

#### IN THIS CHAPTER

- » Introducing the cloud
- » Differentiating among the cloud computing models
- » Introducing the major Microsoft Azure services
- » Starting your Azure subscription
- » Learning how Azure deploys product updates

## Chapter 1

# Introducing Microsoft Azure

Welcome to cloud computing, and welcome to Microsoft Azure! I'm not sure what occurred in your professional or personal life to lead you to read this book, but I'm glad you're here with me. In this chapter, I cover ground-level terminology, beginning with precisely what buzzwords *the cloud* and *cloud computing* mean.

By the end of this chapter, you'll have your very own Azure subscription running at the free tier. Are you excited? I hope so!

## What Is Cloud Computing?

Ask one hundred people to define cloud computing and I am confident the responses may make you laugh, cry, or think a bit. You see, many people at first think cloud technology is anything but shared compute capacity and resources using a common interface.

Most people use cloud services whether they're aware of doing so or not. Think of your smartphone. Where do you think your photos, media, files, and settings are being backed up? What is behind your ability to retrieve your content wherever you are in the world, provided you have an internet connection?

Do you use a web-hosting company to host your personal website? Where is the physical server that houses your website? How about accessing that digital video service or music heard over the Internet?

These scenarios are examples of cloud computing, in which you simply rent resources on another organization's infrastructure.

The resources you rent consist of the following hardware and software components:

- » **Compute:** *Compute* is raw computing power — the central processing unit (CPU) and random-access memory (RAM) that form the platform for applications and data.
- » **Storage:** *Persistent storage* means you have a place on Microsoft's servers to store your files and other data. When you save a file to a cloud-hosted storage account, the file should remain in place forever, or at least until you move or delete it.
- » **Network:** Azure provides a software-defined network infrastructure on which you can host your virtual machines and other Azure services. Because the cloud almost always involves an internet connection, *online* and *cloud* are essentially synonymous. I say almost always because a business can create a private cloud that shares most attributes of a public cloud but is local to its private network environment. Microsoft also sells a private, portable version of Azure called Azure Stack.
- » **Analytics:** You'll never get to touch the cloud provider's compute, storage, or network resources. The closest you'll get is viewing its telemetry data in your web browser or from a management app. Thus, Azure and other public cloud providers give you tools to see precisely how much of their services you consume each minute. Cloud analytics also gives you valuable troubleshooting and performance-tuning advice for your cloud infrastructure.

Businesses are interested in using the cloud because it allows them to offload a lot of what's scary, annoying, and/or expensive about maintaining an on-premises data center, such as the following:

- » **Power:** It's potentially very expensive to provide electricity to all the equipment necessary to host your applications and services. And what happens if your on-campus data center experiences a utilities outage? When you move your data into the cloud, your provider takes on the risk of these issues.

- » **Capital expenditure:** When you run an on-premises data center, you either rent your physical servers or purchase them outright. As such, you're responsible for all hardware upgrades and repairs. All that hardware can be expensive, too.
- » **Security and configuration overhead:** If you can't afford local systems administrators, or if your existing resources are stretched thin, it can be too easy to leave a vulnerability in place on an on-premises server that can be compromised by bad actors. By contrast, when you use a public cloud service like Azure, you rely upon Microsoft's human and machine learning-based threat intelligence to help keep your applications, services, and data safe.

Do you see the trend here? Cloud computing is popular because it's convenient for the end user and cheaper for the enterprise business. Before I go any further, however, I want to codify what I mean by *cloud computing*.

## NIST definition

The National Institute of Standards and Technology (NIST, pronounced *nihst*), a research laboratory in the United States, developed the standard definition of cloud computing. According to NIST, the five essential characteristics of cloud computing are

- » **On-demand self-service:** Cloud customers can provision services at any time and are charged only for the resources they consume.
- » **Broad network access:** Cloud services are ordinarily offered globally, and the customer is encouraged to place services as geographically near its consumers as possible.
- » **Resource pooling:** Cloud services are *multitenant*, which means that different customers' environments are isolated. You should never, ever see another Azure customer's data, and vice versa.
- » **Rapid elasticity:** A cloud services customer can accommodate variable traffic patterns by configuring their services to scale accordingly. For instance, you can configure Azure to automatically duplicate your web servers to accommodate traffic spikes and then remove servers automatically when they are no longer needed.
- » **Measured service:** The cloud offers services on demand, which are metered; once again, customers pay only provisioned resources.



If you want to read the source material, check NIST Special Publication 800-145, *The NIST Definition of Cloud Computing*, which you can download from <https://csrc.nist.gov/publications/detail/sp/800-145/final>.

