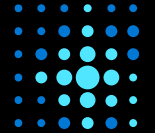


Azure Training Day

Migrating .NET applications to Azure



Perform an app migration assessment

Part 3 of 5 in the Migrate web apps to Azure series

About us...

Ben Magazino

 Cloud Solution Architect

For questions or help with this series

MSUSDev@Microsoft.com

For the lab guides and sample code

<https://github.com/MSUSDEV/Migrating-web-apps-to-Azure>

Workshop Agenda – Hands On Labs

Learn by doing...

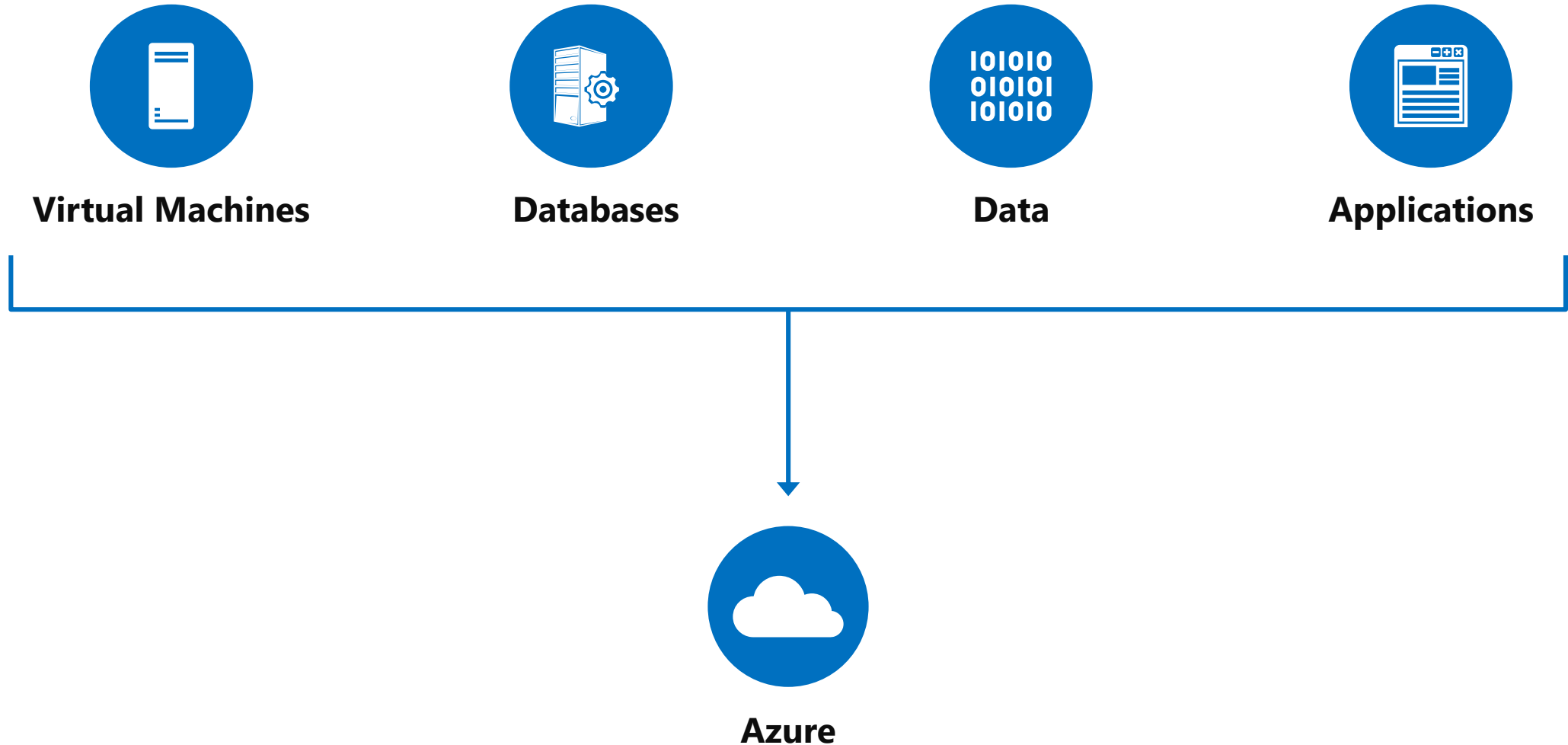
- Module 2: Running Azure Infrastructure and execute Lift & Shift Migrations
 - *Lab 1: Deploy an Azure VM Infrastructure using ARM-Templates*
- Module 3: Performing proper assessments to smooth Azure Migrations (**You are here**)
 - *Lab 2: Using Azure assessment tools*
- Module 4: Why and how migrating databases to Azure PaaS
 - *Lab 3: Migrating SQL Databases to Azure using Database Migration Assistant*
- Module 5: Migrating to Azure App Services – Azure Web Apps (.NET)
 - *Lab 4: Publishing application source code to Azure Web Apps using Visual Studio 2019*

Knowing what to migrate, without surprises!

