Azure Migration and Modernization

<u>View in Power BI</u>

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Agenda

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OverviewBusiness
CaseTransformation
ConsiderationsAdditional Azure
opportunities

Assessment Overview -**Key Metrics**

Business objectives

Sample:

Data collection was performed at a secondary site where Contoso sought more information on scope, scale, and cost estimation for a possible migration of servers to Azure due to the lease expiration of the secondary site.

Key findings

Sample:

- Contoso is also considering other cloud providers
- Lease expiration of secondary site is Q4 2022
- Interested in PaaS for cost estimation but will likely migrate into laaS and then consolidate after migration is completed

*SQL Server discovery and assessment are available only for Windows Server **ASP.NET discovery and assessment is only available for Windows Server running in VMware environment ***Includes servers with SSRS, SSIS, and 2422



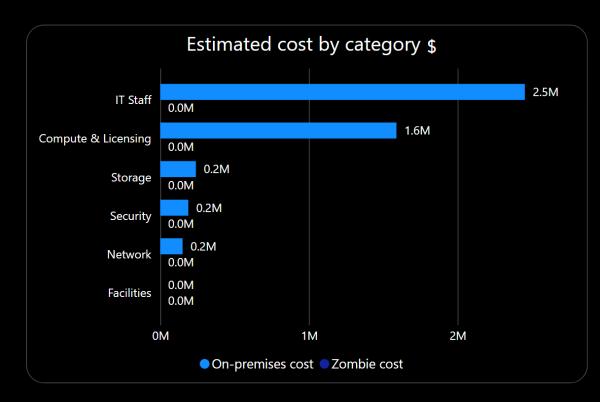
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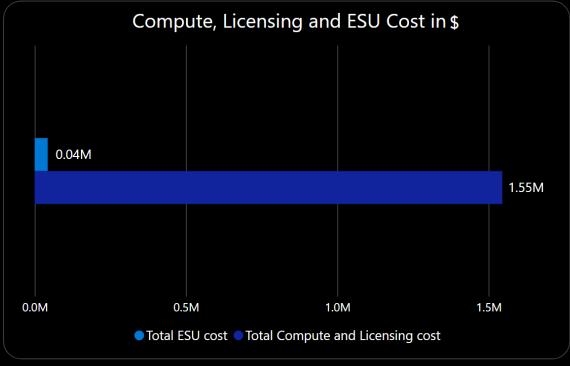
Assessment Overview - On-premises cost estimates









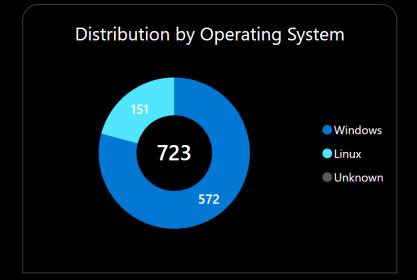


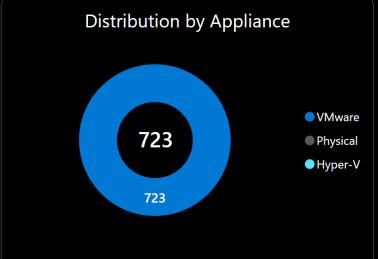
Assessment Overview- Server Analysis













Windows Linux **79.11% 20.89%**

Virtualized Non-virtualized 100.00% 0.00%

Production Dev/Test
97.54% 1.23%
Decommissioned
1.23%

Agenda

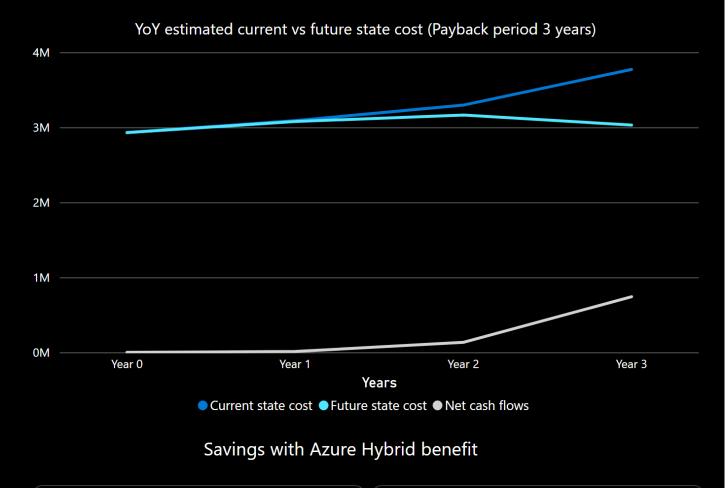
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opportunities

Business Case

Total cost of ownership (TCO)

Potential Cost Savings

Estimated on-premises cost	\$ 4,621,702.89
Estimated Azure cost for servers and workloads ready for migration	\$ 2,722,167.38
laaS cost	\$ 2,482,915.77
PaaS cost	\$ 239,251.60
Savings	\$ 1,899,535.52 Save up to 41.10%



Bring your existing Windows Server licenses to Azure

\$ 1,173,746.30

Bring your existing SQL Server licenses to Azure \$ 127,949.07

Business Case - Details

Total cost of ownership (TCO)

Contoso can save up to 69.70% on License cost with Azure Hybrid benefit. Azure also provides free extended security updates for servers that reach end of life. You can run out of support servers for 3 additional years on Azure.