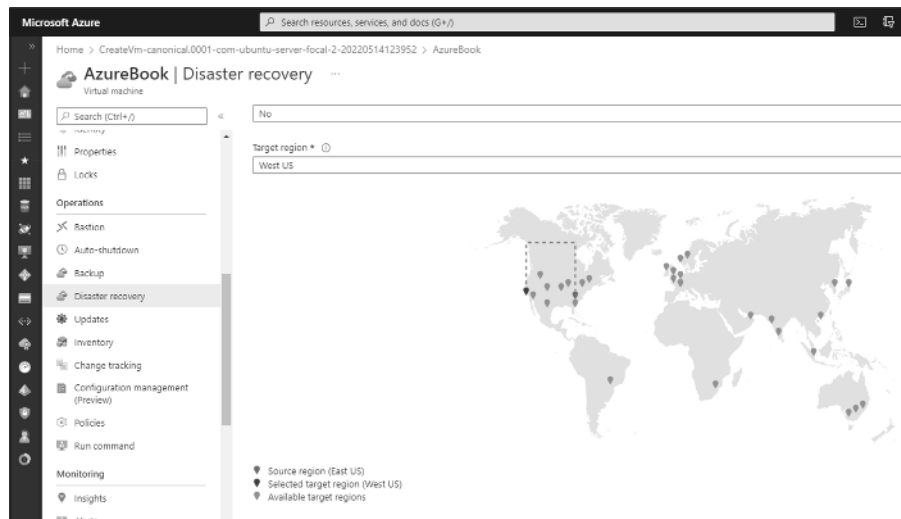
# Cloud computing benefits

As I mention earlier in this chapter, cloud computing is attractive to both businesses and consumers because of its convenience, high availability, and potential cost savings. Whereas organizations had to once buy expensive hardware with limited capacity, also known as a capital expenditure (CapEx), Microsoft Azure uses a consumption-based spending model that's classified as an operational expenditure (OpEx).

So why is OpEx so attractive? The fairly predictable, recurring cost model of OpEx is appealing to cost-conscious organizations. (And which organization isn't cost-conscious nowadays?)

The cloud's rapid scalability and elasticity are capabilities that only the largest companies in the world can afford to manage on their own. Microsoft Azure enables smaller companies and individuals to replicate an SQL database between geographical regions with a couple of mouse clicks. (See Figure 1-1.) Making high availability this accessible to customers is an enormous benefit of cloud computing.

**FIGURE 1-1:** In Azure, you can ensure that a virtual machine includes disaster recovery in one or several locations around the world with only a couple of clicks.



## Economies of scale

The term *economies of scale* means that a business that purchases its internal resources at a larger volume can pass along savings to its customers.



## OTHER CLOUD PROVIDERS

For completeness, I want you to know that although this book's focus is Microsoft Azure, other major public cloud providers also take advantage of economies of scale. These public cloud providers include, but aren't limited to, the following:

- Alibaba Cloud
- Amazon Web Services (AWS)
- Google Cloud Platform (GCP)
- IBM Cloud
- Oracle Cloud
- Salesforce

At this writing, Microsoft has its Azure product portfolio spread across 78 regions worldwide. Within each region are two or more physical data centers. Each data center has untold numbers of server racks, blade servers, storage arrays, routers, switches, and so forth — an immense physical capacity. To further elaborate, while there may be 78 regions worldwide, several regions such as the United States might have many physical data centers. Because there are over 200 physical data centers with compute capacity globally, businesses can be assured their data has a home. I think we can reasonably assume that Microsoft gets a discount from the original equipment manufacturers (OEMs) because it purchases in such huge volume. Microsoft's purchase discounts means that the company in turn extends the savings to its Azure customers. It's as simple as that.

## Understanding Cloud Computing Models

The working definition of *cloud computing* is a subscription arrangement under which a person or business rents a cloud service provider's infrastructure and pays only for the services consumed. That definition is fine. In this section, however, I want to sharpen your general understanding of cloud computing by explaining the deployment and service delivery models.

### Deployment models

In Azure nomenclature, *deployment* refers to your provisioning resources in the Azure public cloud. You may be saying, "What's this? Why is Microsoft Azure

called a public cloud? I thought you said that different Azure customers can never see each other's resources by default." Hang on; hang on. Let me explain.

## Public cloud

Microsoft Azure is a public cloud because its global data center fabric is accessible by the general public. Microsoft takes Azure's multitenant nature very seriously; therefore, it adds layer after layer of physical and logical security to ensure that each customer's data is private. In fact, in many cases, even Microsoft doesn't have access to customers' data encryption keys!

Other major cloud service providers — including AWS and GCP (see the sidebar “Other cloud providers”) — are also considered to be public cloud platforms.



Microsoft has three additional, separate Azure clouds for exclusive governmental use and restricted country usage. You might read Microsoft literature that contains references to Azure Cloud, which refers to its public cloud, and to Azure Government Cloud, which refers to its sovereign, special-access clouds for the U.S. government. No member of the general public can access an Azure Government Cloud without being associated with a government body. The same is true with other country-specific sovereign clouds such as China and Germany. If you are interested in learning more about Azure Government Cloud, including a list of resellers, go to <https://docs.microsoft.com/azure/azure-government/documentation-government-csp-list>.

## Private cloud

As I mention earlier, very, very few businesses have enough financial, capital, and human resources to host their own cloud environments. Typically only the largest enterprise organizations can afford having their own private cloud infrastructure with redundant data centers, storage, networking, and compute, but they may have security prohibitions against storing data in Microsoft's (or any other cloud provider's) physical data centers. Example organizations include financial institutions and healthcare organizations.

Microsoft has two private cloud options, and the one you choose is often dictated by your security needs. For those who no longer want to deal with a hardware footprint, a Microsoft Azure customer can create a dedicated hosting environment whereby computing resources are exclusively owned and managed by a single enterprise. Accessing such computing resources requires the use of a private internal network. Because you are asking Microsoft for dedicated capacity, the costs are understandably higher. That said, most organizations needing dedicated capacity utilize this private cloud offering. Microsoft sells a portable

version of the Azure cloud, Azure Stack, which consists of a server rack that a company leases or purchases from a Microsoft-affiliated hardware or service provider. The idea is that you can bring the hallmarks of cloud computing — on-demand self-service, resource pooling, elasticity, and so forth — to your local environment without involving either the Internet or an external cloud provider, unless you want to.

