



Project Journey

Azure Migration Enablement Program

8 Sept 2020 – 11 Nov 2020

APAC

Today's Session

Module 34 – Tuesday 27 October 2020

Please hold while we get the event ready...
Session will start at 10:15am SGT

IMPORTANT NOTICE:

- If you choose to participate in this session using Microsoft Teams, your name, email address, phone number, and/or title may be viewable by other session participants.
- Please note that the training will not and cannot be recorded in alignment with Microsoft's policies





Azure Migration / Project Journey

Module 4 – The Main Event

Nicolas Yuen

- Cloud Solution Architect

Nick Westbrook

- Cloud Solution Architect

Azure Migration – The main event

Is the moment of truth – migrating your workloads in Azure at scale and run your virtual datacenter in the cloud

Agenda

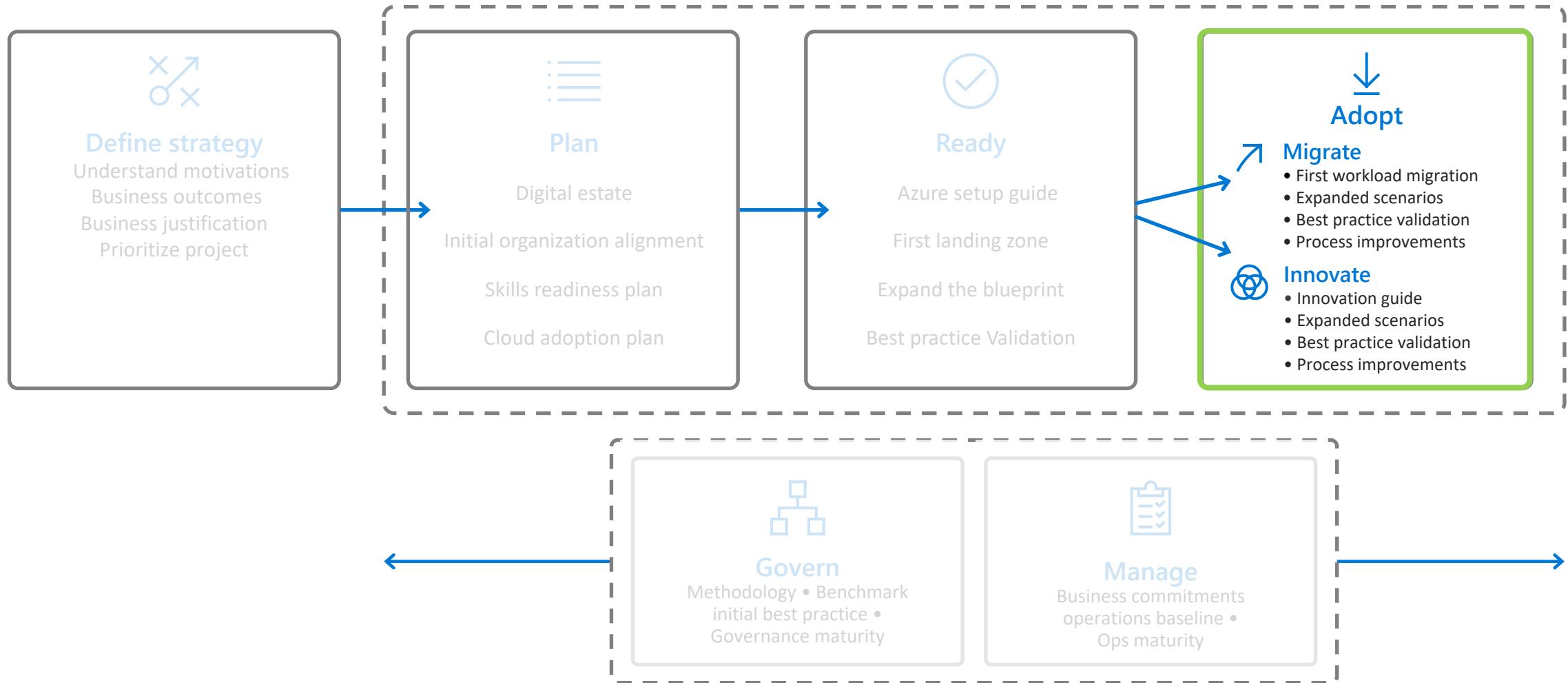
Cloud Adoption Framework: Adopt
Pre-requisites – checklist
Grouping workloads
Replicate
Test
Cut-off
Operate

The background of the image features a sunset or sunrise over a wetland area. In the sky, six Canadian geese are captured in flight, arranged in a V-shape. The foreground is filled with the silhouettes of tall cattails. The overall scene conveys a sense of migration and natural beauty.

Migrate

Cloud Adoption Framework

Microsoft Cloud Adoption Framework for Azure



Defining migration strategies

Applications | Data | Infrastructure

Migrate and modernize

Rehost Refactor Rearchitect

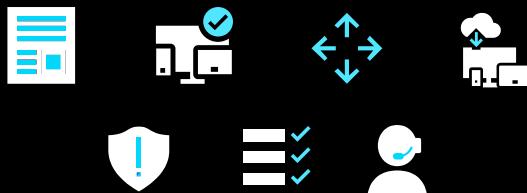
Cloud-native

Rebuild/New

Software as a service

Replace

IT-oriented triggers
(driven by timelines)



Migration

Operational efficiency,
enhanced security, scale

Migration paths

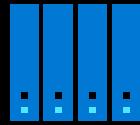
Application-oriented triggers
(driven by application prioritization)



Modernization

Innovation,
productivity, scale

Migration phases with Azure Migrate



Server Migration

1. Discover



Deploy Azure Migrate Appliance to on-premises environment or use CMDB info to import via CSV. Discover and analyze server performance

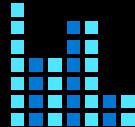
2. Assess



Group servers and perform assessments to determine Azure suitability, right-sizing information, dependency mapping, and cost planning

3. Migrate

Start migrating servers to Azure with the combined appliance. Test migration and perform zero data loss cutover to Azure

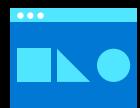


Database Migration

Create project in Azure Migrate as a central repository and download Data Migration Assistant (DMA) tool. Upload results to migrate project

Assess on-premises databases using information from DMA tool. Gain recommendations on performance and reliability improvements for your target Azure location

Sync assessment summary from DMA to Azure Migrate. Use Data Migration Service (DMS) to move schema, data, & uncontained objects from source server to target server



Application Migration

Access the App Migration Service from Azure Migrate. Download the Migration Assistant to start .NET or PHP app migration

Scan the public endpoint to get list of technologies used, which are then compared to other sites hosted on App Service. This creates a unique assessment report for the site

Migrate to App Service by either redeploying code via CI/CD pipeline, deploying a container, or using the App Service Migration Assistant tool

Planning for the first workload

Objective: Migration of the first workload is a highly suggested learning experience, which should come early in any migration effort.

