

# Contents

[Azure billing + cost management documentation](#)

[Understand Azure billing](#)

[Understand your bill](#)

[Get invoice and usage data](#)

[Third-party service charges](#)

[Usage terms explained](#)

[Invoice terms explained](#)

[Manage costs](#)

[Prevent unexpected costs](#)

[Set up billing alerts](#)

[Calculate pricing](#)

[Use resource tags](#)

[Understand spending limit](#)

[Save with Reserved VM Instances](#)

[What are reserved instances?](#)

[Buy a reserved instance](#)

[How discount is applied](#)

[Software costs not included](#)

[Usage for Pay-As-You-Go](#)

[Usage for Enterprise](#)

[Manage reserved instances](#)

[Manage account](#)

[Free account](#)

[Create free services](#)

[Avoid charges](#)

[Check usage](#)

[Upgrade subscription](#)

[Understand meter mapping](#)

[Edit profile](#)

[Grant access to billing](#)

[Link partner ID](#)

[View billing accounts](#)

[Resolve past due balance](#)

[Sign up with Office 365 account](#)

[Sign up for Office 365 with Azure account](#)

[Manage subscription](#)

[Reactivate subscription](#)

[Transfer ownership](#)

[Cancel subscription](#)

[Change credit card](#)

[Change administrator](#)

[Switch subscription offer](#)

[Pay by invoice](#)

[Create management groups](#)

[Move Azure resources](#)

[Create Enterprise subscriptions](#)

[Export subscription information](#)

[Link Azure AD tenant](#)

[Limits and quotas](#)

[Troubleshoot](#)

[No subscriptions found](#)

[Declined card](#)

[Sign up issues](#)

[Sign in issues](#)

[Enterprise cost view disabled](#)

[Contact support](#)

[Samples](#)

[REST API](#)

[Review enterprise costs](#)

[Review subscription use](#)

[.NET samples](#)

[Invoice API code sample](#)

[Usage API code sample](#)

[RateCard API code sample](#)

## [Reference](#)

[Billing Automation Scenarios](#)

[Manage costs with Azure Budgets](#)

[Azure Billing API overview](#)

[Azure Billing REST API](#)

[Partner solution – Cloud Cruiser](#)

[Azure Consumption API overview](#)

[Azure Consumption REST API](#)

[RateCard REST API](#)

[Usage REST API](#)

[Enterprise reporting overview](#)

[Enterprise reporting REST API](#)

Learn how to understand your Azure billing, monitor usage and costs, and manage your account and subscriptions.

## Understand Azure billing

- [Understand your bill](#)
- [Get invoice and usage data](#)
- [Third-party service charges](#)
- [Usage terms explained](#)

## Manage costs

- [Prevent unexpected costs](#)
- [Set up billing alerts](#)
- [Calculate pricing](#)
- [Use resource tags](#)

## Manage account + subscription

- [Reactivate subscription](#)
- [Transfer ownership](#)
- [Cancel subscription](#)
- [Change credit card](#)

## Free account

- [Create free services](#)
- [Avoid charges](#)
- [Check usage](#)
- [Upgrade subscription](#)

## Billing administrator

- [Grant access to billing](#)
- [Pay by invoice](#)
- [Manage reserved instances](#)
- [Usage for reserved instances](#)

## Developer + ISV

- [Azure Billing APIs](#)
- [Azure Consumption APIs](#)
- [Enterprise reporting APIs](#)
- [Programmatically create Enterprise subscriptions](#)

## Save with Reserved VM Instances

- [What are reserved instances?](#)
- [Buy a reserved instance](#)
- [How discount is applied](#)
- [Software costs not included](#)

## Organize Azure resources

- [Use resource tags](#)
- [Create management groups](#)
- [Move Azure resources](#)
- [Deploy Azure resources](#)

**Enterprise subscription: requires EA portal access**

[Manage departments](#)

[Manage accounts](#)

[Create subscriptions](#)

[View price sheet](#)

[View usage details](#)

# Understand your bill for Microsoft Azure

6/27/2018 • 5 minutes to read • [Edit Online](#)

To understand your Azure bill, compare your invoice with the detailed daily usage file and the cost management reports in the Azure portal.

## NOTE

This article does not apply to Enterprise Agreement (EA) customers. If you're an EA customer, [you can find invoice documentation on the Enterprise Portal](#).

To obtain a PDF of your invoice and a copy of your detailed daily usage file CSV download, see [Get your Azure billing invoice and daily usage data](#).

For detailed terms and descriptions of your invoice and detailed daily usage file, see [Understand terms on your Microsoft Azure invoice](#) and [Understand terms on your Microsoft Azure detailed usage](#).

For details on the cost management reports, see [Azure portal cost management](#).

## How do I make sure that the charges in my invoice are correct?

If there is a charge on your invoice that you want more details on, there are a couple of options.

### Option 1: Review your invoice and compare the usage and costs with the detailed usage CSV file

The detailed usage CSV file shows your charges by billing period and daily usage. To get your detailed usage CSV file, see [Get your Azure billing invoice and daily usage data](#).

Your usage charges are displayed at the meter level. The following terms mean the same thing in both the invoice and the detailed usage file. For example, the billing cycle on the invoice is equivalent to the billing period shown in the detailed usage file.

INVOICE (PDF)	DETAILED USAGE (CSV)
Billing cycle	Billing Period
Name	Meter Category
Type	Meter Subcategory
Resource	Meter Name
Region	Meter Region
Consumed	Consumed Quantity
Included	Included Quantity
Billable	Overage Quantity

The **Usage Charges** section of your invoice has the total value for each meter that was consumed during your billing period. For example, the following screenshot shows a usage charge for the Azure Scheduler service.

Usage Charges									
Name	Type	Resource	Region	Consumed	Included	Billable	Rate	Value	
Azure App Service	Shared App Service Hours			721.0000	0.0000	721.0000	0.0130	9.37	
Scheduler	Standard Scheduler Units			0.9677	0.0000	0.9677	13.9900	13.54	

The **Statement** section of your detailed usage CSV shows the same charge. Both the *Consumed* amount and *Value* match the invoice.

Statement	Billing Period	Meter Category	Meter Sub-category	Meter Name	Meter Region	SKU	Unit	Consumed	Included	Within	Overage	Currency	Overage	Commitment Rate	Rate	Value
	201705(4/27/2017 - 5/26/2017)	"Azure App Service"	"Shared App Service Hours"	"7UD "Hou		721	"Hour"	0	0	721 USD	0		0	0.012995839	\$9.37 USD	
	201705(4/27/2017 - 5/26/2017)	"Scheduler"	"Standard Scheduler Units"	"9YD "1 Ur		0.9677448	"Hours"	0	0	0.96774 USD	0		0	0	13.99129192	\$13.54 USD
	201705(4/27/2017 - 5/26/2017)	"Storage"	"Locally Redundant"	"Standard IO - Block Blob (G1"7UD "GB"		2.726822	"GB"	0	0	2.72682 USD	0		0	0	0.025670909	\$0.07 USD

To see a breakdown of this charge on a daily basis, go to the **Daily Usage** section of the CSV. Filter for "Scheduler" under *Meter Category* and you can see which days the meter was used and how much was consumed. The *Resource* and *Resource group* information is also listed for comparison. The *Consumed* values should add up to what's shown on the invoice.

Usage Date	Meter Category	Meter Id	Meter S	Meter Name	Met	Unit	Consum	Resource L	Consumed Service	Resource Group	Ir
4/26/2017	"Networking"	"42bb05e1-6f42-4de1-a1	"Data Transfer In (GB)"	"Zone	"GB"	0.000364	"krsouth"	"Microsoft.Batch"	"abcdef"	"	
4/26/2017	"Azure App Service"	"0c3885bd-351d-4c28-8"	"Shared App Service Hours"	"Hours"		3	"southcentral"	"Microsoft.Web"	"bextresourcegroup"	"	
4/26/2017	"Scheduler"	"2d7eaaf7-2c4b-4229-ac	"Standard Scheduler Units"	"1 Unit"		0.0026882	"westus"	"Microsoft.Scheduler"	"hcltest"	"	
4/26/2017	"Azure App Service"	"c0f5cb45-6fb1-41c9-85	"Free App Service"	"Apps"		0.004032	"southcentral"	"Microsoft.Web"	"bextresourcegroup"	"	
4/26/2017	"Networking"	"fe167397-a38d-43c3-9b	"Data Transfer Out (GB)"	"Zone	"GB"	0.000193	"krsouth"	"Microsoft.Batch"	"abcdef"	"	
4/26/2017	"Cloud Services"	"fb8f87bd-4"	"Standard _ Compute Hours"	"KR So	"Hours"	100	"krsouth"	"Microsoft.Batch"	"abcdef"	"	
4/27/2017	"Azure App Service"	"0c3885bd-351d-4c28-8"	"Shared App Service Hours"	"Hours"		24	"southcentral"	"Microsoft.Web"	"bextresourcegroup"	"	
4/27/2017	"Data Management"	"9cb0bde8-bc0d-468c-8"	"Standard IO - Table Write Operat	"10,000s"		0.0146	"uscentral"	"Microsoft.Storage"	"bextresourcegroup"	"	
4/27/2017	"Storage"	"3fb1e1c-c8"	"Locally Re Standard IO - Table (GB)"	"GB"		0.000146	"uswest"	"Microsoft.Storage"	"bextresourcegroup"	"	
4/27/2017	"Data Services"	"412d6928-6"	"Search"	"Standard S1 Search Hour"	"Hours"	24	"West US"	"Search"	"	"	
4/27/2017	"Cloud Services"	"fb8f87bd-4"	"Standard _ Compute Hours"	"KR So	"Hours"	240	"krsouth"	"Microsoft.Batch"	"abcdef"	"	
4/27/2017	"Data Services"	"412d6928-6"	"Search"	"Standard S1 Search Hour"	"Hours"	24	"West US"	"Search"	"	"	
4/27/2017	"Data Management"	"9cb0bde8-bc0d-468c-8"	"Standard IO - Table Write Operat	"10,000s"		0.0146	"uswest"	"Microsoft.Storage"	"bextresourcegroup"	"	
4/27/2017	"Storage"	"3fb1e1c-c8"	"Locally Re Standard IO - Table (GB)"	"GB"		0.000072	"uswest"	"Microsoft.Storage"	"hcl-testrg537185"	"	
4/27/2017	"Azure App Service"	"c0f5cb45-6fb1-41c9-85	"Free App Service"	"Apps"		0.032256	"southcentral"	"Microsoft.Web"	"bextresourcegroup"	"	
4/27/2017	"Scheduler"	"2d7eaaf7-2c4b-4229-ac	"Standard Scheduler Units"	"1 Unit"		0.0322581	"westus"	"Microsoft.Scheduler"	"hcltest"	"	
4/27/2017	"Networking"	"fe167397-a38d-43c3-9b	"Data Transfer Out (GB)"	"Zone	"GB"	0.000472	"krsouth"	"Microsoft.Batch"	"abcdef"	"	
4/27/2017	"Storage"	"c1635534-1"	"Locally Re Standard IO - Block Blob (GB)"	"GB"		0.090768	"uswest"	"Microsoft.Storage"	"bextresourcegroup"	"	
4/27/2017	"Data Management"	"9cb0bde8-bc0d-468c-8"	"Standard IO - Table Write Operat	"10,000s"		0.0146	"uswest"	"Microsoft.Storage"	"hcl-testrg537185"	"	