Your administrators and developers use the same Azure Resource Manager (ARM) application programming interface (API) to deploy resources locally to Azure Stack as they use to deploy to the Azure public cloud. This API makes it a snap to bring cloud-based services on premises, and vice versa. ARM is discussed in more detail in Chapter 2.

## Hybrid cloud

When you combine the best of on-premises and cloud environments, you have a hybrid cloud. If you are part of any enterprise organization, I can almost guarantee you that some facet of the business operates in a hybrid cloud. Why am I so certain of this? A hybrid cloud allows the business to salvage (read: continue to use) the on-premises infrastructure that it's already paid for while leveraging the hyper scale of the Azure public cloud. It often takes time to transition from a legacy system to a cloud infrastructure.

Take a look at Figure 1-2. In this topology, the on-premises network is extended to a virtual network running in Azure. You can do all sorts of nifty service management here, including

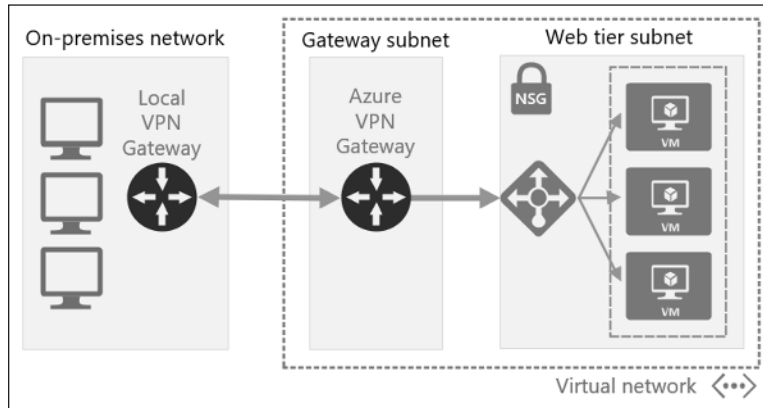
- » Joining the Azure virtual machines (VMs) to your local Active Directory domain.
- » Managing your on-premises servers by using Azure management tools.
- » Providing nearly instant failover disaster recovery (DR) by using Azure as a DR site. *Failover* refers to having a replicated backup of your production servers available somewhere else so that you can shift from your failed primary environment to your backup environment within minutes. Failover is critical for businesses that cannot afford the downtime involved in restoring backups from a backup archive.

By the end of this book, you'll understand how to deploy the environment you see in Figure 1-2, but here's an overview of what's going on:

- » On the left side is a local business network that connects to the Internet via a virtual private network (VPN) gateway.
- » On the right (Azure) side is a three-VM deployment in a virtual network. A site-to-site VPN connects the local environment to the virtual network.

Finally, an Azure load balancer spreads incoming traffic equally among the three identically configured web servers in the web tier subnet. As a result, the company's internal staff can access the Azure-based web application over a secure VPN tunnel and get a low-latency, reliable, always-on connection to boot.

**FIGURE 1-2:**  
A hybrid cloud in which the on-premises corporate network extends to Azure.



In this book, I refer to a local, physical network environment as an *on-premises environment*. In the wild, you'll see stray references to "on premise"—sadly, even in Microsoft's Azure documentation. Don't make this mistake. A *premise* is an idea; *premises* refers to a location.

## Service delivery models

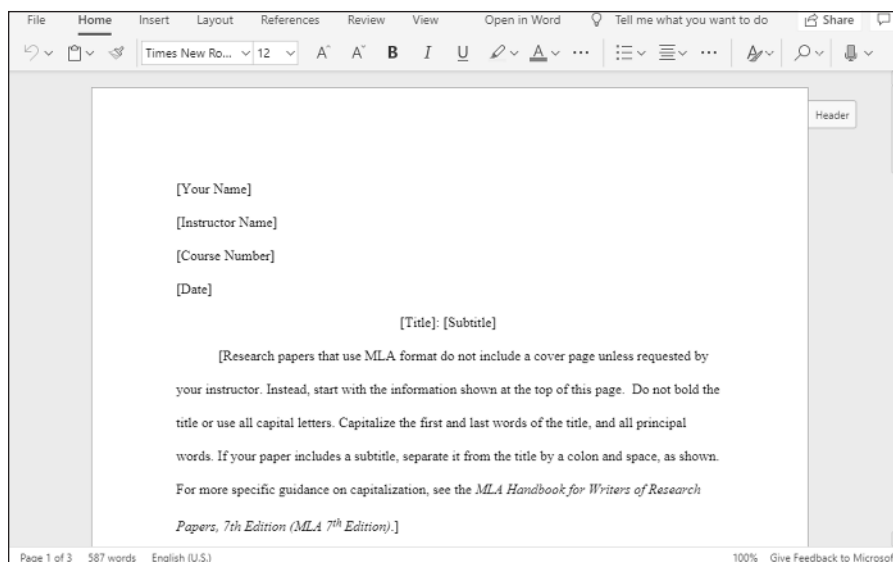
Organizations deploy applications in three primary ways: Software as a Service, Platform as a Service, and Infrastructure as a Service.

### Software as a Service (SaaS)

An SaaS application is a finished, customer-facing application that runs in the cloud. Microsoft Office 365 is a perfect example. As shown in Figure 1-3, you can use Word Online to create, edit, and share documents with only a web browser; an internet connection; and an Office 365 subscription, which you pay for each month on a subscription basis.