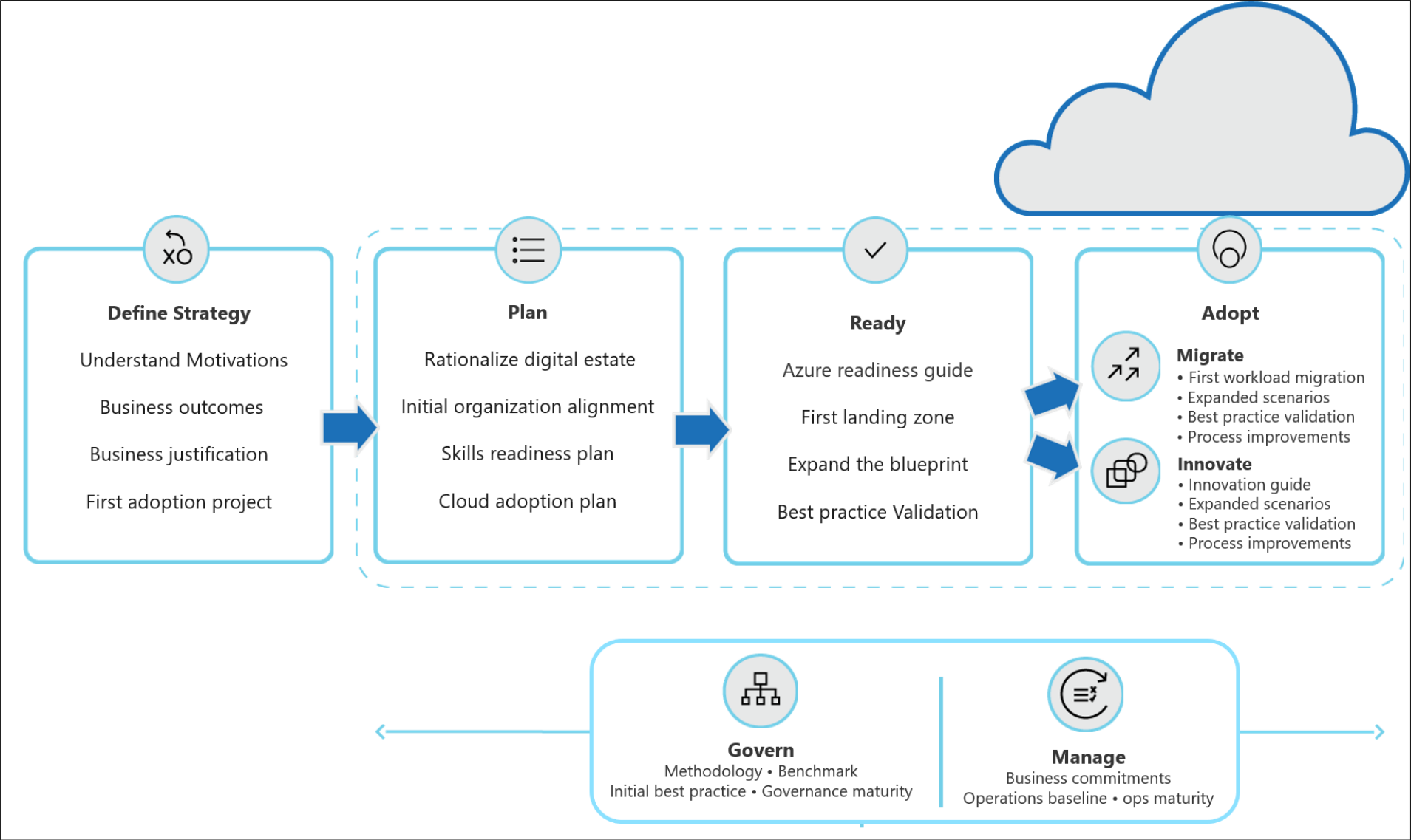
Azure Assessments



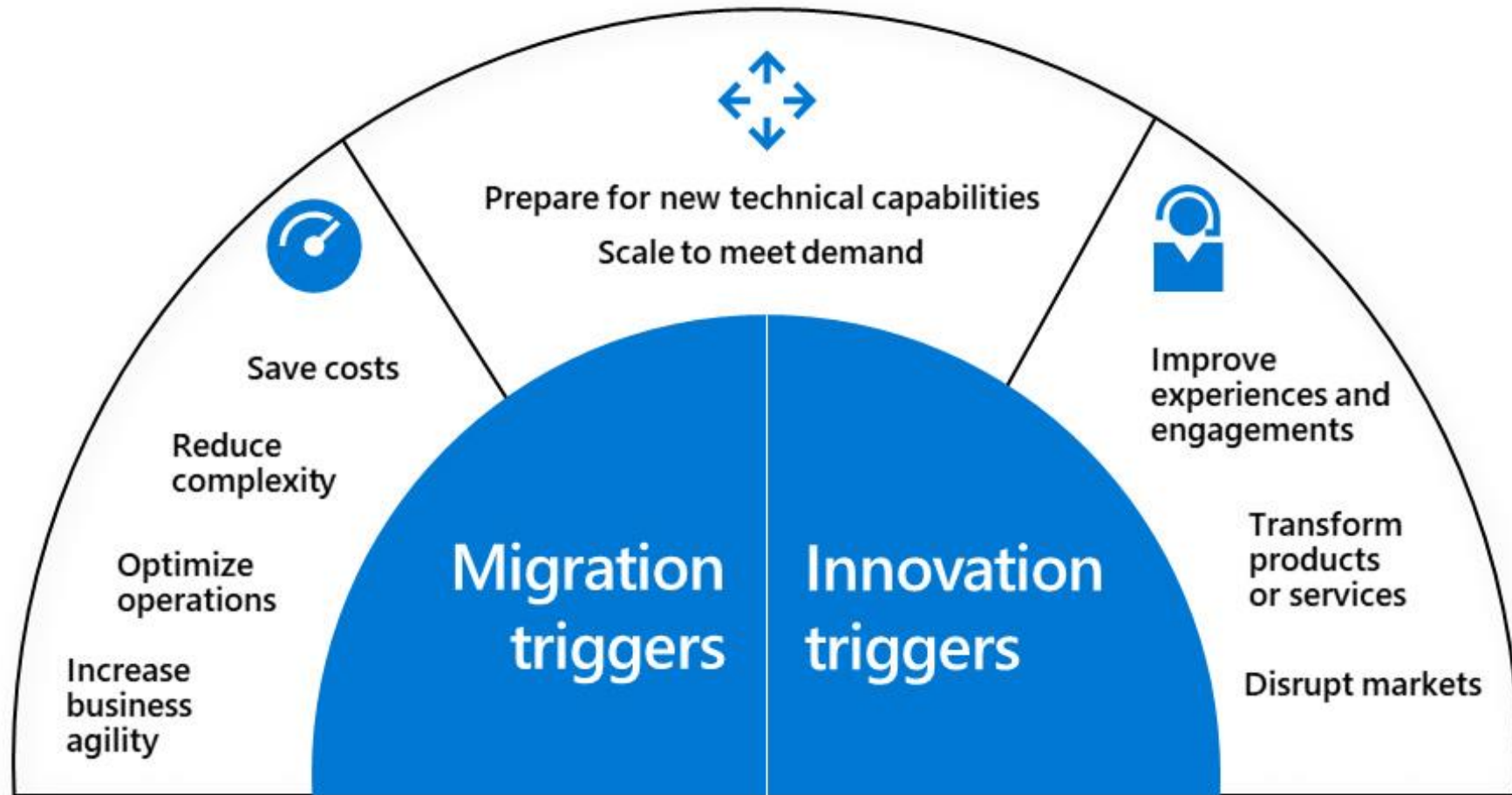
What do customers want to migrate to the Cloud?



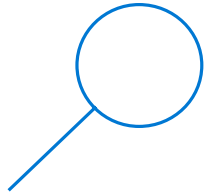
Microsoft Cloud Adoption Framework for Azure



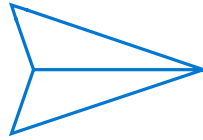
Common migration and innovation triggers



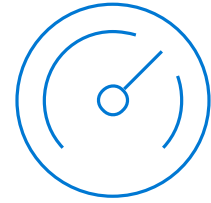
Azure migration journey



Assess



Migrate



Optimize

- Discover/Assess phase brings visibility into apps, workloads, and data in your environment
- Migrate your selected workloads to Azure
- Optimize your Azure-based workloads to realize the benefits of moving them to the cloud

Migration Phases - Assess

Assessment

- **use a mixture of software tools and consultancy best practices to:**
 - discover what applications can be migrated,
 - what their current configurations are,
 - the people within your customer that will be impacted by the migration,
 - identify the dependencies of the application.
- **The output of your assessment will include a comprehensive plan for what to do with the application and the expectations on availability and functionality.**

Migration Phases - Migrate

Migrate

- **The following steps are usually taken:**
 - Setup Azure subscriptions using best practices for security, connectivity, policies and general governance prior to migration to ensure your customers are using Azure correctly from the start.
 - Perform the migration using the prescribed method identified in the assessment plan: rehost, retire, replace, rearchitect or retain.
 - Evaluate and test to ensure the migrated application meets the criteria outlined in your assessment.

Migration Phases - Optimize

Optimize

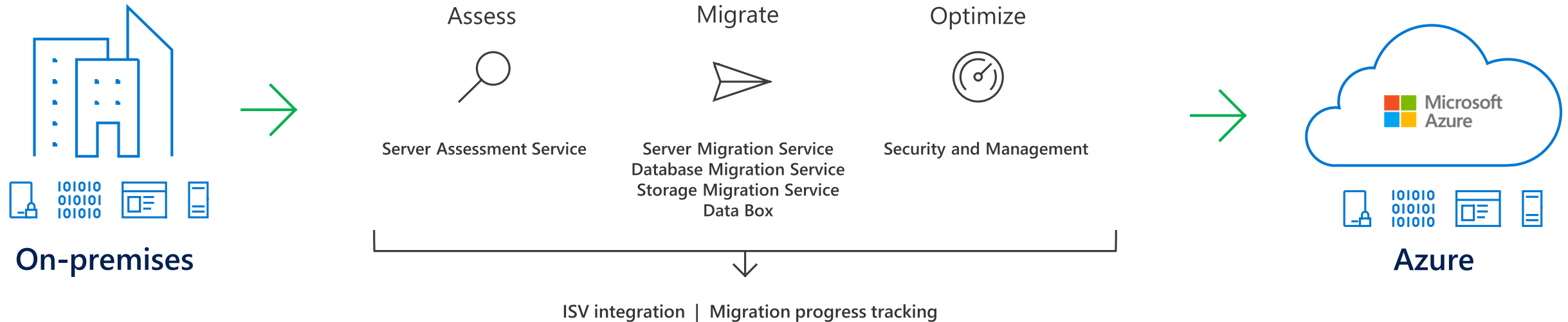
- use Azure security and management resources to govern, secure, and monitor your cloud applications in Azure.
- **Common tasks at this stage are:**
 - Review Azure cost management to track spending and identify areas for cost savings.
 - Evaluate migrated applications for opportunities to right size over provisioned virtual machines and services.
 - Implement automation to resize or stop based on a utilization schedule.
 - Identify applications that could benefit from optimization with platform as a service (PaaS) services or containers.