	On-premises(\$)	Azure(\$)	Savings(\$)	Insights
IT Staff	2,452.80K	1,809.44K	643.36K	\$ 925,652.16 saved by applying AHB and using optimized savings options in Azure
Compute & Licensing	1,589.07K	663.42K	925.65K	\$ 643,357.38 saved by improving IT productivity
Storage	240.05K	77.81K	162.24K	
Security	189.00K	134.43K	54.57K	\$ 113,722.17 saved by network optimizations in Azure
Network	150.78K	37.06K	113.72K	
Facilities	0.00K	0.00K	0.00K	
Total	\$ 4,621,702.89	\$ 2,722,167.38	\$ 1,899,535.52	

Savings with Azure Hybrid Benefit				
Windows Server Licenses	\$ 1,173,746.30			
SQL Server Licenses	\$ 127,949.07			
Savings with Extended Supportability Updates				
¢ 42 256 25				

^{*}Production and Dev-test combined **Includes servers with SSRS, SSIS, and SSAS

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opportunities

Key Transformation Considerations

Contoso has a business goal to migrate servers from an on-premises secondary data center to Azure

Modernize/Re-platform(PaaS)

Total annual cost

\$ 102,113.99

Estimated annual

compute cost

\$102,061.00

Migrate/Re-host to Azure (laaS)

Estimated annual storage cost

\$ 77,759.36

Estimated annual compute cost

\$ 561,358.14

Total annual cost

Management

Estimated annual storage cost

\$ 0.00

Estimated annual compute cost

\$ 370,785.79

\$ 639,117.50

Total annual cost

\$ 370,785.79

04 Security

Estimated annual

storage cost

\$ 52.99

Total annual cost

\$ 134,431.68

Estimated annual Azure consumption cost \$ 1,246,448.97

Transformation to PaaS

Contoso has a business goal to migrate servers from an on-premises secondary data center to Azure

01 Modernize/Re-platform(PaaS)

02

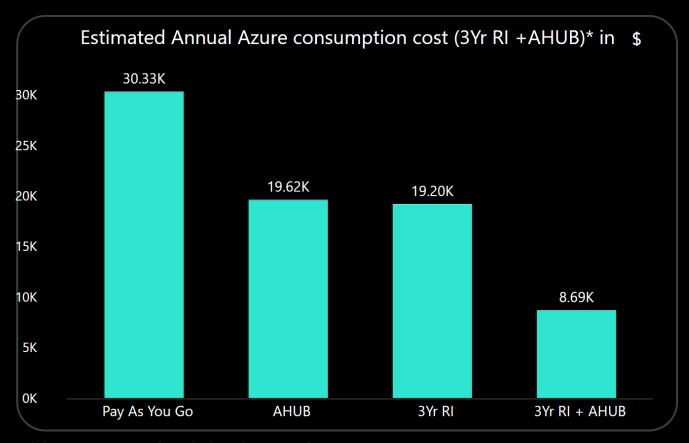
03

04

Workload	Azure Recommendation
4 ASP.NET WebApps on IIS** in dev/test environment	Modernize to 11 Azure App Service plan with dev/test discount pricing
30 ASP.NET WebApps on IIS** in production environment	Modernize to 51 Azure App Service with Azure Savings Plan
0 SQL Server Database Engine in dev/test environment	Modernize to 0 Azure SQL Managed Instance with dev/test discount pricing
2 SQL Server Database Engine in production environment	Modernize to 3 Azure SQL Managed Instance with (AHB + 3YR RI) discount pricing

Transformation to PaaS* sql Server MI

We recommend modernizing 3 SQL Server instances running on 2 servers to 3 Azure SQL MI deployments. This assessment provides readiness, pricing estimates and sizing.



Estimated annual Azure consumption cost (3Yr RI + AHUB)*
\$8,639.98

Active SQL Instances	Avg. SQL CPU Utilization (%) ▼	Total Storage (TB)
3	0.00	0.03

^{**}Includes (3Yr RI + AHUB) cost for Production and (AHUB) cost for Dev-test

Transformation to PaaS*

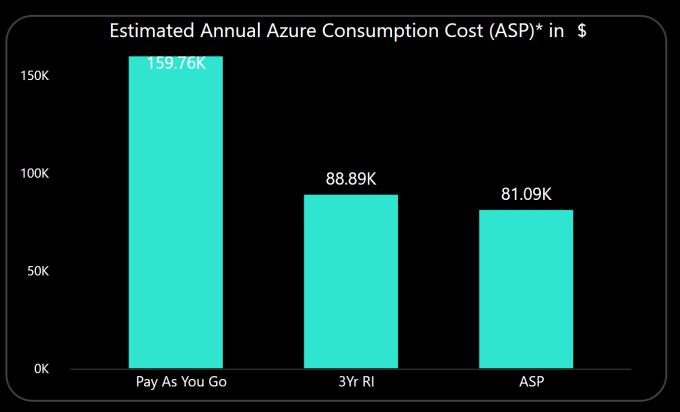
App Service

We recommend modernizing 34 SQL ASP.NET App to 62 Azure App Service plan instances. This assessment provides pricing estimates and sizing.

Estimated annual Azure consumption cost (ASP)* \$81,086.94

ASP.NET Apps**

1023



^{**} ASP.NET discovery and assessment are only available for Windows Server running in VMware environment.

