

An MSP's Guide to Azure Terminology Elements and Hierarchy

Find more: getnerdio.com



Microsoft Azure is a fantastic choice for building your MSP cloud practice, but you'll need to get familiar with Microsoft's terminology, elements, and their hierarchy first.

Here's our "cheat sheet" for the most important Azure elements and how they work together.

We'll be focusing exclusively on Azure Resource Manager – or ARM – which is Microsoft's current implementation of Azure. Before ARM, Azure was using a "classic" model which had different terminology, but it's not something the MSP community needs to worry about today.

What are Microsoft Azure products?

Microsoft Azure is a diverse cloud platform that contains hundreds of products, also known as SKUs, or "stock-keeping units". It's important to remember that Azure is to cloud as Apple is to devices--each has many products within multiple categories.

Infrastructure-as-a-Service (IaaS)

This includes user-managed raw resources that can be used to build IT environments, like virtual machines, storage, and networking.

Platform-as-a-Service (PaaS)

This category includes use-specific and Microsoft-managed packaged offers designed to be the building blocks of applications.

Here are a few examples:

- **Azure SQL** – This is a Microsoft-managed SQL service that can be used as the database backend for a new or existing application.
- **Azure Files** – Microsoft-managed server message block (Common Internet File System). This is a file share service that behaves just like a Windows file server, but without a server to manage.
- **Azure Automation** – a serverless scripting service that can be used to run PowerShell runbooks on a schedule, without the need for a Windows machine to do so.

Data Services

This is the area that contains products like machine learning, analytics and cognitive services.

Software-as-a-Service (SaaS)

These are fully usable, end-user applications that are written, hosted and managed by Microsoft. These will probably be familiar to you already, including products like Office 365 and Dynamics 365.

We'll keep the focus of this article to IaaS, SaaS, and a little bit on PaaS, as those are the most fundamental building blocks an MSP needs to build a cloud IT practice in Azure.

Microsoft Azure Accounts and Tenants

At the highest level, you have your Microsoft Azure account. Note that this account can also be referred to as a tenant or a directory, and we will be doing so throughout this article.

An Azure account is uniquely associated with an Azure Active Directory (AAD), where user objects that access the Azure Portal exist.

An Azure tenant is free to create, acting simply as a container for subscriptions and Azure Active Directory objects. Azure tenant names must be globally unique, and each one has a domain associated with it that follows the same format: TenantName.onmicrosoft.com.

Speaking of subscriptions: you won't be able to run anything in an Azure account without one.

Nerdio Tip

It is possible to use a single Azure tenant for all your customers' infrastructure! We'll go into the advantages of doing so for flexibility of compute reservations a bit later.

Microsoft Azure Accounts and Tenants

Inside an Azure tenant there are subscriptions. A single Azure tenant can contain multiple subscriptions, but each subscription must be contained within a single tenant. These subscriptions act as the "billing container".

You obtain a subscription directly from Microsoft or through an Azure reseller and you can create resources inside of that subscription. Your monthly Azure invoice will contain the consumption of every resource you run inside of a subscription, so if you don't run any resources and therefore have no consumption, your bill is \$0.

Subscriptions come in many flavors, but the easiest way to think about them is as an agreement between you and Microsoft that you will use any of the available Azure products under the terms of your subscription and you agree to pay for them after you've used them.

A good comparison is electrical power service in your home. You open an account with the electricity provider, or subscription in this case, and agree on a rate for electricity and delivery. You use the electricity over the course of the month, then pay the bill once the power company (Microsoft) tells you how much you have used.

Subscriptions obtained directly from Microsoft will typically come in one of the following flavors:

Pay-as-you-go (PAYG)

If you sign up to use Azure online, you will be required to put in a credit card. This will be the agreed upon payment method for any resources consumed inside of your subscription and it will be billed automatically on a monthly basis at Azure's list prices.

Free

This is a limited subscription that you can obtain directly online to test out the service for a limited time, with up to \$200 in resource usage. This type of subscription is too limited to use for anything but a simple VM or two and is not recommended for MSPs looking to build cloud practices in Azure.

Enterprise Agreement (EA)

If your customer is a larger organization, they will probably have a direct volume licensing agreement with Microsoft that gets negotiated every few years with annual reconciliations known as "True-up"s. As part of this EA, the customer will have prepaid for a certain amount of Azure consumption and will be able to use resources in the subscription up to this amount. Any overages will be reconciled at the time of the customer's True-up with Microsoft.

Cloud Solution Provider (CSP)

If you are a Direct CSP with Microsoft, you can provision a CSP subscription for Azure inside of your customer's tenant or your own tenant. Microsoft will bill you for the consumption inside of this subscription – at your discounted reseller rate – and you can then bill your customer. This is one of the most flexible and powerful types of subscriptions available to MSPs.