To get the cost per day, multiply the *Consumed* amounts with the *Rate* value from the **Statement** section.

To learn more about the invoice, see [Understand your Azure invoice](#).

To learn about each of the columns in the CSV, see [Understand your Azure detailed usage](#).

## Option 2: Review your invoice and compare with the usage and costs in the Azure portal

The Azure portal can also help you verify your charges. The Azure portal provides cost management charts for a quick overview of your usage and the charges on your invoice.

To continue with the example from above, visit the [Subscriptions page](#), select your subscription, and then choose **Cost analysis**. From there, you can specify the time-span and see usage charge for the Azure Scheduler service.

 Pay-As-You-Go - Cost analysis

Subscription

Search (Ctrl+ /)

Overview

Access control (IAM)

Diagnose and solve problems

BILLING

Invoices

**Cost analysis**

External services

Payment methods

Partner information

SETTINGS

Programmatic deployment

Resource groups

Resources

Usage + quotas

Policies

→ Costs by service

**i** There is a delay between the time when a resource is used and the time when the usage reaches the billing system. Due to this, costs reported here may be delayed. Amounts displayed are estimates, and may not reflect some recent usage. Taxes are not included.

Subscription: Pay-As-You-Go [f515...]  
Resource type: All resource types  
Resource group: All resource groups

Timespan: Tag  
Custom: All tags

Start date: 2017-04-27 End date: 2017-05-26

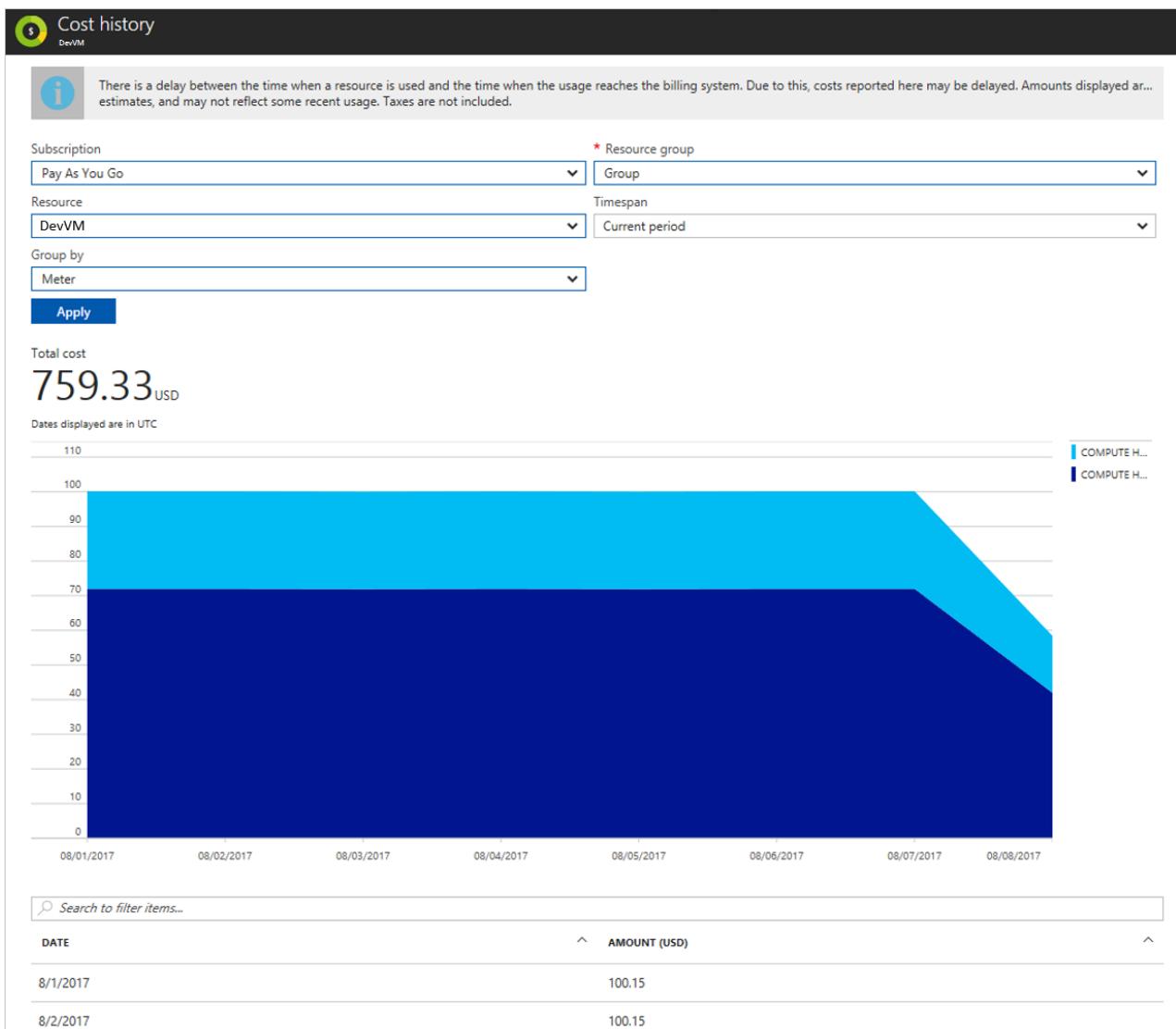
Apply Download

Total cost: **1685.61 USD**

Search to filter items...

NAME	TYPE	RESOURCE ...	COST (USD)	TAGS
abcd	Batch account	abcdef	1,178.80	AccountName:... ...
hctest	Scheduler Job ...	hctest	13.54	-- ...
bextweb001	App Service	bextresourcegr...	9.36	-- ...
bextsa001	Storage account	bextresourcegr...	0.07	-- ...

To see the daily cost breakdown in **Cost history**, click the row.



To learn more, see [Prevent unexpected costs with Azure billing and cost management](#).

## What about external service charges?

External services (also known as Azure Marketplace orders) are provided by independent service vendors and are billed separately. The charges don't show up on your Azure invoice. To learn more, see [Understand your Azure external service charges](#).

## How do I make a payment?

If you set up a credit card or a debit card as your payment method, the payment is charged automatically within 10 days after the billing period ends. On your credit card statement, the line item would say **MSFT Azure**.

If you [pay by invoicing](#), send your payment to the location listed at the bottom of your invoice. For more help, [contact support](#).

## How do I check the status of a payment made by credit card?

[Create a support ticket](#) to ask for the status of your payment.

## Are there different Azure customer types? How do I know what customer-type I am?

There are different types of Azure customers. To better understand your pricing and bill, see the following

customer-type descriptions.

- **Enterprise:** Enterprise customers have signed an Enterprise Agreement with Azure to make negotiated monetary commitments and gain access to custom pricing for Azure resources.
- **Web Direct:** Web Direct customers have not signed any custom agreement with Azure. These customers have signed up for Azure via [azure.com](#) and receive public facing prices for all Azure resources.
- **Cloud Service Provider:** Cloud Service Providers are typically companies that have been hired by an end-customer to build solutions on top of Azure.

## Why don't I see the cost the resource I have created in my bill?

Azure does not bill directly based on resource cost. Billing is done based off one or more meters that are used to track a resource's usage throughout its lifetime. These meters are then used to calculate the bill. See more about Azure metering below.

## How does Azure charge metering work?

When you spin up a single Azure resource, such as a virtual machine, it will have one or multiple meter instances created as well. These meters are used to track the usage of the resource over time. Each meter emits usage records which are then used by Azure in our cost metering system to calculate the bill.

For example, a single virtual machine created in Azure may have the following meters created to track its usage:

- Compute Hours
- IP Address Hours
- Data Transfer In
- Data Transfer Out
- Standard Managed Disk
- Standard Managed Disk Operations
- Standard IO-Disk
- Standard IO-Block Blob Read
- Standard IO-Block Blob Write
- Standard IO-Block Blob Delete

Once the VM is created, each one of the meters above will begin emitting usage records. This usage will then be used in Azure's metering system along with the meter's price to determine how much a customer is charged.