^{*}Includes (3Yr RI) cost for Production and (PAYG) cost for Dev-test

Transformation to laaS

Contoso has a business goal to migrate servers from an on-premises secondary data center to Azure

01

02 Migrate/Re-host to Azure (laaS)

03

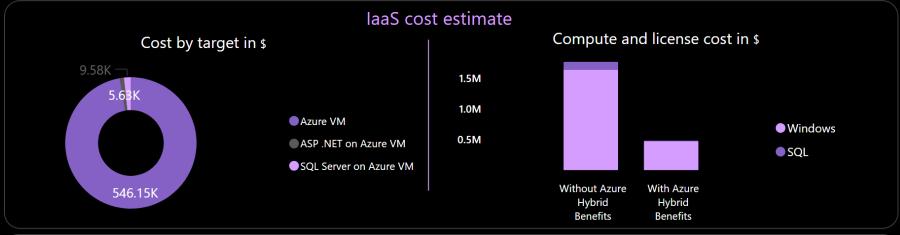
04

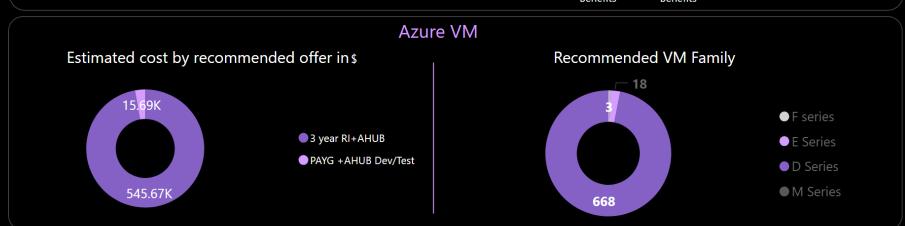
Workload	Azure Recommendation
2 ASP.NET WebApps on IIS** – Prod	Modernize to 2 Azure VM with laaS Production (AHB + 3YR RI)
2 ASP.NET WebApps on IIS** - Dev/Test	Modernize to 2 Azure VM with laaS Production (AHB)
673 Servers* – Prod	Modernize to 673 Azure VM with laaS Azure Production (AHB +3YR RI)
5 Servers* – Dev/Test	Modernize to 5 Azure VM with laaS Azure Dev/Test (AHB)
6 SQL Server Database Engine – Prod	Modernize to 6 SQL Server on Azure VM with laaS Production(AHB + 3YR RI)
1 SQL Server Database Engine – Dev/Test	Modernize to 1 SQL Server on Azure VM with laaS Dev/Test(AHB)

Transformation to laaS

Servers - Ready for Migration







Savings with Azure Hybrid benefit

\$ 1,287,901.44

Bring your existing Windows and SQL Licenses to Azure.

Savings With extended security updates

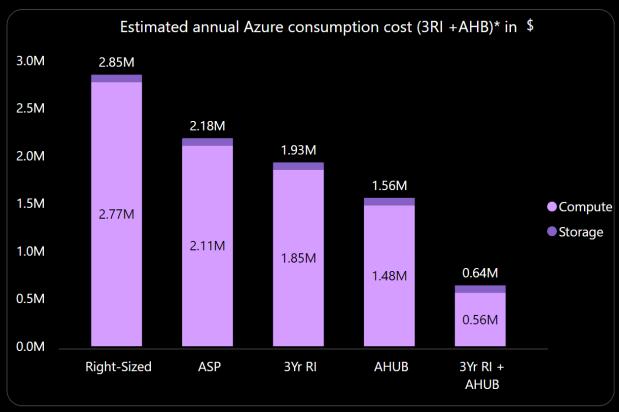
\$ 40,372.50

Bring your end of Support Windows OS and SQL versions to Azure.



Migrate servers to Azure VM (laaS)

Contoso's secondary site is run on corporate-owned hardware in a remote location. The lease for colocation space is approaching renewal in Q4 of 2022 and the hardware is several years old. Migrating this secondary site to Azure would eliminate site costs as well as remove the need for additional hardware purchases.



Estimated annual Azure consumption cost (3Yr RI + AHUB)* \$639,117.50

Tech	Server	Avg. CPU Utilization (in %)	Avg. RAM Utilization (in %)	Storage (in TB)
General Windows workloads	532	0.00	0.00	88.12
General Linux workloads	146	0.00	0.00	9.25
Servers with SQL Server instances	7	0.00	0.00	1.40
Servers with ASP.NET Apps	4	0.00	0.00	1.27

^{*}Includes (3Yr RI + AHUB) cost for Production and (AHUB) cost for Dev-test

^{**}Includes servers with SSRS, SSIS, and SSAS

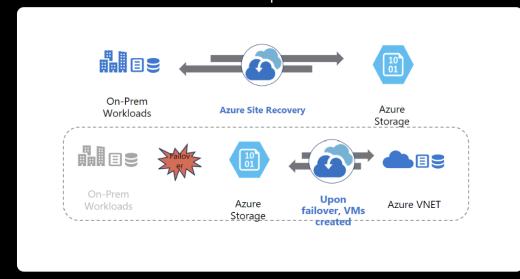
Transformation of Management Services

Management

Azure Site Recovery*

Annual estimated cost of 680 Production Servers \$204,000.00

Azure Site Recovery monitors servers and stores replicas in Azure's low-cost storage. When failover occurs, ASR is used to spin up the recovery VMs from the replicas.



Azure Backup Service*

Annual estimated cost of 680 Production Servers \$166,184.09

Azure Backup service provides simple, secure, and cost-effective solutions to back up your data and recover it from the Microsoft Azure cloud.



Cost assumptions:

Configurable retention needs at steady state:

- Local Redundant Storage (LRS)
- Moderate Churn
- Daily Recovery Point retention for 30 days
- Weekly Recovery Point retention for 4 weeks
- Monthly Recovery Point retention for 12 months
- Yearly Recovery Point retention for 1 year

Windows Server and SQL End of Support

Reviewing and planning around the OS lifecycle is key to securing on-prem infrastructure and prioritizing Azure migration.

Microsoft is invested in supporting customers moving to the cloud as part of infrastructure modernization and provides resources to help keep your environment secure.