Sponsored

If you are part of the Microsoft Partner Network (MPN) and have Silver or Gold competencies, Microsoft may provide you with a sponsored Azure subscription that you can use to hone your Azure skills, run demos for customers, and use internally. Each subscription will have a preset monetary limit and you'll be required to add a credit card to be used once you exceed the preset limits. The details on your sponsored subscriptions, if you have any, can be obtained in your Partner Center under MPN or your Partner Development Manager (PDM).

A word of caution: do not use sponsored subscriptions for customer workloads. Once you exceed your sponsored subscription limit you will be billed at list rates on your credit card and there is no easy way to convert this subscription to a CSP subscription. You will be forced to migrate actual resources to another subscription, which is a disruptive process.

Most MSPs, however, purchase Azure through a CSP Provider like Pax8, Sherweb, Ingram, or Techdata. The MSP in this scenario is known as a "CSP Reseller".

Using the CSP Provider's own portal, you can create a subscription to consume resources within.

Microsoft bills the CSP Provider for the Azure consumption, the CSP Provider then bills the MSP, and the MSP can then bill its customer.

Subscriptions have globally unique IDs (GUID) associated with them. They also have a friendly name that you can set to anything you want, and this name does not have to be unique.

As a matter of fact, you can have subscriptions with the same friendly name inside of the same tenant. However, you should try to assign logical, unique names to each of your subscriptions to make things easier to manage.

As you can see, your subscription options will need a lot of careful consideration. You should do this before you start deploying Azure resources, as changing subscription types later can be difficult, or in some cases, impossible.

Nerdio Tip

Become a CSP Reseller with your provider of choice and create a dedicated subscription for each of your customers under a single tenant. This will provide you the optimal segregation of billing information on a per-customer basis, but allow you to take advantage of portability of Azure reservations between customers since all subscriptions will be in the same account.

What Are Resource Groups?

In the hierarchy of Microsoft Azure, we have our Azure account, and below that we have our subscriptions.

Another level below subscriptions are **resource groups**, or **RG**.

Resource groups are logical groupings of resources in Azure that allow you to easily view and manage sets of resources associated with the same function.

For example, let's say you have two complex, multi-component applications. We'll call them A and B for now.

You will want to split them up into resource groups, which we'll call RG-A and RG-B, to logically group all the compute, storage, and networking for each application with other components that relate to them.

Note that there can be multiple resource groups within a single subscription, but one resource group can't be tied to multiple subscriptions. Resource group names do not have to be globally unique, but they must be unique within the subscription they're stored in.

Resource groups are not billing units. For example, you won't be able to know how much the resources in resource group RG-A are costing you by looking at your Azure invoice. These RGs are there for ease of management, resource organization, and isolation.

As every Azure deployment features a lot of resources, resource groups are vital for keeping things ordered, which is a key consideration for an MSP looking to build a cloud practice.

What Are Resources?

We've talked about Azure accounts (or tenants), the subscriptions inside those accounts, and the resource groups in those subscriptions. Last up are the resources that live within those resource groups.

So, what are resources? They're essentially everything within Azure that actually has a function. Just a few examples of the many Azure resources are virtual machines, virtual networks, disks, network cards, VPN gateways, IP addresses, and so on.

There are many categories of resources and each one has different configuration, usage, and billing characteristics. For now, let's focus on billing.

Some resources will be billable while others won't. For example, a virtual machine (compute resource) will be billable while a virtual network interface (network resource) attached to a virtual machine will not be billable.

Billing in Azure typically has a unit and frequency. The easiest way to think about this is to go back to our electricity at home example. Electric power is a resource, the unit is kWatt, and the frequency is hour. We therefore have a pre-defined cost per kWatt/hour.

As we use electricity, there is a meter running that measures how many kWatt/hours we've used up, and then the electric company sends us a bill for what we used at the end of the month. Azure works the same way: for instance, a virtual machine is billed for compute capacity (the unit) on a per-second basis (the frequency).

Every time we start up – or “provision” – a virtual machine, a meter starts up and keeps track of how long it's running. At the end of the month, our invoice will show how many hours we used a specific virtual machine, and that informs how much money we owe to either Microsoft or a Direct CSP.

The key takeaway here is that each billable resource has a virtual “meter” that's running any time the resource is used, which is defined differently for each resource. If we stop using the resource, we stop the meter and we are no longer billed.

In future articles, we'll learn how these meters can be stopped even if the resource is running. For example, by using compute reservations and software subscriptions.

