Microsoft

AZ-300T02 Module 01: Evaluating and Performing Server Migration to Azure

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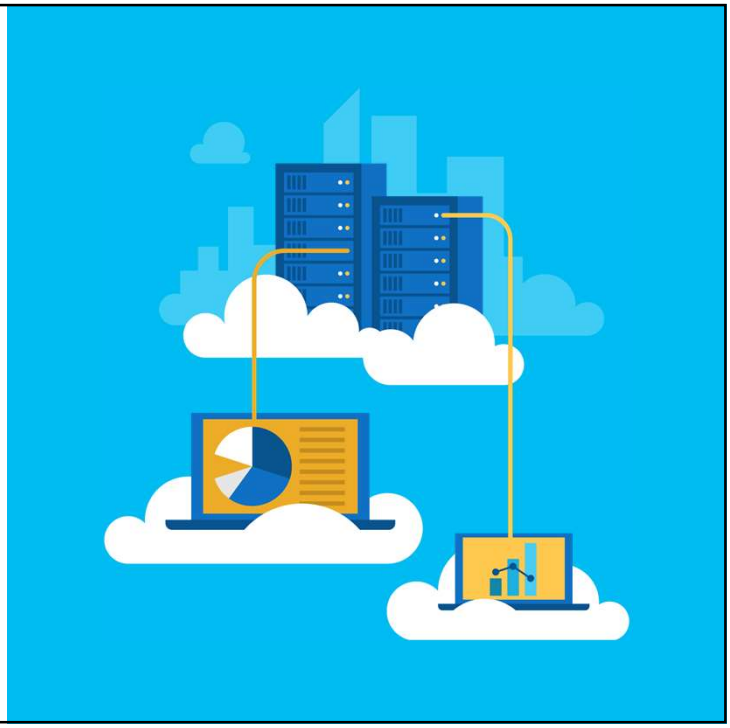

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Module 01: Evaluating and Performing Server Migration to Azure

Lesson 01: Migrate to Azure

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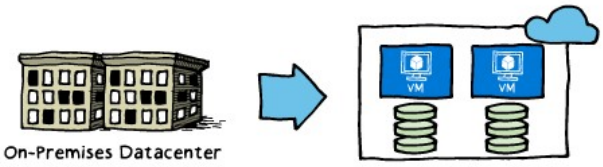
Migration Goals

Technology-focused and business-focused, including:

- **Addressing the hardware obsolescence cycle**
- **Moving away from the 'pre-purchase capacity' model**
- **Lack of IT agility**
- **Desire to re-focus on core competencies**
- **Expense of maintaining a global presence**
- **Enable disaster-recovery scenarios**



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Migration Approach - Best Practices

Framework of *people*, *process* and *technology*:

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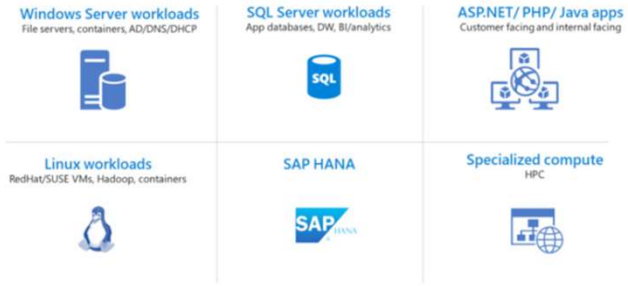
Common Migration and Modernization Projects

Common migration and modernization projects:

- **Windows Server workloads.** A set of file servers moved to the cloud in bulk. Or, containers in an existing Windows Server on-premises environment that need to be provisioned.
- **SQL Server workloads.** Examples include application-serving databases, analytics and Data Warehouse solutions.
- **ASP.NET** PHP and Java apps are examples of workloads suitable for migration and modernization.
- **Linux Workloads Virtual machines and special purpose applications**. Linux workloads that start in RedHat and SUSE can scale to become Hadoop clusters.
- **Specialized projects.** For example, projects involving SAP and specialized compute scenarios, such as HPC.