Windows Server

94%

Extended Support

Plan for upgrade of systems in Extended Support. 2012/R2 support ends 10th October 2023.

Windows Server

5%

Out of Support

To mitigate active security risks, prioritize review of OSEs for decommission, upgrade, or migration.

SQL Server

40%

Extended Support

Plan for upgrade of systems in Extended Support. 2012 support ends 12th July 2022.

SQL Server

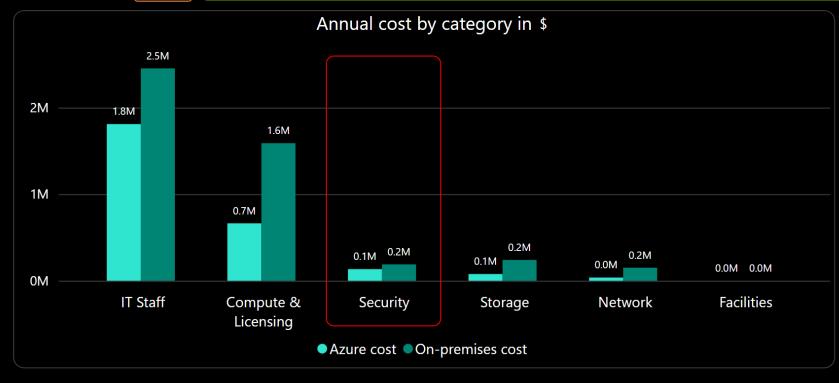
60%

Out of Support

To mitigate active security risks, prioritize review of SQL Servers for decommission, upgrade, or migration.

Defender Business Case





Insights

- \$ 54,568.32
 saved by unifying security management with
 Microsoft Defender for Cloud
- Mitigate threats 50%

 faster and improve your
 security posture with
 Microsoft Defender for
 Cloud

Total on-premises costs vs Azure cost

Potential Savings **\$ 1,899,535.52**

Total on-premises cost \$ 4,621,702.89

Total Azure cost \$ 2,722,167.38

Savings: 41.10%

Agenda

Assessment Business Transformation Additional Azure Overview Case Considerations opportunities

Cost savings on Dev/ Test workloads

Deep-dive

Azure Dev/Test

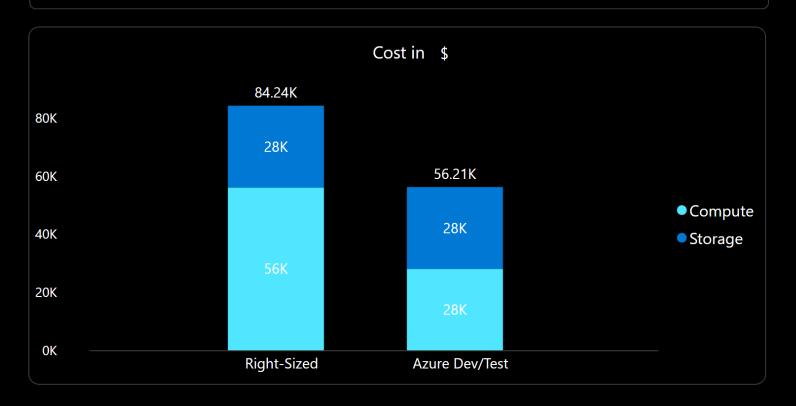
Azure provides numerous advantages for groups with dynamic Dev/Test needs – special Dev/Test pricing, the ability to spin VMs up and down rapidly, and fine control available around uptime and downtime to control costs.

Current non-prod environment considerations:

- 0 General Linux workloads
- 1 Servers with other SQL Services**
- 5 Servers with SQL Server instances
- 7 Servers with ASP.NET Apps
- 9 General Windows workloads

Azure Dev/Test Benefits for EA customers

- Use Visual Studio & MSDN Platforms subscriptions to pay no Microsoft software charges on Azure VMs
- Subscribers receive up to \$150 in monthly Azure credits
- Access Windows 11 VMs & Windows Virtual Desktop service
- Save up to 55% off Azure SQL Managed Instance (PaaS)
- · Use auto-shutdown to reduce VM costs up to 78% savings at 40 hrs/wk uptime*



^{*}Estimates excludes machines eligible for migration to managed servers

^{**}Includes servers with SSRS, SSIS, and SSAS

Migrate servers to Azure VM (laaS)

Deep-dive

Migrate servers to Azure VM (laaS)*

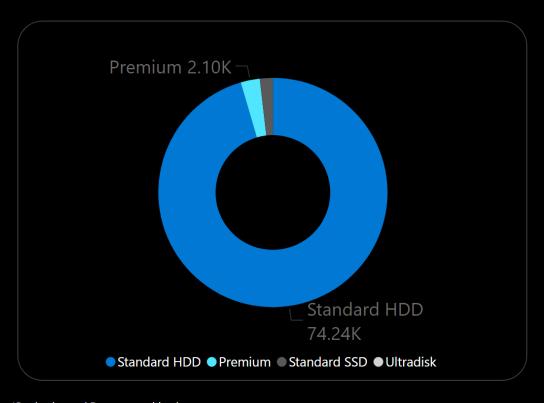


^{*}Includes (3Yr RI + AHUB) cost for Production and (AHUB) cost for Dev-test

^{**}Issue definitions can be found here: https://docs.microsoft.com/azure/migrate/troubleshoot-assessment#azure-vm-assessment-readiness-issues

Migrate disks to Azure Storage

Aligning disk sizing to performance requirements further reduces costs. Automatic disk allocation ensures that there are no bottlenecks with the server and applications. Specific workloads and applications may also run on a lower specification disk when the peaks occur.