### NOTE

The example meters above may only be a subset of the meters created a VM that is created.

## What is the difference between Azure 1st party charges and Azure Marketplace charges?

Azure 1st party charges are for resources that are directly developed and offered by Azure. Azure Marketplace charges are for resources that have been created by third party software vendors that are available for use via the Azure marketplace. For example, a Barracuda Firewall is an Azure marketplace resource offered by a third party. All charges for the firewall and its corresponding meters will appear as marketplace charges.

## Tips for cost management

- Estimate costs by using the [pricing calculator](#) and [total cost of ownership calculator](#), and get the [detailed pricing](#)

information for each service.

- Set up billing alerts.
- Review your usage and costs regularly in the Azure portal.

## Need help? Contact support.

If you still need help, [contact support](#) to get your issue resolved quickly.

# Download or view your Azure billing invoice and daily usage data

5/25/2018 • 3 minutes to read • [Edit Online](#)

You can download your invoice from the [Azure portal](#) or have it sent in email. To download your daily usage, go to the [Azure Account Center](#). Only certain roles have permission to get billing invoice and usage information, like the Account Administrator. To learn more about getting access to billing information, see [Manage access to Azure billing using roles](#).

This article does not apply to Enterprise Agreement (EA) customers. If you're an EA customer, your invoices are sent directly to the Enrollment Administrators.

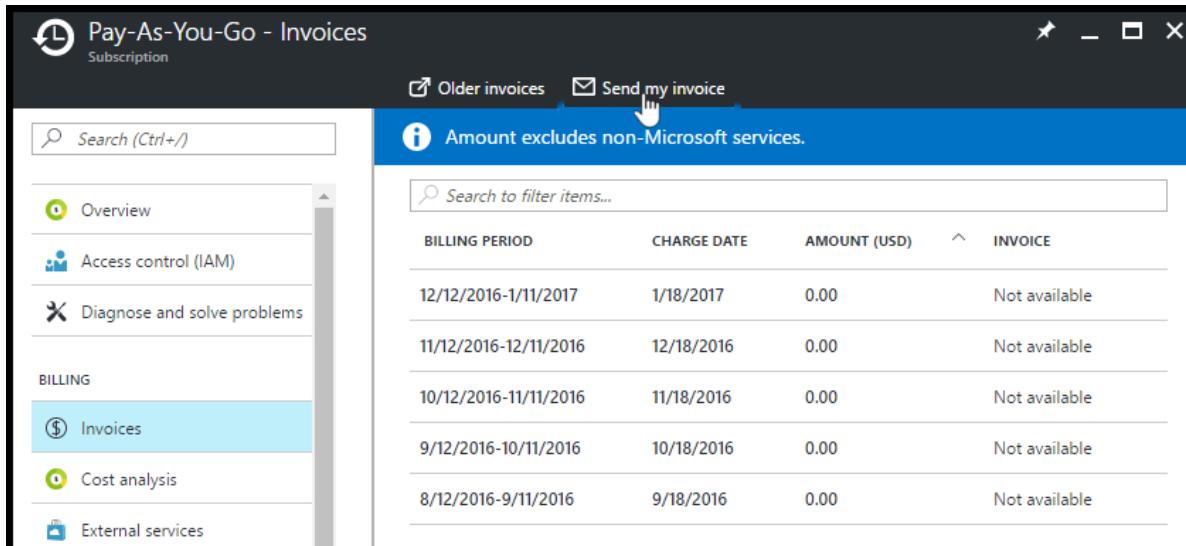
## NOTE

This article provides steps for how to delete personal data from the device or service and can be used to support your obligations under the GDPR. If you're looking for general info about GDPR, see the [GDPR section of the Service Trust portal](#).

## Get your invoice in email (.pdf)

You can opt in and configure additional recipients to receive your Azure invoice in an email. This feature may not be available for certain subscriptions such as support offers, Enterprise Agreements, or Azure in Open.

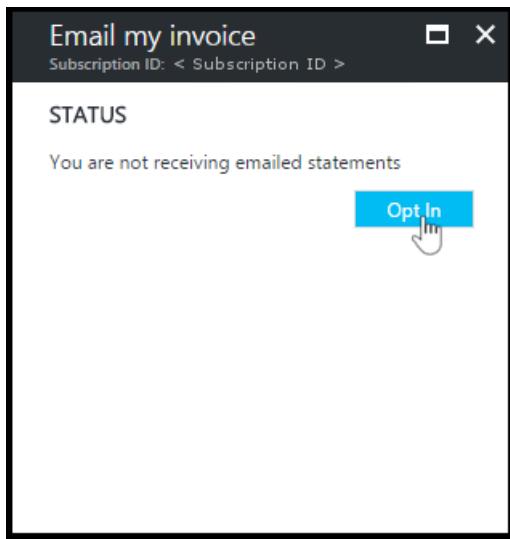
1. Select your subscription from the [Subscriptions page](#). Opt-in for each subscription you own. Click **Invoices** then **Email my invoice**.



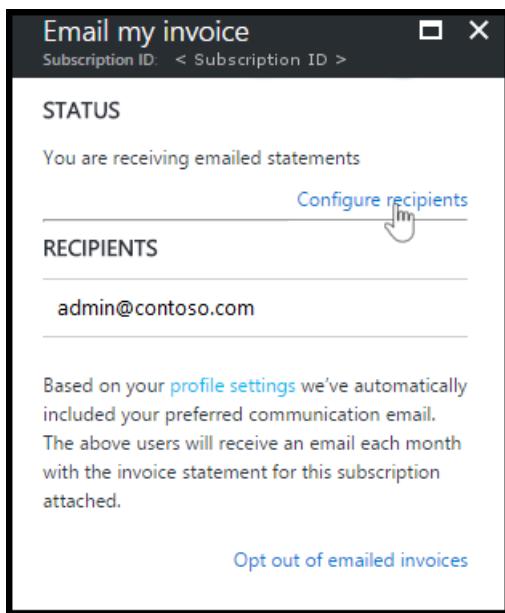
The screenshot shows the Azure portal's Invoices page for a "Pay-As-You-Go - Invoices" subscription. On the left, there's a sidebar with links for Overview, Access control (IAM), Diagnose and solve problems, BILLING (Invoices, Cost analysis, External services), and a search bar. The main area has a heading "Amount excludes non-Microsoft services." and a table of invoices. The table has columns for BILLING PERIOD, CHARGE DATE, AMOUNT (USD), and INVOICE. All listed invoices have a value of 0.00 and are marked as "Not available". At the top right of the main area, there are buttons for "Older invoices" and "Send my invoice", with the latter being the one highlighted by a cursor.

BILLING PERIOD	CHARGE DATE	AMOUNT (USD)	INVOICE
12/12/2016-1/11/2017	1/18/2017	0.00	Not available
11/12/2016-12/11/2016	12/18/2016	0.00	Not available
10/12/2016-11/11/2016	11/18/2016	0.00	Not available
9/12/2016-10/11/2016	10/18/2016	0.00	Not available
8/12/2016-9/11/2016	9/18/2016	0.00	Not available

2. Click **Opt in** and accept the terms.



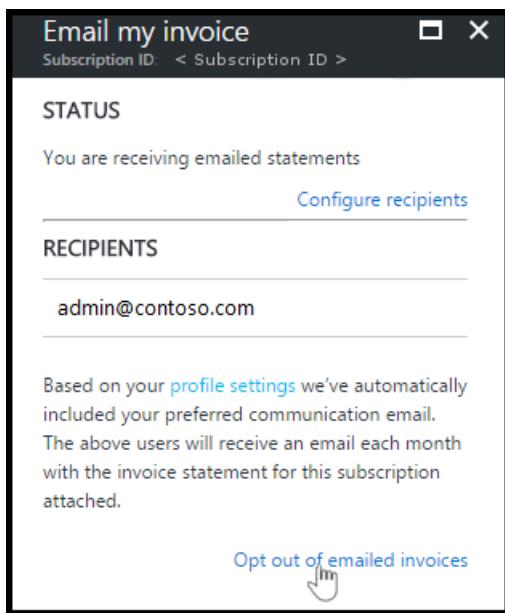
3. Once you've accepted the agreement, you can configure additional recipients. When a recipient is removed, the email address is no longer stored. If you change your mind, you need to re-add them.



If you don't get an email after following the steps, make sure your email address is correct in the [communication preferences on your profile](#).

#### **Opt out from getting your invoice in email**

If you don't want to get your invoice in email, click Opt out of emailed invoices. This removes any email addresses set to receive invoices in email. If you opt back in you will have to reconfigure recipients.



## Download invoice from Azure portal (.pdf)

1. Select your subscription from the [Subscriptions page](#) in Azure portal as [a user with access to invoices](#).
2. Select **Invoices**.

The screenshot shows the Azure portal's 'Subscriptions' page for a 'Pay-As-You-Go' subscription. On the left, there's a list of subscriptions including 'Pay-As-You-Go', 'Visual Studio Ultimate with MS...', and another 'Pay-As-You-Go'. On the right, under the 'Pay-As-You-Go' subscription, there's a sidebar with links: 'Overview' (highlighted in blue), 'Access control (IAM)', 'Diagnose and solve problems', 'BILLING' (highlighted in blue), 'Invoices' (boxed in red), 'Cost analysis', and 'External services'.