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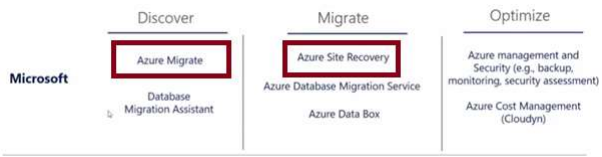
Migration Phases

When planning for migration to Azure, consider the following phases:

- **Discover: gain better visibility of on-premises workloads and assess the optimal resource level to run them in Microsoft Azure.**
  - **Azure Migrate is the primary tool for this, and includes:**
    - **Automated server, app, and database discovery.**
    - **Intelligent workload right-sizing and costing for maximum ROI.**
    - **Workload configuration analyses and recommendations.**
- **Migrate: move selected workloads to Azure.**
  - **Azure Site Recovery is the primary tool for this and includes:**
    - **Lifting and shifting of servers, apps, databases, and data.**
    - **Containerization of existing applications and infrastructure**
    - **Modernization options for apps and databases.**
- **Optimize: fine tune your Azure-based workloads and maximize your ROI.**
  - **There are many Microsoft partners to help you with backup, monitoring, security assessments, and cost management.**



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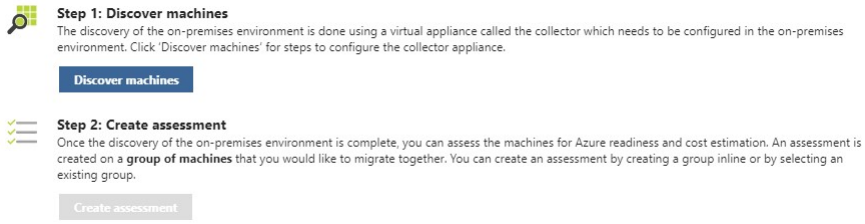
Azure Migration Service

Provides assessment of on-premises workloads for migration to Azure:

- **migration suitability of on-premises machines**
- **performance-based sizing**
- **cost estimates for running your on-premises machines on Azure VMs**

Follows two steps:

- **Discover machines**
- **Create Assessments**



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Module 01: Evaluating and Performing Server Migration to Azure

Lesson 02: Azure Migrate Process

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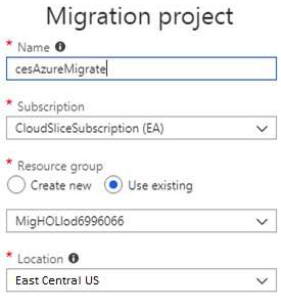
Creating a Project

The initial step of the Azure Migrate

A project contains metadata representing on-premises environment:

- **Name**
- **Subscription**
- **Resource Group**
- **Location**
- **Discovery records of VMware VMs**

- Project limits:
  - **Up to 1,500 discovered VMs per project**
  - **Up to 1,500 assessed VMs per project**
  - **Up to 20 projects per subscription**



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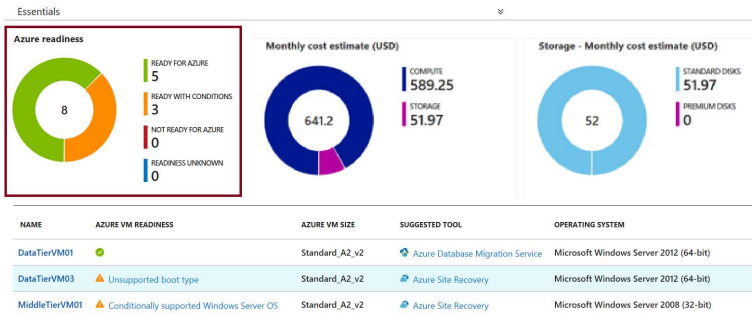
Assessing Readiness

Assessment is based on the readiness status of discovered VMs:

- **Ready for Azure (green): along with the recommended Azure VM size**
- **Ready with conditions (Orange) and Not ready for Azure (Red): including readiness issues and remediation steps.**
- **Readiness unknown (Blue)**



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Assessing VM Sizing

Azure Migrate VM assessment offers two types of sizing :

- **Performance-based sizing (default) which takes into account:**
  - **Storage: maps the size and performance of VM disks to Azure VM disks**
  - **Network: identifies Azure VM sizes that offer matching number and performance of network adapters**
  - **Compute: determines CPU and memory requirements based on performance history of discovered VMs**
- **On-premises sizing:**
  - **Matches the size of on-premises VM to an equivalent Azure VM**
  - **Does not take into account performance history of discovered VMs**

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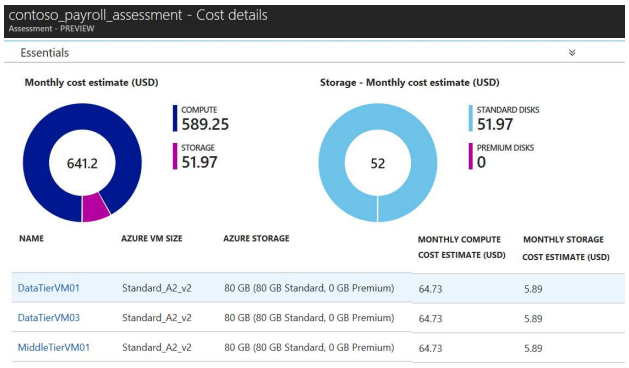
Estimating Cost

Provides the total costs of Azure VMs:

- **Compute: aggregated monthly cost, which takes into account:**
  - **OS type**
  - **Software Assurance**
  - **Reserved Instances**
  - **VM uptime**
  - **VM location**
  - **currency settings**
- **Storage: aggregated monthly cost.**
  - **No offer specific settings**



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Customizing the Assessment

Customization settings include:

- **Performance history duration**
- **Target location**
- **Pricing tier**
- **Storage type**
- **Comfort factor**
- **Currency**
- **Discounts**
- **VM uptime**

Setting	Details	Default
Target location	The Azure location to which you want to migrate. Azure Migrate currently supports 30 regions.	West US 2 is the default location.
Pricing tier	You can specify the pricing tier (Basic/Standard) for the target Azure VMs.	By default the Standard tier is used.
Storage type	You can specify the type of disks you want to allocate in Azure.	The default value is Premium managed disks.
Comfort factor	Azure Migrate considers a buffer (comfort factor) during assessment. This buffer is applied on top of machine utilization data for VMs.	Default setting is 1.3x.

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Module 01: Evaluating and Performing Server Migration to Azure

Lesson 03: Overview of Azure Site Recovery (ASR)

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Overview of Azure Site Recovery (ASR)

Site Recovery service: Replicates workloads running on physical and virtual machines (VMs) from a primary site to a secondary location. If an outage occurs at the primary site, there is fail over to a secondary location.

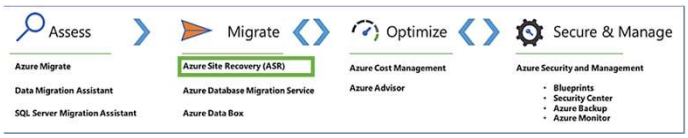
Backup service: The Azure Backup service keeps data safe and recoverable by backing it up to Azure.

Site Recovery can manage replication for:

- Azure VMs replicating between Azure regions.
- On-premises VMs, Azure Stack VMs and physical servers.

Migration tools:

- Azure Site Recovery: Use ASR to migrate to Azure. Prepare the Azure components including a storage account and virtual network. On-premises, prepare your Hyper-V or VMware environment. Once prepared, set up and enable replication to Azure, and migrate the VMs.
- Azure Database Migration: If on-premises machines are running a database such as SQL Server, MySQL, or Oracle, then use the Azure Database Migration Service to migrate them to Azure.