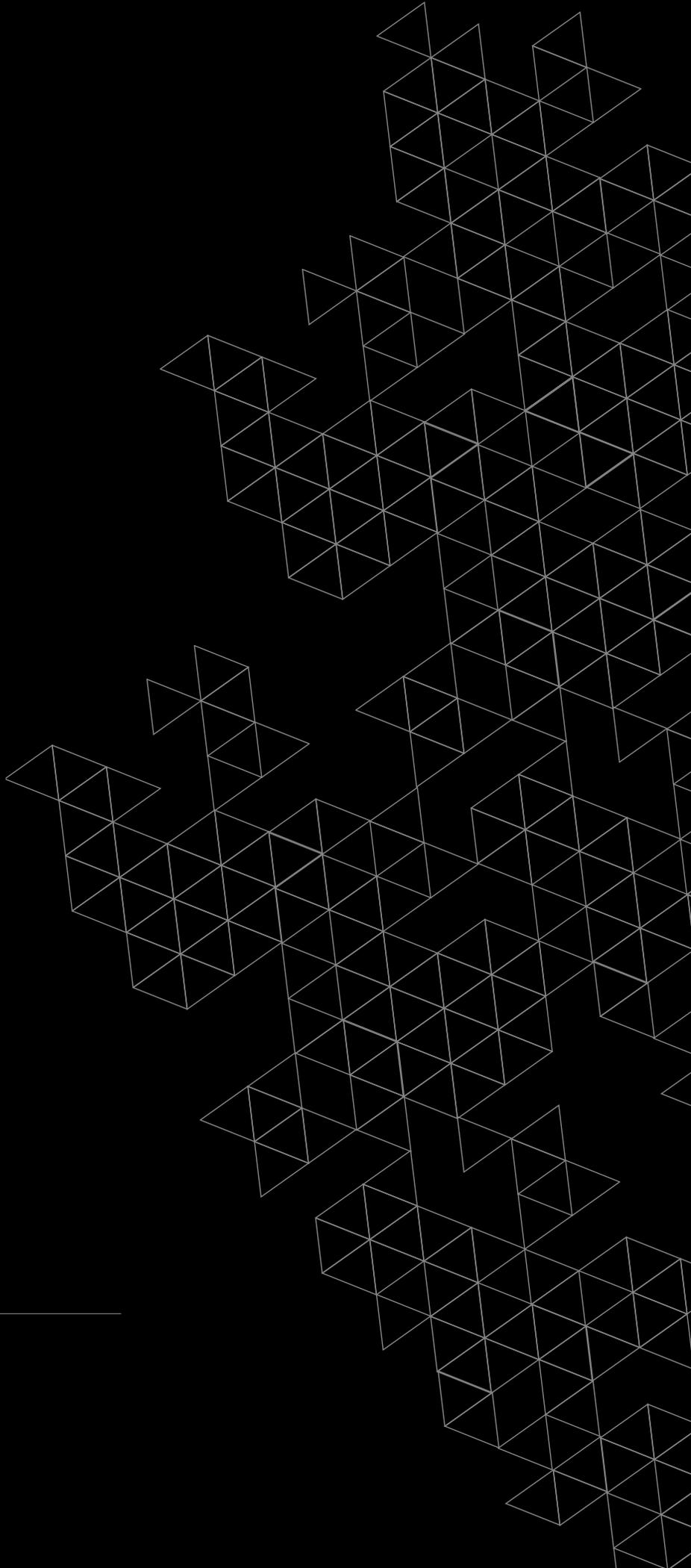
Summary

We've learned the hierarchy of Azure objects and how each level interacts with each other. Here's a handy reference to help you visualize this structure:

Azure account/tenant/directory

- Subscription A
 - Resource Group 1
 - Virtual machine (resource)
 - Compute meter
 - Premium SSD Managed disk (resource)
 - Storage capacity meter
 - Resource Group 2
 - Virtual machine (resource)
 - Compute meter
 - Standard SSD Managed disk (resource)
 - Storage capacity meter
 - Storage operations meter
- Subscription B
 - Resource Group 1
 - Virtual machine (resource)
 - Compute meter
 - Virtual Network Interface (resource)
 - No billing meters
 - Resource Group 2
 - Azure SQL (resource)
 - vCPU meter OR
 - DTU meter
 - VPN Gateway (resource)
 - VPN gateway meter
 - Transfer meter

Familiarizing yourself with this set of core building blocks is the first step an MSP should take in determining the most efficient and cost-effective way in building a cloud IT practice in Microsoft Azure.



Contact Us:

Phone: 1-844-463-7346
Email: hello@getnerdio.com
Website: getnerdio.com