3. Click **Download Invoice** to view a copy of your PDF invoice. If it says **Not available**, see [Why don't I see an invoice for the last billing period?](#)

The screenshot shows the Azure portal's 'Billing' section. It includes a message 'Amount excludes non-Microsoft services.' and a search bar. Below is a table with columns: BILLING PERIOD, CHARGE DATE, AMOUNT (JPY), and INVOICE. Two rows are shown: one for '2016-09-02-2016-10-01' with an amount of 5,956.33 and a 'Download invoice' link, and another for '2016-08-02-2016-09-01' with an amount of 6,044.56 and a 'Download invoice' link.

4. You can also view your daily usage by clicking the billing period.

For more information about your invoice, see [Understand your bill for Microsoft Azure](#). For help managing costs,

see [Prevent unexpected costs with Azure billing and cost management](#).

## Download usage from the Account Center (.csv)

1. Sign into the [Azure Account Center](#) as the Account Administrator.
2. Select the subscription for which you want the invoice and usage information.
3. Select **BILLING HISTORY**.

The screenshot shows a summary page for Pay-As-You-Go. At the top, there are two tabs: "OVERVIEW" and "BILLING HISTORY". The "BILLING HISTORY" tab is highlighted with a red border. Below the tabs, the text "Summary for Pay-As-You-Go" is displayed.

4. You can see your statements for the last six billing periods and the current unbilled period.

The screenshot shows the "Summary for Pay-As-You-Go" page. It displays two billing periods: "Current period" (5/12/2015 - 6/11/2015) and "Previous period" (4/12/2015 - 5/11/2015). Each period has links for "View Current Statement", "Download Invoice", "Download Usage", and the total amount (\$7,827.71 for the current period and \$6,992.41 for the previous period).

5. Select **View Current Statement** to see an estimate of your charges at the time the estimate was generated. This information is only updated daily and may not include all your usage. Your monthly invoice may differ from this estimate.

The screenshot shows the "Summary for Pay-As-You-Go" page. The "View Current Statement" link for the "Current period" is highlighted with a red box. The page also lists the previous period and its details.

The screenshot shows the "Summary for Pay-As-You-Go" page. At the bottom right, there is a box labeled "NEXT BILL (ESTIMATED):" containing the amount "\$38.45".

6. Select **Download Usage** to download the daily usage data as a CSV file. If you see two versions available, download version 2.

## Summary for Pay-As-You-Go

OVERVIEW BILLING HISTORY ALERTS PREVIEW

Click here to [Understand Your Bill](#).

Current period

[View Current Statement](#)

[Download Usage▼](#)

5/12/2015 - 6/11/2015

[Download Invoice](#)

[Download Usage▼](#)

\$7,827.71

4/12/2015 - 5/11/2015

[Download Invoice](#)

[Download Usage▼](#)

\$6,992.41

Only the Account Administrator can access the Azure Account Center. Other billing admins, such as an Owner, can get usage information using the [Billing APIs](#).

For more information about your daily usage, see [Understand your bill for Microsoft Azure](#). For help managing costs, see [Prevent unexpected costs with Azure billing and cost management](#).

## Why don't I see an invoice for the last billing period?

There could be several reasons that you don't see an invoice:

- You have a monthly credit amount with your subscription that you didn't exceed or you have a Free Trial. An invoice is only generated when you owe money.
- It's less than 30 days from the day you subscribed to Azure.
- The invoice isn't generated yet. Wait until the end of the billing period.
- If you're not the Account Administrator, older invoices may not be available to you.

## Need help? Contact support.

If you still have further questions, [contact support](#) to get your issue resolved quickly.

# Understand your Azure billing for external service charges

6/15/2018 • 2 minutes to read • [Edit Online](#)

External services are published by third party software vendors in the Azure marketplace. For example, ClearDB and SendGrid are external services that you can purchase in Azure, but are not published by Microsoft.

When you provision a new external service or resource, a warning is shown:

**Offer details**

NGINX Plus by Nginx, Inc.	0.2100 USD/hr	⚠
<a href="#">Terms of use   privacy policy</a>		
Standard DS1 v2 by Microsoft	0.0730 USD/hr	ℹ
<a href="#">Terms of use   privacy policy</a>		

**⚠** The highlighted Marketplace purchase(s) are not covered by your Azure credits, and will be billed separately.  
You cannot use your Azure monetary commitment funds or subscription credits for these purchases. You will be billed separately for marketplace purchases.

If you have previously purchased a free trial offering, your free trial period will run 30 days from the date of your original purchase; all use thereafter will be billed at the standard rates listed above.

**ℹ Azure resource**  
You may use your Azure monetary commitment funds or subscription credits for these purchases. Prices presented are retail prices and may not reflect discounts associated with your subscription.

**Terms of use**

By clicking "Purchase", I (a) agree to the legal terms and privacy statement(s) associated with each Marketplace offering above, (b) authorize Microsoft to charge or bill my current payment method for the fees associated with my use of the offering(s), including applicable taxes, with the same billing frequency as my Azure subscription, until I discontinue use of the offering(s), and (c) agree that Microsoft may share my contact information and transaction details with the seller(s) of the offering(s). Microsoft does not provide rights for third-party products or services. See the [Azure Marketplace Terms](#) for additional terms.

## NOTE

External services are published by companies that are not Microsoft, but sometimes Microsoft products are also categorized as external services.

## How external services are billed

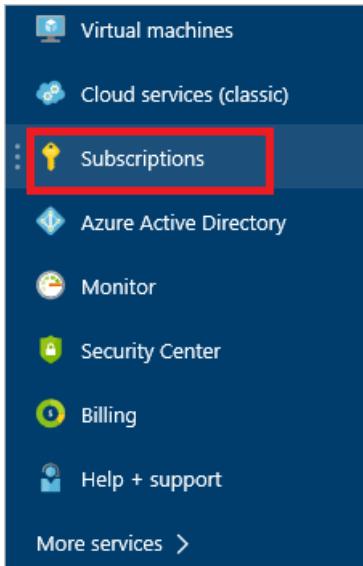
- External services are billed separately. They are treated as individual orders within your Azure subscription. The billing period for each service is set when you purchase the service. Not to be confused with the billing period of the subscription under which you purchased it. You also receive separate bills and your credit card is charged separately.
- Each external service has a different billing model. Some services are billed in a pay-as-you-go fashion while others use a monthly based payment model. You need a credit card for Azure external services, you can't buy external services with invoice pay.
- You can't use monthly free credits for external services. If you are using an Azure subscription that includes **free**

[credits](#), they can't be applied to external service bills. Use a credit card to purchase external services.

## View external service spending and history in the Azure portal

You can view a list of the external services that are on each subscription within the [Azure portal](#):

1. Sign in to the [Azure portal](#) as the account administrator.
2. In the Hub menu, select **Subscriptions**.



3. In the **Subscriptions** blade, select the subscription that you want to view, and then select **External services**.

The image shows two screenshots of the Azure portal. On the left, the 'Subscriptions' blade is open, displaying a list of subscriptions: 'Pay-As-You-Go' (selected and highlighted in blue), 'Visual Studio Ultimate with MS...', and another 'Pay-As-You-Go'. A search bar at the top says '<subscription ID>'. On the right, the 'External services' blade is open for the 'Pay-As-You-Go' subscription. It features a navigation menu on the left with 'Overview' (selected and highlighted in light blue), 'Access control (IAM)', 'Diagnose and solve problems', 'BILLING' (disabled), 'Billing & usage', 'Resource costs', and 'External services' (highlighted with a red rectangular box). A search bar at the top says 'Search to filter items...'.

SUBSCRIPTION	SUBSCRIPTION ID	ROLE
Pay-As-You-Go	<subscription ID>	Account admin
Visual Studio Ultimate with MS...	<subscription ID>	Account admin
Pay-As-You-Go	<subscription ID>	Account admin

4. You should see each of your external service orders, the publisher name, service tier you bought, name you gave the resource, and the current order status. To see past bills, select an external service.

Search to filter items...			
PUBLISHER	TYPE	RESOURCE NAME	STATUS
Microsoft	Bing Voice Recognition (Beta)	Bing-speechrecognition	Active
F5 Networks	F5 Web Application Firewall Solution	TestVM	Active
Bing Maps	Bing Maps API for Enterprise	BingTest	Active
MySQL Database-as-a-Ser...	ClearDB MySQL Database	MyDatabase	Active
Barracuda Networks Inc	Barracuda Web Application Firewall	MyMachine	Active

5. From here, you can view past bill amounts including the tax breakdown.

BILL CALCULATION DATE	SUBTOTAL	TAX	TOTAL
9/28/2016	226.88	21.55	248.43 USD
8/28/2016	226.88	21.55	248.43 USD
7/28/2016	226.88	21.55	248.43 USD
6/28/2016	226.88	21.55	248.43 USD
5/28/2016	226.88	21.55	248.43 USD
4/28/2016	226.88	21.55	248.43 USD
3/28/2016	226.88	21.55	248.43 USD
2/28/2016	226.88	21.55	248.43 USD
...			

## View external service spending for Enterprise Agreement (EA) customers

EA customers can see external service spending and download reports in the EA portal. See [Azure Marketplace for EA Customers](#) to get started.

## Manage payment methods for external service orders

Update your payment methods for external service orders from the [Account Center](#).

### NOTE

If you purchased your subscription with a Work or School account, [contact support](#) to make changes to your payment method.

1. Sign in to the [Account Center](#) and navigate to the **marketplace** tab

The screenshot shows the Microsoft Azure Account Center interface. At the top, there is a dark header bar with the "Microsoft Azure" logo. Below it is a navigation bar with several tabs: HOME, PRICING, DOCUMENTATION, DOWNLOADS, COMMUNITY, SUPPORT, and ACCOUNT. The "ACCOUNT" tab is currently selected. Underneath the navigation bar, there are links for "subscriptions", "marketplace" (which is highlighted with a red box), "profile", and "preview features".