With SaaS applications, you have zero visibility into the back-end mechanics of the application. In the case of Word Online, you neither know nor care how often the back-end servers are backed up, where the Office 365 data centers are geographically located, and so forth. All you care about is whether you can get to your cloud-hosted documents and whether Word Online behaves as you expect.

**FIGURE 1-3:** Microsoft Word Online, part of the Microsoft Office 365 product family, is an example of an SaaS application.



## Platform as a Service (PaaS)

Consider a business that runs a three-tier on-premises web application with VMs. The organization wants to move this application workload to Azure to take advantage of the benefits of cloud computing. Because the organization has always done business by using VMs, it assumes that the workload must by definition run in VMs in Azure.

Not so fast. Suppose that the workload consisted of a Microsoft-stack application. Maybe the business should consider using PaaS products such as Azure App Service and Azure SQL Database to leverage autoscale and pushbutton georeplication.



REMEMBER

I discuss both Azure App Service and Azure SQL Database in Part 3. For now, understand that *georeplication* means placing synchronized copies of your service in other geographic regions for fault tolerance and placing those services closer to your users.

Or maybe the workload is an open-source project that uses PHP and MySQL. No problem. Azure App Service can handle that scenario. Microsoft also has a native hosted database platform for MySQL called (appropriately enough) Azure Database for MySQL.

With PaaS, Microsoft takes much more responsibility for the hosting environment. You're not 100 percent responsible for your VMs because PaaS products abstract all that plumbing and administrative overhead away from you. Sounds dreamy, right? The goal is to develop the best application without focusing on the system administration overhead.

The idea is that PaaS products free you to focus on your applications and, ultimately, on the people who use those applications. If PaaS has a trade-off, it's that relinquishing full-stack control is an adjustment for many old-salt systems and network administrators.

## Infrastructure as a Service (IaaS)

Most businesses that migrate their applications and services to Azure use the IaaS model at first, if only because they've delivered their services via VMs in the past — the old “if it ain't broke, don't fix it” approach.

In large part, IaaS is where the customer host one or more VMs in a cloud. The customers remain responsible for the full lifecycle of the VM, including

- » Configuration
- » Data protection
- » Performance tuning
- » Security

By hosting your VMs in Azure rather than in your on-premises environment, you save money because you don't have to provision the physical and logical resources locally. You also don't have to pay for the layers of geographic, physical, and logical redundancy included in Azure out of the box.

Thus, whereas SaaS is a service that's been fully abstracted in the cloud and the customer simply uses the application, IaaS offers a split between Microsoft's responsibility (providing the hosting platform) and the customer's responsibility (maintaining the VMs over their lifecycles).



TIP

To sum up the major distinction between IaaS and PaaS, IaaS gives you full control of the environment but you sacrifice scalability and agility. PaaS gives you full scalability and agility, but you sacrifice some control. To be sure, the cloud computing literature contains references to other cloud deployment models, such as community cloud. You'll also see references to additional delivery models, such as Storage as a Service (STaaS) and Identity as a Service (IDaaS). This chapter focuses on the most commonly used cloud deployment and delivery models.



WARNING

Cloud computing in general, and Microsoft Azure in particular, uses what's called the *shared responsibility model*. In this model, Microsoft's responsibility is providing the tools you need to make your cloud deployments successful — Microsoft's data centers, the server, storage and networking hardware, and so on. Your responsibility is to use those tools to secure, optimize, and protect your deployments. Microsoft isn't going to configure, back up, and secure your VMs automatically; those tasks are your responsibility.

## Introducing Microsoft Azure Services

The Microsoft Azure service catalog has hundreds of services. In fact, the number of services increase on a rolling basis, generally quarterly, and the list is constantly evolving. Microsoft maintains a services directory at <https://azure.microsoft.com/services>, but in this chapter, I give you a high-level tour of what Microsoft calls 80 percent services — the Azure products that 80 percent of the customer base uses.

### Azure history

In October 2008, Microsoft announced Windows Azure at its Professional Developers Conference. Many people feel that this product was a direct answer to Amazon, which had already begun unveiling AWS to the general public.

The first Azure-hosted service was SQL Azure Relational Database, announced in March 2009. Then came support for PaaS websites and IaaS virtual machines in June 2012. Figure 1-4 shows what the Windows Azure portal looked like during that time.

Satya Nadella became Microsoft's chief operating officer in February 2014. Satya had a vision of Microsoft expanding its formerly proprietary borders, so Windows Azure became Microsoft Azure, and the Azure platform began to embrace open-source technologies and companies that Microsoft formerly considered to be hostile competitors.

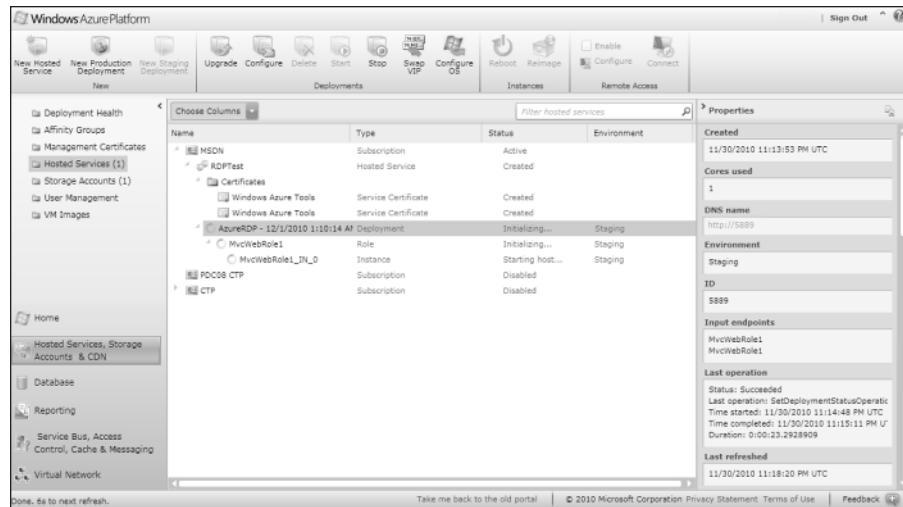


TIP

Microsoft Azure provides first-class support for Linux-based VMs and non-Microsoft web applications and services, which is a huge deal. Did you ever expect Microsoft to promote another vendor's products besides its own? I surely didn't once upon a time.