The goal is to deploy one or more production ready workloads. However, this is done to provide the team with the ability to learn the tools and the Azure platform. That learning will help make the right long-term decisions, even if those workloads don't ever get promoted to production traffic.

Domain Alignment:

Choose a workload that represents the domain focus that will be used throughout the migration plan.



Workloads



Applications



VMs

Select a Toolchain:

Choose one or two migration tools to use for this first migration



Azure Site Recovery



App Service Migration Tool



Data Migration Service

Workload Selection:

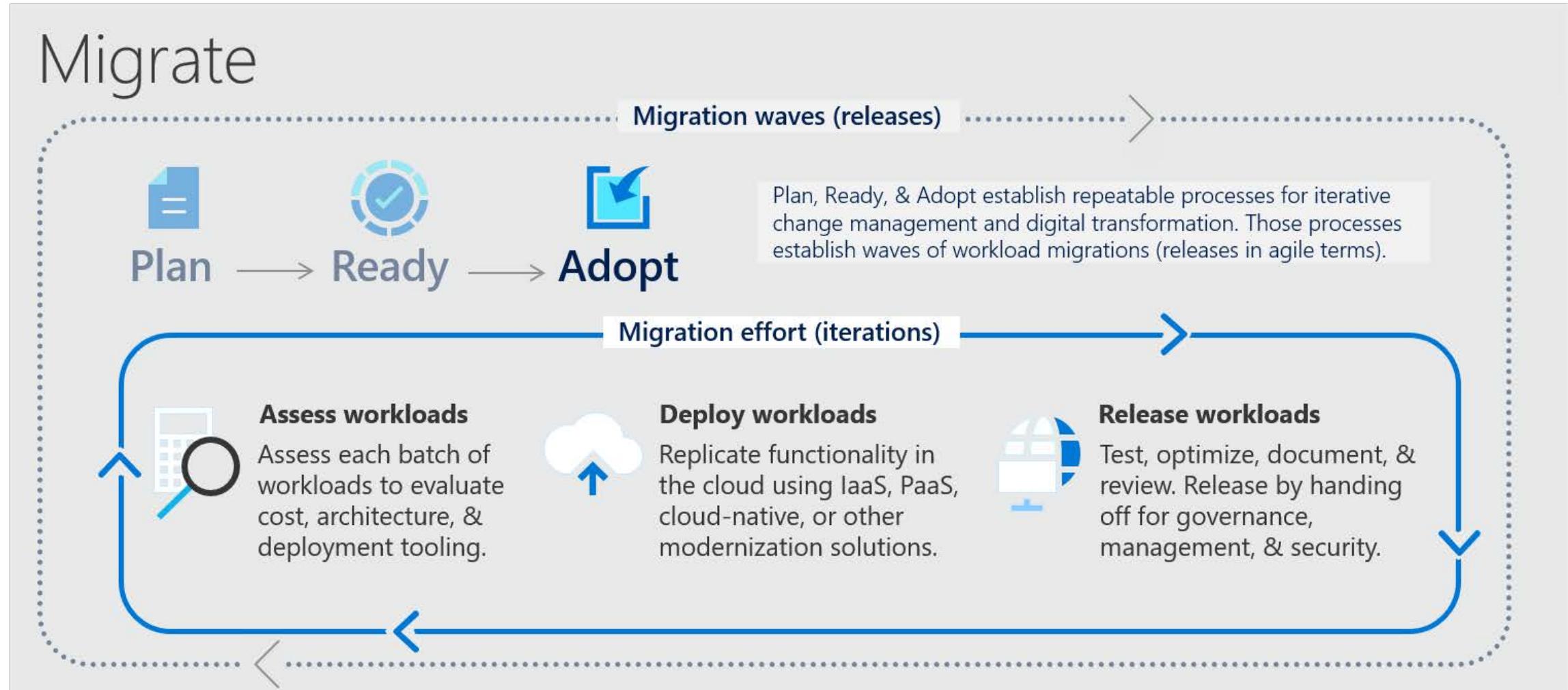
The following checklist can aid in selection of a first workload

1. Low impact to end users & business processes
2. Performance of the workload is established and can be tested
3. Performance impacts during this experiment won't negatively impact critical processes
4. Application Owner is supportive of the cloud migration objectives
5. Subject Matter Experts for the workload should be aware or even involved in the migration
6. Operations staff for the workload should be aware or even involved in the migration
7. IT experts from networking, identity, security, governance, and compliance should be aware or even involved in the migration
8. The migration landing zone should be validated prior to migration
9. Well maintained (Current on patches & updates)
10. Limited infrastructure complexity (Small number of assets)
11. Limited dependencies (All dependencies should be moved in the first workload migration)
12. Limited exposure (No mission critical applications or sensitive data)