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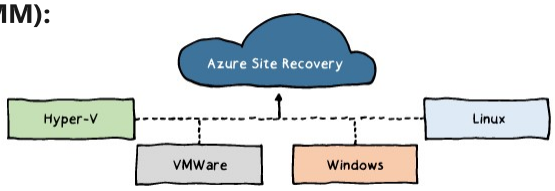
ASR Scenarios

Hyper-V VM replication:

- **Hyper-V with Virtual Machine Manager (VMM):**
  - **Replication to Azure or a secondary datacenter.**
- **Hyper-V without VMM:**
  - **Replication to Azure only.**



VMware VM replication:

- **Replication to a secondary site running VMware or to Azure.**

Physical Windows and Linux machines:

- **Replication to a secondary site running VMware or to Azure.**

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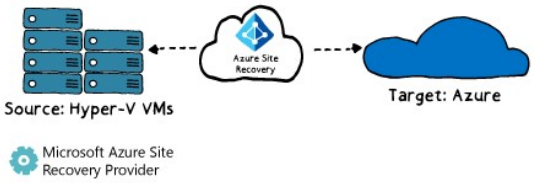
Using ASR: A Look Ahead

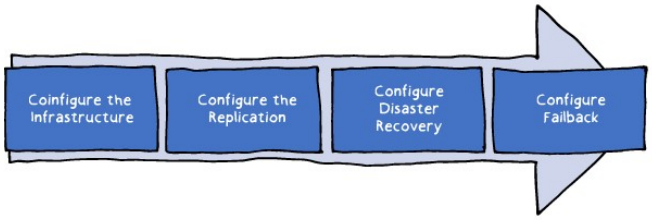
Architecture:

- **The primary and a secondary site**
- **On-premises or in Azure**



Process:

- **Configure the Infrastructure**
- **Configure the Replication**
- **Configure Disaster Recovery**
- **Configure Failback**



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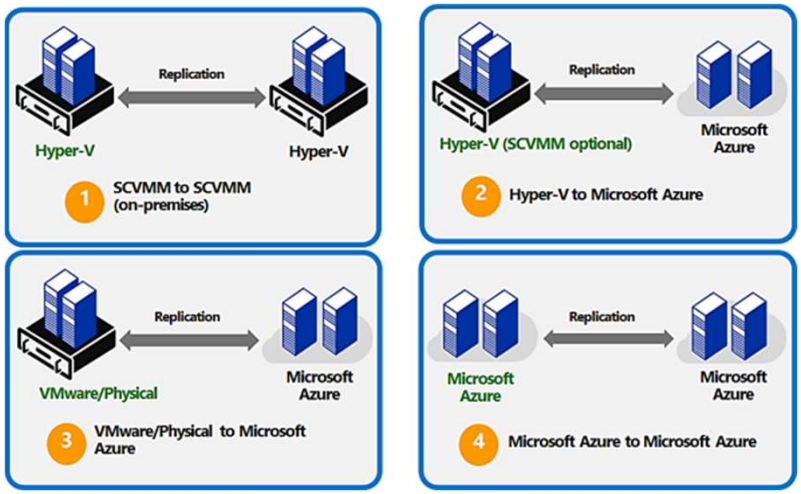
Azure Site Recovery – Key Infrastructure Scenarios



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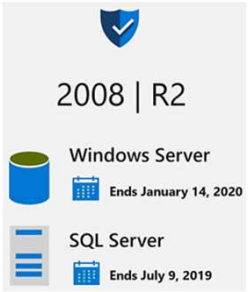
Server Migration Scenarios

Amazon Web Services (AWS) VMs:

- Use ASR to migrate virtual machines from AWS to Azure.
- When migrating AWS EC2 instances to Azure, the VMs are treated like physical, on-premises computers.

End of support scenarios:

- Windows Server 2008 and SQL Server end of support are server migration opportunities to use ASR to migrate into Azure.