Finally, Microsoft introduced the RM deployment model at Microsoft Build 2014. The API behind Windows Azure was called Azure Service Management (ASM), and

it suffered from several design and architectural pain points. ASM made it super-difficult to organize deployment resources, for example, and it was impossible to scope administrative access granularly. So changes were bound to come from Azure’s Product Development team.



**FIGURE 1-4:**  
The Windows  
Azure portal,  
circa 2012.

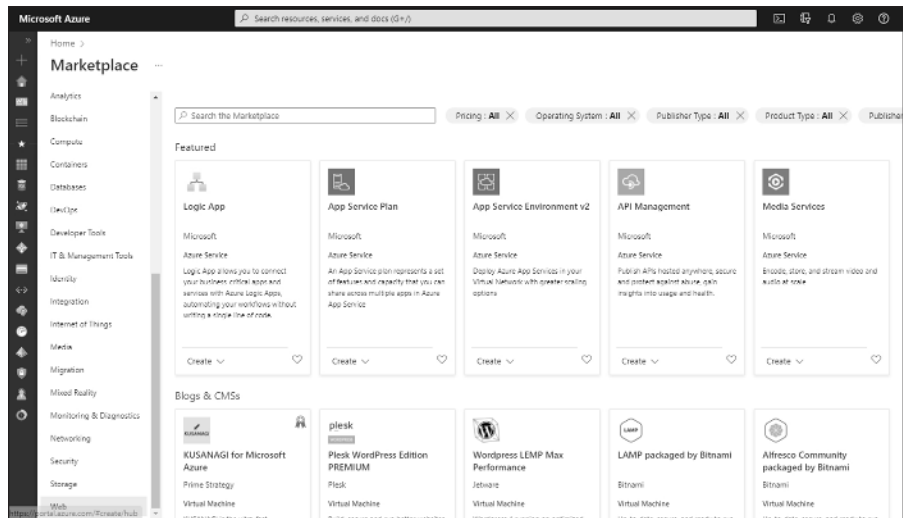
The ARM API is modeled closely on the AWS API (you know the old saying “Imitation is the sincerest form of flattery”), with core architectural concepts such as resource groups and role-based access controls that were direct analogs of features in the AWS cloud.

To support old customers with old deployments, ARM still offers limited support for ASM deployments in the Azure portal (see Chapter 2). These resources are tagged with the suffix Classic. This book is committed to the ARM API, however, and because few organizations still utilize these services, I won’t be addressing ASM IaaS products.

Azure Virtual Machines is Microsoft Azure’s meat and potatoes IaaS product. Specifically, the Azure Marketplace in the Azure portal lists thousands of preconfigured VM images from Microsoft, endorsed Linux distributions, and third-party solution providers. You can see the gallery of VM images in Figure 1-5.

You can migrate your on-premises physical and virtual machines to Azure, of course, as well as create custom VM images. I get to those topics in time; I promise.

**FIGURE 1-5:**  
The Azure  
Marketplace  
includes prebuilt  
Windows and  
Linux VM images.



## PaaS products

The Azure product portfolio is filled with powerful, cost-saving PaaS offerings. The following are some of the more high-profile Azure PaaS products:

- » **App Service:** Web Apps, Mobile Apps, API Apps, Logic Apps, and Function Apps
- » **Databases:** Cosmos DB, Azure SQL Database, Azure Database for MySQL, and Azure Cache for Redis
- » **Containers:** Azure Container Instances, Azure Container Registry, and Azure Kubernetes Service
- » **DevOps:** Azure DevOps and Azure DevTest Labs
- » **Internet of Things (IoT):** Azure IoT Hub, Azure IoT Edge, Azure Sphere, and Azure Digital Twins
- » **Machine learning:** Azure Machine Learning Service, Azure Bot Service, Cognitive Services, and Azure Search
- » **Identity:** Azure Active Directory (AD), Azure AD Business-to-Business, and Azure AD Business-to-Consumer
- » **Monitoring:** Application Insights, Azure Monitor, and Azure Log Analytics
- » **Migration:** Azure Site Recovery, Azure Cost Management, Azure Database Migration Service, and Azure Migrate



Microsoft Database solutions are not IaaS products; they are PaaS products. Why? Because Microsoft is handling the infrastructure, your focus can be on building innovative data-centric solutions.

## Starting Your First Azure Subscription

You can have a free, low-obligation trial of the Microsoft Azure platform with the Azure free account. *Low-obligation* means that you have to provide some personal details and a legitimate payment type. Microsoft uses your credit card information only for identity verification.

Many people have some trepidation about signing up for a public cloud service, even if it's promised to be free, for reasons such as these:

- » Does Microsoft begin to charge my credit card when the free trial period expires?
- » What if I accidentally leave an Azure service running? Will Microsoft ding my credit card for it?