Azure migration vision

Do it yourself

Azure TCO calculator | Azure migration center | Azure Essentials

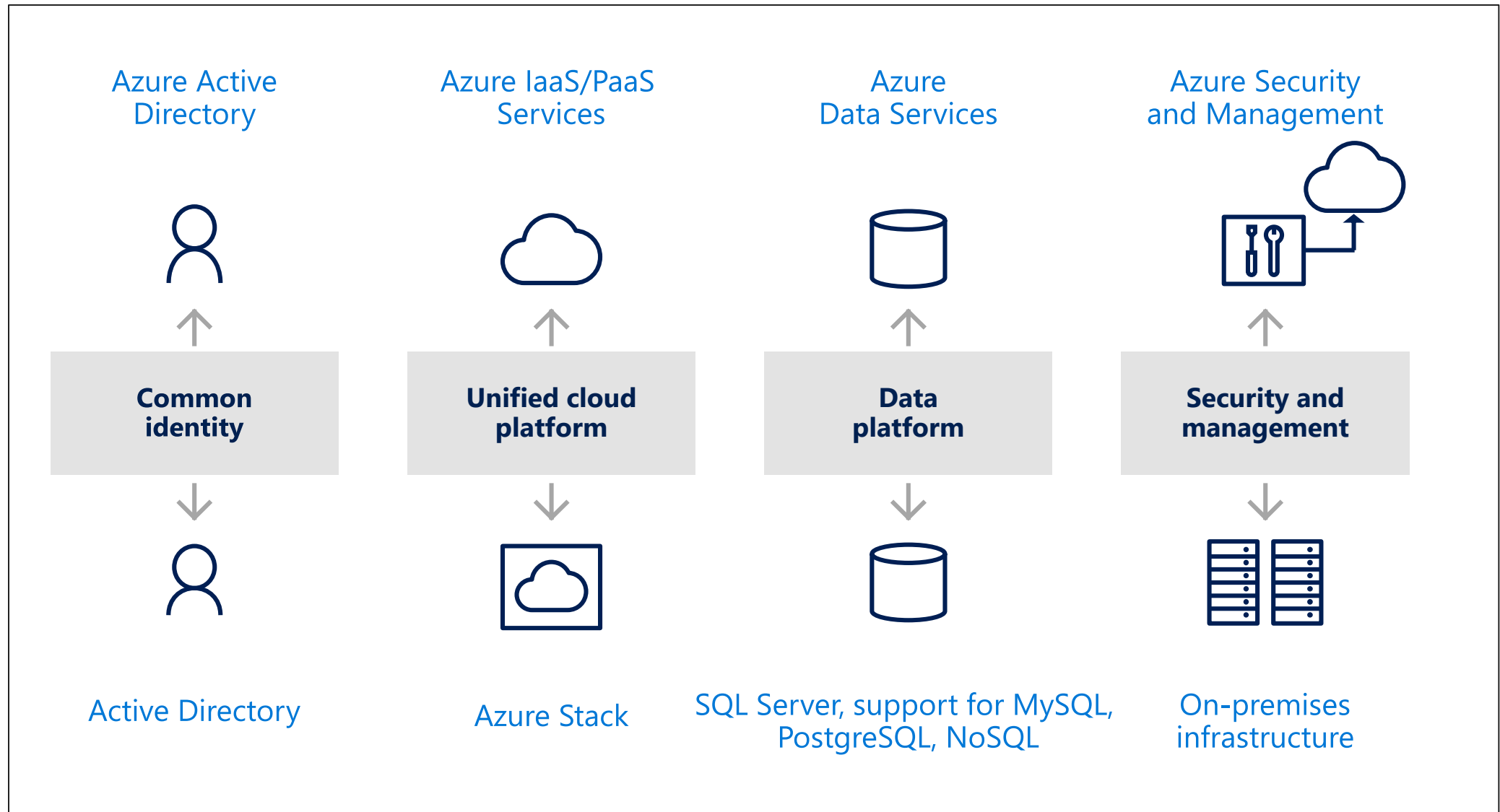
Azure Migrate: Unified, Extensible experience



Assisted

FastTrack for Azure | Managed Service Providers | Systems integrators

Azure is the only consistent hybrid cloud



Get started at no cost: Built-in tools at each stage

Pre-migration



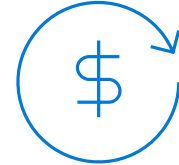
Azure Migrate

During migration



Azure Site Recovery

Post-migration



Azure cost management

Choice of tools for every stage and every requirement



Partners



Azure Discovery and Assessment Tools

Discovery and Assessment using MAP Toolkit

Microsoft Assessment and Planning (MAP) Toolkit

- Multi-product (Microsoft Servers, Exchange, SharePoint, Oracle, Office 365, Windows Clients, Vmware hosts,...) assessment and planning
- Agentless data collection technologies to gather inventory
- Performance collection as option
- The main areas of planning:
 - Migration Planning
 - Consolidation/Virtualization
 - Private/Public Cloud Planning
 - Software Usage Tracking

MAP Toolkit

Inventory | Assessment | Reporting

- Data collection based on WMI, Active Directory, local admin permissions, network IP ranges
- inventories hardware, Operating System and installed software
- Simplifies the planning process for migration to Azure



Demo

Microsoft Assessment & Planning Toolkit

Discovery and Assessment using Azure Migrate

Azure Migrate – Assessment Tools

“... Azure Migrate is a collection of different assessment tools, allowing any organization to migrate any of their existing workloads to Azure...”



Azure Migrate – Server Assessment

- Performs assessment of source VMware environments
- V2 also supports Hyper-V as source environment (not SCVMM yet)
- Assessment and Migration from the same dashboard



Azure Migrate – Database Assessment

- Analyzes source database environments running SQL Server, to assess a migration to Azure SQL PaaS, Azure SQL Managed Instance or Azure SQL VMs
- Migration can be executed using DMA (Data Migration Assistant)



Azure Migrate – App Services Assessment

- Performs assessment of life-running web application servers
- Detects the framework, source language, dependencies and other critical parameters, to make it supported on Azure Web Apps
- Migration can also be executed from the same toolkit

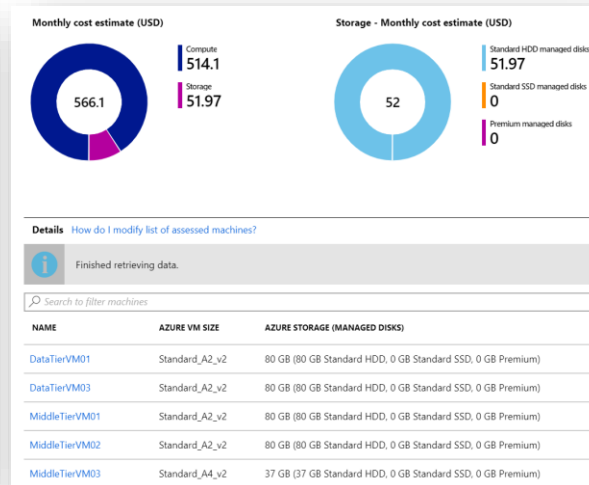
Azure Migrate for Discovery and Assessment

Discover machines Group machines Create assessment Refresh Columns

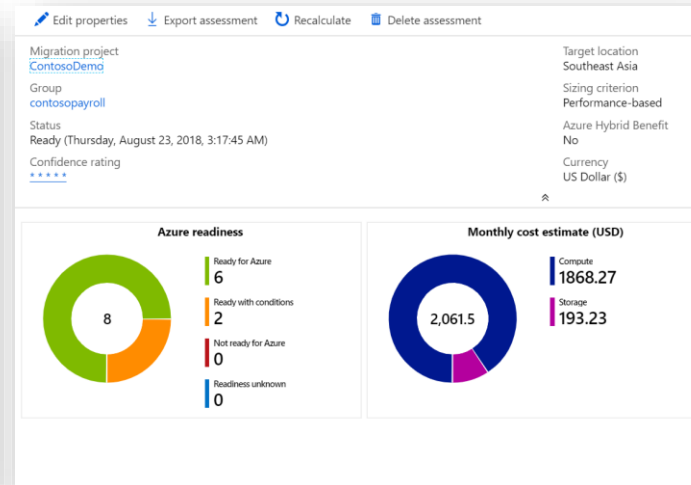
Search to filter machines

NAME	MEMBER OF	CORES	MEMORY (MB)	DISKS
RAMD	mb-test,demotest,azure...	12	16384	3
FW12R2D5SP16-04	mb-test,azuretools-wind...	2	4096	3
FW12R2D5SP13-02	mb-test,azuretools-wind...	2	4096	3
SPChum	mb-test2,azuretools-win...	4	4096	3
FW12DCR25Q12-04	azuretools-windows disc...	2	2048	3
ScaleMon-49	azuretools-windows disc...	1	2048	1
FC6U7-02	mb-test,mb-test2,red ha...	2	2048	7
FW12STR25Q12-01	azuretools-windows disc...	2	2048	3
FW12STR25Q12-03	azuretools-windows disc...	2	2048	3
FW12R2D5SP16-01	azuretools-windows disc...	2	4096	3
ScaleMon-47	azuretools-windows disc...	1	2048	1
DiscoveryConnector	test.allmachines,manual...	2	2048	5
FW12R2D5SP13-01	azuretools-windows disc...	2	4096	3
ScaleMon-98	azuretools-windows disc...	1	2048	3
DataTierVM03	contosopayroll,richeny...	2	2048	1

