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AZURE USER GROUP NL

INSPARK

AZURE SITE RECOVERY & AZURE MIGRATE

TALES FROM THE TRENCHES

20-06-2019

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Blog: talkingazure.com

INSPARK
Innovate to accelerate

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AGENDA

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Introduction

Azure Site Recovery

- Overview of Microsoft BCDR solutions
- Scenario's
- Demo Azure Site Recovery

Azure Migrate

- Introduction Azure Migrate
- Private preview
  - Demo Hyper-V Assessment
  - Demo Azure Migrate private preview

Tales from the trenches…

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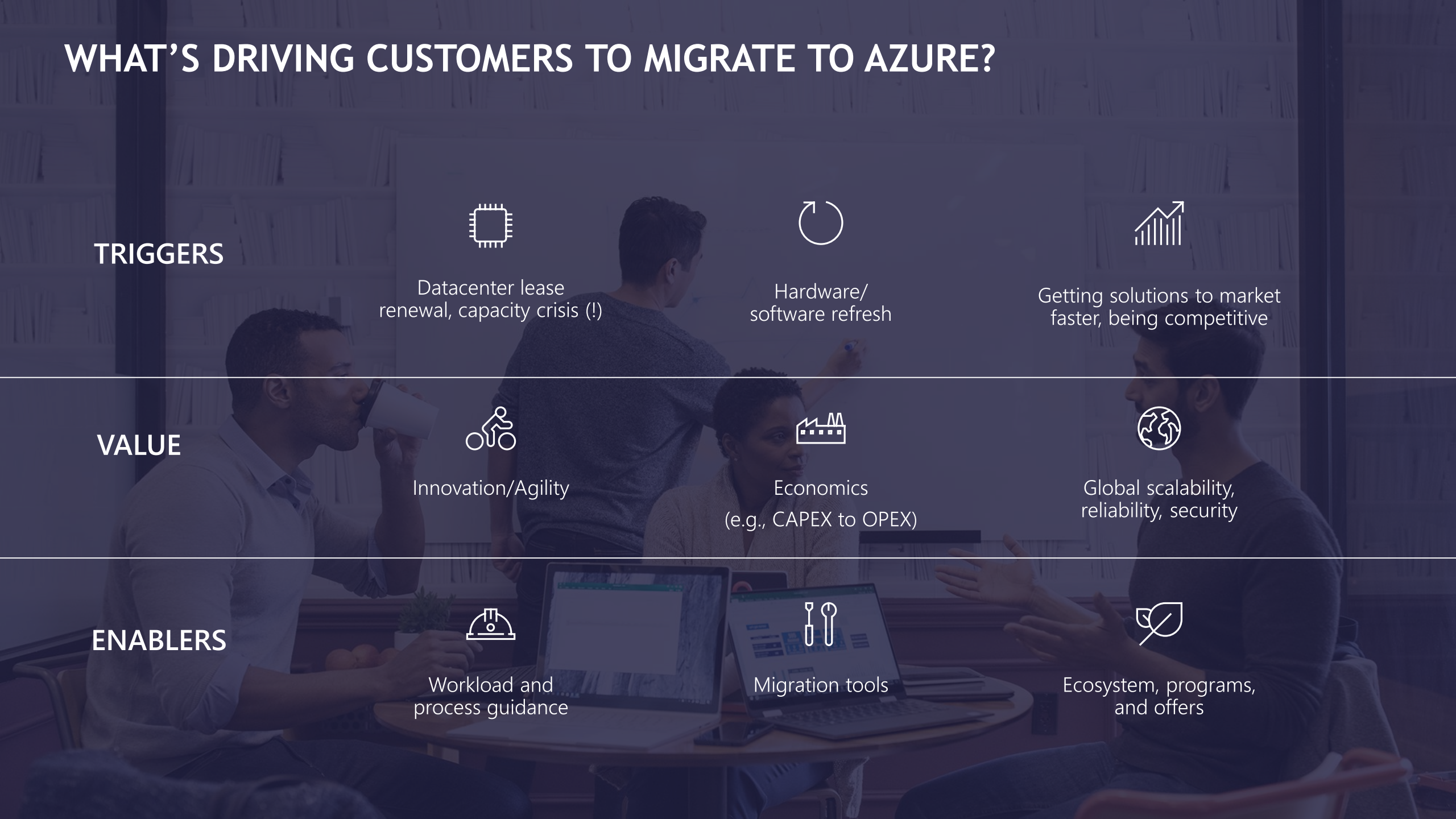
WHAT'S DRIVING CUSTOMERS TO MIGRATE TO AZURE?



TRIGGERS

Datacenter lease renewal, capacity crisis (!)

Hardware/ software refresh

Getting solutions to market faster, being competitive

VALUE

Innovation/Agility

Economics (e.g., CAPEX to OPEX)

Global scalability, reliability, security

ENABLERS

Workload and process guidance

Migration tools

Ecosystem, programs, and offers

CHOICE OF TOOLS FOR EVERY STAGE AND EVERY REQUIREMENT

Goal is successful Azure migration: Pick the right tool for the job

Assess

Azure Migrate

Data Migration Assistant (DMA)

SQL Server Migration Assistant (SSMA)

Migrate

Azure Site Recovery (ASR)

Azure Database Migration Service

Azure Data Box

Optimize

Azure Cost Management

Secure & Manage

Azure Security & Management (e.g., Blueprint, Security Center, Backup, Monitor)

We embrace ISV solutions

MOVERE
Cloudamize
CloudAtlas®
BitTitan
CHEF
STRATOZONE®
turbonomic
Zerto
Corent
intigua
stiim
ATTUNITY
DATOMETRY
MORPHIS
Ispirer
Informatica
QuerySurge

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SUMMARIZING CLOUD MIGRATION STRATEGIES

	REHOST	REFACTOR	REARCHITECT	REBUILD
Description	**Redeploy as-is to cloud**	**Minimally alter to take better advantage of cloud**	**Materially alter/decompose application to services**	**New code written with cloud native approach**
Drivers	• Reduce Capex • Free up datacenter space • Quick cloud ROI	• Faster, shorter, updates • Code portability • Greater cloud efficiency (resources, speed, cost)	• App scale and agility • Easier adoption of new cloud capabilities • Mix technology stacks	• Accelerate innovation • Build apps faster • Reduce operational cost
Technologies	**IaaS**	**Containers** **PaaS**	**PaaS** **Serverless** **Microservices**	

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BUSINESS CONTINUITY CHALLENGES

Costs		Need to reduce the costs related to downtime Disaster recovery solutions with synchronous replication are expensive
Monitoring		Constant monitoring of services can be challenging
Recovery		Manual recovery of the many virtual machines that compose services can be complex and time-consuming - procedures need to be documented and tested
Protecting Many Workloads		Some workloads that could benefit from protection go unprotected due to costs and complexity

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MIGRATE TOOLS – GA AND PREVIEW

Scenario	Recommended Tool
Migration of Windows Server 2008 and 2008 R2 servers to Azure	Azure Site Recovery
Large-scale VMware, Hyper-V, physical server, AWS, GCP & **ASM** migrations to Azure	Azure Site Recovery
Migration of SQL Server 2008 and 2008 R2 databases to Azure	Database Migration Service
Large-scale VMware assessments (10,000 servers in one assessment)	PREVIEW Azure Migrate – Server Assessment *production deployments supported*
Large-scale Hyper-V assessments (5000 servers in one assessment)	PREVIEW Azure Migrate – Server Assessment *production deployments supported*
Agentless migration from VMware to Azure	PREVIEW Azure Migrate – Server Migration *production deployments supported*

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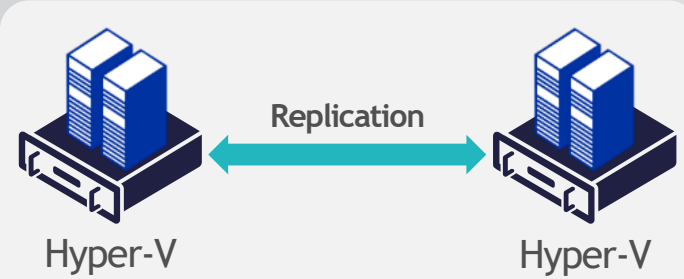
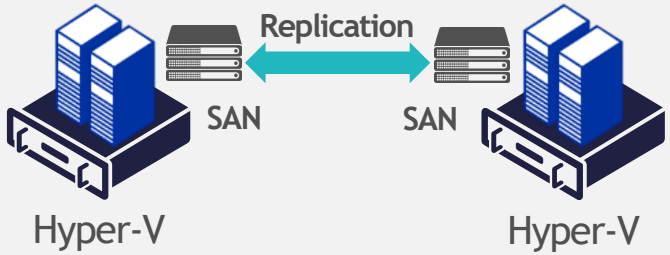
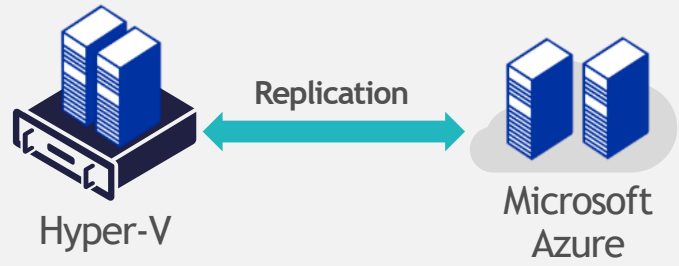
AZURE SITE RECOVERY
ONE SOLUTION FOR MULTIPLE INFRASTRUCTURES



1 Hyper-V to Hyper-V (on-premises)

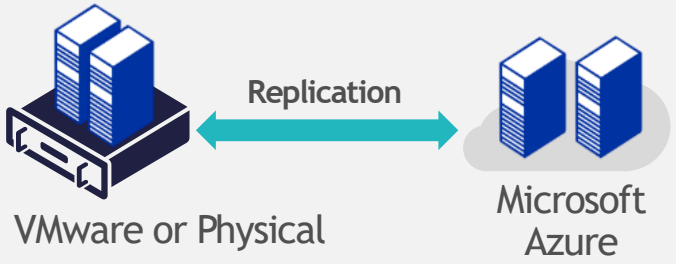


2 Hyper-V to Hyper-V (on-premises)



3 Hyper-V to Microsoft Azure

4 VMware or Physical to VMware (on-premises)



5 VMware or Physical to Microsoft Azure

6 Microsoft Azure to Microsoft Azure

Protect important applications by coordinating the replication and recovery of private clouds across sites. Protect your applications to your own second site, a hoster's site, or even use Microsoft Azure as your disaster recovery site.