2. Select the external service you want to manage

The screenshot shows the Microsoft Azure Marketplace page. At the top, there is a navigation bar with tabs: HOME, PRICING, DOCUMENTATION, DOWNLOADS, COMMUNITY, SUPPORT, and ACCOUNT. The "ACCOUNT" tab is currently selected. Below the navigation bar, there are links for "subscriptions", "marketplace" (which is highlighted with a red box), "profile", and "preview features". On the right side, there is a blue button labeled "Portal" with a circular arrow icon. The main content area displays a list of services under two categories: "12-MONTH PLAN (PREPAID)" and "PAY-AS-YOU-GO".  
**12-MONTH PLAN (PREPAID)**  
SUBSCRIPTION ID: <Subscription ID>  
Bing Search API - Microsoft - Bing-search (Active)  
**PAY-AS-YOU-GO**  
SUBSCRIPTION ID: <Subscription ID>  
ClearDB MySQL Database - MySQL Database-as-a-Service - MyDatabase (Active)  
Barracuda Web Application Firewall - Barracuda Networks Inc - MyMachine (Active)  
Bing Maps API for Enterprise - Bing Maps - BingTest (Active)  
Bing Voice Recognition (Beta) - Microsoft - Bing-speechrecognition (Active)  
F5 Web Application Firewall Solution - F5 Networks - TestVM (Active)

3. Click **Change payment method** on the right side of the page. This link brings you to a different portal to manage your payment method.

The screenshot shows a page for changing payment methods. It contains the following information:  
**DATE PURCHASED**  
1/28/2016  
**CURRENT BILLING PERIOD**  
09/28/2016 - 10/27/2016  
**Contact Microsoft Support**  
**Change payment method** (this link is highlighted with a red box)  
  
**MARKETPLACE ORDER ID**  
<9505ce34-7c2e-4510-9089-8765c177f167>  
**RESOURCE NAME**  
BingTest  
**SUBSCRIPTION NAME**  
Pay-As-You-Go  
**SUBSCRIPTION ID**  
<Subscription ID>  
**SUBSCRIPTION STATUS**  
Active

4. Click **Edit info** and follow instructions to update your payment information.

# Payment options

[Add a payment option](#)

Credit and debit cards, PayPal, bank account, etc.



Microsoft account

Once you add money to your account, it'll show up for fast checkout in the Windows and Xbox stores. [Learn more](#)

[Redeem a code or gift card](#)

[Redeem Bitcoin](#)

[Send a gift card by email](#)



Visa \*\*3380

[Edit info](#)

[Remove](#)

[View order history](#)

## Card info

Name on card

Billing address

Card number

Expiration date

For purchases in  
United States

## Subscriptions

[MySQL Database-as-a-Service](#)

- [ClearDB MySQL](#)

[Database-/subscripti](#)

[Bing Maps - Bing Maps API for  
Enterprise-/subscriptions/6b74c45b](#)

## Cancel an external service order

If you want to cancel your external service order, delete the resource in the [Azure portal](#).

BingTest  
Default

**Delete** **Manage**

Essentials ▾

Resource group: Default  
Resource id: /subscriptions/6b74c45b-9597-4939-a202-...  
Subscription Name: Pay As You Go

Resource name: BingTest  
Subscription Id: <Subscription ID>  
Location: West US

All settings →

Summary

Resources	Pricing Tier
BINGTEST	BINGTEST
Default	Resource group
BingTest	Bing Maps API for Enterprise
MyMachine	Virtual machine
...	

Publi...

Need help? Contact support.

If you still have questions, [contact support](#) to get your issue resolved quickly.

# Understand terms on your Microsoft Azure detailed usage charges

6/27/2018 • 4 minutes to read • [Edit Online](#)

The detailed usage charges CSV file contains daily and meter level usage charges for the current billing period.

To get your detailed usage file, see [How to get your Azure billing invoice and daily usage data](#). It's available in a comma-separated values (.csv) file format that you can open in a spreadsheet application. If you see two versions available, download version 2. That's the most current file format.

Usage charges are the total **monthly** charges on a subscription. The usage charges don't take into account any credits or discounts.

## Detailed terms and descriptions of your detailed usage file

The following sections describe the important terms shown in version 2 of the detailed usage file.

### Statement

The top section of the detailed usage CSV file shows the services that you used during the month's billing period. The following table lists the terms and descriptions shown in this section.

TERM	DESCRIPTION
Billing Period	The billing period when the meters were used
Meter Category	Identifies the top-level service for the usage
Meter Sub-Category	Defines the type of Azure service that can affect the rate
Meter Name	Identifies the unit of measure for the meter being consumed
Meter Region	Identifies the location of the datacenter for certain services that are priced based on datacenter location
SKU	Identifies the unique system identifier for each Azure meter
Unit	Identifies the Unit that the service is charged in. For example, GB, hours, 10,000 s.
Consumed Quantity	The amount of the meter used during the billing period
Included Quantity	The amount of the meter that is included at no charge in your current billing period
Overage Quantity	Shows the difference between the Consumed Quantity and the Included Quantity. You're billed for this amount. For Pay-As-You-Go offers with no Included Quantity with the offer, this total is the same as the Consumed Quantity.

TERM	DESCRIPTION
Within Commitment	Shows the meter charges that are subtracted from your commitment amount associated with your 6 or 12-month offer. Meter charges are subtracted in chronological order.
Currency	The currency used in your current billing period
Overage	Shows the meter charges that exceed your commitment amount associated with your 6 or 12-month offer
Commitment Rate	Shows the commitment rate based on the total commitment amount associated with your 6 or 12-month offer
Rate	The rate you're charged per billable unit
Value	Shows the result of multiplying the Overage Quantity column by the Rate column. If the Consumed Quantity doesn't exceed the Included Quantity, there is no charge in this column.

## Daily usage

The Daily usage section of the CSV file shows usage details that affect the billing rates. The following table lists the terms and descriptions shown in this section.

TERM	DESCRIPTION
Usage Date	The date when the meter was used
Meter Category	Identifies the top-level service for which this usage belongs
Meter ID	The billed meter identifier that's used to price billing usage
Meter Sub-Category	Defines the Azure service type that can affect the rate
Meter Name	Identifies the unit of measure for the meter being consumed
Meter Region	Identifies the location of the datacenter for certain services that are priced based on datacenter location
Unit	Identifies the unit that the meter is charged in. For example, GB, hours, 10,000 s.
Consumed Quantity	The amount of the meter that has been consumed for that day
Resource Location	Identifies the datacenter where the meter is running
Consumed Service	The Azure platform service that you used
Resource Group	The resource group in which the deployed meter is running in. For more information, see <a href="#">Azure Resource Manager overview</a> .

TERM	DESCRIPTION
Instance ID	The identifier for the meter.  The identifier contains the name you specify for the meter when it was created. It's either the name of the resource or the fully qualified Resource ID. For more information, see <a href="#">Azure Resource Manager API</a> .
Tags	Tag you assign to the meter. Use tags to group billing records.  For example, you can use tags to distribute costs by the department that uses the meter. Services that support emitting tags are virtual machines, storage, and networking services provisioned by using the <a href="#">Azure Resource Manager API</a> . For more information, see <a href="#">Organize your Azure resources with tags</a> .
Additional Info	Service-specific metadata. For example, an image type for a virtual machine.
Service Info 1	The project name that the service belongs to on your subscription
Service Info 2	Legacy field that captures optional service-specific metadata

## How do I make sure that the charges in my detailed usage file are correct?

If there is a charge on your detailed usage file that you would like more details on, see [Understand your bill for Microsoft Azure](#).

## What about external service charges?

External services (also known as Marketplace orders) are provided by independent service vendors and are billed separately. The charges don't show up on the Azure invoice. To learn more, see [Understand your Azure external service charges](#).

## Need help? Contact support.

If you still need help, [contact support](#) to get your issue resolved quickly.

# Understand terms on your Microsoft Azure invoice

6/27/2018 • 4 minutes to read • [Edit Online](#)

The invoice provides a summary of your charges and provides instructions for payment. It's available for download in the Portable Document Format (.pdf) from the [Azure portal](#) or can be sent via email. For more information, see [How to get your Azure billing invoice and daily usage data](#).

A few things to note:

- If you're using a free trial subscription, you can get your detailed usage information from the Azure portal but you don't have an invoice.
- Up to 24 hours of usage at the end of the previous billing period may show up in your current invoice.
- Charges listed on billing statements for international customers are for estimation purposes only. Banks may have different costs for the conversion rates.

## Detailed terms and descriptions of your invoice

The following sections list the important terms that you see on your invoice and descriptions for each term.

### Account information

The account information section of the invoice is on the top of the first page and shows information about your profile and subscription.

 Microsoft Azure	<b>Bill to</b>	Contoso 1234 Address Way City, State Zip
<b>Customer PO No.</b>	512	
<b>Invoice No.</b>	E12345JTHE	
<b>Billing Cycle</b>	3/5/2017 to 4/4/2017	
<b>Invoice Date</b>	4/5/2017	<b>Pay-As-You-Go</b>
<b>Payment Method</b>	Credit Card	<b>Account Owner Email</b> Joe@contoso.com

TERM	DESCRIPTION
Customer PO No.	An optional purchase order number, assigned by you for tracking
Invoice No.	A unique, Microsoft generated invoice number used for tracking purposes
Billing cycle	Date range that this invoice covers
Invoice date	Date that the invoice was generated, typically a day after end of the Billing cycle
Payment method	Type of payment used on the account (invoice or credit card)

TERM	DESCRIPTION
Bill to	Billing address that is listed for the account
Subscription offer ("Pay-As-You-Go")	Type of subscription offer that was purchased (Pay-As-You-Go, BizSpark Plus, Azure Pass, etc.). For more information, see <a href="#">Azure offer types</a> .
Account owner email	<p>The account email address that the Microsoft Azure account is registered under.</p> <p>To change the email address, see <a href="#">How to change profile information of your Azure account such as contact email, address, and phone number</a>.</p>

## Understand the invoice summary

The **Invoice Summary** section of the invoice lists the total transaction amounts since your last billing period, and your current usage charges.