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Migration and Modernization Scenarios

	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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Lesson 04: Preparing the Infrastructure

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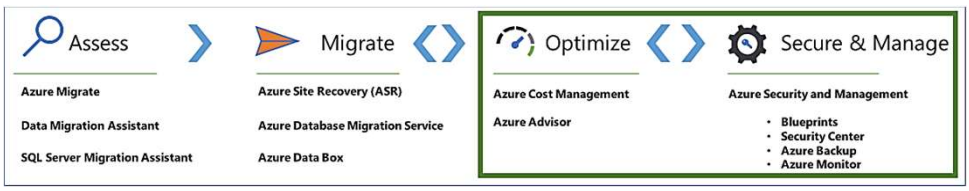
ASR Migration - Optimize and Secure Phase

ASR migration process:

1. After you've assessed on-premises machines, use Azure Site Recovery to migrate to Azure.
2. Prepare the Azure components needed, including a storage account and virtual network.
3. On-premises, prepare your VMware or Hyper-V environment.
4. When everything's prepared, set up and enable replication to Azure, and migrate the VMs



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Best Practice - Secure Migrated Workloads to Azure

Security Center analyzes resources and configurations across Azure tenants and makes security recommendations, including:

- Centralized policy management – Ensure compliance with centrally managing security policies across hybrid cloud workloads.
- Continuous security assessment – Monitor the security posture of machines, networks, storage and data services, and applications.
- Actionable recommendations – Remediate security vulnerabilities before they can be exploited by attackers with prioritized and actionable security recommendations.
- Prioritized alerts and incidents - Focus on the most critical threats first with prioritized security alerts and incidents.

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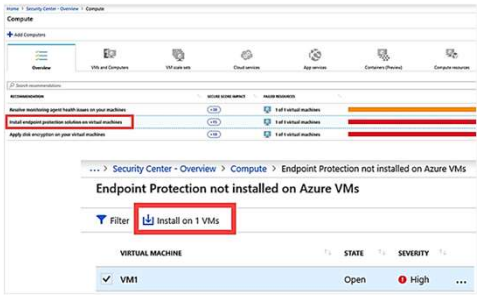
Best Practice - Protect VMs with Antimalware

Azure provides a free endpoint solution that helps protect VMs from viruses, spyware, and other malware.

- Microsoft Antimalware for Azure generates alerts when known malicious or unwanted software tries to install itself.
- It's a single agent solution that runs in the background without human intervention.
- In Azure Security Center, you can easily identify VMs that don't have endpoint protection running, and install Microsoft Antimalware as needed.



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Module 01: Evaluating and Performing Server Migration to Azure

Lesson 05: Datacenter Migration using Migration Factory

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Large Scale Migrations to Azure

- Microsoft Consulting Services (MCS) performs large migrations with a custom "factory" approach allowing them to quickly migrate out of entire datacenters before their renewal deadlines.
- Using Automation for Migration Factory, you can move multiple VMs at scale from on-premises to Azure.

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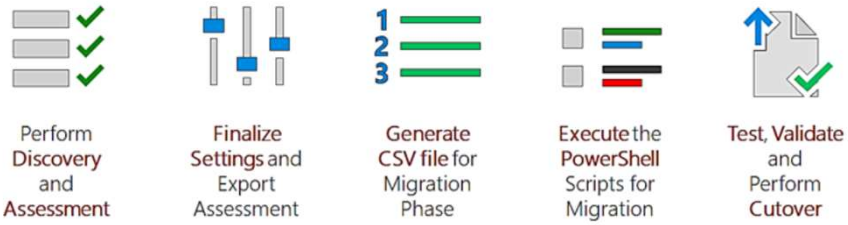
Automating a large scale migration

- Begin with server assessment and finalize the settings of your assessment.
- Once all the settings have been finalized, export the assessment.
- Generate a CSV file which will provide the inputs to the automation scripts you will use to perform the migration.
- Execute the PowerShell scripts and perform the migration.
- Test the performance of the applications in Azure, validate the migration results, and when satisified with performance and functionality perform the cutover to production.



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