executech

Azure Pricing

Breaking Down Compute, Networking, and Storage Costs

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CHAPTER 1

Azure Pricing Explained

It's the age of cloud. Every day more companies make the switch to cloud technology, shifting their data, systems, and networks from on-premises infrastructure to the provider of their choice. There are many benefits of moving to the cloud, such as increased scalability, collaboration, and flexibility. But, one of the most significant benefits touted by cloud providers is the cost-effectiveness.

And although it seems everyone is shouting from the rooftops that the cloud costs less than on-site hardware (we'll admit even we've done this), it's often difficult to find any actual price breakdowns or comparisons.

This lack of transparency is because cloud pricing is extremely complex. There are so many factors that can increase or decrease the price depending on what your organization needs. But, today, we are going to attempt to pull back the curtain on cloud pricing for one of the largest cloud providers - and the one we work with - Microsoft Azure.

ABOUT MICROSOFT AZURE

Microsoft stepped into the cloud game in 2010, introducing Microsoft Azure. Azure competes with other large public cloud providers like AWS and Google Cloud Platform. The factors that set Azure apart are hybrid model options, easy integration with Microsoft systems, and various included features and services.

If you're considering moving to Microsoft Azure, one of the biggest questions you probably have is, "How much is this going to cost?" This can be difficult to gauge because it's entirely dependent on your wants and needs.

Microsoft does offer a helpful pricing calculator for Azure. It's a great tool that businesses can use to estimate their monthly Azure bill. But although the calculator is intuitive, it still can get confusing if you aren't sure what exactly your organization needs.

So, to help you out, we're going to run through some of the factors that affect the price of Azure.

FACTORS THAT AFFECT THE PRICE OF MICROSOFT AZURE

From our experience, the three categories that make up a significant chunk of your Azure spend are Compute, Storage, and Networking. We are going to go through some key features in these three categories to help you determine the base of your spend.

You will most likely be adding other services on top of these three depending on what your organization needs. For example, do you need the ability to create apps easily? Or do you need to manage large SQL databases? There are services in Azure that will help you do these things.

One service on top of your Compute, Storage, and Networking needs we always recommend companies add is Azure's Security Center. With the standard tier of Security Center, Microsoft will automatically start protecting all of your resources unless you decide to opt-out. In this digital era, you can never be too careful - cybersecurity should always be at the top of your mind.

The list of additional features offered by Azure is long, including all of the following categories:

- Web
- Mobile
- Containers
- Databases
- Analytics
- AI + Machine Learning
- Internet of Things
- Integration
- Identity
- Security
- Developer Tools
- DevOps
- Management & Governance
- Media
- Migration
- Mixed Reality
- Blockchain

However, to go through every feature, or even every category, would take days. For now, we are going to start with those top three categories we mentioned- Compute, Networking, and Storage.

CHAPTER 2

Compute

In the Compute category of Microsoft Azure, you can choose from several different products. Each tool will provide you access to cloud compute capacity while using the familiar pay-as-you-go structure.

The most common element used by organizations in the Compute category is most likely Virtual Machines (VMs). So, let's start there!

VIRTUAL MACHINES

With Azure's VM tool, you can provision Linux and Windows virtual machines with the configurations of your choice. When picking your specifications, you will choose your region, operating system, type, tier, and instance, along with the number of VMs and number of transaction units you want. Each factor will slightly affect the price, but the most prominent attribute is probably the instance you choose.

Azure offers ten different series of VMs, ranging from A-H and L and N. And in each series, you can choose from several different options. Each option varies according to how many vCPUs and cores each version has, along with how much RAM and temporary storage is available. And this can result in a broad range of prices.

For example, the A0 model only includes 1 core, 0.75 GB of RAM, and 20 GB of temporary storage. This model is offered at $0.02 per hour. But if you choose the Gs5 option, you'll get 32 cores, 448 GB of RAM, and 896 GB of temporary storage. A lot more, but at a much bigger price tag of $9.65 per hour.

Many companies' needs will fall between these two ranges, and they might have several different types of VMs for various purposes. It's essential to understand what the needs of your company are so that you can choose the right option that balances performance with cost. You can learn more about each series here, and identify which one is right for your organization (the D-Series is a general-purpose option that is a popular choice).

Remember that included in the price for a Windows operating system is the cost of the license. If you are looking to go the hybrid model route, you can save some money by utilizing licenses you already own.