Invoice Summary	
<b>Production Storage</b>	
Previous balance	664.14
Payment - Thank you!	-216.00
Outstanding balance (from previous billing cycle)	448.14
<b>Current Charges</b>	
Usage charges	219.45
Adjustments	-20.00
<b>Total Pre-Tax Charges</b>	199.45
VAT (0.000%)	0.00
<b>Total Amount</b>	<b>647.59 USD</b>
*Payment instructions on page 2	

The Subscription name ("Production Storage") is the name of the subscription for this invoice.

## Understand the previous charges

The previous balance, payments, and outstanding balance section of the invoice summarizes transactions since your last billing period.

TERM	DESCRIPTION
Previous balance	The total amount due from your last billing period
Payments	Total payments and credits applied to your last billing period
Outstanding balance (from previous billing cycle)	Any credits or remaining balance in your account since your last billing period

## Understand the current charges

The Current Charges section of the invoice shows details about your monthly charges for the current billing period.

TERM	DESCRIPTION
Usage charges	Usage charges are the total monthly charges on a subscription for the current billing period

TERM	DESCRIPTION
Discounts	Service discounts applied to your current billing period
Adjustments	<p>Miscellaneous credits (Free Usage, Credits, etc.) or outstanding charges applied to your current billing period.</p> <p>For example, if you have the Visual Studio Enterprise with MSDN offer, you see a monthly credit. If you cancel your subscription, you see any monthly usage charges that exceed the monthly credit that you get with your subscription offer. The charges incur at the start of your current billing period until the subscription cancellation date.</p>

#### Sold to and payment instructions

The following table describes the sold to and payment instructions shown on the second page of your Invoice.

TERM	DESCRIPTION
Sold to	<p>Profile address that's on the account.</p> <p>If you need to change the address, see <a href="#">How to change profile information of your Azure account such as contact email, address, and phone number</a>.</p>
Payment instructions	Instructions on how to pay depending on payment method (such as by credit card or by invoice).

#### Usage Charges

The Usage charges section of the invoice displays meter level information on your charges.

Contoso		Microsoft Azure						
Invoice No.		E12345JTHE						
Usage Charges								
Name	Type	Resource	Region	Consumed	Included	Billable	Rate	Value
Storage	Locally Redundant	Standard IO - Page Blob/Disk (GB)		1505.0000	0.0000	1505.0000	.0500	75.35
Virtual Machines	BASIC.A3 VM (Windows)	Compute Hours	EU North	365.9500	0.0000	365.9500	.3000	109.79
Storage	Locally Redundant	Standard IO - Table (GB)		318.7142	0.0000	318.7142	.0700	22.31
Data Management		Standard IO - Block Blob Write Operation Units (in 10,000s)		30.0000	0.0000	30.0000	.4000	12.00
								Sub-Total
								219.45
<b>Grand Total</b>								<b>219.45 USD</b>

The following table describes the usage charges column headers shown on your Invoice.

TERM	DESCRIPTION
Name	Identifies the top-level service for the usage
Type	Defines the Azure service type that can affect the rate

TERM	DESCRIPTION
Resource	Identifies the unit of measure for the meter being consumed
Region	Identifies the location of the datacenter for certain services that are priced based on datacenter location
Consumed	The amount of the meter used during the billing period
Included	The amount of the meter that is included at no charge in your current billing period
Billable	Shows the difference between the Consumed Quantity and the Included Quantity. You're billed for this amount. For Pay-As-You-Go offers with no amount included with the offer, this total is the same as the Consumed Quantity
Rate	The rate you're charged per billable unit
Value	Shows the result of multiplying the Overage Quantity column by the Rate column. If the Consumed Quantity doesn't exceed the Included Quantity, there is no charge in this column.
Sub-Total	The sum of all your charges pre-tax for this billing period
Grand Total	The sum of all your charges after tax for this billing period

## How do I make sure that the charges in my invoice are correct?

If there is a charge on your invoice that you would like more details on, see [Understand your bill for Microsoft Azure](#).

## Need help? Contact support.

If you still need help, [contact support](#) to get your issue resolved quickly.

# Prevent unexpected charges with Azure billing and cost management

6/27/2018 • 8 minutes to read • [Edit Online](#)

When you sign up for Azure, there are several things you can do to get a better idea of your spend. The [pricing calculator](#) can provide an estimate of costs before you create an Azure resource. The [Azure portal](#) provides you with the current cost breakdown and forecast for your subscription. If you want to group and understand costs for different projects or teams, look at [resource tagging](#). If your organization has a reporting system that you prefer to use, check out the [billing APIs](#).

- If your subscription is an Enterprise Agreement (EA), the public preview for seeing your costs in the Azure portal is available. If your subscription is through Cloud Solution Provider (CSP), or Azure Sponsorship, then some of the following features may not apply to you. See [Additional resources for EA, CSP, and Sponsorship](#) for more info.
- If your subscription is a Free Trial, [Visual Studio](#), Azure in Open (AIO), or BizSpark, your subscription is automatically disabled when all your credits are used. Learn about [spending limits](#) to avoid having your subscription unexpectedly disabled.
- If you have signed up for [Azure free account](#), you can use some of the most popular Azure services for free for 12 months. Along with the recommendations listed below, see [Avoid getting charged for free account](#).

## Get estimated costs before adding Azure services

### **Estimate cost online using the pricing calculator**

Check out the [pricing calculator](#) to get an estimated monthly cost of the service you're interested in. You can add any first party Azure resource to get an estimate cost.

# Pricing calculator

Configure and estimate the costs for Azure products



## Products

Select a product to include it in your estimate.

Search products  x

- Featured
- Compute
- Networking
- Storage
- Web + Mobile
- Containers
- Databases
- Data + Analytics
- AI + Cognitive Services
- Internet of Things
- Enterprise Integration
- Security + Identity
- Developer Tools
- Monitoring + Management

**Virtual Machines**  
Provision Windows and Linux virtual machines in seconds

**Virtual Machine Scale Sets**  
Manage and scale up to thousands of Linux and Windows virtual machines

**App Service**  
Quickly create powerful cloud apps for web and mobile

**Functions**  
Process events with serverless code

**Batch**  
Cloud-scale job scheduling and compute management

**Service Fabric**  
Develop microservices and orchestrate containers on Windows or Linux

**Cloud Services**  
Create highly-available, infinitely-scalable cloud applications and APIs

For example, an A1 Windows Virtual Machine (VM) is estimated to cost \$66.96 USD/month in compute hours if you leave it running the whole time:

Your Estimate

Virtual Machines 1: A1: 1 cores, 1.75 GB RAM, 70 GB disk \$66.96

 Virtual Machines

REGION: West US OPERATING SYSTEM: Windows TYPE: (OS Only)

TIER: Standard ADD MANAGED DISKS

INSTANCE: A1: 1 Core(s), 1.75 GB RAM, 70 GB Disk, \$0.090/hour

1 × 31 Days = \$66.96

More info

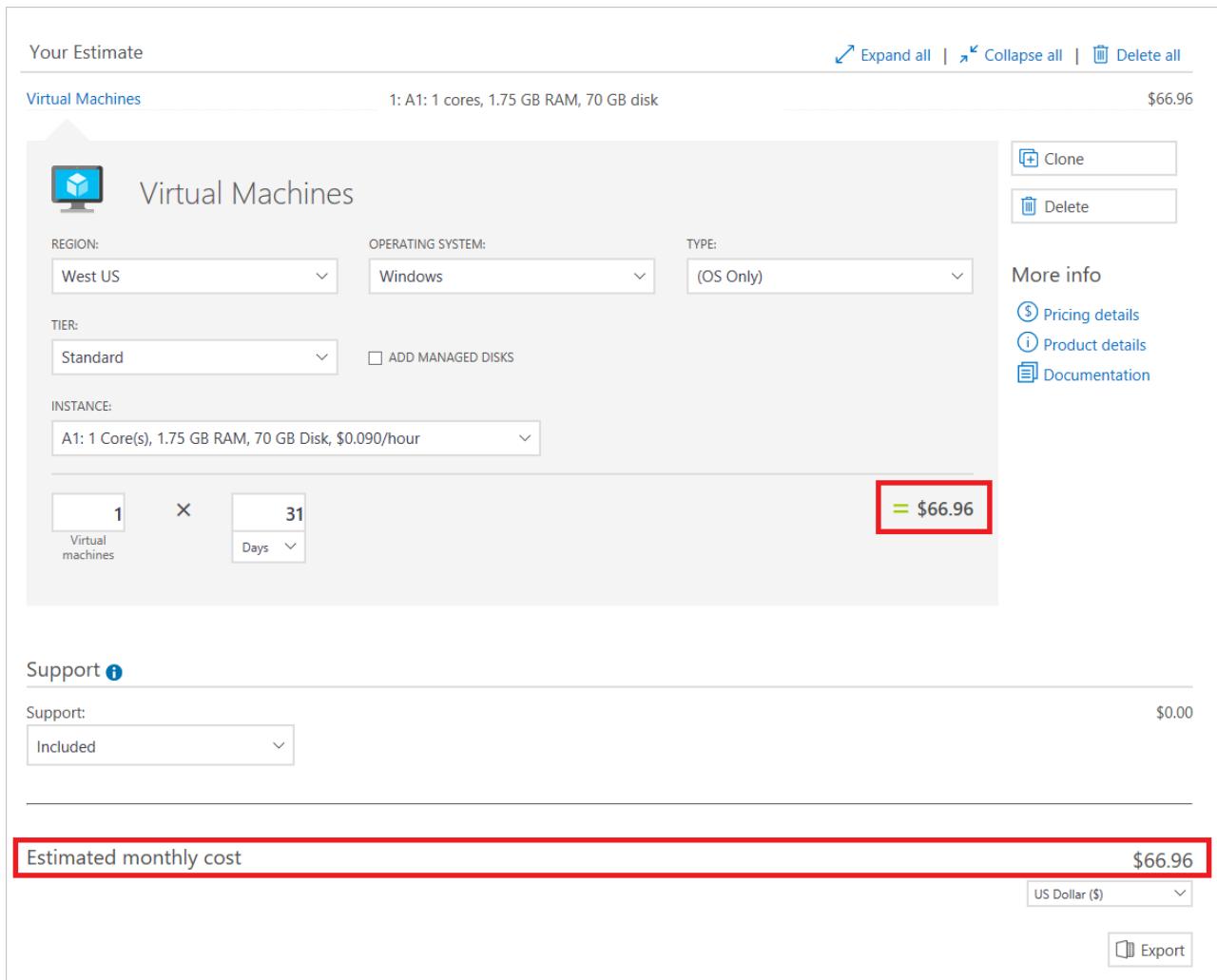
[Pricing details](#) [Product details](#) [Documentation](#)