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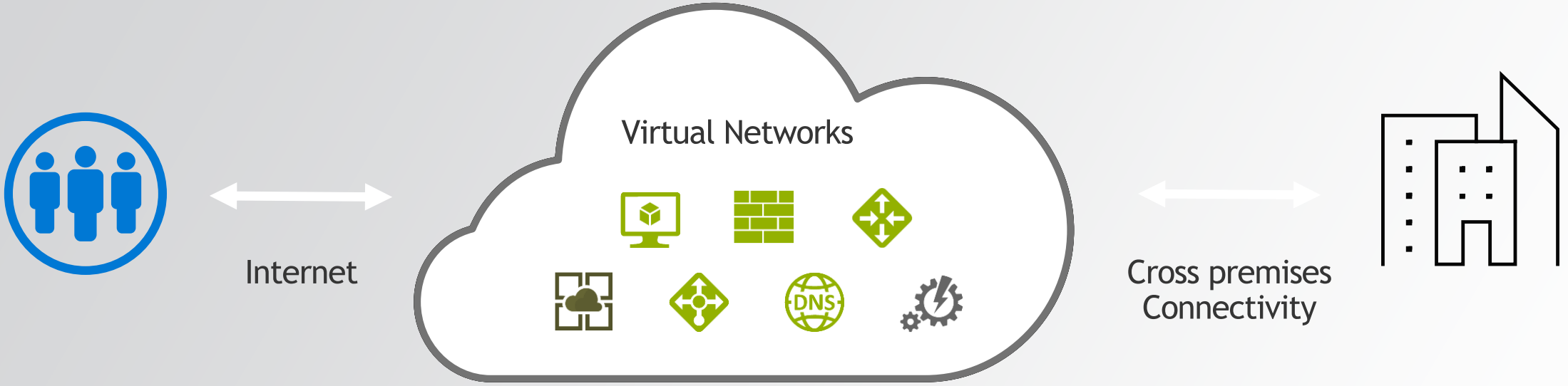
THIS IS HOW WE PRESENT CLOUD NETWORKING



- Secure per customer virtual datacenter in the cloud
- Instantiate and configure complex topologies in minutes
- Rich security and networking services

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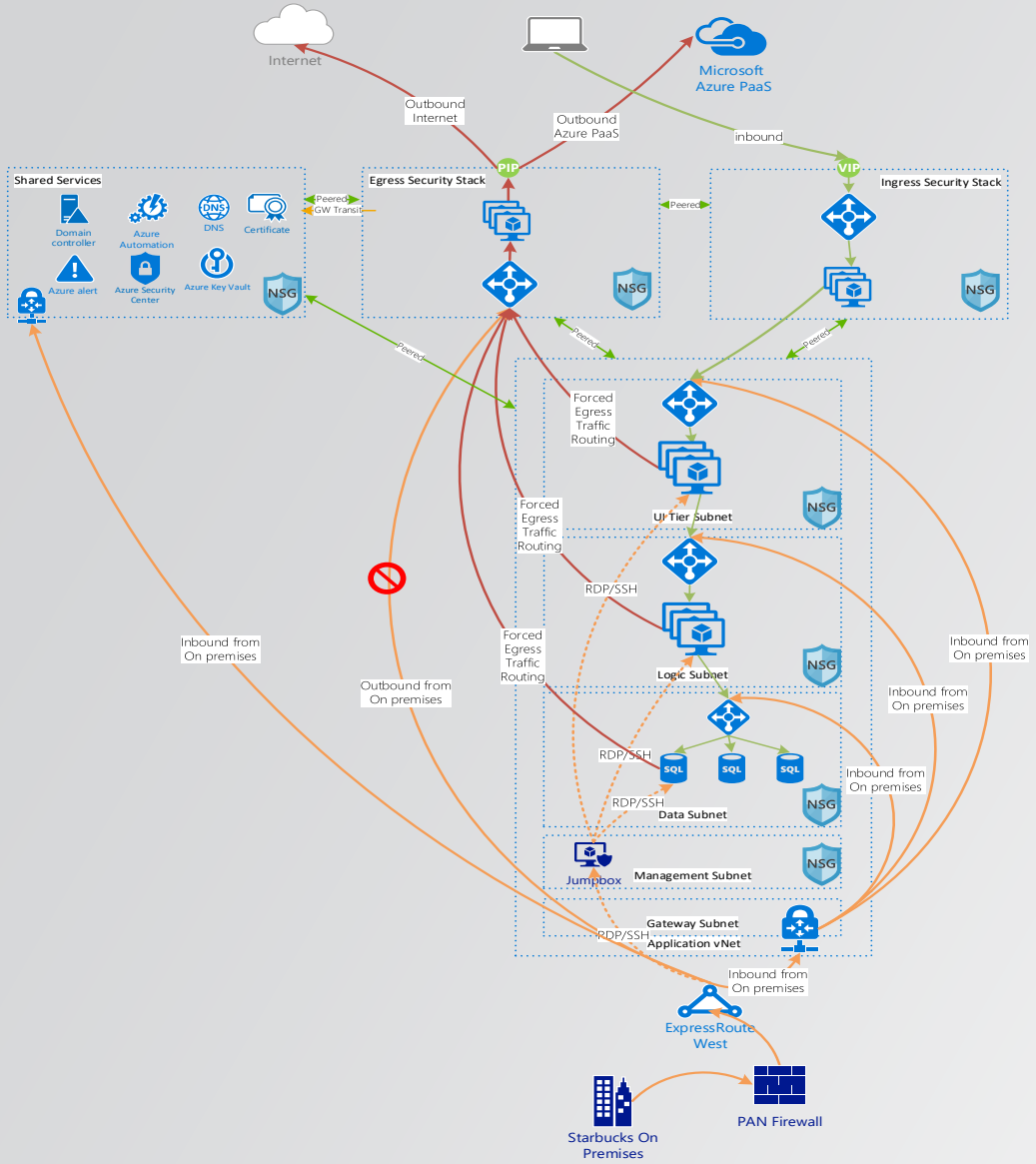
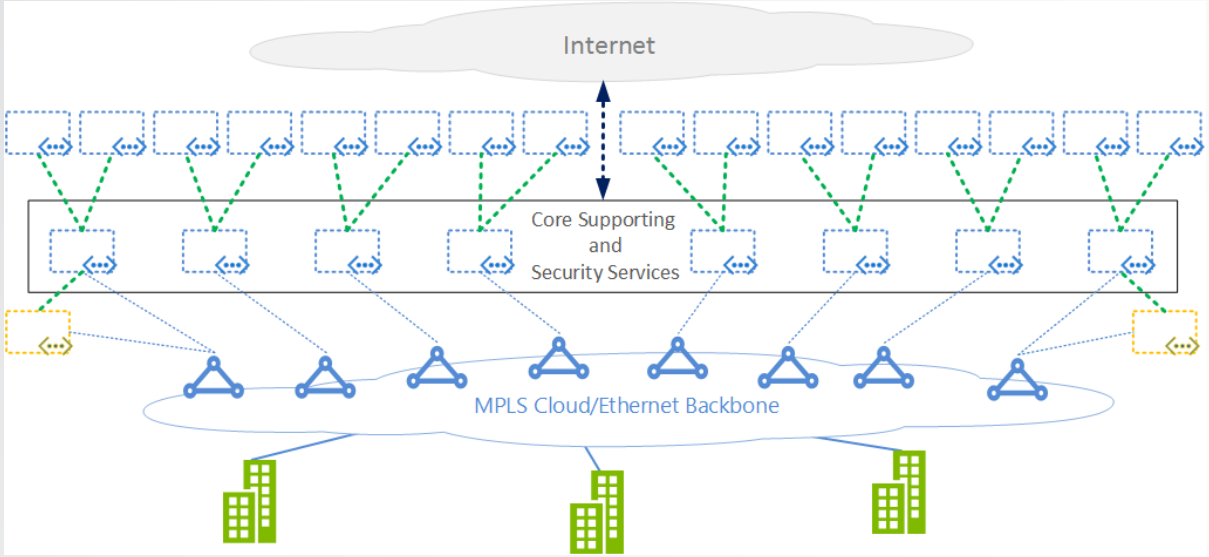
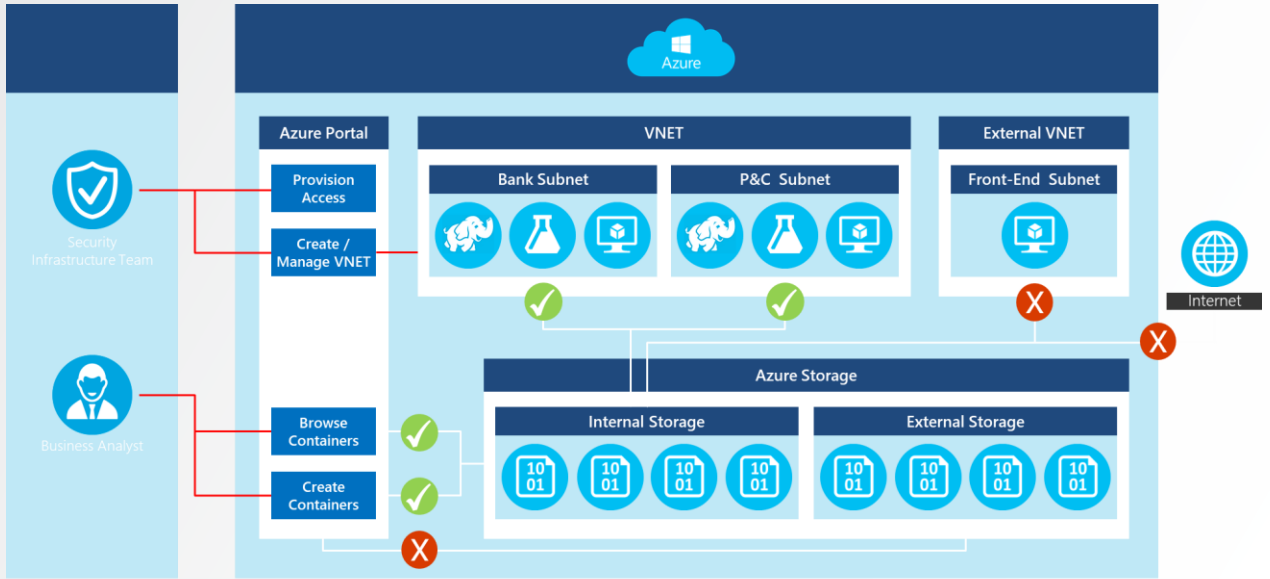
THIS IS WHAT THE CUSTOMERS NEED…