Two other factors that will nominally increase the cost of your VM are the storage you choose and the number of storage transactions. You can set up a Managed OS Disk(s) with different levels of available storage- your cost increasing as your storage level increases. You can then adjust your storage transactions, with 100 transaction units (10,000 transactions) equaling $0.05 ($0.0005 per unit).

Reserved Virtual Machine Instances

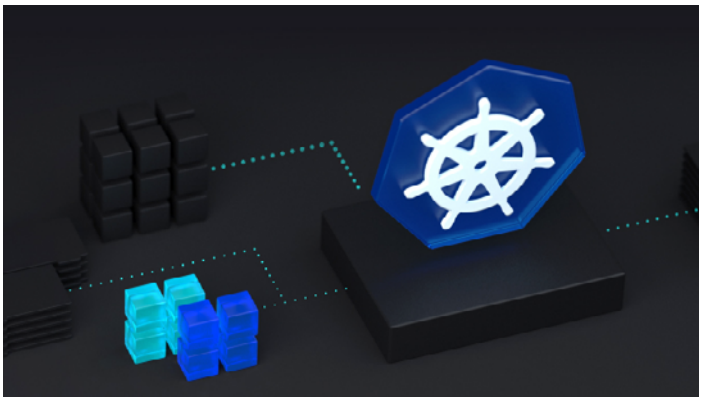
Something else to consider that may affect how much you pay for your VMs is Microsoft's option for Reserved Instances. The typical payment structure for cloud services is pay-as-you-go. But with Azure VMs, you can also choose to purchase in advance for one or three years. By committing to one or three-year terms, you can receive up to 72 percent price savings. And, you can choose to pay a single upfront payment, or make monthly installments at no additional cost. Both Microsoft and Microsoft partners can offer you these payment options for Reserved Instances.

Microsoft recommends using an Azure Reserved Virtual Machine Instance for:

- Applications with steady-state usage
- Customers who want budget predictability
- Customers who can commit to using a virtual machine (VM) over a one-year or three-year term to reduce computing costs

In the end, the cost for one VM can be as low as around $15. But, for a standard small to mid-sized business that is using the pay-as-you-go model and purchasing new licenses, the cost for one VM will probably be closer to $100-$300.

AZURE KUBERNETES SERVICE (AKS)



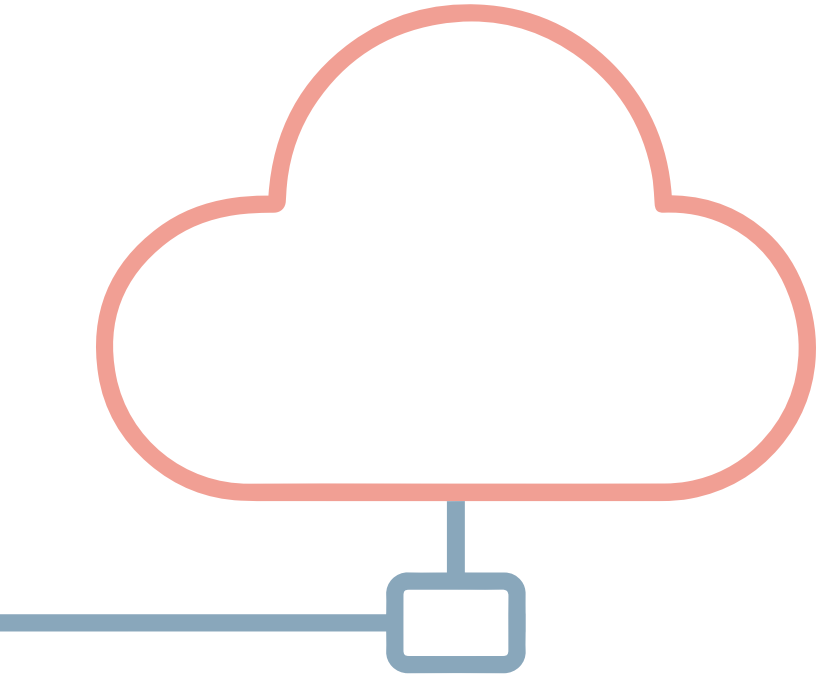
Next up in Compute is containers. If you're looking to use containers, you will most likely be using Azure Kubernetes Service (AKS). AKS is a free container service where you only pay for the associated VM storage and networking resources consumed by your Kubernetes cluster. Look for your price to increase with the more resources your containers use up.