I address these and other perfectly reasonable concerns, starting by explaining how Azure subscriptions work.

### Understanding subscription types

When you sign up for an Azure free account, you receive \$200 (or the equivalent in your local currency) to spend on any Azure service over a 30-day period. At the end of the 30 days, Microsoft does not convert your account to pay as you go (PAYG), the typical paid subscription offer.

Instead, any running services you have are stopped, and to restart your services, you need to convert your trial account manually to a PAYG account or other subscription offer in the Azure portal.

That said, the Azure free account provides 12 months of free availability to several IaaS and PaaS services, including the following:

- » 750 hours of B1ms General Purpose VMs running Windows Server or Linux
- » 5GB locally redundant hot-tier blob storage
- » 10 web, mobile, or API apps with 1GB storage

- » 25GB Cosmos DB instance
- » 15GB outbound data transfer from Azure



ON THE  
WEB

You can see a full list of Azure free tier services by looking up the Free services blade in the Azure portal or by visiting the Azure Free Account FAQ page at <https://azure.microsoft.com/free/free-account-faq>.



REMEMBER

A *blade* refers to a *pane* in the Azure portal. I use the word a lot in this book, and you'll see it all the time in the Azure documentation.

Additionally, several Azure services run on an always-free tier; you'll need to check <https://azure.microsoft.com> for specifics. Remember, however, that the free tier services aren't there for you to run production workloads. The tier exists to give you an opportunity to test Azure, to see whether it may fit your professional or personal needs.

Pay-As-You-Go (PAYG for short) is the most common standard subscription offer. Each month, you receive an invoice stating charges for the Azure resources you consume outside the Azure free-tier services.

The Enterprise Agreement (EA) is a special-purpose contract intended for larger businesses that are willing to commit to a one or three-year Azure subscription. Microsoft offers EA customers special discounts on Azure services and provides them a special management portal for analyzing spending, creating budgets, tracking use, and so forth. Discounts are often as high as 75 percent.



REMEMBER

Under EA, you pay your yearly fee up front and must use it or lose it. If you commit to \$12,000 for the first year and spend only \$9,000 by December 31, for example, you lose the remaining \$3,000. At the end of each contract year, however, you can adjust your fee for the upcoming year to better match your use and expectations. If you spend more than the \$12,000, Microsoft provides you with a discount similar to the upfront commitment under an EA exclusively.

Several other Azure subscription offers grant recurring monthly credits, including these:

- » **Visual Studio:** Given to those who have a Visual Studio Online subscription
- » **Action Pack:** Given to Microsoft Partner Network members
- » **Azure for Students:** A free credit (\$100) over 12 months for students with a verified academic email address
- » **Azure Pass:** Normally granted by Microsoft to Azure user groups and educational institutions and intended for free distribution

# Creating a free Azure account

To sign up for an Azure free account, you need an internet connection and any modern web browser.



I suggest that you perform this procedure (and all procedures in this book) on a desktop or laptop computer rather than a tablet or smartphone. Microsoft makes the Azure portal as mobile-friendly as possible but given the amount of typing you'll be doing, I recommend using a larger computer. Also, the mobile form facts are purpose-built for analytics rendering and basic administrative actions, not heavy coding or configuration.

Follow these steps to create your account:

**1. Browse to <https://azure.microsoft.com> and look for a free-account.**

Microsoft changes the Azure website regularly, so I hesitate to ask you to look in a particular spot for the link or a button. Somewhere on the page, you'll find the link or button to click.

**2. Sign in with your Microsoft account, or create a new one.**

The Azure free account is a Microsoft account, which powers all of the company's online services including Xbox and Office 365. If you already have a Microsoft account, however, you may want to create a new one exclusively for Azure use. I suggest this because you probably want to keep your Azure business completely isolated from, say, your Xbox leisure.

**3. In the About You section, provide your contact details, and click Next.**

Microsoft needs this information to set up your Azure subscription. It also uses your telephone number, email address, and payment details to verify your identity.

**4. In the Identity Verification by Card section of the next page, provide valid credit card details.**

Note that you can't use a prepaid credit card or gift card; the card has to be a legitimate credit or debit card with your name and billed to your address. Microsoft won't charge your account unless you upgrade to a paid subscription offer. That said, Microsoft may put a \$1 verification hold on your credit card account; this hold is lifted within three to five business days.

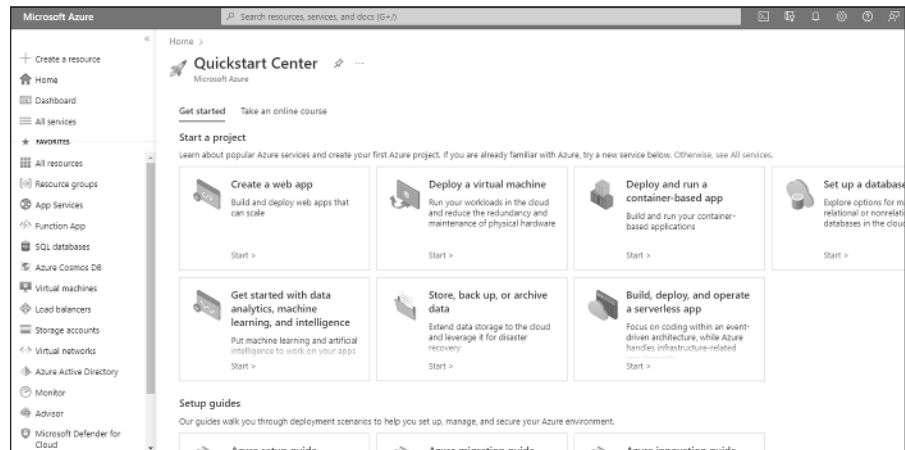
You can have only one Azure free account, and Microsoft performs the identity verification in part to prevent fraud.