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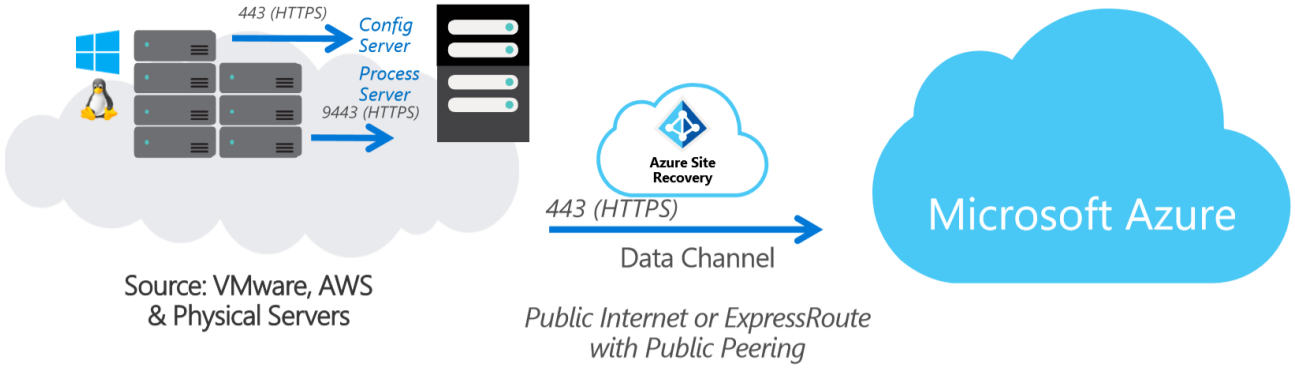
MICROSOFT AZURE SITE RECOVERY

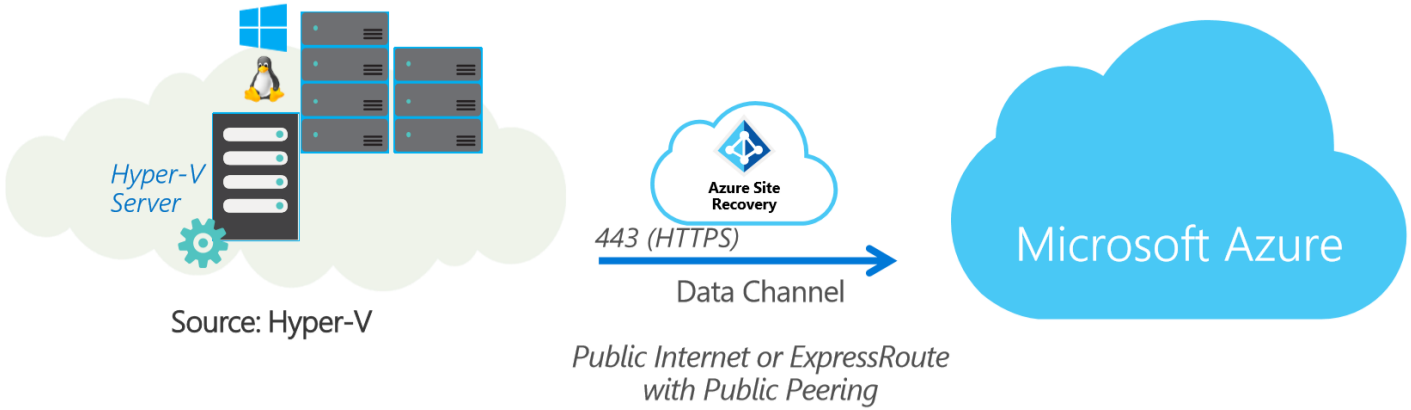
REPLICATION & RECOVERY INTO MICROSOFT AZURE FROM ANY CLOUD



Process Server
Used for caching, compression, and encryption

Configuration Server
Used for centralized management

Mobility Service
Captures all data writes from memory



Microsoft Azure Recovery Services Agent
Replicates data to Azure

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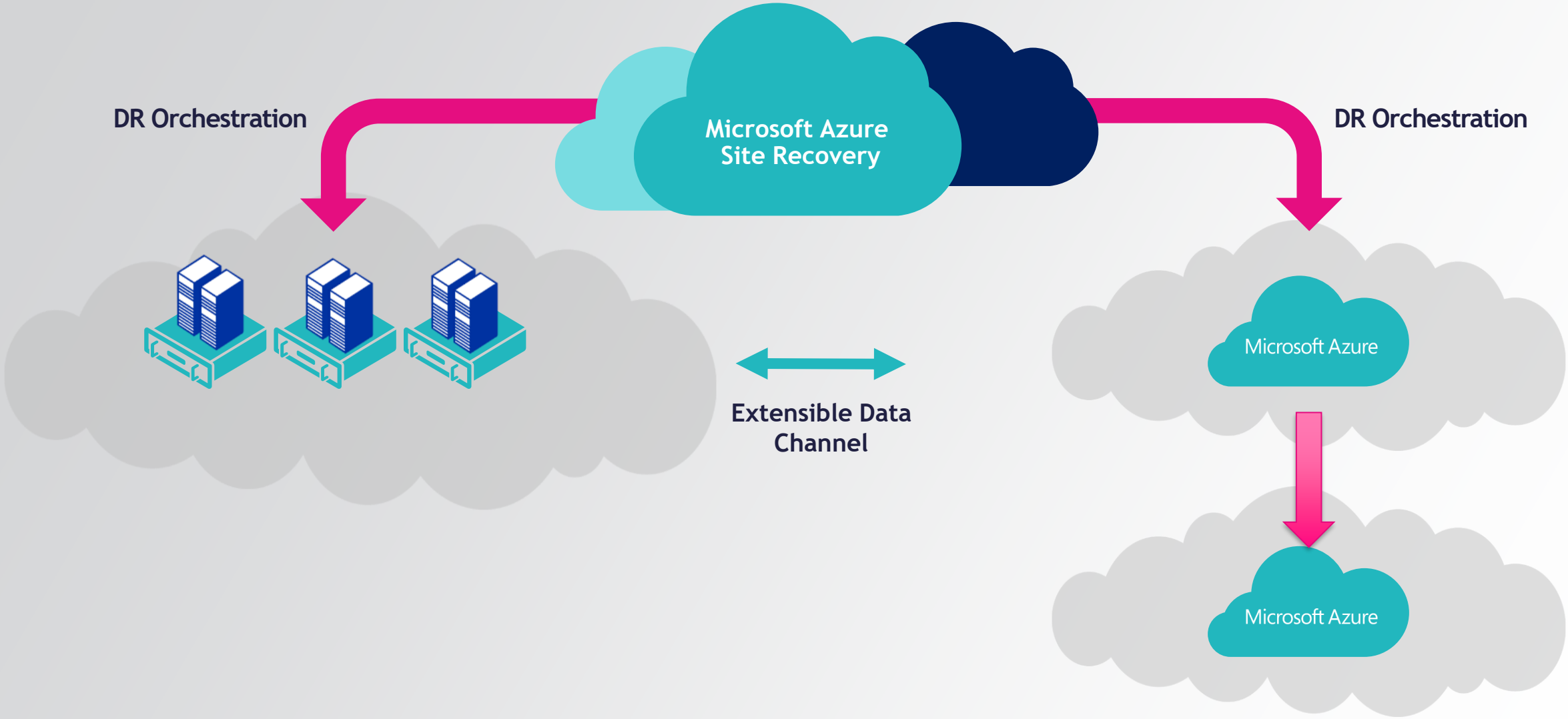
OFFERING DR AS A ADD-ON SERVICE FOR HOSTED WORKLOADS