For one D2 series machine, the cost is about $0.15 per hour. But this can change based on what series you choose and other factors.

AZURE FUNCTIONS

If you want to go the serverless route, you can choose Azure Functions for your Compute needs. With Azure Functions, you are billed based on the number of executions requested each month and the time consumed.

Your first million executions are free; after that, you are billed $0.20 per million executions. As for the execution time, it is measured in gigabyte seconds and comes down to $0.000016/GB-s. The minimum memory size Azure allows is 128 MB, so to calculate your monthly cost, you will need to determine the memory size starting from 128 MB, the execution time in seconds, and the number of executions you will need per month. Then, add your total executions cost (billed at the $0.20 rate per million executions).



CHAPTER 3

Networking

The next category that takes up a significant portion of your Azure budget is Networking. No matter what Compute services you are using, you will have Networking (and Storage) costs associated with those services. Let's go into a few of the main Networking services used by businesses. The first service we'll look into is Virtual Network.

VIRTUAL NETWORK

With Azure Virtual Network, you are creating a private network in the cloud. The tool gives you access to 50 initial virtual networks across all regions free of charge. However, many services that run inside your virtual network are charged. Public IP addresses and reserved IP addresses used on services inside a virtual network carry a nominal charge - from $0.0036/hour to $.008/hour depending on the type of IP. Other Azure services used inside of a virtual network are also charged, like Application Gateway and VPN Gateway (more on that later).

If you won't be using those additional services, the main cost you will need to configure is your virtual network peering (VNET Peering). VNET Peering allows you to link virtual networks, creating one extensive network to route traffic using private IP addresses. This traffic includes both ingress (inbound) and egress (outbound) traffic. And if your transferring data across regions, this will be more expensive too.

It's important to remember to include these data traffic costs in your initial pricing estimation, or you will end up with some surprises on your monthly Azure bill. Here's how the data traffic charges breakdown.

VNET Peering Within the Same Region

Inbound Data Transfer	**$0.01 per GB**
Outbound Data Transfer	**$0.01 per GB**

Global VNET Peering

	Zone 1	Zone 2	Zone 3	US Gov
Inbound Data Transfer	$0.035 per GB	$0.09 per GB	$0.016 per GB	$0.044 per GB
Outbound Data Transfer	$0.035 per GB	$0.009 per GB	$0.016 per GB	$0.044 per GB

VPN GATEWAY

If you are using a VPN gateway to connect to on-premises and virtual networks in Azure, you will want to add the additional cost of Azure's VPN Gateway service into your Networking costs. The cost of VPN Gateway is based on the amount of time that the gateway is available.

There are several different VPN gateways types you can choose from- each one varying in bandwidth, S2S tunnels, P2S tunnels, and of course, price. For a basic VPN, it's $0.04 per hour. Check out the chart below to compare the different VPN options and costs.

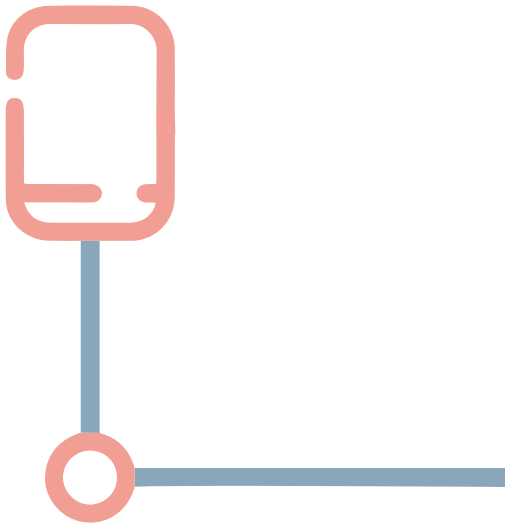
VPN Gateway Type	Price	Bandwidth	S2S Tunnels	P2S Tunnels
Basic	$0.04/hour	100 Mbps	Max 10 1010: included	Max 125 1-128: included
VpnGw1	$0.19/hour	650 Mbps	Max 30 1010: included 11-30: $0.015/hour per tunnel	Max 250 1-128: included 129-250: $0.01/hour per connection
VpnGw2	$0.49/hour	1 Gbps	Max 30 1010: included 11-30: $0.015/hour per tunnel	Max 500 1-128: included 129-500: $0.01/hour per connection
VpnGw3	$1.25/hour	1.25 Gbps	Max 30 1010: included 11-30: $0.015/hour per tunnel	Max 1000 1-128: included 129-1000: $0.01/hour per connection
VpnGw4	$2.10/hour	5 Gbps	Max 30 1010: included 11-30: $0.015/hour per tunnel	Max 5000 1-128: included 129-5000: $0.01/hour per connection
VpnGw5	$3.65/hour	10 Gbps	Max 30 1010: included 11-30: $0.015/hour per tunnel	Max 10,000 1-128: included 129-10,000: $0.01/hour per connection