Agentless
discovery



TCO
calculation



Right-sized
and suitability

TARGET DETAILS

Target location
Southeast Asia

Pricing tier
Standard

Storage type
Premium managed disks

Reserved instances
1 year reserved

SIZING

Sizing criterion
Performance-based

Performance history
1 Month

Percentile utilization
95th

VM series
9 selected

Comfort factor
1.3x

PRICING

Offer
Pay-As-You-Go

Currency
US Dollar (\$)

Discount (%)
0

VM uptime
31 Days(s) per month 24 Hour(s) per day

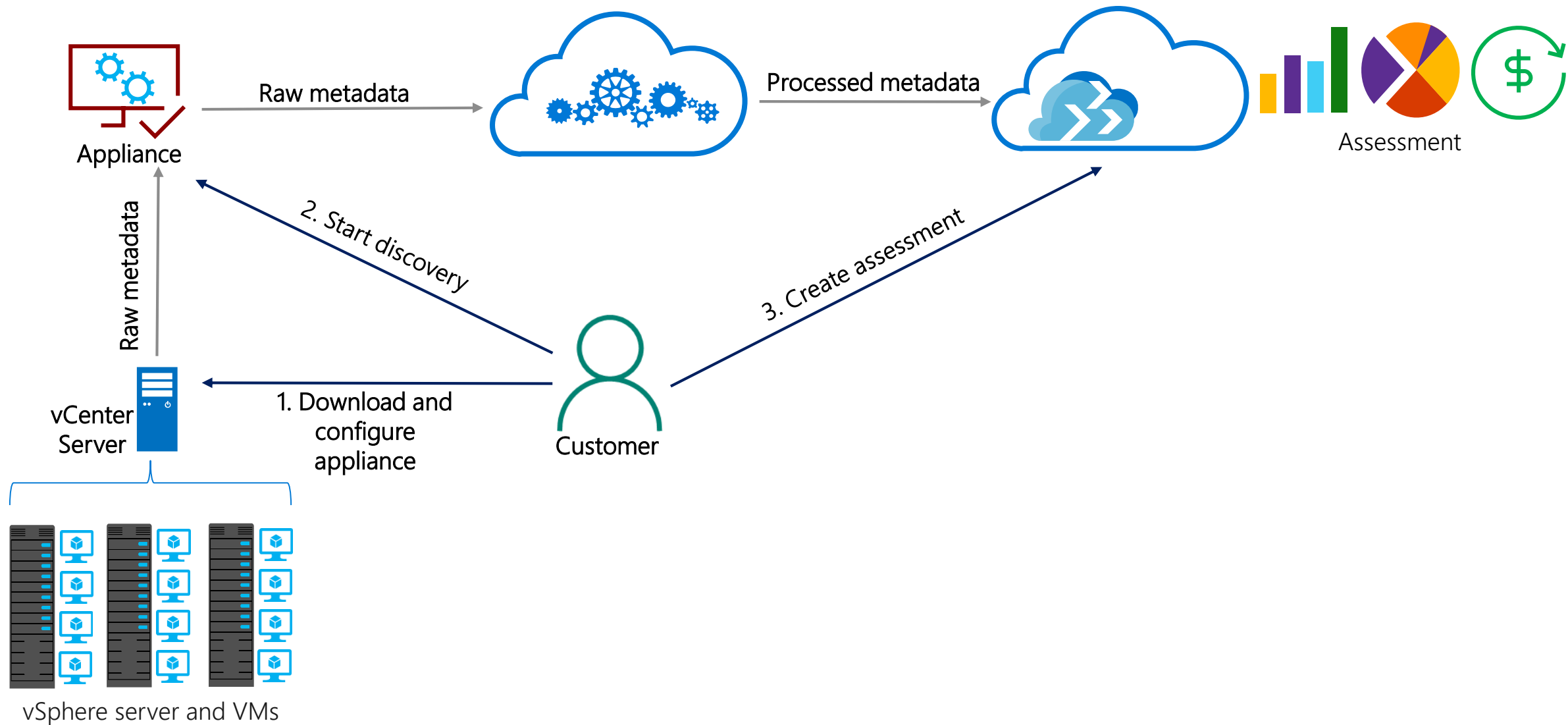
Azure Hybrid Benefit
Apply Azure Hybrid Benefit and save up to 49% vs. pay-as-you-go costs with an eligible Windows Server license.