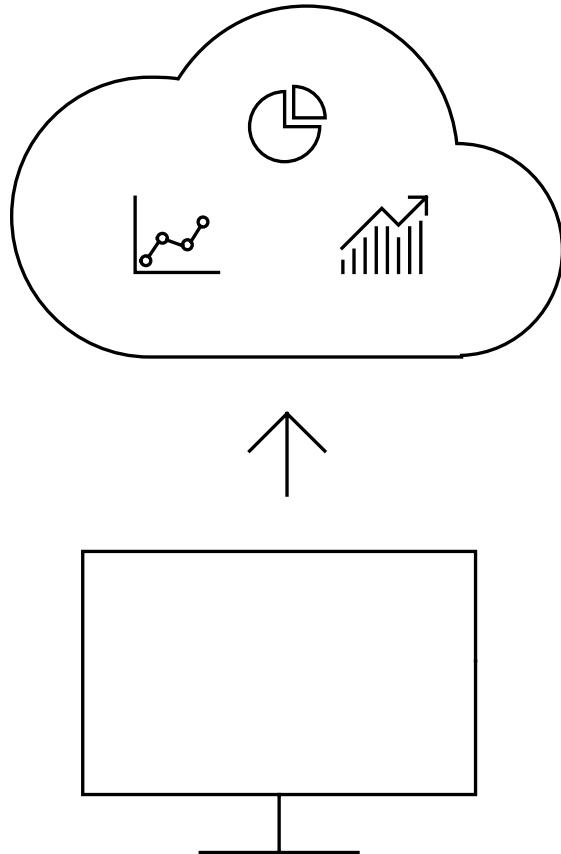
Iteratively mature migration process

Migration phases with Azure Migrate



Improve assessment accuracy

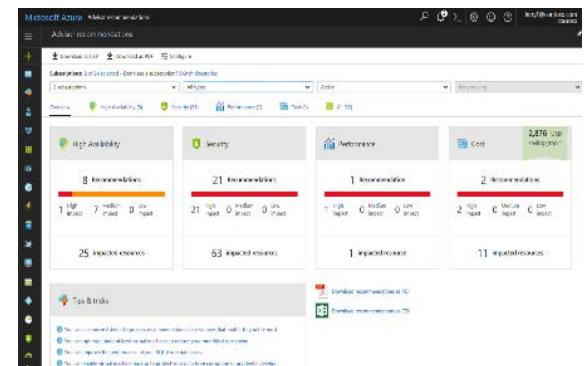
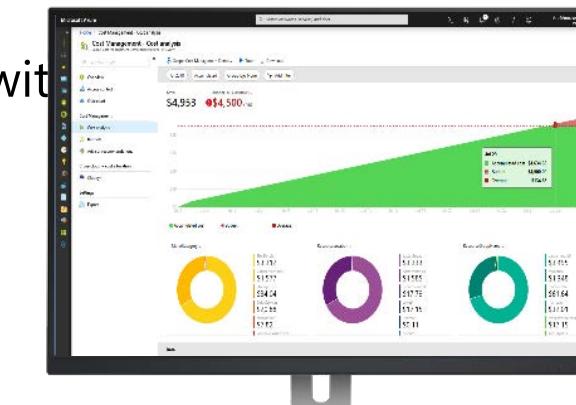
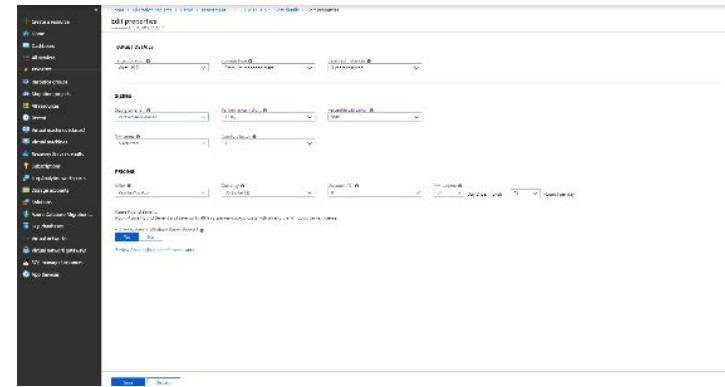
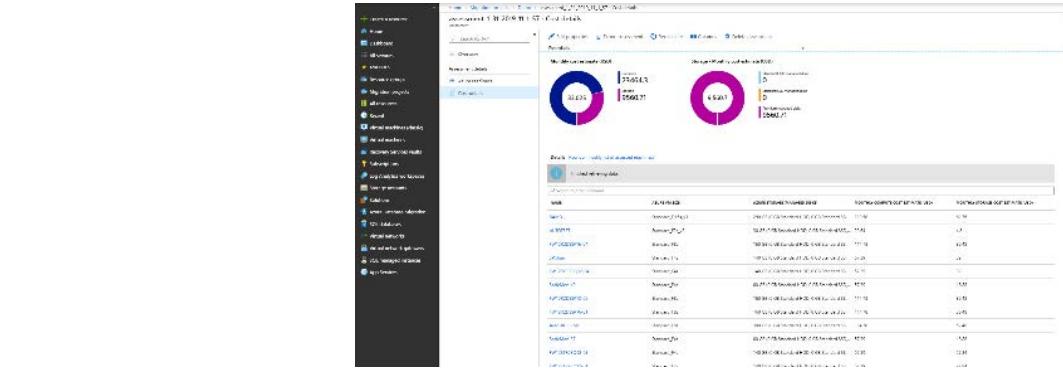
Increase assessment decisions accuracy w/ better data



- With each release leverage Azure Migrate to improve workload definitions by grouping relevant servers
- Improve assessment decision accuracy by aligning the business value of workloads with key technical decisions regarding **compatibility, performance, dependency, and costs**

Continuously optimize resources during and after migration

- As you move
 - Right-size Azure resources based on assessment guidance
 - Use Azure Hybrid Benefit and Azure Reserved Instances to save money
- After you move
 - Unified experience to optimize cloud spends: Azure Cost Management
 - Azure Advisor: Built-in best practice recommendations
 - (e.g., turn off idle VMs)
 - Balance optimization and performance decisions with
 - Azure Monitor
- Modernize for longer term value

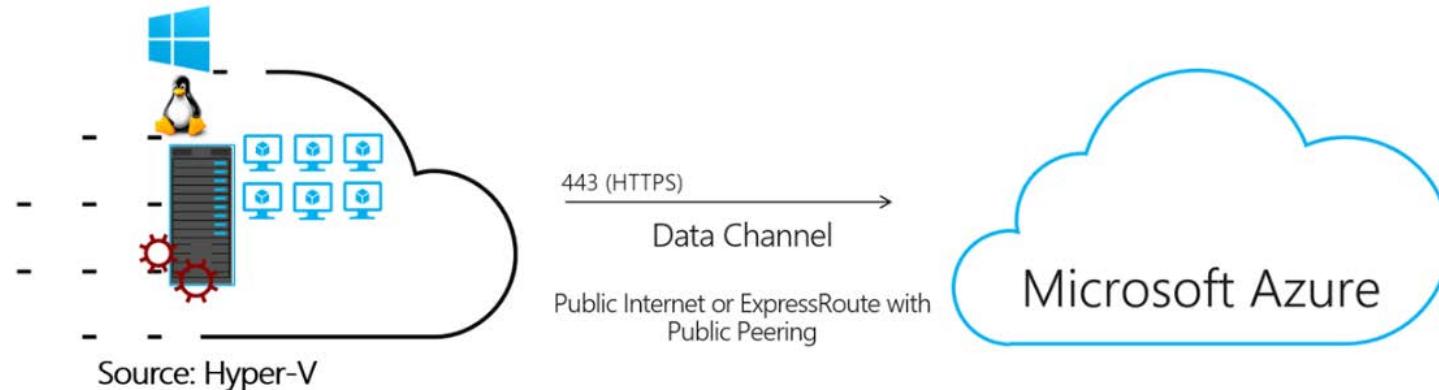


Pre-Migration checklist



Checklist

- Azure Migrate server tool installed and configured
 - Throughput on the host is configured to avoid disruption to existing workloads
 - The Azure Migrate appliance uses outbound HTTPS port 443 connections to communicate with Azure Migrate Server Migration
 - Verify appliance access to Azure URLs: <https://docs.microsoft.com/en-us/azure/migrate/migrate-appliance#public-cloud-urls>