BANDWIDTH

Another Networking cost you will probably incur with Microsoft Azure is Bandwidth. With Azure, any inbound data transfers are free. The same is not true, however, for outbound data transfers. Any data going out of Azure data centers will have costs associated. The first 5 GM per month are free, but any outbound data transfers exceeding this have incremental costs. The table below indicates each different tier of pricing.

Many organizations forget to include this Bandwidth cost into their overall monthly estimation, but these nominal costs can give you a more accurate picture of your monthly bill.

Outbound Data Transfers	Zone 1
First 5 GB/Month	Free
5 GB-10 TB/Month	$0.087 per GB
5 GB-10 TB/Month	$0.083 per GB
5 GB-10 TB/Month	$0.07 per GB
5 GB-10 TB/Month	$0.05 per GB
5 GB-10 TB/Month	Contact Microsoft



CHAPTER 4

Storage

Moving on to the last category of our three big Azure spenders, let's take a look at the Storage costs businesses might incur using Azure's Storage Accounts feature.

STORAGE ACCOUNTS

For their customers, Azure offers Storage Accounts, described as "durable, highly available, and massively scalable cloud storage." There are other options organizations can choose for their storage needs, but we're going to stick to Storage Accounts because it's the most popular option.

In Azure's Storage Accounts, you can choose which type of storage you would like. There are options such as block blob, file, table, queue, data lake, and disk storage. The cost of your storage will depend on what type of storage you include along with a few other factors such as:

- The volume of data stored per month
- The redundancy option you choose- locally redundant storage is the least expensive and the most popular
- The quantity and types of operations performed
- The number of storage transactions
- The type of storage based on hot, cool, or archive
- The number of disks- only applicable to disk storage

All of these small details will help you better understand what your eventual cost will be for Storage.

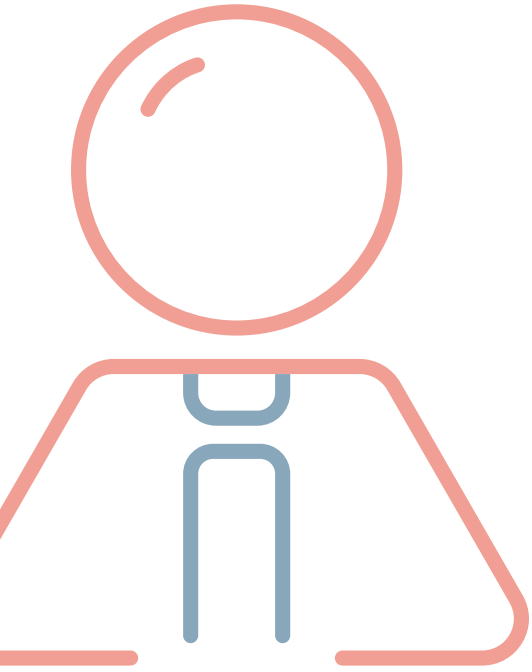
CHAPTER 5

Azure Pricing In The End

Like we said above, these three categories are going to be where the majority of your monthly budget goes, but not the entirety. There are so many other services that your organization may want to utilize with Azure. That's part of the beauty of cloud computing - you get access to enterprise-level tools without spending a fortune.

You can use Microsoft's Azure pricing calculator to help nail down your price estimate, but remember, it's only an estimate. As you start using Azure, you may find new services that would be valuable to your organization and worth the extra cost.

As for the final cost of moving to Azure, some companies may pay less than $100 per month, whereas others will pay upwards of $10,000. It really just depends. If you're looking to move to Azure, we offer free cloud migration assessments. One of our experts will look over your business systems, networks, and needs and help you determine what type of budget you are looking at. Click here to sign up for a free assessment today!



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