Already have a Windows Server license?
Yes No

Review Azure hybrid benefit compliance

Azure
target platform

Azure Migrate – Process flow for VMware hosts

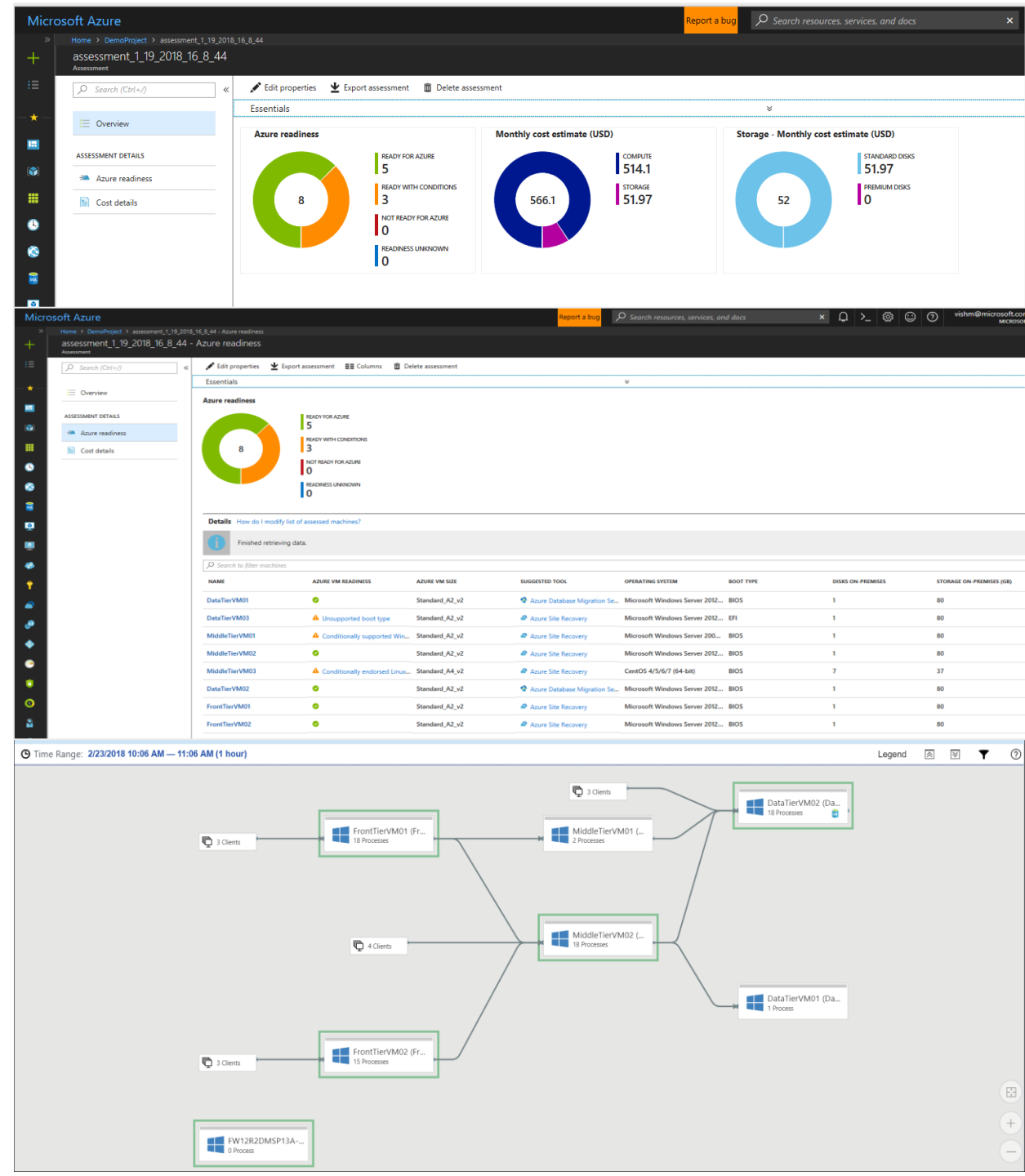


Azure Migrate – Discovery

- **Light Discovery - Appliance-based**
 - No prerequisites on the source VM machine
 - Agentless
 - Uses the VMware host credentials for VM access
 - Supports VMWare
 - VM Operating System can be Microsoft Windows Server and Linux OS
- **Deep Discovery – Agent-based**
 - Visualize dependencies of machines
 - Understand all server and application connections
 - Discover unknown relationships to ensure high-confidence migration

Azure Migrate Features

- Discover and assess on-premises servers
- Dependency visualization
- Intelligent rightsizing for Azure VMs
- Estimated monthly run costs in Azure
- Compatibility reporting with guidelines for remediation
- Service Map
- Workload Migration Tool Guidance
- Lift & Shift Server Migrations (Azure Site Recovery)
- Database Migrations (Database Migration Service)



Azure Migrate – Assessment

■ Migration suitability

- Deep assessment of VMs to determine Azure readiness
- Guidance on remediation for suitability issues
- Suggestion on tools for migration

■ Intelligent rightsizing

- Performance-based right sizing for Azure







■ Cost estimation

- Region, offer and currency specific
- Supports Azure Hybrid Benefit for Windows Server

Add a tool

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

Start by choosing a server discovery and assessment tool. We recommend that you discover and assess your datacenter to determine migration readiness.

TOOL	PRICING	SUPPORTED WORKLOADS	FEATURES	LEARN MORE
 Azure Migrate: Server Assessment	View	VMware virtual machines Hyper-V virtual machines	Agentless discovery Cost planning and optimal right sizing Application dependency analysis Cloud migration planning	Learn more
 Cloudamize: Cloud Assessment	View	VMware virtual machines Hyper-V virtual machines Physical machines Workloads on other public clouds	Agentless or agent-based discovery Cost planning and optimal right sizing Application dependency analysis Cloud migration planning	Learn more
 Corent Tech: SurPaaS MaaS	View	VMware virtual machines Hyper-V virtual machines Physical machines Workloads on other public clouds	Agentless or agent-based discovery Cost planning and optimal right sizing Application dependency analysis Cloud migration planning	Learn more
 Turbonomic: Turbonomic	View	VMware virtual machines Hyper-V virtual machines Physical machines Workloads on other public clouds	Agentless discovery Cost planning and optimal right sizing Application dependency analysis Cloud migration planning	Learn more
 UnifyCloud: CloudRecon	View	VMware virtual machines Hyper-V virtual machines Physical machines Workloads on other public clouds	Agentless or agent-based discovery Cost planning and optimal right sizing Application dependency analysis Cloud migration planning	Learn more
 Device42: Device42	View	VMware virtual machines Hyper-V virtual machines Physical machines Workloads on other public clouds	Agentless discovery Cost planning and optimal right sizing Application dependency analysis Application workload grouping	Learn more

Note: Visit the ISV tool's website to learn more about tool capabilities.
Don't see a tool that you are looking for? We are continuously adding support for more ISV tools. [Learn more](#)

☐ Skip adding an assessment tool for now

Creating a Project

- Create an Azure Migrate project from the Azure portal to hold the metadata of your on-premises VMs
- Discover up to 1500 VMs in a single project
- Create multiple projects for larger environments

[Home](#) > [Azure Migrate - Servers](#) > Add a tool

Add a tool

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

An Azure Migrate project is used to store the discovery, assessment and migration metadata reported by your on-premises environment. Select a subscription and resource group in your preferred geography to create the migrate project.

* Subscription ⓘ

007FFFLearning Labs ▼

* Resource group ⓘ

simplwebappRG ▼

[Create new](#)

PROJECT DETAILS

Specify the name of the migrate project and the preferred geography.

* Migrate project ⓘ

SampleMigration ✓

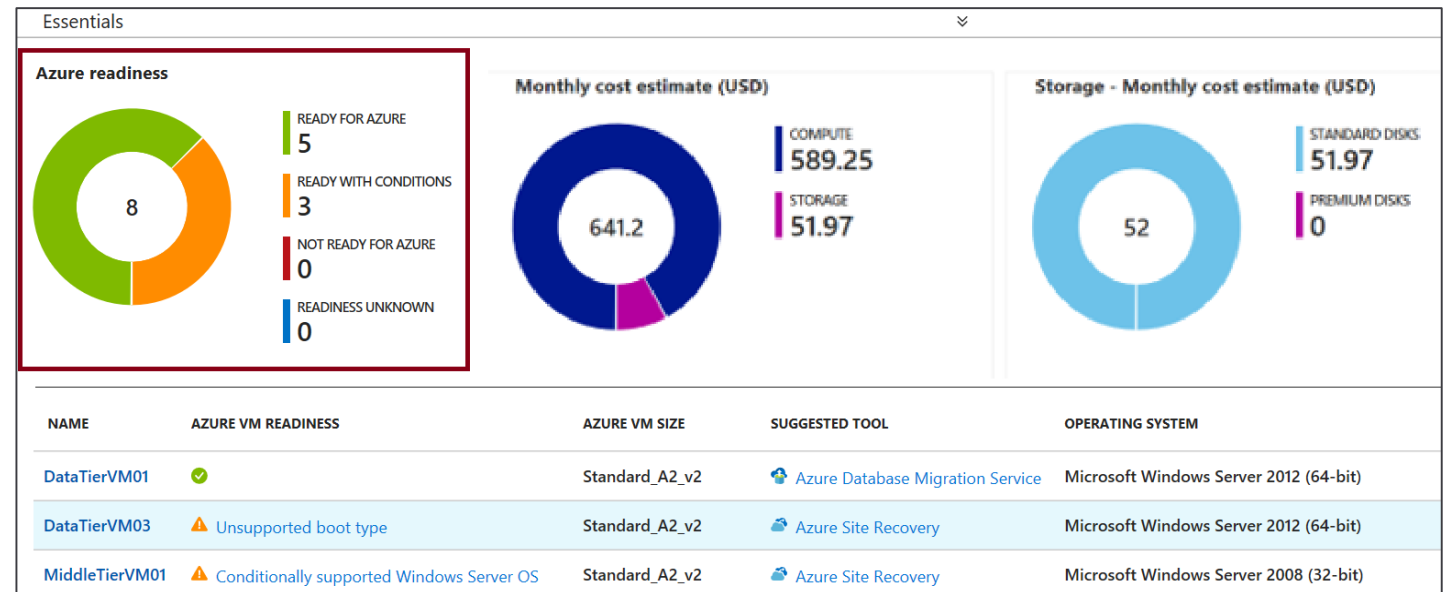
* Geography ⓘ

United States ▼

Assessing Readiness

Readiness view shows status for each VM discovered

- Ready for Azure (Green)
- Ready with conditions (Orange)
- Not ready for Azure (Red)
- Readiness unknown (Blue)