HSP Data Center 1

Microsoft Azure

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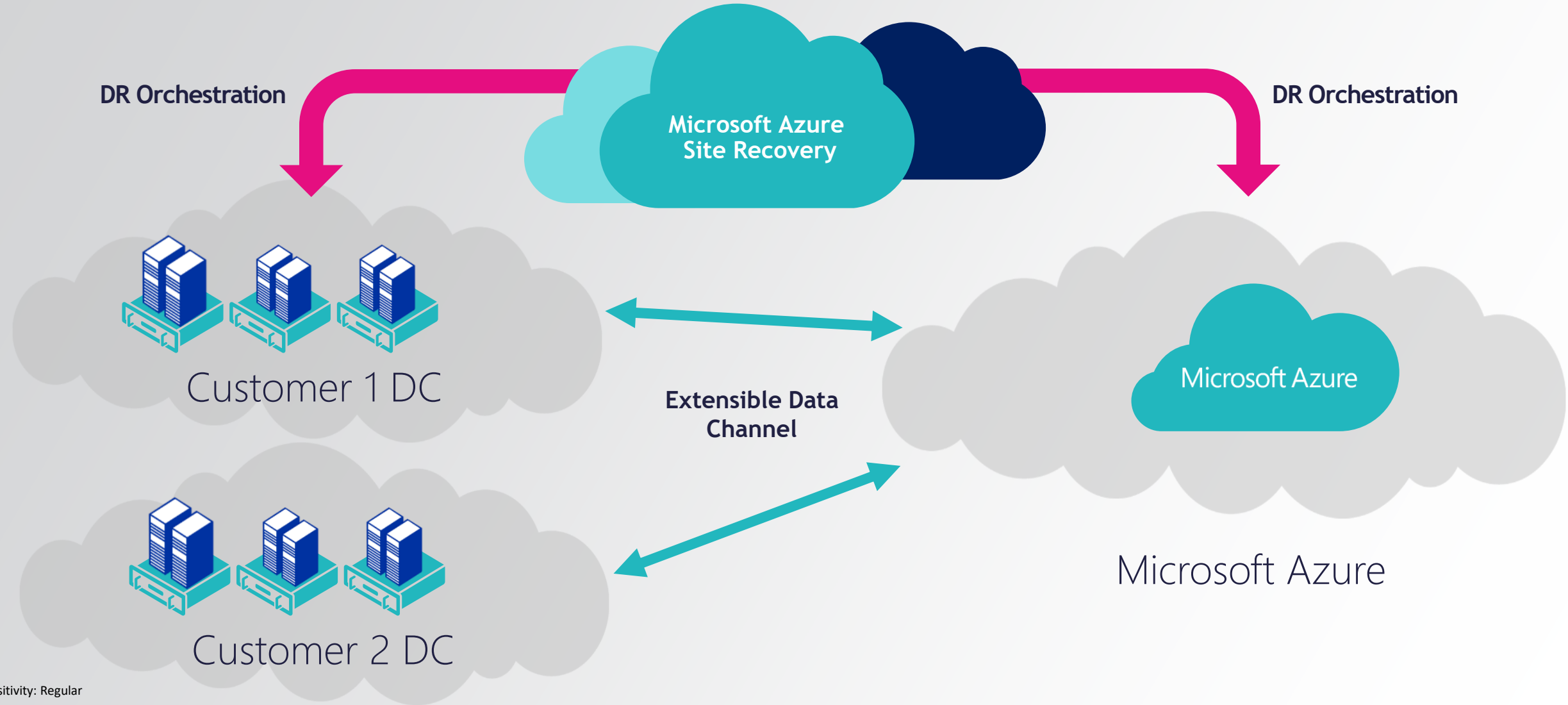
OFFERING DRAAS FOR CUSTOMER WORKLOADS



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MICROSOFT AZURE SITE RECOVERY

REPLICATION & RECOVERY INTO MICROSOFT AZURE

Consistent Experience

Centralized view of replication & recovery between on-premises locations, & between on-premises & Microsoft Azure.

Streamlined Configuration

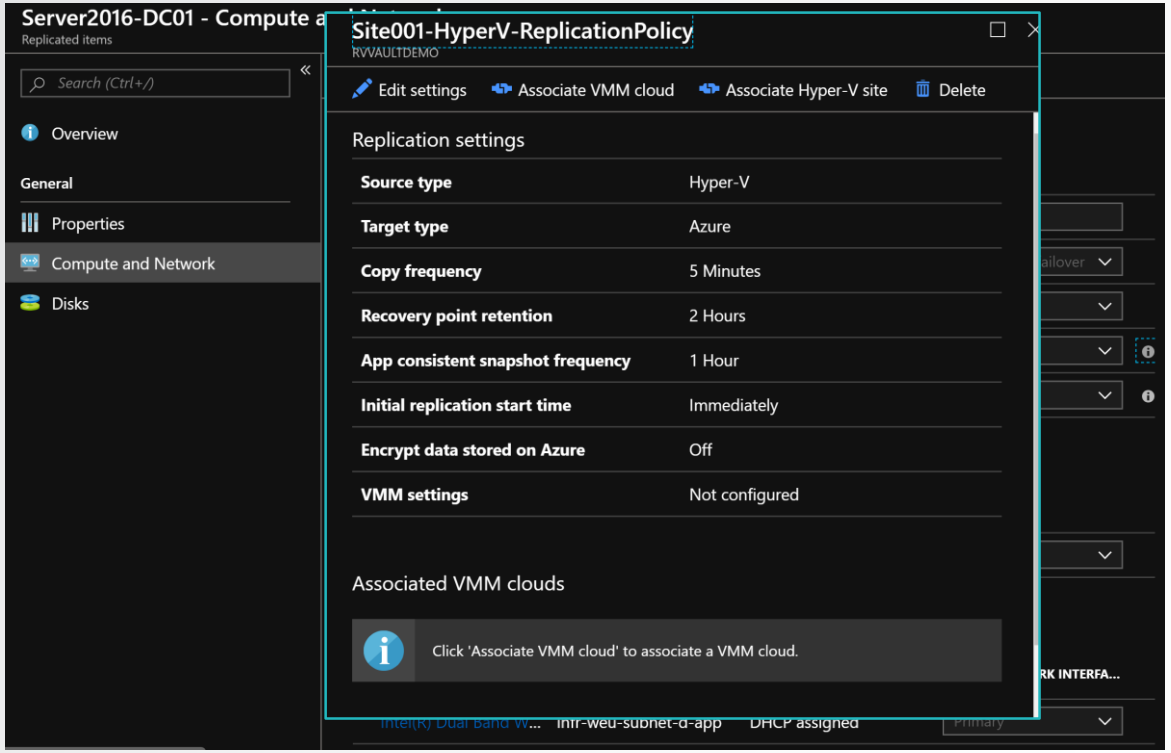
Only 1 additional installation step – installation of Site Recovery agent on Hyper-V Hosts

Quickly set up protection of on-premises clouds, with Microsoft Azure as a target.

Support for Encryption of Data at Rest, along with flexible replication frequencies, additional recovery points & VSS-aware application consistent checkpoints.

Network Mapping

Enables the mapping of on-premises VM Networks into pre-created Microsoft Azure Virtual Networks



Zero application data loss during migration

Near zero application down time during migration

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MICROSOFT AZURE SITE RECOVERY

REPLICATION & RECOVERY INTO MICROSOFT AZURE

Recovery Plans

Automate the orderly recovery into Microsoft Azure, in the event of a site outage at the primary datacenter.

Support for Scripts and Manual Actions that require some form of human intervention during the execution of the Recovery Plan.

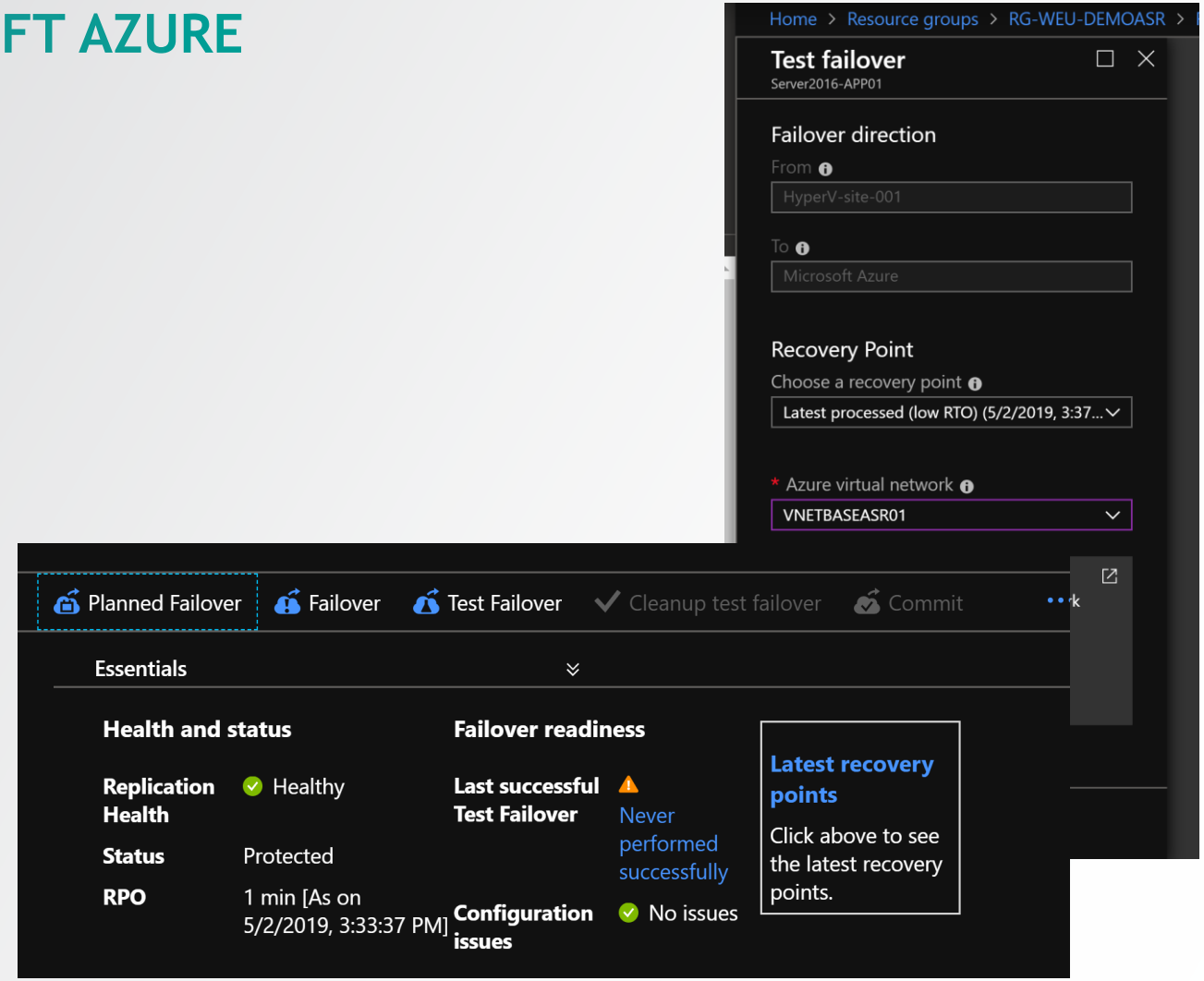
Shutdown of VMs upon execution is in reverse order of recovery to ensure zero data loss.