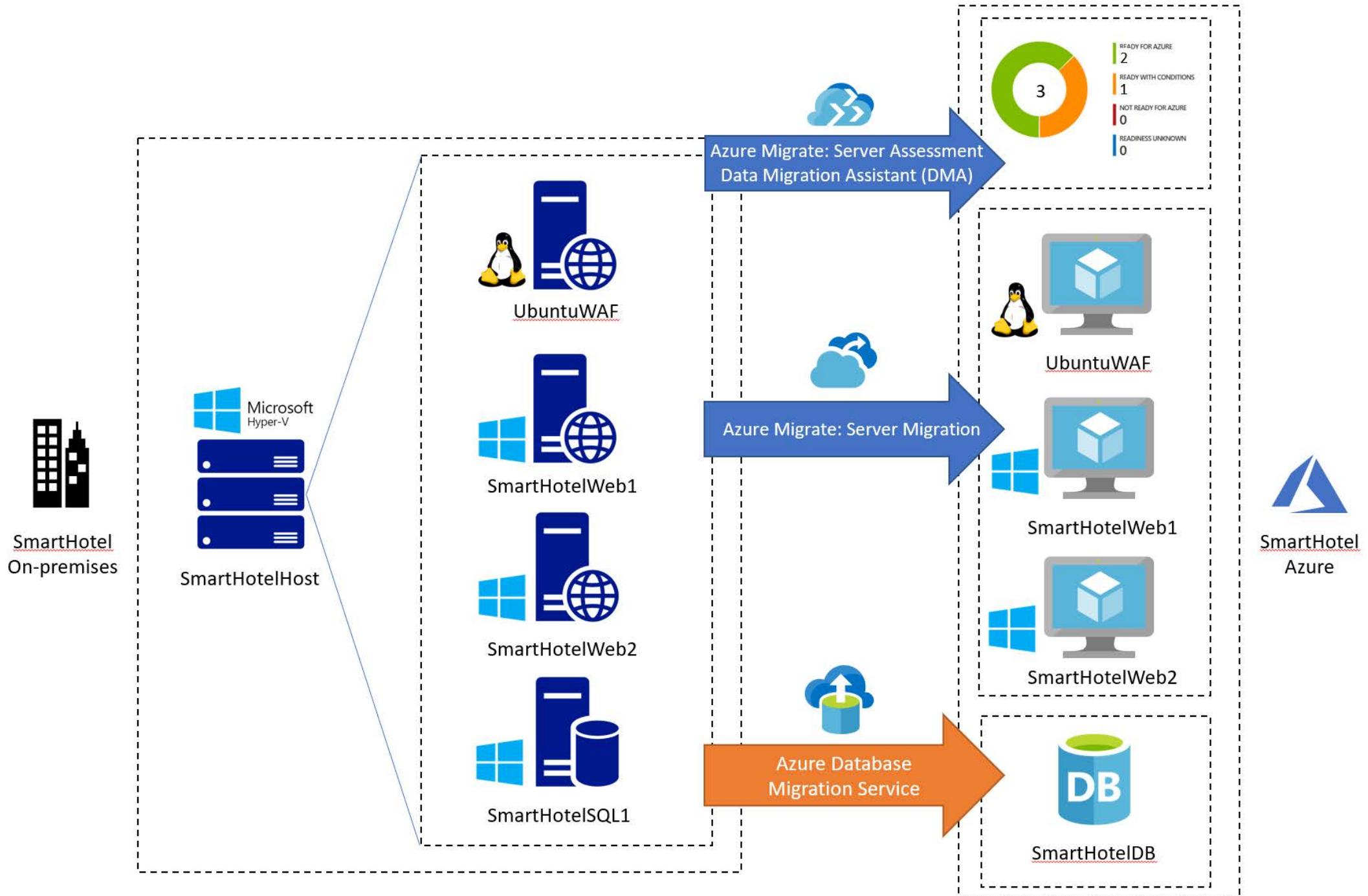


Checklist part 2

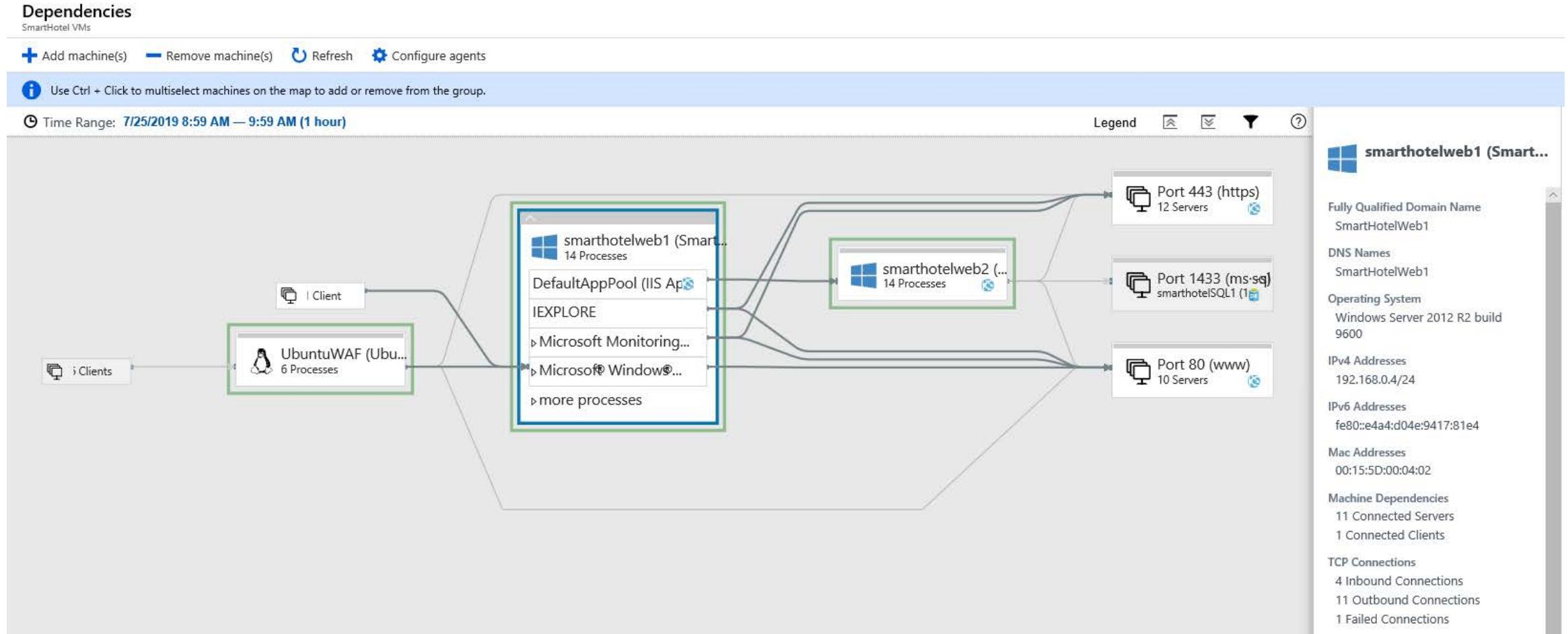
- Subscriptions and management group configured
- Identity and RBAC configured
- Landing zone ready
 - Shared services
 - Networking / connectivity
 - Monitoring / logging
 - Security
- Configure SAN policy (By default, Azure VMs are assigned drive D to use as temporary storage)