Standard HDD Drives

944

\$ 74,236.42 accounts for 95.47% of total storage cost

Standard SSD Drives

41

\$ 1,425.60 accounts for 1.83% of total storage cost

Premium Disks

10

\$ 2,097.35 accounts for 2.70% of total sto...

Ultra Drives

0

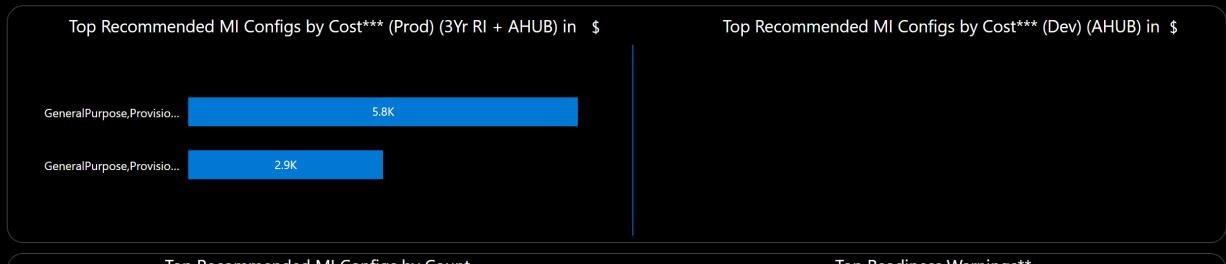
\$ 0.00 accounts for 0.00% of total storage ...

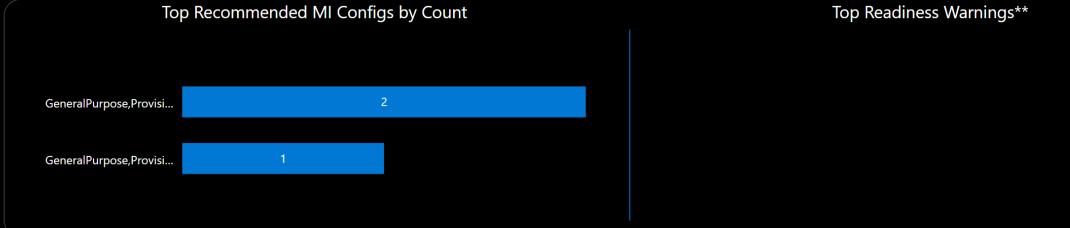
Modernize to PaaS

Deep-dive

Refer to Core Report for details.

Modernize SQL to Azure SQL Managed Instance (PaaS)

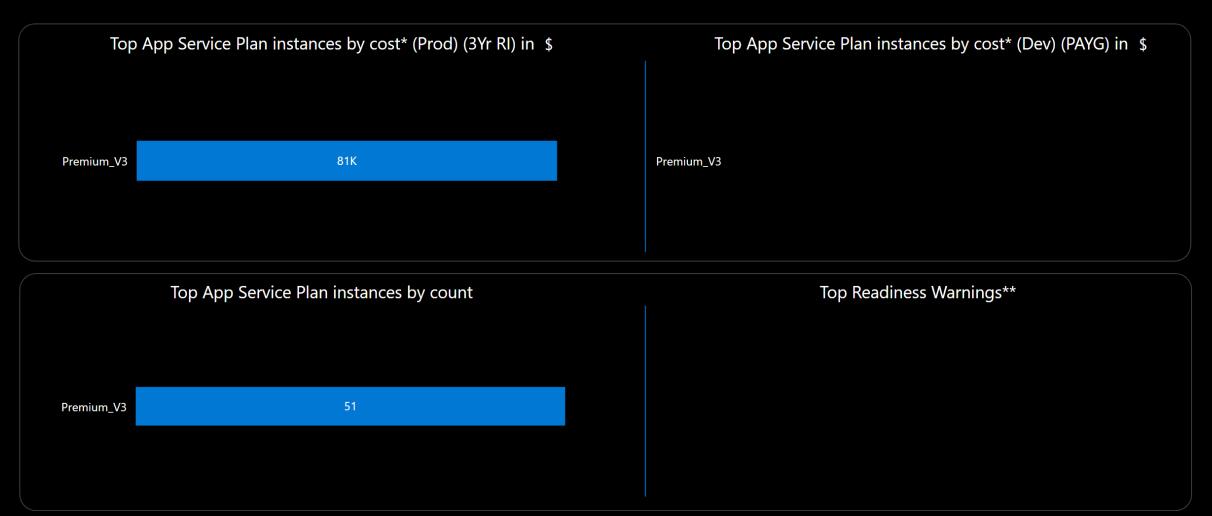




^{*}Includes (3Yr RI + AHUB) cost for Production and (AHUB) cost for Dev-test

^{**}Issue definitions can be found here: https://aka.ms/AzureSQLMI/AssessmentRules

Modernize ASP.NET Apps Azure App Service (PaaS)



^{*}Includes (3Yr RI) cost for Production and (PAYG) cost for Dev-test

^{**}Issue definitions can be found here: https://aka.ms/AzureSQLMI/AssessmentRules

Modernize SQL completely

Azure SQL Platforms Overview

Azure provides flexible offerings to enable organizations to tailor SQL to their business needs, priorities, and timelines.