Flexible Failover & Failback Options

Support for Test, Unplanned & Planned Failover into Microsoft Azure.

Can be used to provide compliance assurance without impacting production workloads, and also as a mechanism to migrate into Microsoft Azure for longer term usage.

Streamlined process for failback into on-premises environment.



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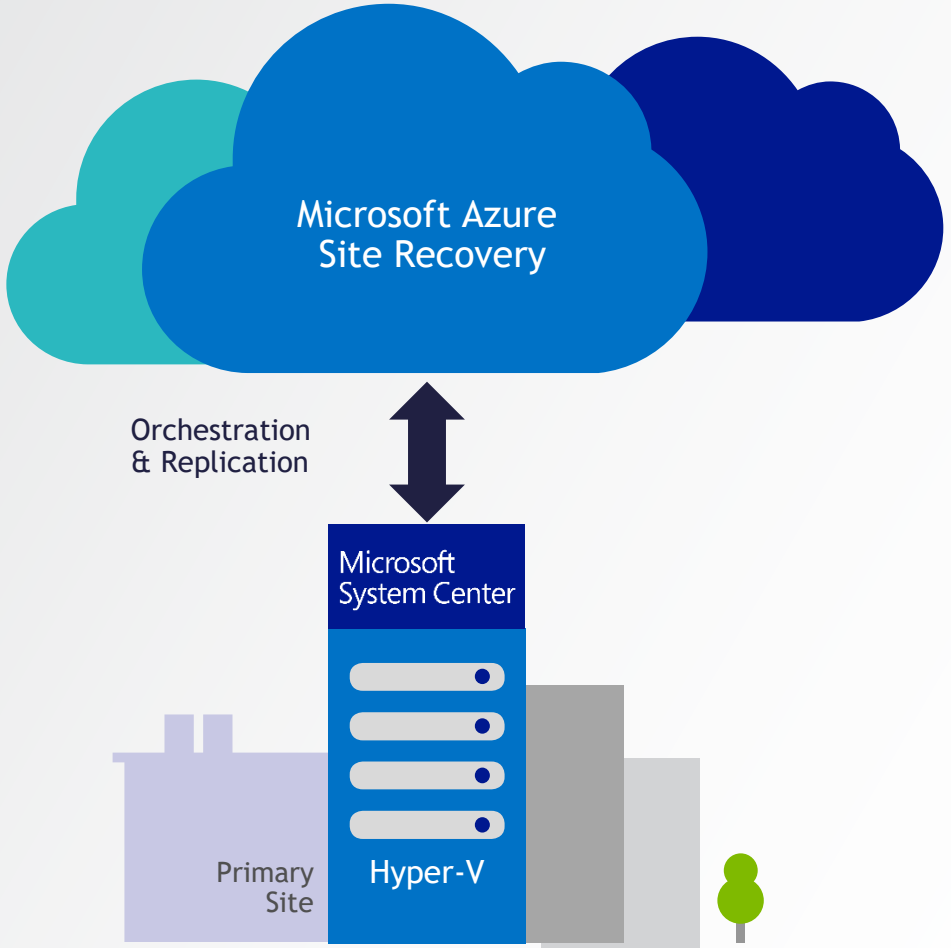
DEMO

Configuring Azure site recovery

Between on premise site Hyper-V and Azure



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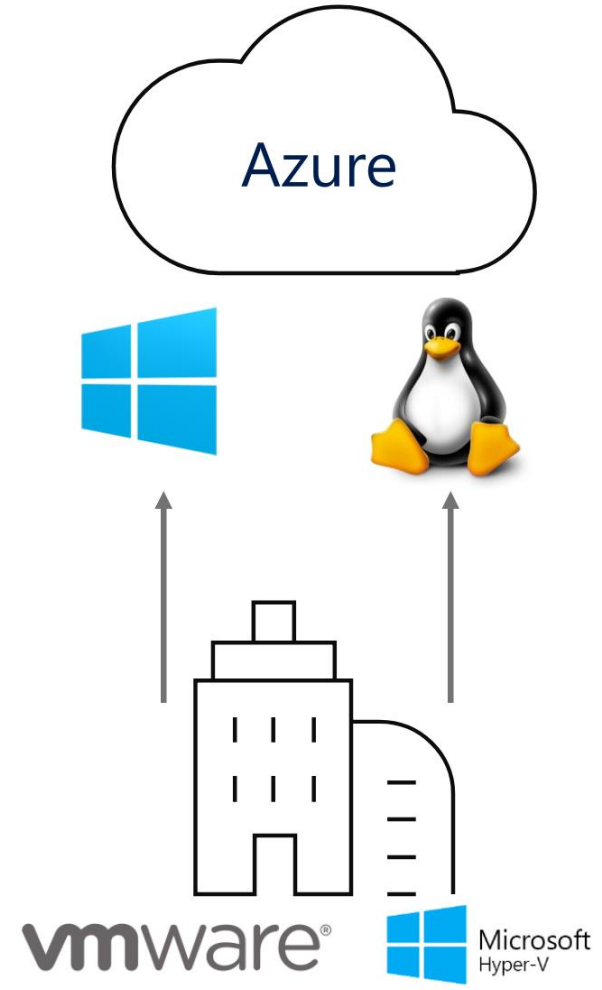
AZURE MIGRATE

What does it do?

- Easily discovery of on-premises VMs
- Visualize dependencies to create move groups
- Insightful workload assessments:
  - Azure Suitable analysis “editable”
  - Right-sized Azure resources bases on utilization history
  - Estimated monthly run cost in Azure
  - Customize cost assessment – offers, workload uptime, Vm serie
  - Support for VMWare and **NEW** Hyper-V
- No Cost



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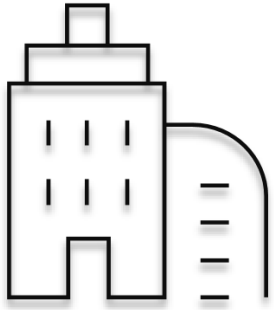
AZURE MIGRATE ‘PRIVATE PREVIEW’

Microsoft Hyper-V

vmware



VmWare and **Hyper-V** assessments

Scale
5,000 Hyper-V VMs
10,000 VMware VM

Agentless and **OS-diagnostic** VMware migration

Integrated migration journey

- Unified assessment, migration, & progress tracking
  - A single centralized user experience to track your migration journey using Microsoft and ISV tools.
- Extensible approach with ISV integration – Cloudamize integration with Azure Migrate to enable additional assessment capabilities
- **Coming soon:** Support for physical servers assessment

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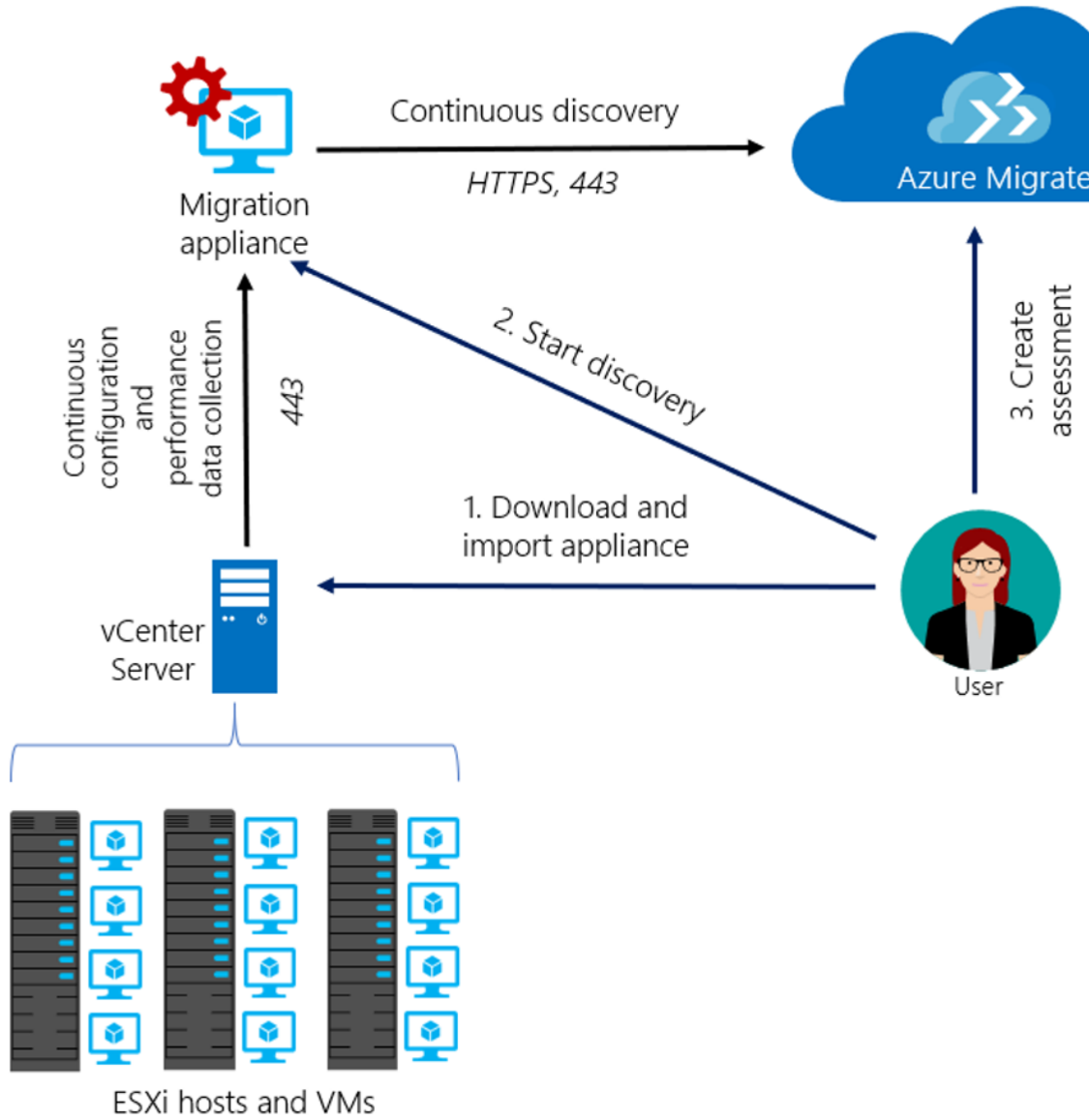
MIGRATE TO AZURE WITH AZURE SITE RECOVER PROCESS