Support \$0.00

Included

Estimated monthly cost \$66.96

US Dollar (\$) Export



For more information on pricing, see this [FAQ](#). Or if you want to talk to an Azure salesperson, contact 1-800-867-1389.

#### Review the estimated cost in the Azure portal

Typically when you add a service in the Azure portal, there's a view that shows you a similar estimated cost per month. For example, when you choose the size of your Windows VM, you see the estimated monthly cost for the compute hours:

**Create virtual machine** – □ X **Choose a size** – □ X

Prices presented are estimates in your local currency that include only Azure infrastructure costs and any discounts for the subscription and location. The prices don't include any applicable software costs. Recommended sizes are determined by the publisher of the selected image based on hardware and software requirements.

★ Recommended | [View all](#)

D1_V2 Standard	D1 Standard	A1 Standard
1 Core	1 Core	1 Core
3.5 GB	3.5 GB	1.75 GB
2 Data disks	2 Data disks	2 Data disks
2x500 Max IOPS	2x500 Max IOPS	2x500 Max IOPS
50 GB Local SSD	50 GB Local SSD	Load balancing
Load balancing	Load balancing	
<b>98.95</b> USD/MONTH (ESTIMATED)	<b>104.16</b> USD/MONTH (ESTIMATED)	<b>66.96</b> USD/MONTH (ESTIMATED)

## Set up billing alerts

Set up billing alerts to get emails when your usage costs exceed an amount that you specify. If you have monthly credits, set up alerts for when you use up a specified amount. For more information, see [Set up billing alerts for your Microsoft Azure subscriptions](#).

Microsoft Azure

⚠️ In the last 28 hour(s) your remaining monetary credits for Visual Studio Enterprise dropped below \$120.

### NOTE

This feature is still in preview so you should check your usage regularly.

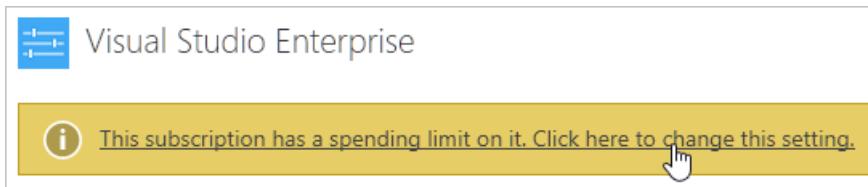
You might want to use the cost estimate from the pricing calculator as a guideline for your first alert.

### Check if you have a spending limit on

If you have a subscription that uses credits, then the spending limit is turned on for you by default. This way, when you spend all your credits, your credit card doesn't get charged. See the [full list of Azure offers and the availability of spending limit](#).

However, if you hit your spending limit, your services get disabled. That means your VMs are deallocated. To avoid service downtime, you must turn off the spending limit. Any overage gets charged onto your credit card on file.

To see if you've got spending limit on, go to the [Subscriptions view in the Account Center](#). A banner appears if your spending limit is on:

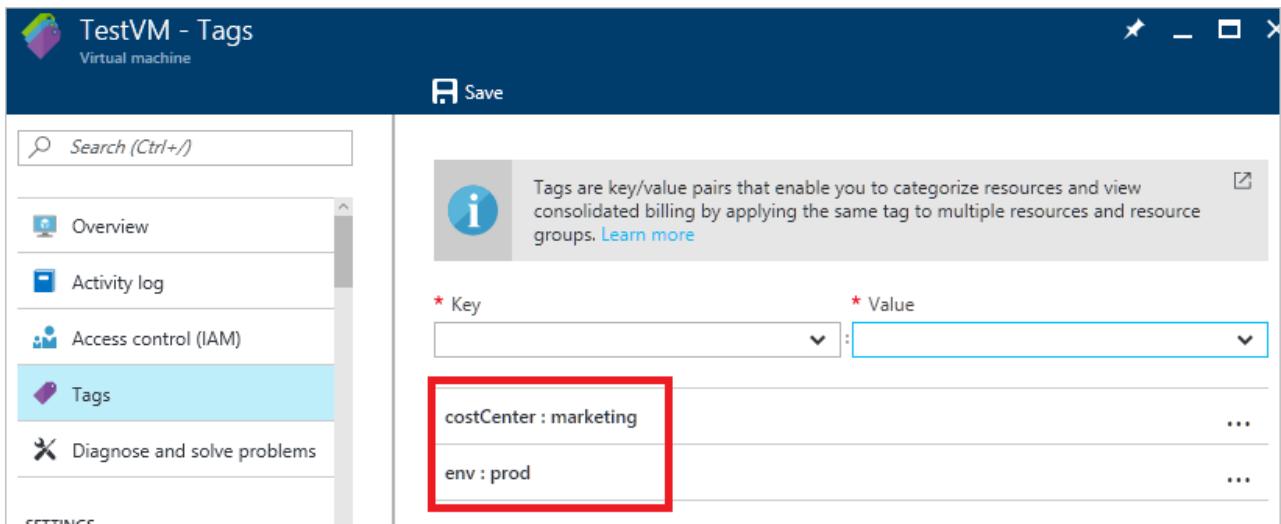


Click the banner and follow prompts to remove the spending limit. If you didn't enter credit card information when you signed up, you must enter it to remove the spending limit. For more information, see [Azure spending limit – How it works and how to enable or remove it](#).

## Ways to monitor your costs when using Azure services

### Add tags to your resources to group your billing data

You can use tags to group billing data for supported services. For example, if you run several VMs for different teams, then you can use tags to categorize costs by cost center (HR, marketing, finance) or environment (production, pre-production, test).



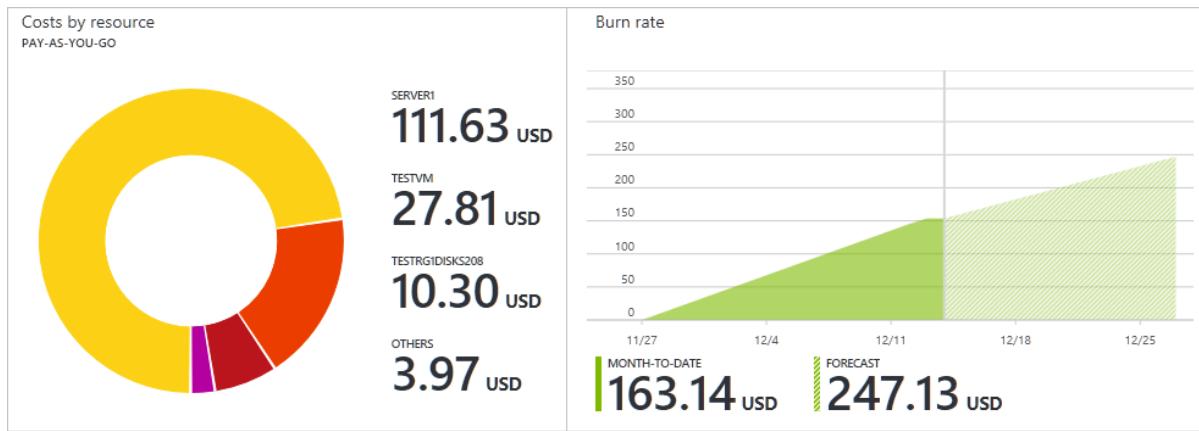
The tags show up throughout different cost reporting views. For example, they're visible in your [cost analysis view](#) right away and [detail usage .csv](#) after your first billing period.

For more information, see [Using tags to organize your Azure resources](#).

### Regularly check the portal for cost breakdown and burn rate

After you get your services running, regularly check how much they're costing you. You can see the current spend and burn rate in Azure portal.

1. Visit the [Subscriptions blade in Azure portal](#) and select a subscription.
2. You should see the cost breakdown and burn rate in the popup blade. It may not be supported for your offer (a warning would be displayed near the top).



- Click **Cost analysis** in the list to the left to see the cost breakdown by resource. Wait 24 hours after you add a service for the data to populate.