Consideration	SQL on Azure VMs	Azure SQL Database Managed Instance	Azure SQL Database
Cloud service type	laaS	PaaS	PaaS
Pricing model	Compute & Storage	vCores & Storage	vCores & Storage
Migration effort	Fast Lift/Shift	Fast Lift/Shift	Refactor
SQL Server compatibility	Full	Full	Limited
Customization/Admin capability	High	High	Moderate
Storage max	64TB	8TB*	4TB
Azure Hybrid benefits	Yes	Yes	Yes
Reserved Instance/capacity pricing	Yes	Yes	Yes
Hardware admin	Microsoft	Microsoft	Microsoft
OS admin	Customer	Microsoft	Microsoft
SQL Server admin	Customer	Microsoft	Microsoft
Built-in Azure security features	No	Yes	Yes
Built-in Azure HA/DR/BC features	No	Yes	Yes
Built-in intelligence	No	Yes	Yes

Azure SQL Database Managed Instances streamline PaaS adoption with extremely high feature parity with the latest on-premises SQL Server database technologies, while reducing management overhead versus the laaS model.

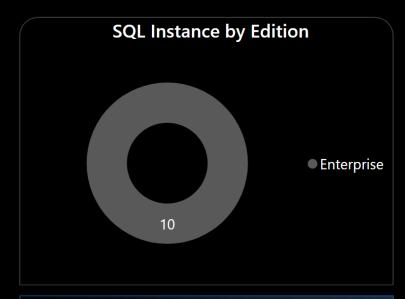
For detailed guidance on database migration paths and strategies. see Microsoft's whitepaper at:

https://azure.Microsoft.com/en-us/resources/choosing-your-database-migration-path-to-azure/en-us/

^{*} General Purpose Tier

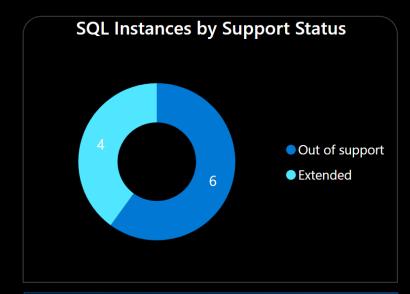
SQL Supportability*

10 SQL instances of Standard or Enterprise Edition were identified, with an additional varied no-cost editions (such as Express or Developer). Review security & maintenance across all installed SQL instances to best manage risk.



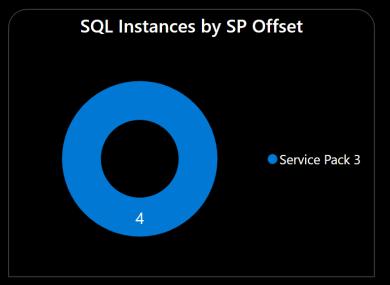
Extended Support

Plan for upgrade 2012: Support ends Jul 12, 2022 2014: Support ends Jul 9, 2024



Unsupported/Unpatched

Prioritize review & action to mitigate security risks. Migration to Azure provides three years Extended Security Updates beyond end of support for 2012.

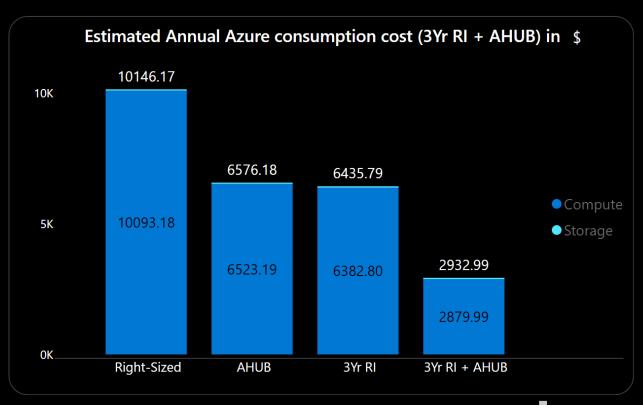


Not Recently Patched

Catch up on Service Pack installation on these instances to mitigate security risk.

Modernize remaining production SQL deployments to Azure SQL MI

We recommend modernizing 3 SQL Server instances running on 2 servers to 3 Azure SQL MI deployments. This assessment provides readiness, pricing estimates and sizing.





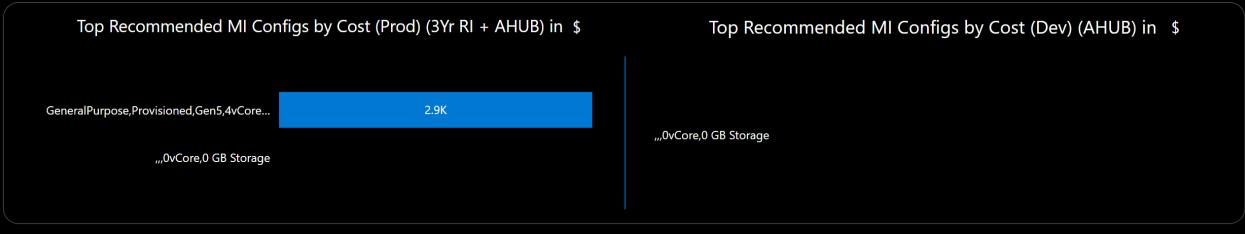
SQL Instances**	Avg. CPU Utilization (in %)	Sum of Storage(TB)
7	0.00	0.02

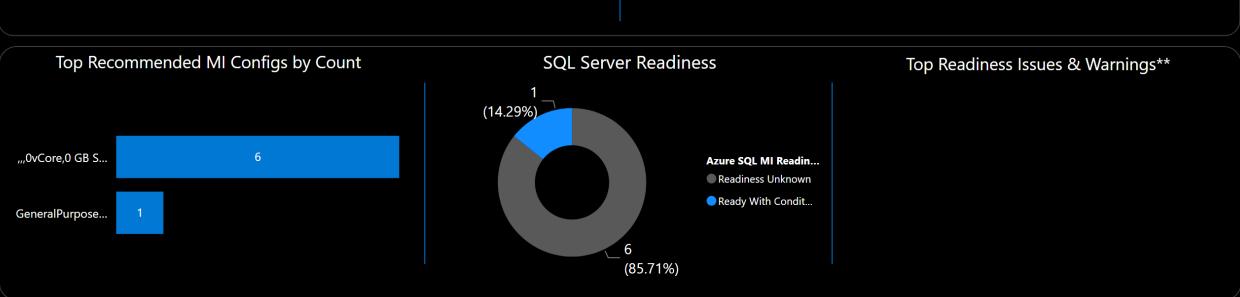
^{*}Includes (3Yr RI + AHUB) cost for Production and (AHUB) cost for Dev-test