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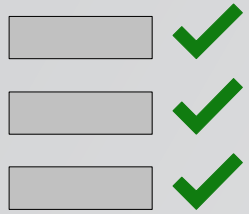
DEMO AZURE MIGRATE PRIVATE PREVIEW

Azure Migrate

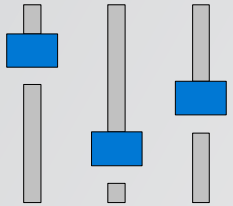
Azure Migrate Assessment

Sensitivity: Regular

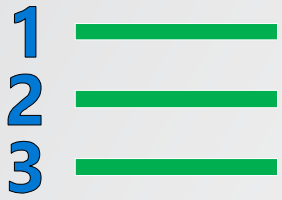
LARGE-SCALE MIGRATIONS TO AZURE



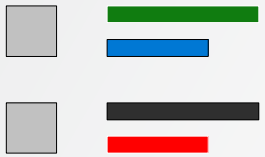
Perform **Discovery** and **Assessment**



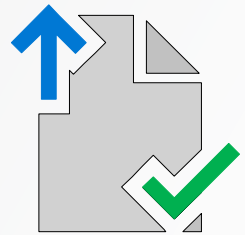
Finalize Settings and Export Assessment



Generate CSV file for Migration Phase



Execute the **PowerShell** Scripts for Migration



Test, **Validate** and Perform **Cutover**

Documentation: https://aka.ms/migrate/migration_factory
GitHub repository: https://aka.ms/migrate/migration_factory_scripts

Sensitivity: Regular

EXECUTE LARGE-SCALE MIGRATIONS TO AZURE

1. Generate the CSV file for large-scale migration

Settings include all target details such as resource group, availability set, and desired SKU

A	B	C	D	E	F	G	H	I	J
VAULT_SUBSCRIPTION_ID	VAULT_NAME	SOURCE_MACHINE_NAME	TARGET_MACHINE_NAME	CONFIGURATION_SERVER	PROCESS_SERVER	TARGET_RESOURCE_GROUP	TARGET_STORAGE_ACCOUNT	TARGET_VNET	REPLICATION_POLICY
8c3c936a-c09b-4de3-830b-3f5f244d72e9	ContosoScale	Contoso-DataTier1	Contoso-DataTier1	ContosoCS	ContosoCS	ScaleDemo	storageaccountscale	VirtualNetworkScale	Scalemigration
8c3c936a-c09b-4de3-830b-3f5f244d72e9	ContosoScale	Contoso-DataTier2	Contoso-DataTier2	ContosoCS	ContosoCS	ScaleDemo	storageaccountscale	VirtualNetworkScale	Scalemigration
8c3c936a-c09b-4de3-830b-3f5f244d72e9	ContosoScale	Contoso-DataTier3	Contoso-DataTier3	ContosoCS	ContosoCS	ScaleDemo	storageaccountscale	VirtualNetworkScale	Scalemigration
8c3c936a-c09b-4de3-830b-3f5f244d72e9	ContosoScale	Contoso-FrontTier3	Contoso-FrontTier3	ContosoCS	ContosoCS	ScaleDemo	storageaccountscale	VirtualNetworkScale	Scalemigration
8c3c936a-c09b-4de3-830b-3f5f244d72e9	ContosoScale	Contoso-MiddleTier1	Contoso-MiddleTier1	ContosoCS	ContosoCS	ScaleDemo	storageaccountscale	VirtualNetworkScale	Scalemigration

	A	B	C	H	K	L	M
1	VMname	Stopped in ASM?	In Backup?	NEW Resource Group	VM Size	New InstanceSize	Storage Account
2	VBLNL814001	Yes		BVGO-WE-RSG-P-Arsys	Standard_F4s	Standard_F4s_V2	vbstorparsys
3	VBLNL825001	Yes		BVGO-WE-RSG-A-Arsys	Standard_F4s		vbstorparsys
4	VBLNLMS801	Yes		BVGO-WE-RSG-P-DOCMGT	Standard_D2_v2	Standard_D2_v2	vbstorp07
5	VBLNLMS825002	Yes		BVGO-WE-RSG-A-Arsys	Standard_F4s	Standard_F4s_V2	vbstorparsys

2. Execute ASR_StartMigration.ps1 to start replicating servers to Azure

Track replication progress by executing ASR_ReplicationStatus.ps1

```
$vaultName = $csvItem.VAULT_NAME
$sourceAccountName = $csvItem.ACCOUNT_NAME
$sourceProcessServer = $csvItem.PROCESS_SERVER
$sourceConfigurationServer = $csvItem.CONFIGURATION_SERVER
$targetPostFailoverResourceGroup = $csvItem.TARGET_RESOURCE_GROUP
$targetPostFailoverStorageAccountName = $csvItem.TARGET_STORAGE_ACCOUNT
$targetPostFailoverVNET = $csvItem.TARGET_VNET
$targetPostFailoverSubnet = $csvItem.TARGET_SUBNET
$sourceMachineName = $csvItem.SOURCE_MACHINE_NAME
$replicationPolicy = $csvItem.REPLICATION_POLICY
$targetMachineName = $csvItem.TARGET_MACHINE_NAME
$targetStorageAccountRG = $csvItem.TARGET_STORAGE_ACCOUNT_RG
$targetVNETRG = $csvItem.TARGET_VNET_RG
```

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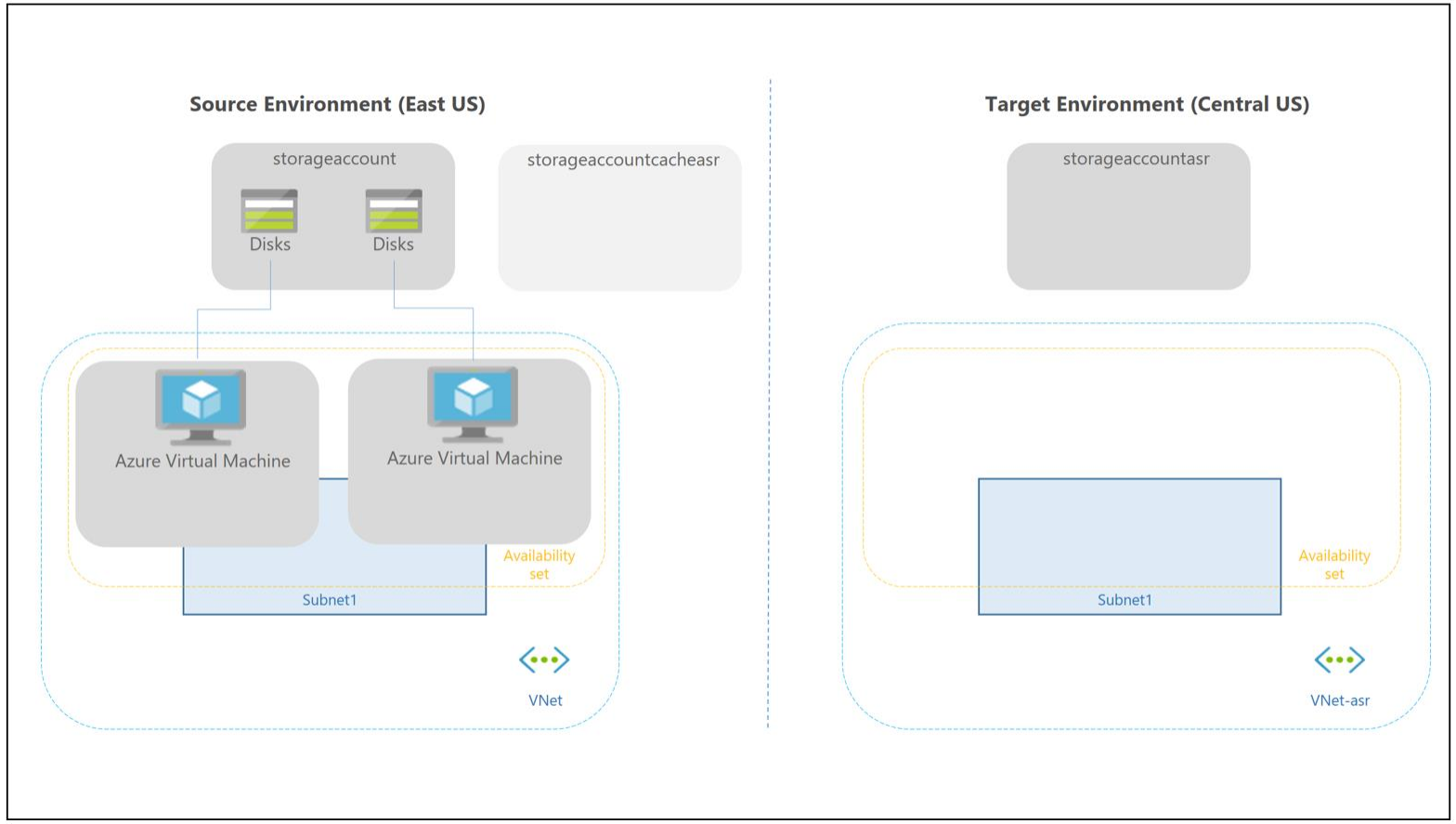
ARCHITECTURE AZURE-TO-AZURE