5. In the Agreement section, confirm that you agree to the subscription agreement, offer details, and privacy statement; then click Sign Up.
6. On the You're Ready to Start with Azure page that appears, click Go to the Portal.

You're done and ready to rock. That was easy, wasn't it?

You should now see the Azure portal, along with a Welcome to Microsoft Azure message, as shown in Figure 1-6.

**FIGURE 1-6:**  
Signing in to the  
Azure portal for  
the first time.



I formally introduce the Azure portal in Chapter 2. For now, bookmark this address (<https://portal.azure.com>), because you'll be using it a lot from now on.

Click Start Tour to take a spin around the Azure portal. In the background of Figure 1-6, you see the Quickstart Center; you can return to this blade at any time by typing **quickstart center** in the search box on the top navigation bar. The Quickstart Center contains links to the documentation and to Microsoft Learn, Microsoft's free Azure education portal.

## Viewing subscription details

Follow these steps to view your Azure free-account subscription details:

1. Type subscriptions in the global search box in the Azure portal.

The Subscriptions option should appear almost instantly.



TIP

As you'll quickly learn in Azure, there are hundreds of products available. Frankly, it's tough to find some of them in one or two clicks. Using the global search box at the top of the Azure Portal can get you to your destination in a matter of minutes.

## 2. In the Subscriptions blade, select your Free Trial subscription.

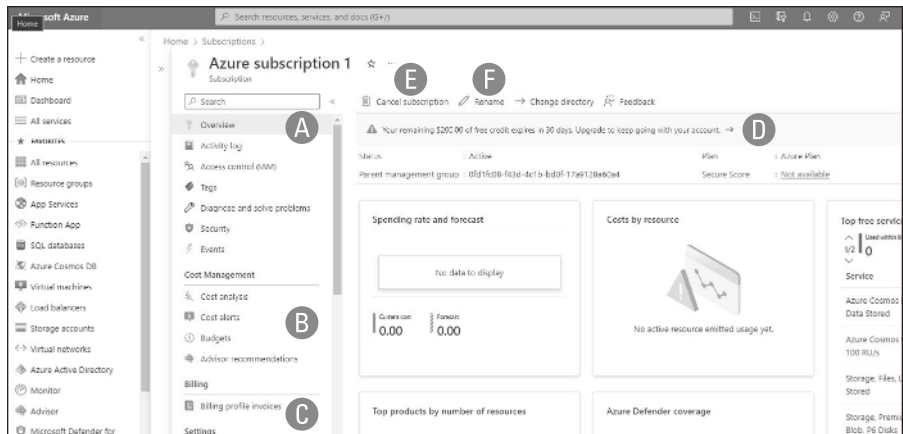
Before you click Free Trial, notice the information that the Subscriptions blade gives you: Your account role is Account Admin, and the status of the account is Active. So far, so good.

## 3. Examine the various subscription management tools.

Figure 1-7 shows the following tools:

- A: The Overview setting shows you the Essentials panel (shown on the right side of the figure), where you see details on your subscription status and metadata.

**FIGURE 1-7:**  
Viewing your  
Free Trial  
subscription in  
the Azure portal.



- B: The Cost Management settings enable you to report on the Azure service you've consumed and/or are currently consuming.
- C: The Payment Methods setting enables you to change the payment method associated with your subscription.
- D: Upgrade Subscription enables you to convert your free trial to a PAYG subscription. If you convert before you spend the \$200 or reach the 30 days, you keep your credit before the cost meter starts ticking.

- *E*: The Manage button takes you to the Azure Account Center, where you can print past service invoices, set billing alerts, and change the account that owns the subscription.
- *F*: The Cancel Subscription button enables you to . . . well, cancel your subscription. What else?
- *G*: The Rename button enables you to change the logical name of your subscription from Free Tier to something more meaningful to you and your organization.

If you decide to upgrade your subscription, Microsoft asks whether you want to buy a monthly support plan. As with the PAYG subscription, you can cancel a support plan at any time with no penalty. The three support tiers, each of which has a fixed monthly cost, are

- » **Developer plan:** Support for trial and nonproduction environments. You can interact with Azure support staff members from 9 a.m. to 5 p.m. in your time zone, with an initial response time of less than 8 business hours. As of this writing in August 2022, the monthly cost is \$29.
- » **Standard plan:** Support for production environments. You receive 24/7 technical support and a response within 2 hours. As of this writing, the Standard plan costs \$100 per month.
- » **Professional Direct plan:** Support for businesses that rely heavily on Azure. You get 24/7 technical support and a response for critical issues within one hour. As of this writing, Microsoft charges \$1,000 per month for this support plan.
- » **Premier plan:** This support tier is aimed at large enterprises that require extensive support and service globally within minutes. Microsoft also provides architectural support not available in any other tier. Acquiring a Premier plan requires you reach out to Microsoft or an authorized partner.



REMEMBER

Unless you have an EA with Microsoft, you can cancel your Azure subscription at any time. Be aware, however, that you're required to delete all your resources before Microsoft will let you cancel the subscription.

