



Migrating VMware to Microsoft Azure

Total cost of ownership guidance

November 2017



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Introduction

To meet modern business requirements and enable innovation, organizations—including organizations that run workloads on VMware software-defined datacenters—are under pressure to extend traditional on-premises datacenters to the hybrid cloud. These organizations need a roadmap to the cloud so they can adopt innovative cloud technologies to drive their business agenda forward, modernize their workloads, and cut capital expenditures.

Modernizing workloads doesn't just mean extending your datacenter to the cloud—it means transforming to be future-ready while lowering the total cost of ownership (TCO) of your infrastructure.

Azure—a simpler approach to migration

Microsoft Azure provides a comprehensive set of tools and offers to ease migration to the cloud and reduce risk. With the simple discover, migrate, and optimize framework, you get a proven approach to Azure migration, which provides a clear picture of dependencies, resource requirements, and cost.

- **Discover.** Automated workload discovery and TCO/ROI analysis.
- **Migrate.** Effortless workload and data migration, including containerization.
- **Optimize.** Continuous cost management and rightsizing even after migration.

Cloud migration enables significant savings

Moving to the cloud gives you greater control and agility over your resources, enabling your organization to respond faster to market and customer needs. Because many on-premises resources are significantly under-utilized, they tend to be over-provisioned for CPU and memory allocation. When these are migrated to Azure, intelligent right-sizing can occur to measure actual resource utilization and then match the best VM series. This ensures the optimal outcome for your VMs, matching economics with important performance and SLA requirements.

Azure—through services like Azure Migrate, Azure Database Migration Service, and Azure Cost Management—provides a painless approach to moving VMware VMs to Azure. This approach, encompassing discovery, migration, and optimization, lets you increase agility while reaping the cost benefits of cloud computing.

- Azure Migrate enables easy discovery for all on-premises virtual machines (including Windows and Linux), to help you better understand app interdependencies, identify migration risks, and intelligently right-size for Azure, based on utilization.
- Azure Site Recovery and Azure Database Migration Service both enable migration to Azure without impact on critical systems. Azure Site Recovery enables seamless replication and isolated testing to ensure that your workloads and applications work as expected.
- Azure Cost Management (by Cloudyn) continues to assist you once you've migrated, providing built-in optimization and VM efficiency reporting. Optimize how you use your assets by further right-sizing your virtual machines post migration and eliminating idle resources.

Azure customers can continue to access tools to modernize workloads through PaaS solutions like containers, microservices, serverless computing, and more.

Azure Hybrid Benefit and Azure Reserved Virtual Machine Instances—driving further savings

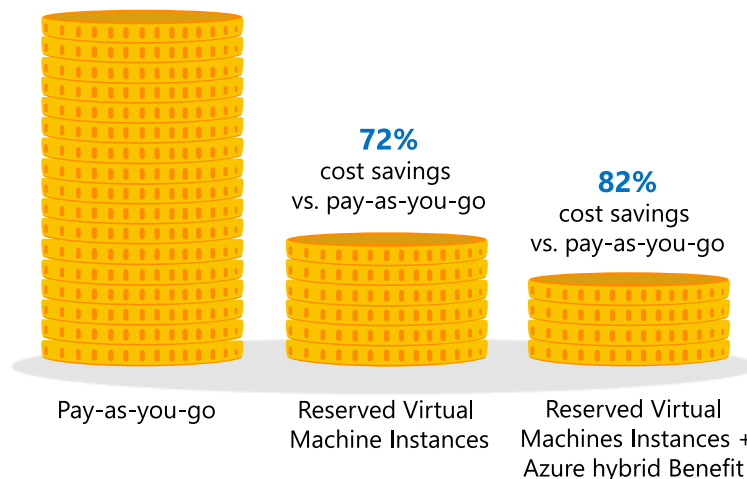
While pay-as-you-go (PAYG) provides convenience, new Azure offers like Azure Hybrid Benefit and Azure Reserved Virtual Machine Instances may further reduce TCO for select workloads.