Assessing VM Sizing

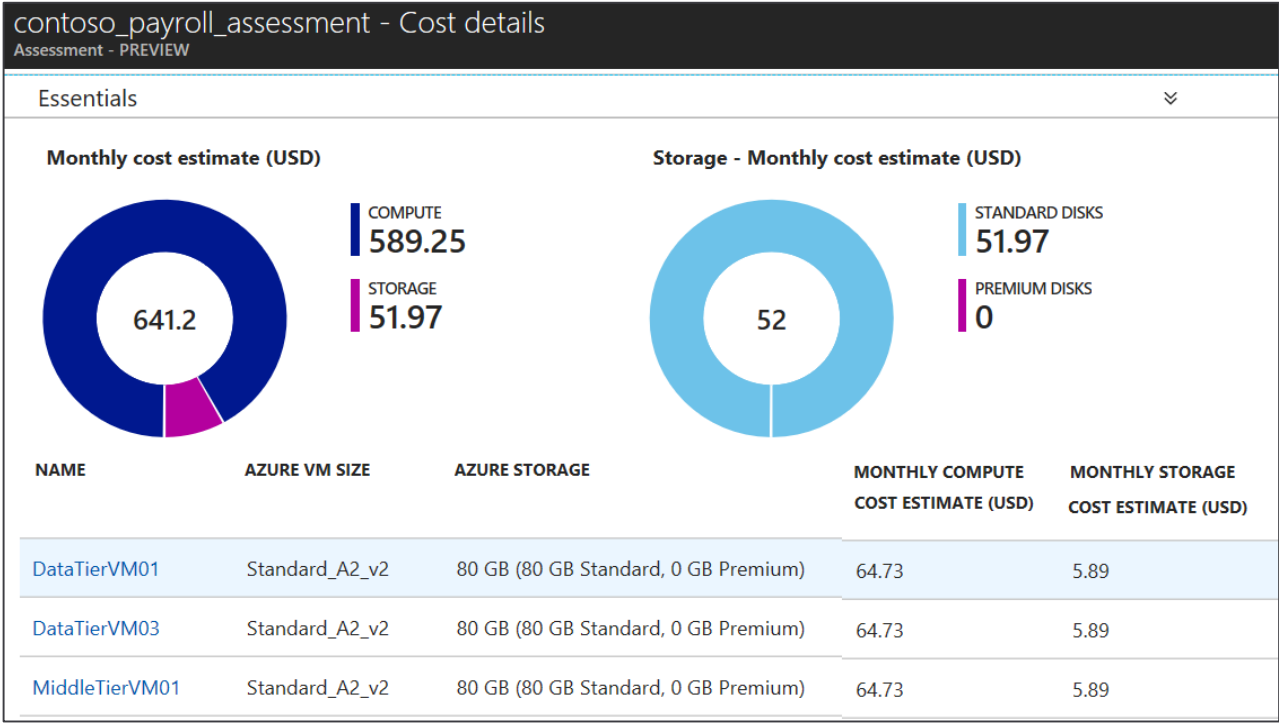
Azure Migrate uses performance-based sizing to map on-premises VMs to Azure VMs + Accounts for on-premises over-allocation of VMs or low utilization

- **Storage:** tries to map every attached disk to a disk in Azure
- **Network:** looks for Azure VMs that can support the number of network adapters attached to a machine
- **Compute:** assesses CPU and memory to find a suitably sized Azure VM

Estimating Cost

Cost assessment view with total monthly compute and storage costs

- **Compute**
 - Based on Billing API
 - Aggregation across all machines
- **Storage**
 - Aggregates costs of all attached disks



Service Map

- Automatically discovers application components on Windows and Linux systems and maps the communication between services.
- Shows connections between servers, processes, inbound and outbound connection latency, and ports across any TCP-connected architecture

groupA

Group

+ Add machines

— Remove machines

↻ Refresh

📄 Assess servers

📄 View assessments

☰

Assessments : 1

Machines

60

🖥️

Assessments

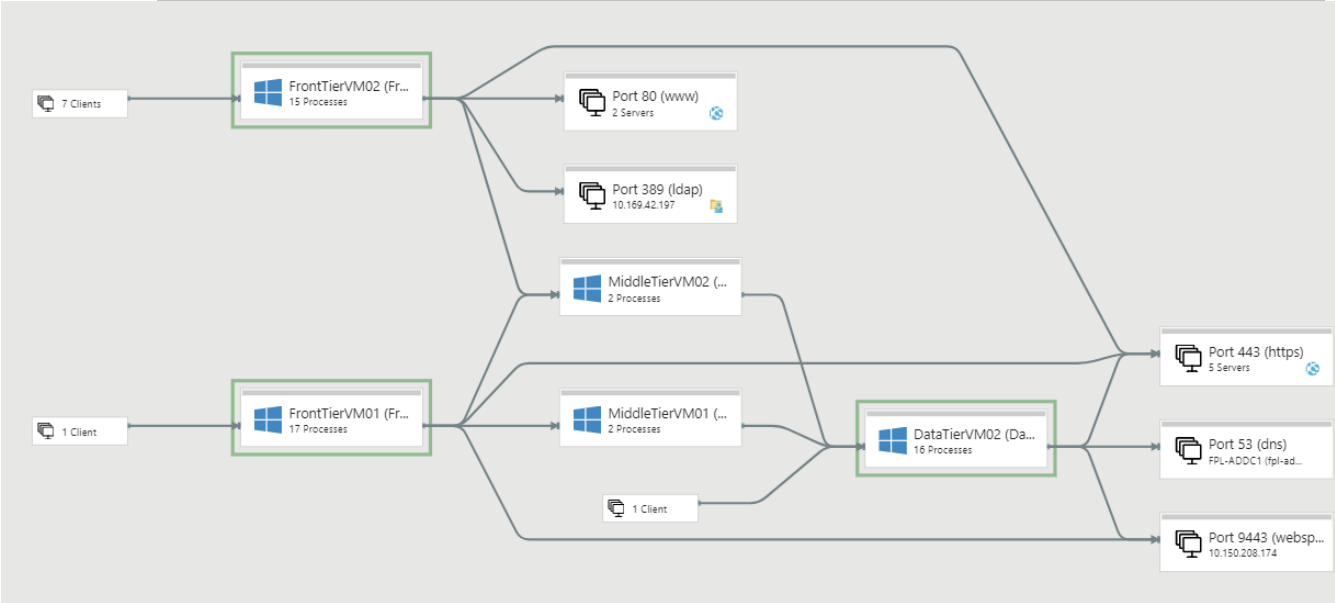
1

✅✅

MACHINES

Search to filter machines

NAME	MEMBER OF	DEPENDENCIES	CORES
NestedScaleVM7303	groupa	📘 Requires installation	1
NestedScaleHost-44788-10	groupa	📘 Requires installation	1
NestedScaleHost-44800-95	groupa	📘 Requires installation	1



Demo

Azure Migrate Assessment of Virtual Machine workloads

Assessment of SQL Server Databases

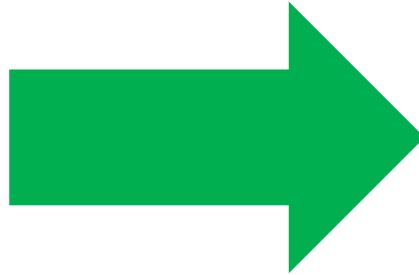
Azure Data Migration Assistant (SQL)

- The Data Migration Assistant (DMA) helps you upgrade to a modern data platform by:
 - detecting compatibility issues that can impact database functionality in your new version of SQL Server or Azure SQL Database
 - DMA recommends performance and reliability improvements for your target environment
 - and allows you to move your schema, data, and uncontained objects from your source server to your target server
 - Assessment and migration can be run at once, or separate, as well as repeatable (Delta)

Azure Data Migration Assistant (SQL)

■ Supported Sources:

- SQL Server 2005
- SQL Server 2008
- SQL Server 2008 R2
- SQL Server 2012
- SQL Server 2014
- SQL Server 2016
- SQL Server 2017 on Windows