Components:

- VMs in source region
- Source VM storage
- Source VM networks
- Cache storage account
- Target resources

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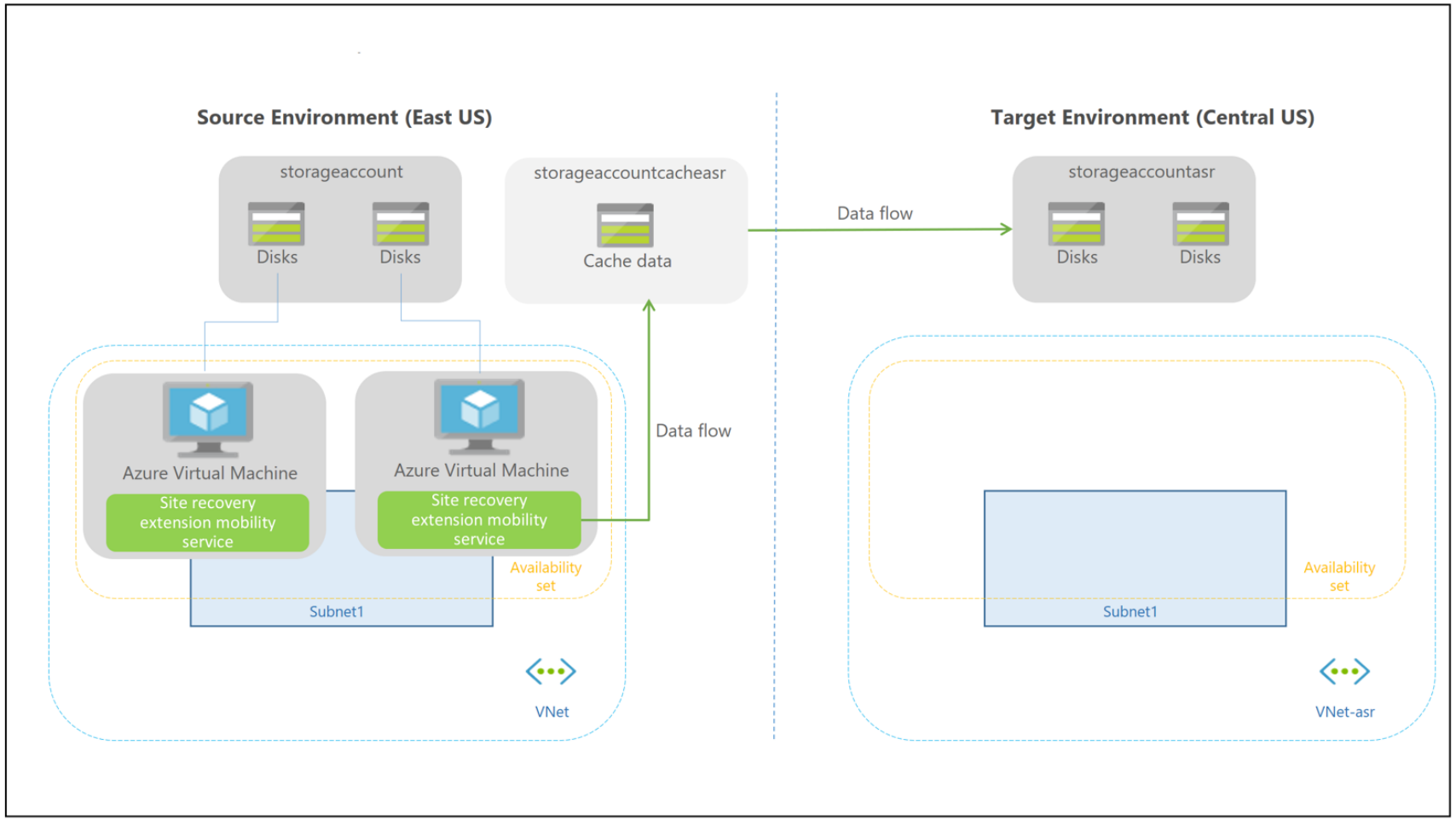
ARCHITECTURE AZURE-TO-AZURE



Replication process:

1. The Site Recovery Mobility service extension is automatically installed on the VM.
2. The extension registers the VM with Site Recovery.
3. Continuous replication begins for the VM. Disk writes are immediately transferred to the cache storage account in the source location.
4. Site Recovery processes the data in the cache, and sends it to the target storage account, or to the replica managed disks.
5. After the data is processed, crash-consistent recovery points are generated every five minutes. App-consistent recovery points are generated according to the setting specified in the replication policy.

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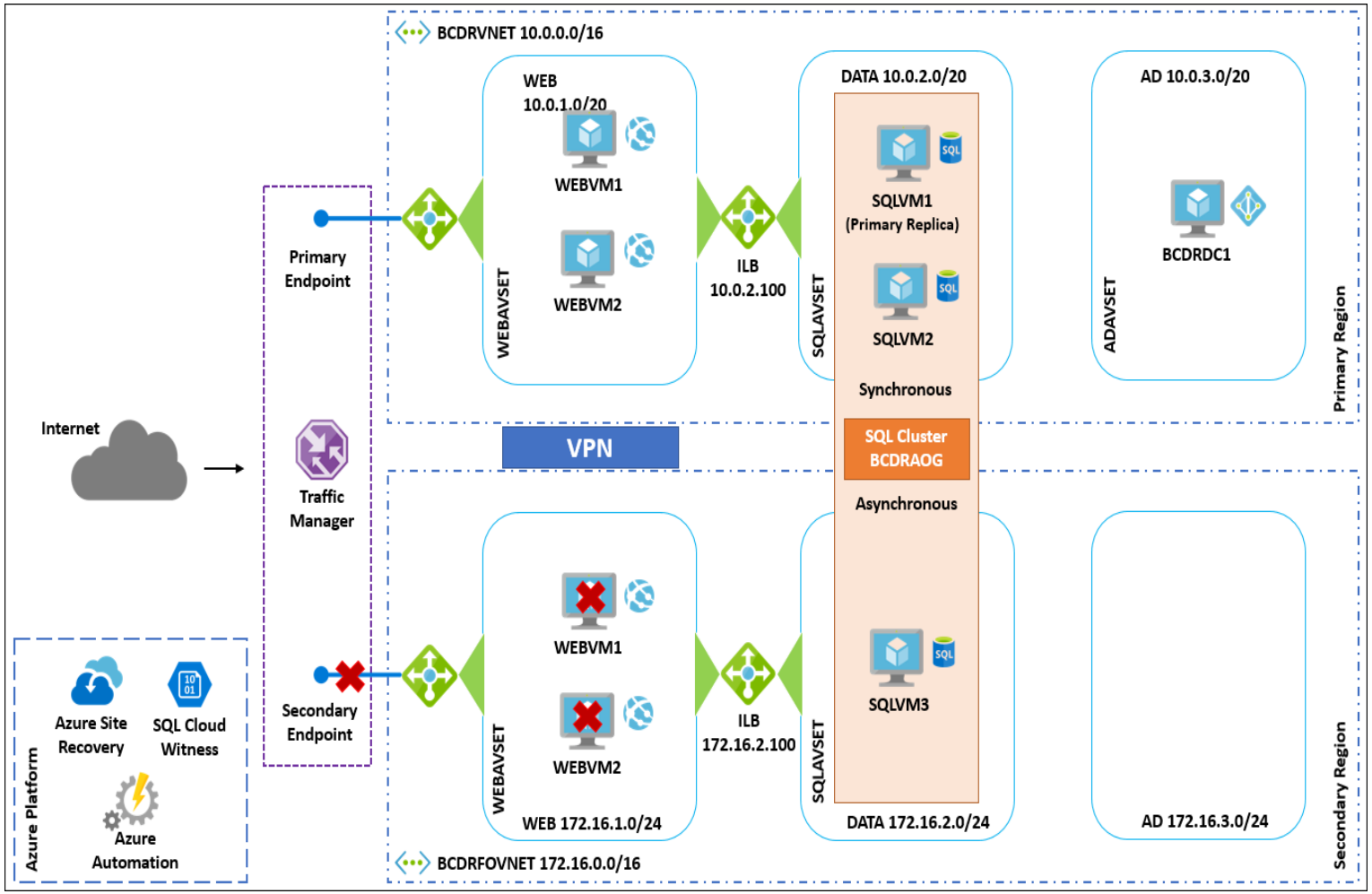
ARCHITECTURE AZURE-TO-AZURE



Background: This environment will consist of two Virtual Networks deployed to your Primary and Secondary site with an AD Domain, IIS Web Servers and Microsoft SQL Servers that you will configure into a SQL Always On Availability Group

Goal using Azure BCDR: Your goal for this environment is to have the ability to have a one-click failover process using Azure Site Recovery in either direction. The users will have one URL that they will use to connect to your application regardless of where the application is running.