Migration batches

- Migrate group of resources based on the dependency management analysis
- Synchronize the migration schedule with the business teams to avoid unnecessary disruptions
- Planned architecture and pre-requisites ready for each workload



Dependency management



A photograph of a man with a beard and glasses, wearing a dark suit and red patterned tie, holding a white, curly-haired sheep. He is smiling slightly and looking towards the camera. The background is blurred, showing what appears to be a large hall or exhibition space.

Replication

Key actions

1. Create a storage account for replication (can be part of the landing zone)
2. Prepare the host
3. Replicate targeted VMs
4. Configure networking settings (IP addresses)

Prepare the host

Discover machines

Are your machines virtualized? 

Yes, with Hyper-V

Target region 

North Europe

Prepare for replication by downloading and installing the replication provider software on your Hyper-V hosts. Follow the steps below to setup and configure Hyper-V host servers.



1. Prepare Hyper-V host servers.

[Download](#) the Hyper-V replication provider(AzureSiteRecoveryProvider.exe) software installer. Use the installer to install the replication provider on the Hyper-V servers.

Download the registration key file and use it to register the Hyper-V host to this Azure Migrate project.

[Download](#)



2. Finalize registration.

Prepare for replication by finalizing registration for the Hyper-V hosts.



Registered Hyper-V hosts

0 (Connected) [Why do I not see any Hyper-V host?](#)

Select the registration key file you downloaded from the Azure Site Recovery portal and specify vault settings. [Learn More](#)

Key file	OPSVault_SmartHotelSite_Mon Nov 12 2018.VaultCredentials	Browse
Subscription	[Redacted]	
Vault name	OPSVault	
Hyper-V site name	SmartHotelSite	

Discover machines

Are your machines virtualized? [?](#)

Yes, with Hyper-V

Target region [?](#)

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Registered Hyper-V hosts

1 (Connected)

[Why do I not see any Hyper-V host?](#)

[Finalize registration](#)

Enable replication

Source settings Virtual machines **Target settings** Compute Disks Review + Start replication

Select target properties for migration. Migrated machines will be created with the specified properties.

* Region i

North Europe

* Subscription i

Visual Studio Enterprise – MPN

 * Resource group i

SmartHotelRG

* Replication Storage Account i

migrationstorage6 (Standard)

* Virtual Network i

SmartHotelVNet

* Subnet i

SmartHotel

Azure Hybrid Benefit

Apply Azure Hybrid Benefit and save up to 49% vs. pay-as-you-go virtual machine costs with an eligible Windows Server license.

* Already have an eligible Windows Server License? i

Yes

No

Last refreshed at: 25/07/2019 16:09:04

**Step 1: Replicate**

Start replicating machines

Replicating machines



Healthy	3
Warning	0
Critical	0

[Replicate more machines](#)**Jobs** [View all](#)

Failed

0



In progress

0

**Step 2: Test migration**

Perform test migrations



You have not performed any test migrations yet. Perform test migrations on the servers which are replicating to Azure

[Test migration](#)**Step 3: Migrate**

Migrate to Azure



Replicate your machines to Azure first. Performing test migrations on replicated machines is recommended before you start with actual migration.

[Migrate](#)**Attention required**

No issues found.

Assign IP addresses

Network interface		
InternalNATSwitch		
PROPERTIES	SOURCE	TARGET
Subnet	InternalNATSwitch	SmartHotel (192.1... ▾)
Private IP address	-	192.168.0.4 ✓



Azure Migrate: Server Migration - Replicating machines

AzureMigrateRG

Search (Ctrl+ /)



Refresh



Migrate



Columns

Overview

Manage

Replicating machines

Infrastructure servers

Jobs

Events

Settings

Properties

Other

Last refreshed at: 25/07/2019 16:14:29

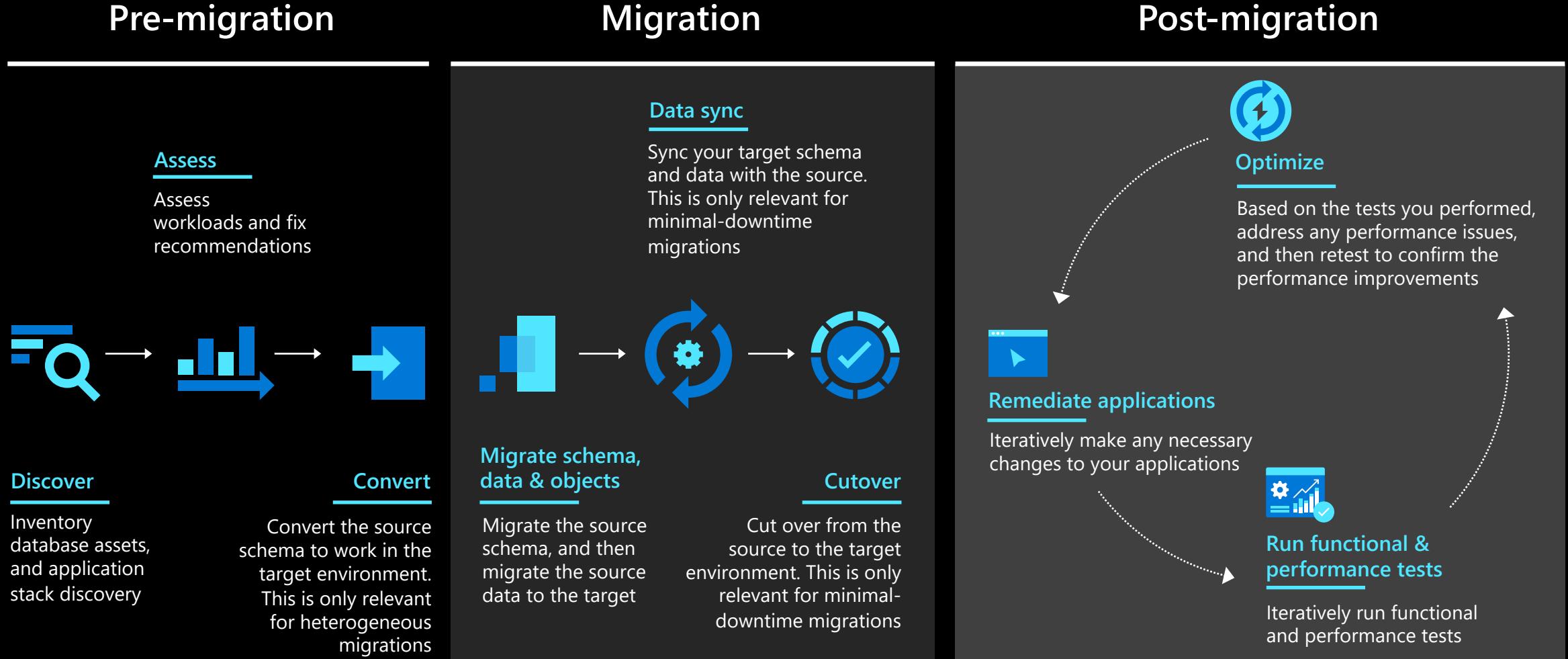
Filter items...