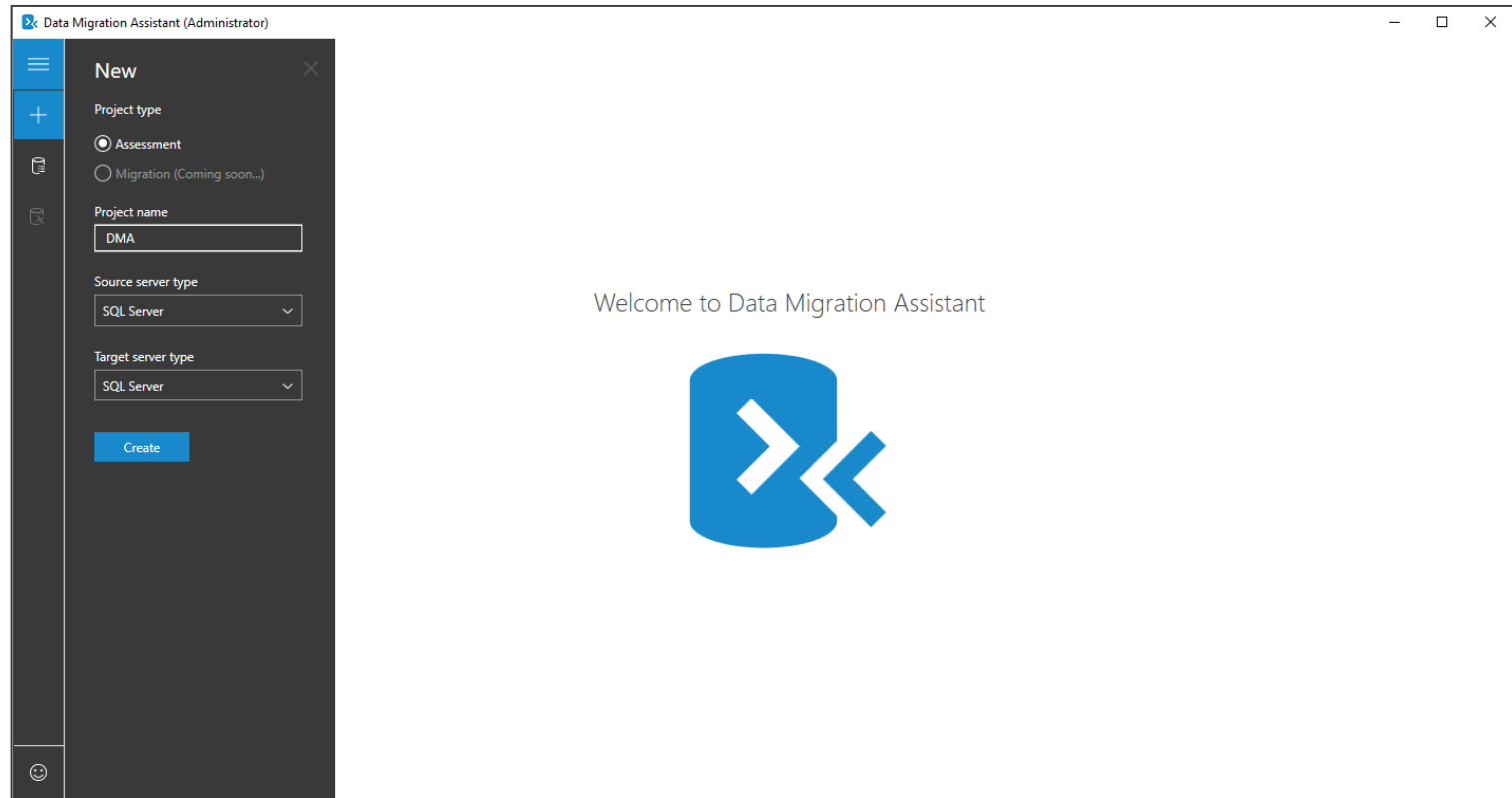


■ Azure Targets:

- SQL Server 2012
- SQL Server 2014
- SQL Server 2016
- SQL Server 2017 on Windows and Linux
- Azure SQL Database
- Azure SQL Database Managed Instance

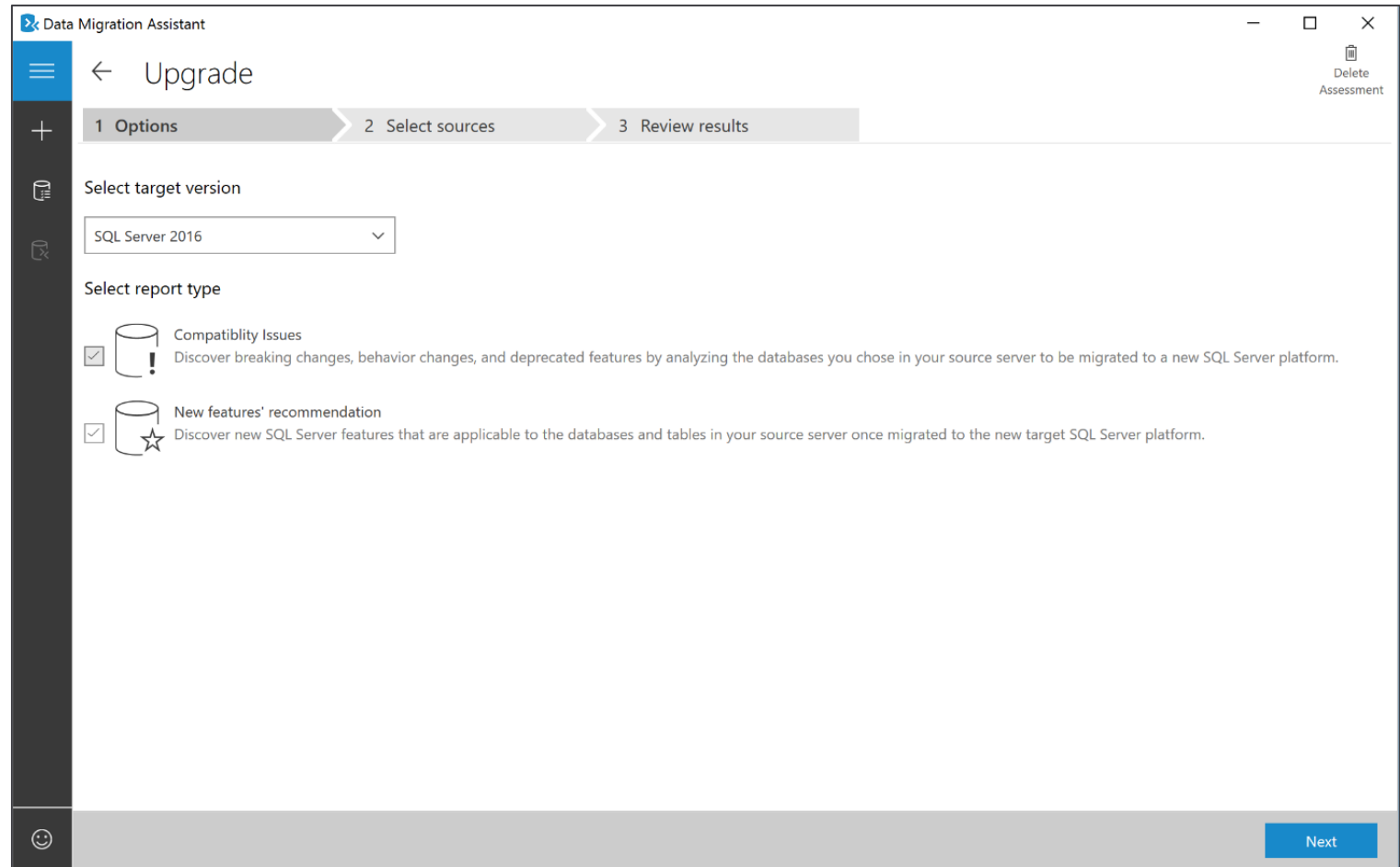
Azure Data Migration Assistant (SQL)

1. Download Data Migration Assistant (DMA) Tool
2. Create New Assessment



Azure Data Migration Assistant (SQL)

1. Download Data Migration Assistant (DMA) Tool
2. Create New Assessment
3. Choose Assessment Options



Azure Data Migration Assistant (SQL)

1. Download Data Migration Assistant (DMA) Tool
2. Create New Assessment
3. Choose Assessment Options
4. Review Results (Compatibility Issues)