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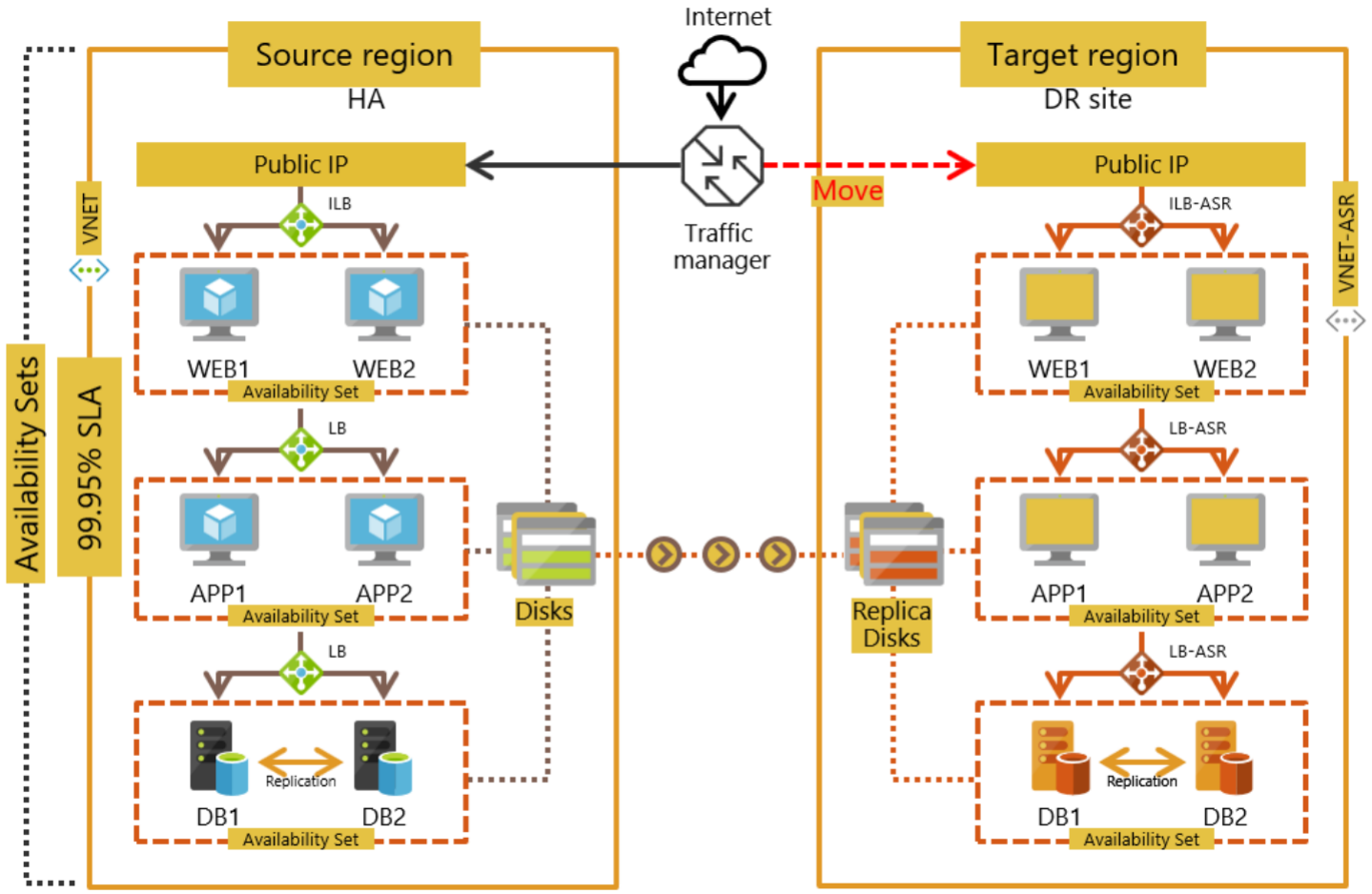
VMS IN EACH TIER DEPLOYED ACROSS AVAILABILITY SETS



VMs in each tier deployed across availability sets:

Each VM in a tier is configured in an availability set. Availability sets ensure that the VMs you deploy on Azure are distributed across multiple isolated hardware nodes in a cluster.

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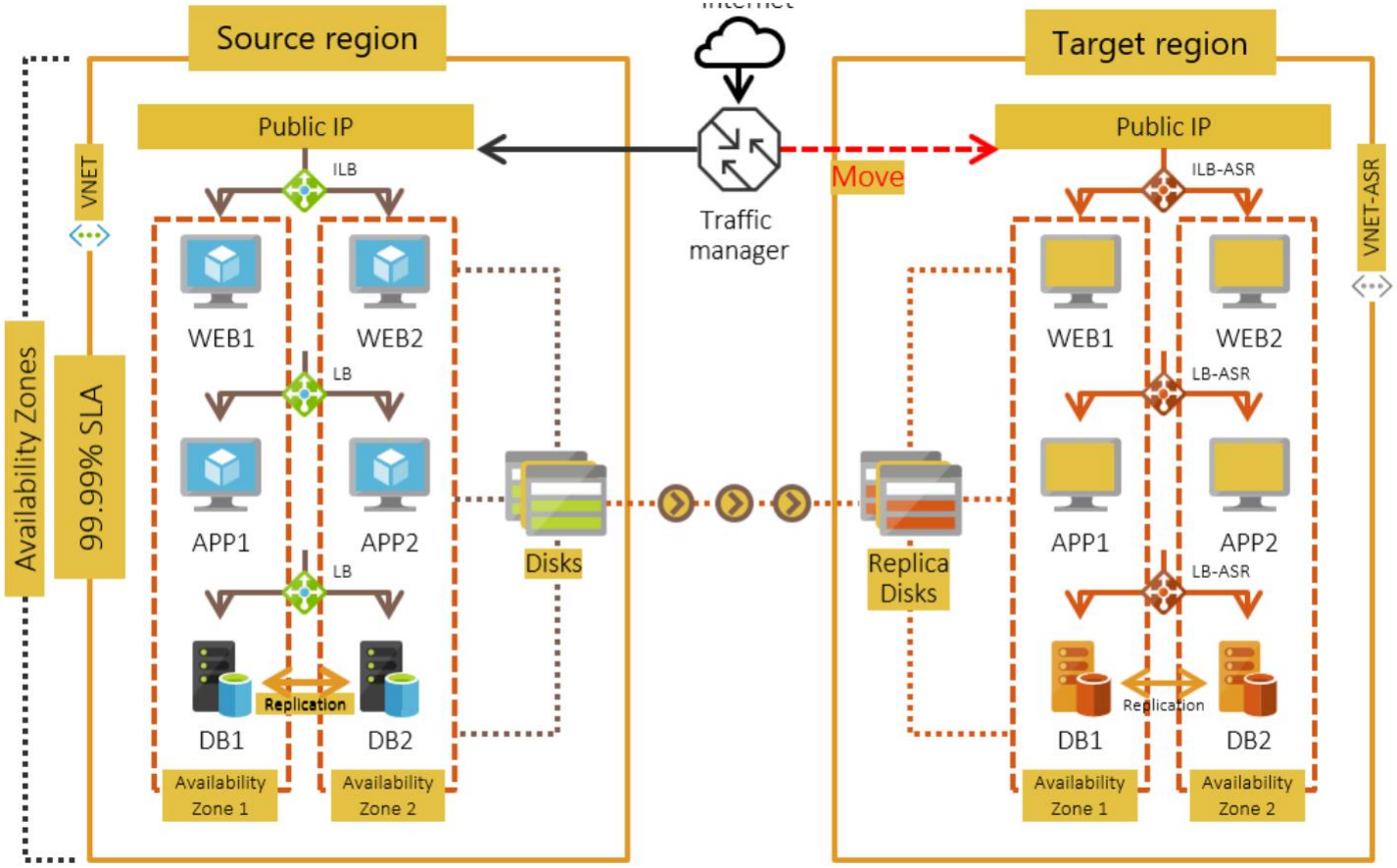
VMS IN EACH TIER DEPLOYED ACROSS AVAILABILITY ZONES



VMs in each tier deployed across Availability Zones: Each VM in a tier is configured across Availability Zones. An Availability Zone in an Azure region is a combination of a fault domain and an update domain.

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TALES FROM THE TRENCHES…

- Performance impact
- Harddisk resize not recogizied
- Site Recovery supports enabling replication for data disks GA (May 2019)
- Data change rate
- No back-up tool
- Automation Account
- Network throttling
- Naming conventions
- Application Consistent Snapshots not ideal for Migraties (ASR)
- Disk changed will be not applied ASR (agent based)
- Temporary Drive gerepliceerd
- Disk cache not transfert
- No ShutDown source (agent based)
- Test Fail-over in Storage Accounts (Managed Disks will be available)

Sensitivity: Regular

LINKS

- Azure Site Recovery - Business continuity and disaster recovery (BCDR)
  - https://docs.microsoft.com/en-us/azure/site-recovery/vmware-azure-about-disaster-recovery
- Azure Site Recovery – VMware Permissions
  - https://docs.microsoft.com/en-us/azure/site-recovery/vmware-azure-tutorial-prepare-on-premises

Sensitivity: Regular

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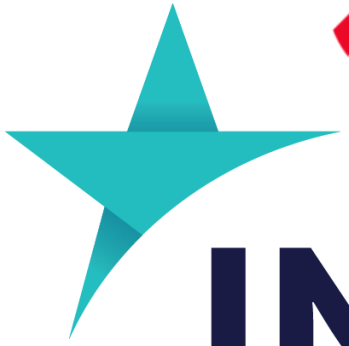

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THE END - QUESTIONS & DRINKS