NAME	STATUS	HEALTH	MIGRATION PHASE	TEST MIGRATION STATUS	...
smarhotelweb1	Protected	✓ Healthy	-	Never performed	...
UbuntuWAF	Protected	✓ Healthy	-	Never performed	...
smarhotelweb2	Protected	✓ Healthy	-	Never performed	...

Azure migrate performs the following for you (Linux)

Action	Agent-Based VMware Migration	Agentless VMware Migration	Hyper-V
Install Hyper-V Linux Integration Services	Yes	Yes	Not needed
Enable Azure Serial Console logging	Yes	Yes	No
Update device map file	Yes	No	No
Update fstab entries	Yes	Yes	No
Remove udev rule	Yes	Yes	No
Update network interfaces	Yes	Yes	No
Enable ssh	No	No	No

Database migration process overview



Tools and services for your database migration

On-premises

Microsoft SQL Server

ORACLE

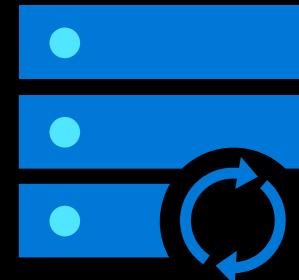


mongoDB®



Google Cloud

Assessment



Azure Migrate/DMA
Database Experimentation
Advisor(DEA)
SQL Server Migration
Assistant (SSMA)

Migration



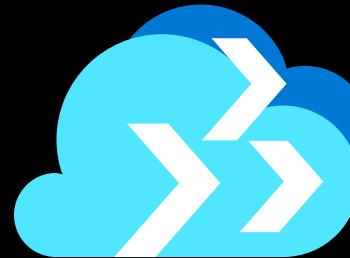
Azure Database
Migration Service

Microsoft Azure

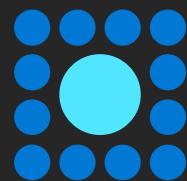


Azure Database Migration Service

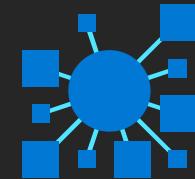
Accelerate your transition to Azure



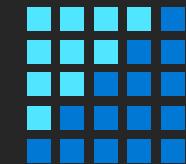
A seamless, end-to-end solution for moving on-premises databases to Azure



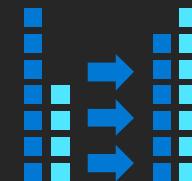
Homogeneous
sources



Heterogeneous
sources



Orchestration



Scale
migration



Near-zero
downtime



Migration testing

Always perform a migration drill

When delta replication begins, you can run a test migration for the VMs, before running a full migration to Azure.

We highly recommend that you do this at least once for each machine, before you migrate it.

- checks that migration will work as expected, without impacting the on-premises machines, which remain operational, and continue replicating.
- Test migration simulates the migration by creating an Azure VM using replicated data
- You can use the replicated test Azure VM to validate the migration, perform app testing, and address any issues before full migration.

Migration tools



Azure Migrate: Server Migration

[Discover](#)[Replicate](#)[Migrate](#)[Overview](#)

Discovered servers

442



Replicating servers

6



Test migrated servers

1



Migrated servers

1



Next step: You can start migrating the replicating servers to Azure

Perform the required testing

Unit testing of the resources

Performance testing (CPU/RAM/IOPS/Networking)

Integration testing

Compare performance with source server

Involved end-users, beware of the placebo effect



Cutover

Complete the migration



After the migration is done: **Stop the migration process.** This does the following:

Stops replication for the on-premises machine.

Removes the machine from the **Replicating servers** count in Azure Migrate: Server Migration.

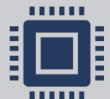
Cleans up replication state information for the VM.



Install the Azure VM [Windows](#) or [Linux](#) agent on the migrated machines.



Perform any post-migration app tweaks, such as updating database connection strings, and web server configurations.



Perform final application and migration acceptance testing on the migrated application now running in Azure.

Cutover



Update DNS entries if required



Cut over traffic to the migrated Azure VM instance.



Remove the on-premises VMs from your local VM inventory.