## Staying Current with Azure

Unlike the old days of installing a piece of software on your computer and waiting a year (or longer) for the latest update — that you had to purchase — cloud computing infrastructure updates are transparent. Suppose your organization decides

to suddenly upload 2TB of data to one of its databases. Back when folks used CDs and DVDs to maintain backups, you'd need to make sure that there was enough capacity for what is now an insignificant storage change. Because cloud computing platforms such as Azure are elastic, your storage needs can go up and down quickly, and the user can focus on other system responsibilities. Sure, you will certainly get an invoice for the extra capacity, but you'll never have to worry about not having enough space.

Also constantly evolving are those core applications and resources that Microsoft is responsible for within the cloud. Microsoft introduces updates to its cloud almost daily. Most changes are to fix development bugs or patch up security snafus. The nice thing for you, the cloud consumer, is that you don't have to wait for these changes; they just happen transparently. Your monthly service charges include the constant updates.

## Customizing the Azure user experience

Each time you add a new resource or service, the Azure portal user experience changes. You'll see new icons, dashboards, KPIs, and blades to navigate between features. For example, notice that Figure 1-1 had a completely different user experience than when you opened the new subscription. The account shown in Figure 1-1 has been operating for several years versus the one shown in Figure 1-7. In addition, the user experience was personalized.

You can create a personalized look and feel by following these steps:

- 1. Click the gear icon located in the top-right corner of the Azure portal.**

A page titled Portal Settings is launched.

- 2. On the left side, locate the secondary navigation.**

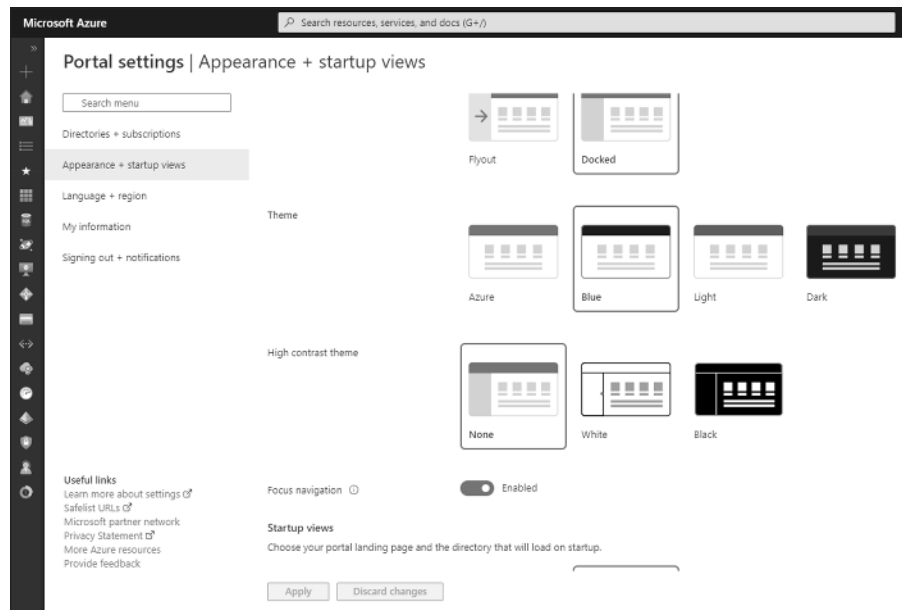
Several options are available in this list including Appearance + startup views and Language + region. These two options enable you to customize the look and feel of the portal as well as the display language.

- 3. Click the Appearance + startup view.**

Once the Appearance + startup view appears, you can configure the Menu Behaviors, Theme, Contrast, Focus Navigation, and Startup View, as shown in Figure 1-8.

You can modify the user experience to best suit your desired portal environment.

**FIGURE 1-8:**  
Configuring the  
Azure portal user  
experience.



## Rolling with the Azure updates

I've already established that when you use a cloud provider such as Microsoft Azure, your hosting environment is updated frequently. The frequency of updates is determined by criticality and features. The term *service lifecycle* is more appropriate to describe the frequency, as there is a methodology used before features become fully available for public consumption. Of course, Microsoft won't put the emergency security patches or critical bug fixes through a long-haul process. But when there is a new service or resource offering being introduced, the cycle is regimented.



TECHNICAL  
STUFF

Every Azure resource or service starts with a development phase formally called a *private preview*. The Azure Development team collects and defines the requirements on a rolling basis to support a viable product. Most users will not have access to development-level work, as Microsoft selects targeted cloud workloads to evaluate such features. Once the development team is confident in a feature, the service is released to the public as a beta. Also known as *public preview*, the public can access and experience the feature in its entirety and are given the opportunity to provide feedback. During the public preview, Microsoft does not charge users to use and test the feature, as the community and development team use that feedback to work out product kinks. The final step in the Azure update cycle is *general*

*availability*. You'll know a product is generally available because it becomes a production-ready service. When this happens, Microsoft will indicate that the product is no longer free and in beta.



WARNING

Trying out and integrating a shiny new feature might be tempting for you and your organization. However, remember that until a feature is generally available, there is no guarantee the product will get the “green light.” Make sure to check out any products terms and conditions. Also, any preview item is excluded from a Service Level Agreement. In some cases, previews aren’t even covered by customer support. That’s why Microsoft recommends that you wait to deploy a service or resource publicly for any mission-critical workload.



ON THE  
WEB

If you want to see what’s on the Microsoft Azure road map, check out the Microsoft Books of News, a road map of features presented at the yearly Microsoft Ignite conference. Go to <https://aka.ms/ignite-book-of-news>.