^{*}Please ensure that discovery has completed for all SQL Server deployments

^{**}SQL Server discovery and assessment are available only for Windows Server

Modernize remaining production SQL deployments to Azure SQL MI



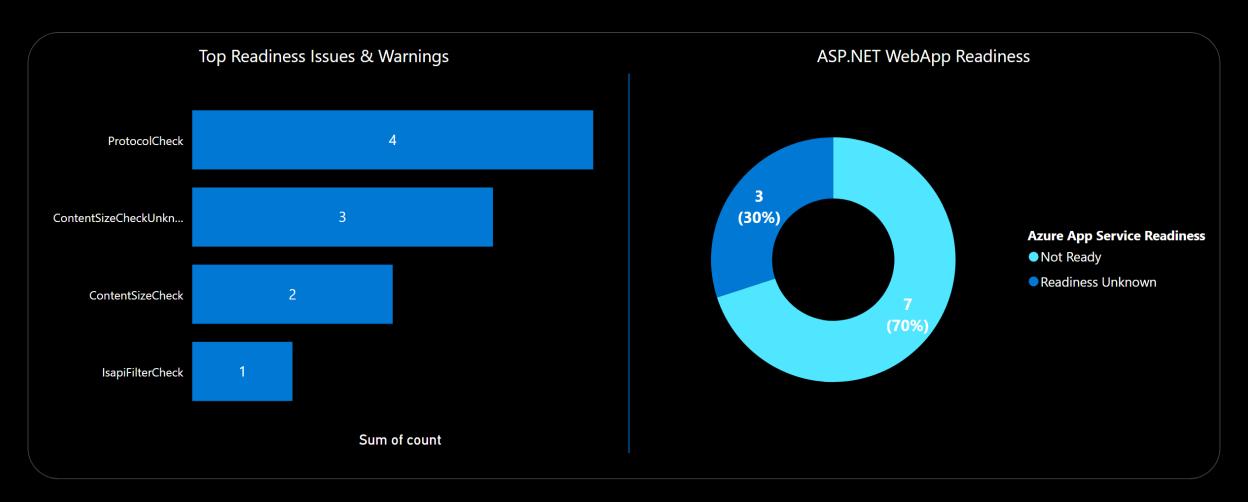


^{*}Includes (3Yr RI + AHUB) cost for Production and (AHUB) cost for Dev-test

^{**}Issue definitions can be found here: https://aka.ms/AzureSQLMI/AssessmentRules

Modernize ASP.NET WebApps completely

Modernize/ Replatform ASP.NET Apps to Azure App Service (PaaS)



^{*}Production and Dev-test combined

^{**}Issue definitions can be found here: https://aka.ms/AzureSQLMI/AssessmentRules

Refer to Opportunity Report for details.

Rehost VMware Servers on Azure VMware Solution

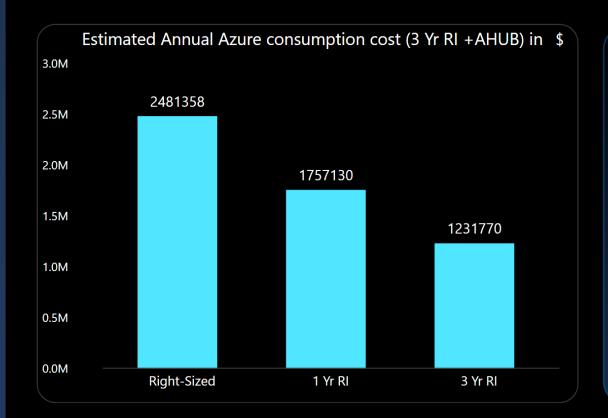
Seamlessly move VMware-based workloads from your datacenter to Azure and integrate your VMware Environment with Azure.

Cost Assumptions:

- 1080 vCPU deployed with 82.59 % avg. utilization
- 17280 GB RAM provisioned | 10587.456 GB RAM in use (61.27% Over-Provisioned)
- 30 nodes needed
- 450 TB storage provisioned | 175.635 TB storage in use (39.03% Over-Provisioned)
- 723 VMs running on VMware
- Each AV36 node includes 15.36 TB Flash Storage
- Inclusive of all VMware licensing

30 AV36 Nodes needed to support 723 VMs

- Get scale, automation, and fast provisioning for your VMware workloads on global Azure infrastructure
- Modernize your VMware workloads with native Azure management, security, and services
- Keep using your existing VMware investments, skills, and tools, including VMware vSphere, vCenter
- Take advantage of Azure as the best cloud for your Microsoft Windows and SQL Server workloads



Estimated annual Azure consumption cost (3Yr RI + AHUB)* \$1,231,769.88

Azure Benefits and Offers



Azure Hybrid Benefit for Windows Server and SQL Server

Save 50% versus other cloud providers



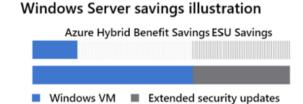
Extended Security Updates (ESU), free only on Azure