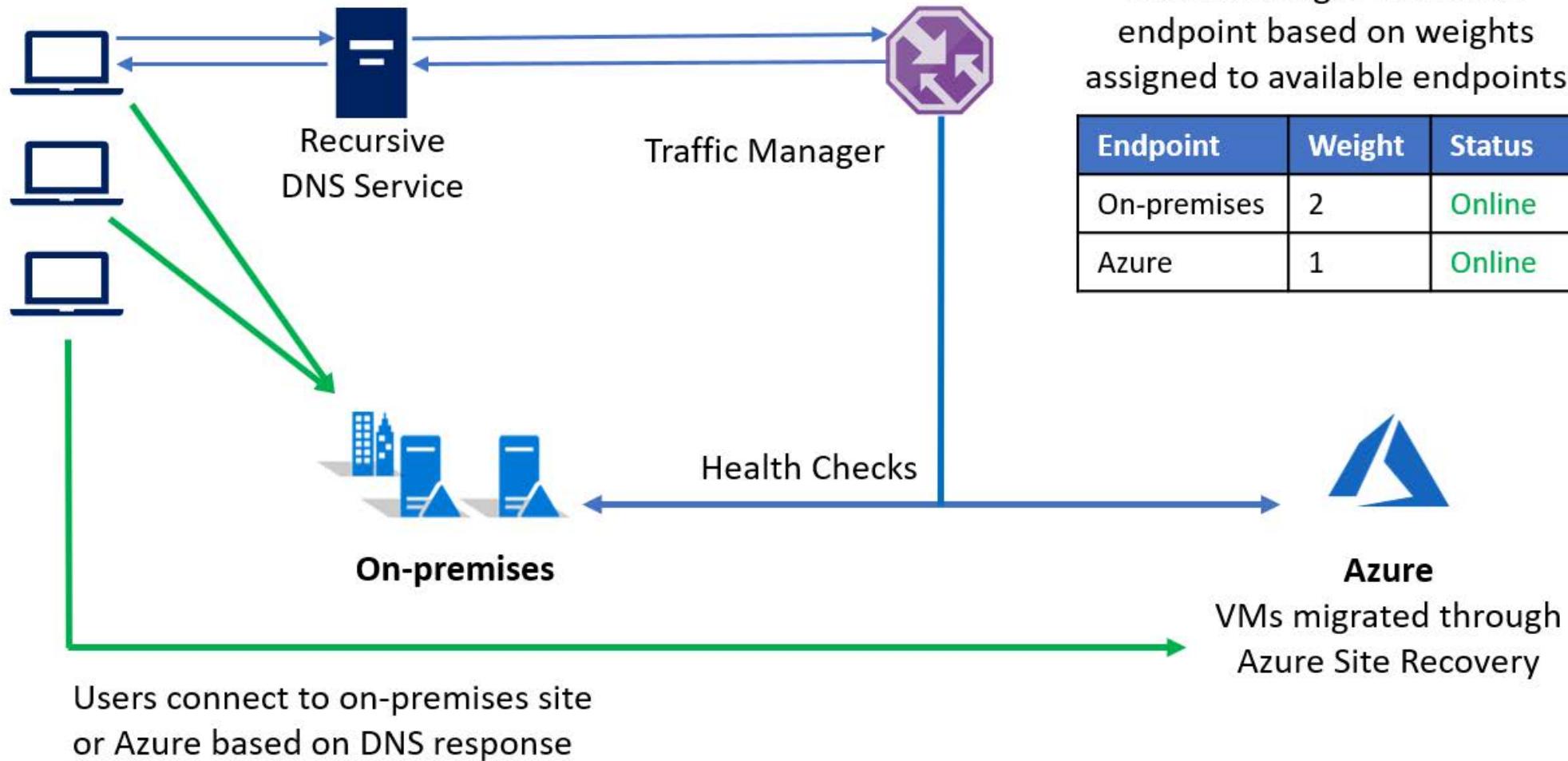


Remove the on-premises VMs from local backups.



Update any internal documentation to show the new location and IP address of the Azure VMs.

Leveraging Azure traffic manager



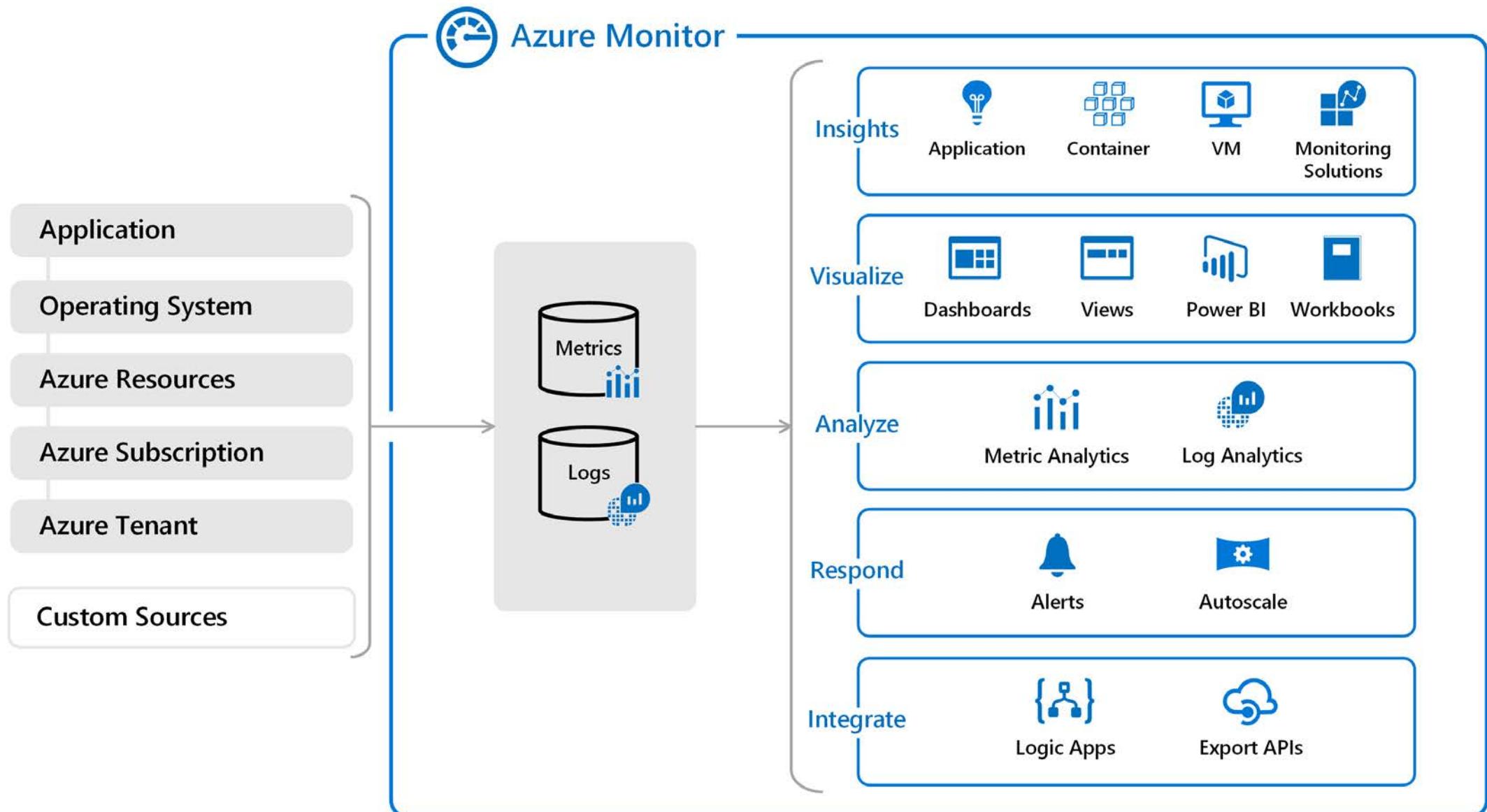
Delete the migration project



Post migration

- Enforce governance and operation baseline
- Configure Log Analytics, Diagnostic logs
- Install the AzureVM agent
- Setup configuration management and change management tools
- Setup performance baseline and alerts
- Configure encryption as required
- Onboard VMs on Azure Defender
- Configure Azure bastion and update NSGs

Operate in Azure



Operate in Azure

The screenshot displays the Azure portal interface for monitoring virtual machines.