Azure Hybrid Benefit enables customers with Software Assurance to run Windows Server VMs on Azure at a lower rate. With Azure Hybrid Benefit, you get more value from your Windows Server licenses and save up to 40 percent on Windows Server VMs, as compared to PAYG. Learn more about the Azure Hybrid Benefit [here](#). If you're a SQL Server customer with Software Assurance, you'll also be able to use your existing SQL Server licenses toward SQL Database managed instances and pay only for the underlying compute and storage.

You can also take advantage of Azure Reserved Virtual Machine Instances to further reduce costs—up to 72 percent on pay-as-you-go prices—with one-year or three-year terms on both Windows and Linux virtual machines. What's more, you can now improve budgeting and forecasting with a single up-front payment, easily calculating your compute needs and investments. Learn more about Azure Reserved Virtual Machine Instances [here](#).

When you combine the cost savings inherent to Azure Reserved Virtual Machine Instances with the added value of the Azure Hybrid Benefit, Azure is the most cost-effective public cloud on which to run your Windows Server workloads. You can save up to 82 percent over PAYG rates on Azure and up to 67%* compared to AWS RIs for Windows VMs.

Save up to **82%** with Reserved Instances and Azure Hybrid Benefit



*Based on comparing 3-year Azure D8_v3 RI prices with Azure Hybrid Benefit in US West 2 to AWS m4.2xlarge 3-year Standard RIs in US West (Oregon). Actual savings may vary based on region, instance type, usage or software license costs.

Azure vs VMware on-premises TCO —a customer example

Because of the significant cost of maintaining a full VMware vSphere deployment supporting hundreds of virtual machines, many organizations are now looking at ways to reduce this burden

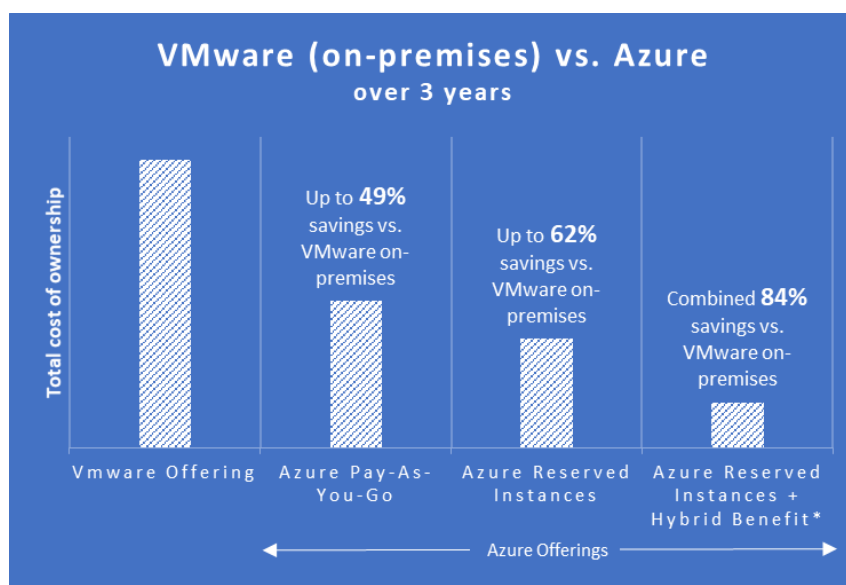
while still providing mission-critical services. For example, for a typical customer running 500 Windows VMs on VMware vSphere on-premises, TCO can be over \$5.5M over a 3-year period. Supporting this many systems incurs vast expenses across hardware, physical datacenters, and IT labor. By simply migrating to Azure, you can take advantage of immediate savings in hardware and datacenter costs and benefit from optimized IT management and access to first-class single-vendor support.