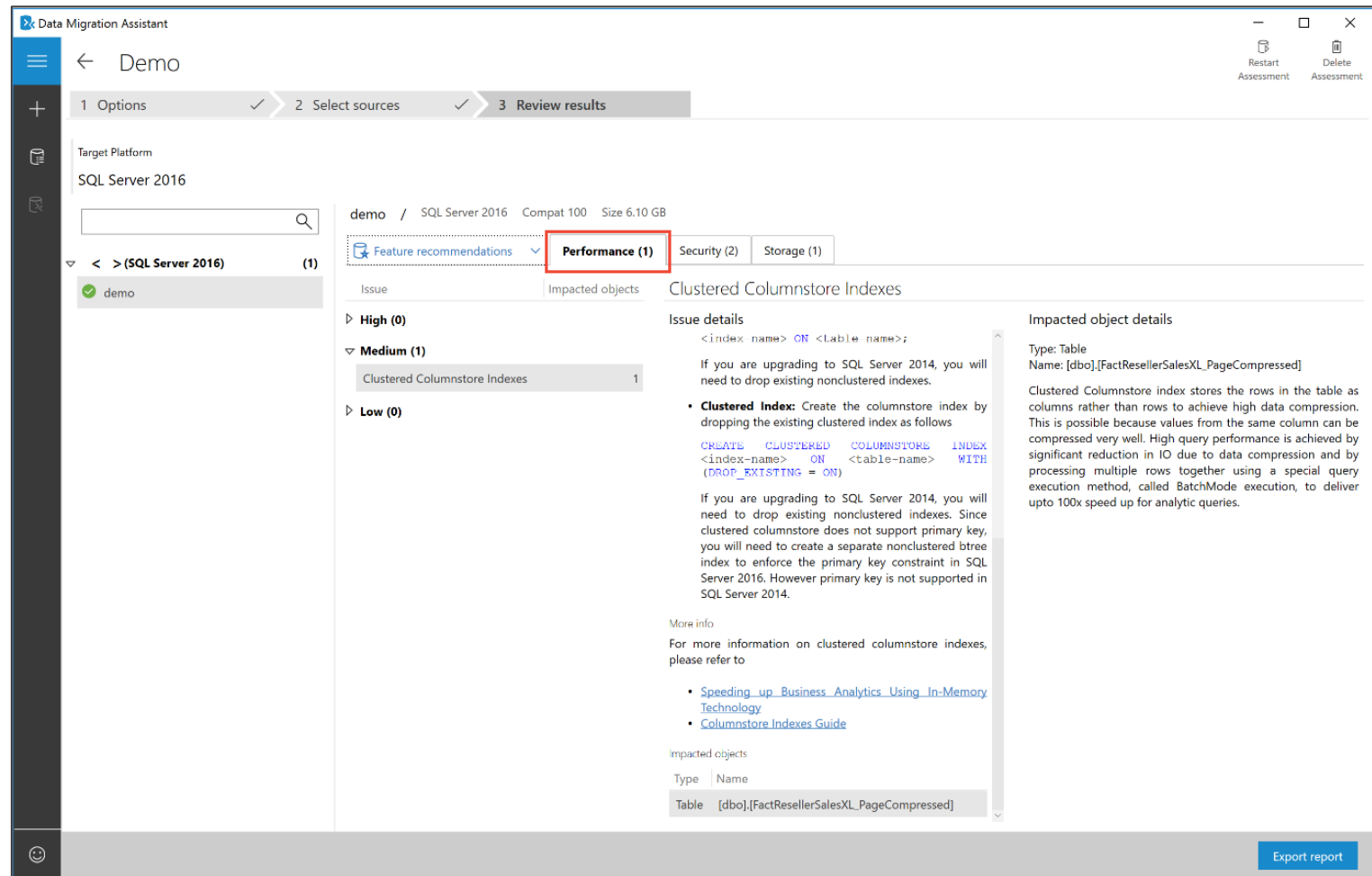
The screenshot shows the Azure Data Migration Assistant (DMA) interface during the 'Review results' step of a demo assessment. The interface is divided into several sections:

- Progress Bar:** Shows the steps: 1 Options (checked), 2 Select sources (checked), and 3 Review results (active).
- Target Platform:** SQL Server 2016.
- Assessment Details:** demo / SQL Server 2016 / Compat 100 / Size 6.10 GB.
- Compatibility Issues:** A list of issues is shown on the left, categorized into Breaking changes (4), Behavior changes (7), and Deprecated features (2). The 'Unqualified Join(s) detected' issue is highlighted.
- Issue Details:** The main pane displays details for the 'Unqualified Join(s) detected' issue. It includes a recommendation to use explicit JOIN syntax and a list of impacted objects.
- Impacted Object Details:** A detailed view of the impacted object 'dbo.RemoveSSDDUserRoleMember' is shown on the right, including its type (Procedure) and a description of the issue.

A red box highlights the 'Compatibility issues' tab and the 'Unqualified Join(s) detected' issue. Another red box highlights the impacted object 'dbo.RemoveSSDDUserRoleMember' in the 'Impacted objects' list. A red arrow points from the impacted object list to the 'Impacted object details' pane.

Azure Data Migration Assistant (SQL)

1. Download Data Migration Assistant (DMA) Tool
2. Create New Assessment
3. Choose Assessment Options
4. Review Results
(Performance, Storage & Security)



Demo

Azure Database Migration Assistant

Assessment of (Web) Application Servers

Azure App Service Migration Assistant (Web)

- The App Service Migration Assistant (SMA) helps you migrate to a modern web app platform by:
 - Performing an assessment to verify whether your app is a good candidate for migration by running a scan of its public URL
 - Running the assessment out-of-the-box, by downloading the App Migration Assistant
 - Use the tool to run readiness checks and general assessment of application config settings, before running the actual migration
 - If assessment is successful, you have the option to perform the migration of the app as well from the same tool

Azure App Service Migration Assistant (Web)

- Supports more than just Microsoft Development Languages:

- DotNet & DotNetCore
- Ruby
- Java
- JavaScript
- PHP
- Docker
- Git



Azure App Service Migration Assistant (Web)

- The Migration Assistant performs the following checks:

- Port Bindings
- Protocols
- Certificates
- Location Tags
- ISAPI Filters
- Application Pools
- Application Pool Identity
- Authentication Type
- Application Settings
- Connection Strings
- Frameworks
- Configuration Errors
- Virtual Directories

The screenshot displays the Azure App Service Migration Assistant (Web) interface. It shows a list of detected domains, a section for hosting, a toggle for showing more technologies, and several sections for analytics, CDN, and docinfo checks. Each check is represented by a green bar with the technology name, last detected time, and a status message.

Detected Domains (1)

azure.microsoft.com

HOSTING (1)

Azure App Service
Last detected : a few seconds ago

Azure App Service supports migration for this hosting model.

Show more technologies detected for the site

☒ Yes

ANALYTICS (6)

Microsoft Application Insights
Last detected : a few seconds ago

Used by top App Service site.

Google Universal Analytics
Last detected : a few seconds ago

Used by top App Service site.

Google Analytics
Last detected : a few seconds ago

Used by top App Service site.

Google Analytics IP Anonymization
Last detected : a few seconds ago

Used by top App Service site.

Google Analytics Event Tracking
Last detected : a few seconds ago

Used by top App Service site.

ClickTale
Last detected : a few seconds ago

Used by top App Service site.

CDN (3)

Azure Edge
Last detected : a few seconds ago

Used by top App Service site.

Microsoft Azure CDN
Last detected : a few seconds ago

Used by top App Service site.

Content Delivery Network
Last detected : a few seconds ago

Used by top App Service site.

DOCINFO (17)

HTML5 DocType
Last detected : a few seconds ago

Used by top App Service site.

Demo

Azure App Services Migration Assistant

Section Take-Aways

1. Microsoft offers the Microsoft Cloud Adoption Framework, to assist in the end-to-end adoption of Azure public cloud
2. Azure Migrate provides the right tools to help customers from assessment to migration, using Microsoft tools, or integrated with 3rd party tools
3. Azure Migrate = Virtual Machine Assessment + Migration
Azure Migrate = (SQL) Database Assessment + Migration
Azure Migrate = App Services Assessment + Migration

Questions Landing Spot

“...If you want good answers,
ask better questions...”

© Randy Glasbergen



Azure

Next Module...

Infrastructure as Code + VM Lift & Shift Migration





Thank You