Top Left: A summary view showing 16 / 111 Virtual Machines. It includes a hexagonal heatmap of CPU usage percentages for various VMs, with one VM labeled "ContosoCloud" at 95.8%.

Top Right: A detailed "Virtual machine details" card for "ContosoCloud". It shows CPU percentage (95.76%), Disk reads and writes (261.79 MB/s), Unique Users (237), Unique Sessions (237), and Views (237). It also lists application requests and unique users for various pages.

Bottom Left: A smaller summary view showing 9 / 111 Virtual Machines. It includes a heatmap and a link to "Align Graph".

Bottom Right: A table listing virtual machines with their Percentage CPU (Average), Percentage CPU Timeline, Disk Read Bytes (Sum), Disk Write Bytes (Sum), Network In Total (Sum), and Network Out Total (Sum).

Subscription	Percentage CPU (Average)	Percentage CPU Timeline	Disk Read Bytes (Sum)	Disk Write Bytes (Sum)	Network In Total (Sum)	Network Out Total (Sum)
Contoso IT - demo						
ContosoASClient	26.2%		10.608	29.008	130.8MB	824.0MB
ContosoAppSrv1	6.5%		14.108	33.008	206.0MB	981.0MB
ContosoAppSrv2	6.1%		14.108	28.008	256.2MB	889.0MB
ContosoAppSrv3	2%		7.108	35.208	810.2MB	392.0MB
ContosoAppSrv4	1.4%		6.308	10.308	137.2MB	731.6MB
ContosoADS1	1.3%		604.940	11.308	302.0MB	130.8
ContosoADM	1.1%		808	11.708	73.6MB	542.5MB
ContosoAppSrv5	1%		6.908	12.008	885.7MB	153.0MB
AA-Contoso-01	0.5%		7.1M8	144.1108	1M8	1.2MB

A close-up photograph of a pair of dark-rimmed glasses resting on an open notebook. The notebook has a red cover visible at the bottom left. The pages are white with horizontal blue lines. The word "HOMWORK" is printed in capital letters across the top of the left page, and "HOMEWORK" is printed across the top of the right page. The background is blurred.

homework

Homework

Topic	Link
Azure migrate for server	 https://docs.microsoft.com/en-us/learn/patterns/m365-azure-migrate-virtual-machine/
Hands on Lab	 https://github.com/microsoft/MCW-Line-of-business-application-migration
Design a holistic monitoring strategy on Azure	 https://docs.microsoft.com/en-us/learn/modules/design-monitoring-strategy-on-azure/
Migrate your relational data stored in SQL Server to Azure SQL Database	 https://docs.microsoft.com/en-us/learn/modules/migrate-sql-server-relational-data/

Q&A

Contact us - projectjourney@microsoft.com

Your feedback is important

Tell us what you think



Nick Westbrook



Jenzus Hsu



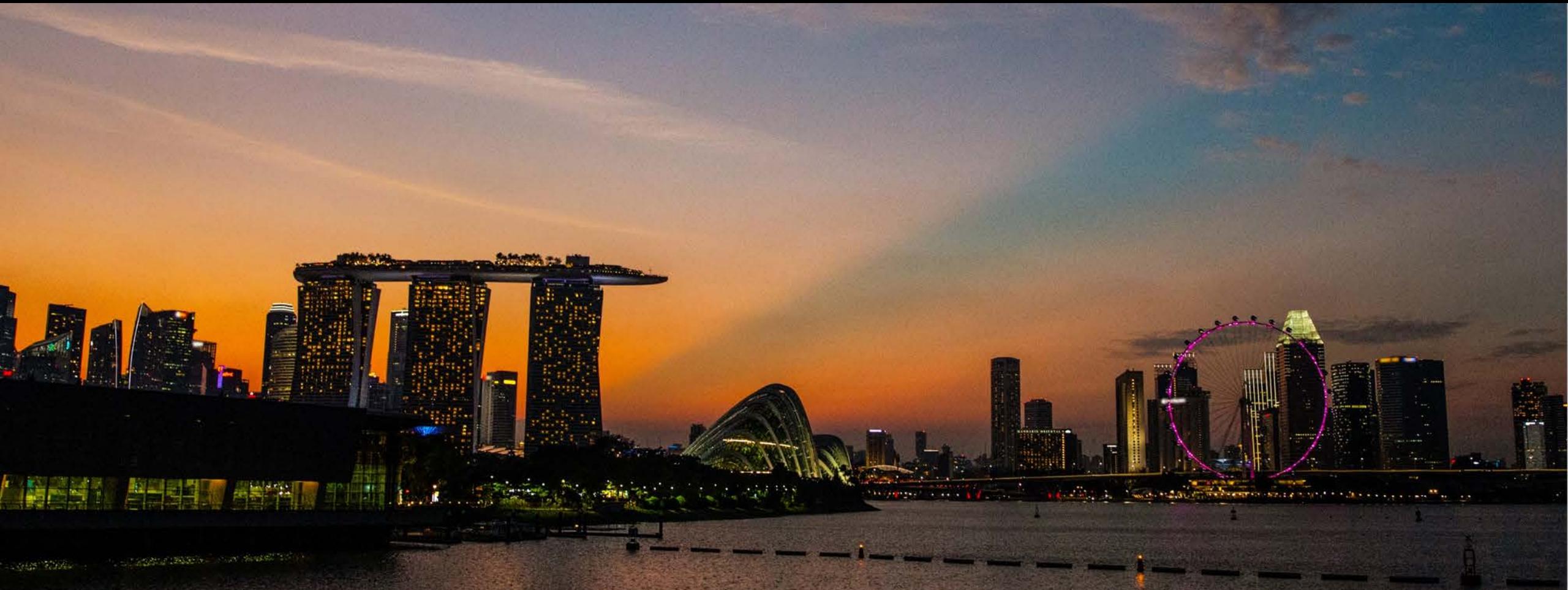
Nicolas Yuen



Inseob Kim



<https://aka.ms/JourneySurvey>



We passionately pursue customer success through value co-creation with partners on Microsoft technologies.