TCO of On-Premises VMware vs. Azure over 3 years

VMWare Offering		Azure Offering			
Category	VMware On-Premises	Category	Azure Pay-As-You-Go	Reserved Instances	Reserved Instances + Hybrid Benefit
Windows Server Licenses	\$ 1,586,070	Windows Server VMs	\$ 2,584,655	\$ 1,848,096	\$ 616,032
VMWare Licenses and Support	\$ 574,160	VMWare Licenses and Support	-	-	-
Hardware	\$ 1,754,104	Hardware	-	-	-
Datacenter	\$ 1,006,561	Datacenter	-	-	-
Storage	\$ 266,240	Storage	\$ 92,160	\$ 92,160	\$ 92,160
IT labor	\$ 378,605	IT labor	\$ 162,465	\$ 162,465	\$ 162,465
Total cost	\$ 5,565,740	Total cost	\$ 2,839,280	\$ 2,102,721	\$ 870,657

*Based on comparing TCO of 3-year Azure F2 Standard RI prices with Azure Hybrid Benefit in US East on-premises datacenter with VMware vSphere Enterprise Plus. VMs are running Windows VMs at 100% utilization. Costs estimated using the Azure [TCO calculator](#). Actual savings may vary based on region, instance type, usage or software license costs.

Migrating to Azure, or building new deployments in Azure, enables you to take advantage of offers like Azure Reserved Virtual Machine Instances and Hybrid Benefit. If the VMware customer in this example used Azure Hybrid Benefit for Windows Server and Azure Reserved Virtual Machine Instances, the organization could save up to 84 percent over the total cost of running on-premises.



*Based on comparing TCO of 3-year Azure F2 Standard RI prices with Azure Hybrid Benefit in US East on-premises datacenter with VMware vSphere Enterprise Plus. VMs are running Windows VMs at 100% utilization. Costs estimated using the Azure [TCO calculator](#). Actual savings may vary based on region, instance type, usage or software license costs.

While the example above uses Windows workloads, customers will realize lesser, but still significant savings on Linux workloads using Azure reserved instances. In addition, customers can achieve further efficiencies by using approaches such as:

- Re-factoring their apps to cloud-native services such as containers
- Fine-tuning VM use – for example, suspending VM's in low periods of usage such as evenings and weekends) as well as scaling up or down while paying only for usage.

Summary

Azure enables VMware customers to:

- **Unlock new application innovation with new hybrid scenarios.** Harness the power of truly-consistent hybrid cloud to enable new scenarios. Build and deploy innovative applications by using modern application architectures, the best of edge and cloud computing working together, and unified DevOps capabilities.
- **Drive significant TCO efficiencies by moving VMware workloads to Azure.** Gain from economies of scale, use flexible compute options in Azure to right-size and optimize resource utilization, and save even more with offers like [Azure Reserved VM Instances](#) and [Azure Hybrid Benefit](#) (for Windows Server workloads). In addition, take advantage of first-class first-party support for your Microsoft workloads.
- **Migrate to Azure in a low-friction manner.** Migrate to Azure in a way that works for your business without affecting day-to-day operations, and discover how to optimize your migration to assure long-term results.
- and DevOps capabilities.

Learn more on the [Azure Migration Center](#).

Methodology for TCO

This TCO analysis was created using the following assumptions and data:

- 500 virtual machines were configured running Windows Server, with a reference VM of 2 vCPUs and 4 GB of RAM and 100 TB of storage.
- Windows Server licenses were part of an active Software Assurance agreement, enabling the use of Azure Hybrid Benefit for all Windows Server–based virtual machines on Azure. Customers were assumed to have sufficient on-premises Windows Server licenses to cover their Azure AHUB requirement. Please see the [Azure Hybrid Benefit](#) terms to understand how the benefit may be applied for your specific situation.
- Simple virtual machine series matching was performed, with no VM consolidation assumptions. Azure F2 Standard VMs (2 cores, 4 GB RAM) were used for the TCO comparison. While the Azure TCO calculator assumes a 60% VM consolidation (40% VM utilization), the calculations in this paper assumed 100% VM utilization and 0% consolidation.
- All VMWare offering costs (licensing, hardware, datacenter) estimated using the [Azure TCO](#) calculator.
- Prices used in the calculator are list prices as of November 2017
- All calculations are in USD, over a three-year timeframe.
- Calculations exclude bandwidth and IP address charges.

The TCO output is only an estimate of on-premises costs and equivalent Microsoft Azure service prices. Final Azure costs will be based on your actual usage of Azure services and may be different from the TCO estimates. This document is for information purposes only. MICROSOFT MAKES NO WARRANTIES, EXPRESS OR IMPLIED, IN THIS SUMMARY.