Three years of security after support on-premises ends

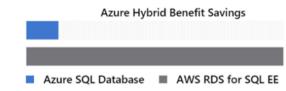
75% of the license cost to buy standalone



Pay less with Azure. AWS is 5x more expensive



SQL Server savings illustration (PaaS)



Learn more: aka.ms/why5xmore

Azure Hybrid Benefits

Save up to 55% in Azure for Windows Server and SQL Server workloads*

Azure Hybrid Benefit for Windows Server

Convert, or re-use Windows licensing with active software assurance in Azure for laaS

Significantly reduce costs, paying the 'base rate' in Azure

Azure Hybrid Benefit for SQL Server

Convert SQL licensing with active software assurance to save up in Azure for laaS and PaaS

Use licenses on-premises and under the Hybrid Benefit simultaneously for 180 days

^{*}Savings may be higher when that Azure Hybrid Benefit for Windows Server and SQL Server are used together or 'stacked' in laaS

Azure Hybrid Benefit for Windows Server

Convert or re-use Windows Server to pay reduced rates in Azure

License edition

Windows Server Datacenter 16 cores (with SA or subs)

Use right via the Azure Hybrid Benefit for Windows Re-use Windows Server on up to 2 VMs and up to 16 cores in Azure

Run virtual machines on-premises and in Azure

Windows Server Standard 16 cores (with SA or subs)

Convert Windows Server on up to 2 VMs and up to 16 cores in Azure

Run virtual machines either on-premises or in Azure

Azure Hybrid Benefit for SQL Server

Azure only benefit for customers with active SA or subscriptions on SQL cores



Significantly reduce the costs of running SQL laaS and PaaS in Azure



Pay only the 'base rate' in Azure on SQL laaS, and SQL PaaS



Available for SQL Server core licenses only



Customers can use their cores on-premises, OR as vCores in Azure





However, cores can be used on-premises and in Azure simultaneously for up to 180 days, to allow for migration

Save money when you reserve resources in advance

Select I- or 3-year terms, monthly payment options at no extra cost

Capacity prioritization Virtual Machines, Azure SQL, Azure Cosmos DB, Synapse, Storage and more



Significant cost savings up to 80% versus PAYG models



Budget predictability pay upfront or monthly



Flexibility to modify reservations and simplicity of purchase

Azure Reservations

Select 1- or 3-year terms

- -Capacity prioritization and not guaranteed
- -Virtual Machines, Storage, SQL & Cosmos DB, SQL DW, and more
- -Prepaid software plans for SUSE Linux Enterprise Server and Red Hat Enterprise Linux



Significant cost savings up to 80% versus PAYG rates

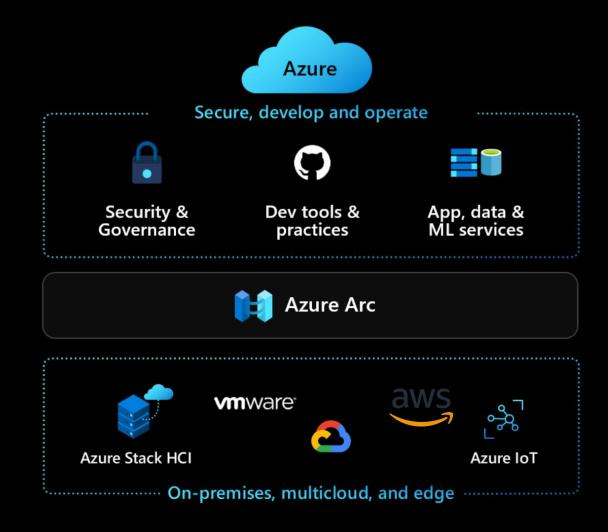


Budget predictability pay upfront or monthly



Flexibility to modify reservations and simplicity of purchase

Innovate anywhere with Azure Arc



Use cases for Hybrid and Multi-Cloud Security



Azure AD

Identity and access management



Azure Monitor

Cloud to edge observability



Microsoft Defender for Cloud

Cloud security posture management and protection



Microsoft Sentinel

Intelligent security analytics across the organization with a cloud-native SIEM



Azure Arc



Multi-cloud



Datacenter



Edge

Anticipate, detect and withstand security threats with complete visibility and resiliency

- Collect, analyze and act on telemetry data to gain end-to-end visibility across the stack
- Detect & diagnose issues through centralized insights, smart alerts and automated actions
- Single pane-of-glass visualization solution for hybrid and multi-cloud environments



63%

faster to resolve configuration errors thus preventing security vulnerablities¹

- Run a second instance when applications have a catastrophic failure
- Protect applications in Azure or a secondary datacenter
- Restore your data if it is corrupted, deleted or lost



80%

reduction in average data recovery time²

^{1.} IDC Business Value White Paper, sponsored by Microsoft Azure, The Business Value of Microsoft Azure Monitor, April 2023. The study compares Azure Monitor with an on-premises observability solution.

Financial Summary Modelling

This report highlights several options for reducing the overall cost of your estate on Azure

Pay As You Go

Accounts for the actual usage of your servers over the scan period as measured by the assessment tool. Azure target VMs are selected based on collected usage statistics.

Azure Reserved VM Instances (RIs)

An option to reserve capacity for 1 year or 3 years which in turn can lead to significant discounts.

https://azure.microsoft.com/en-us/pricing/reserved-vm-instances/

Azure Hybrid Benefit (AHB)

A pricing benefit for customers who have licences with Software Assurance. Eligible customers can save up to 40% on Azure Virtual Machines and up to 55% on Azure SQL Database and SQL Server on Azure Virtual Machines.

https://azure.microsoft.com/en-us/pricing/hybrid-benefit/

Cost savings vs. pay as-you-go