The screenshot shows the 'Cost analysis' blade with the following details:

**Subscription:** Pay-As-You-Go

**Resource type:** All resource types

**Resource group:** All resource groups

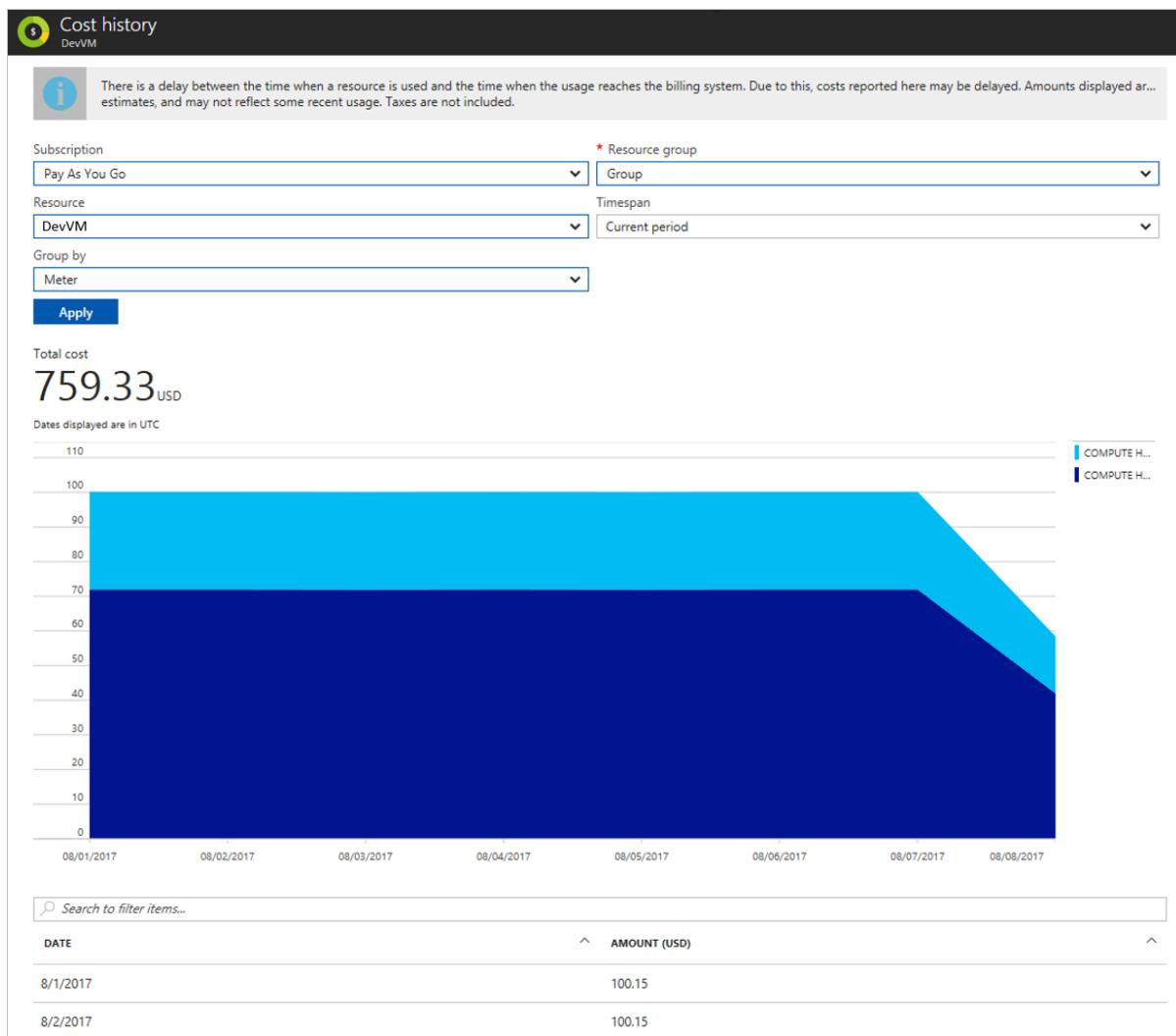
**Timespan:** Current period

**Tag:** All tags

**Total cost:** 109.01 USD

NAME	TYPE	RESOURCE GROUP	COST (USD)	TAGS
DevVM	Virtual machine	DevRG	56.15	...
TestVM	Virtual machine	TestRG	31.19	...
ProdVM	Virtual machine	ProdRG	10.92	...
DevStorage	Storage account	DevRG	4.34	...
ProdStorage	Storage account	ProdRG	4.32	...
DevIP	Public IP address	DevRG	0.63	...
TestIP	Public IP address	TestRG	0.62	...

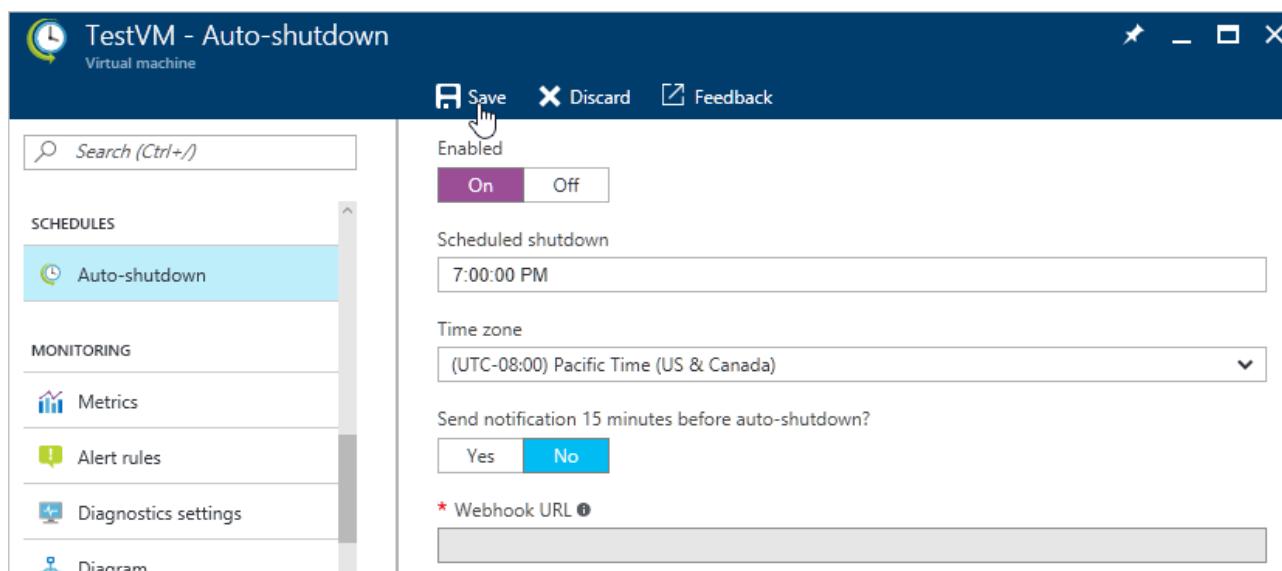
- You can filter by different properties like **tags**, resource group, and timespan. Click **Apply** to confirm the filters and **Download** if you want to export the view to a Comma-Separated Values (.csv) file.
- Additionally, you can click a resource to see daily spend history and how much the resource costs each day.



We recommend that you check the costs you see with the estimates you saw when you selected the services. If the costs wildly differ from estimates, double check the pricing plan (A1 vs A0 VM, for example) that you've selected for your resources.

### Consider enabling cost-cutting features like auto-shutdown for VMs

Depending on your scenario, you could configure auto-shutdown for your VMs in the Azure portal. For more information, see [Auto-shutdown for VMs using Azure Resource Manager](#).

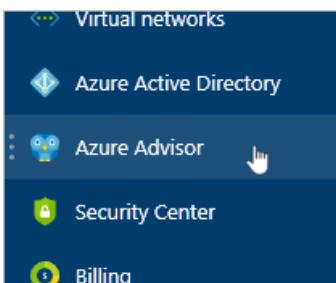


Auto-shutdown isn't the same as when you shut down within the VM with power options. Auto-shutdown stops and deallocates your VMs to stop additional usage charges. For more information, see pricing FAQ for [Linux VMs](#) and [Windows VMs](#) about VM states.

For more cost-cutting features for your development and test environments, check out [Azure DevTest Labs](#).

### Turn on and check out Azure Advisor recommendations

Azure Advisor is a preview feature that helps you reduce costs by identifying resources with low usage. Turn it on in the Azure portal:



Then, you can get actionable recommendations in the **Cost** tab in the Advisor dashboard:

A screenshot of the Azure Advisor Cost recommendations dashboard. The dashboard has a dark blue header with the title 'Recommendation' and a 'Snooze' button. Below the header, there are two main sections: 'PERFORMANCE' and 'COST'. The 'COST' section shows a credit card icon with the number '1'. Under 'PERFORMANCE', there is a bar chart icon with the number '0' and a dropdown menu set to 'Active'. Below these sections, a message says 'Pay-As-You-Go (&lt;subscription ID&gt;)'. A table lists one resource: '1 Virtual machine' updated at '1/3/2017 11:07:41 AM'. On the right side, the main content area displays a recommendation: 'Shut down or resize your virtual machine...' with a 'Snooze' button. It includes details like 'IMPACT High', 'LAST REFRESHED 1/3/2017 11:07:41 AM', and 'RESOURCE Server1'. A large callout box highlights 'Potential Monthly Savings 217.99\* USD'. A note below states: '\*You can save up to the stated amount if you choose to shut down the virtual machine. Your actual savings may vary.' At the bottom, there are 'Recommended actions' with a link to 'View Usage Patterns' and a button to 'Shut down the virtual machine' with a mouse cursor icon.

For more information, see [Advisor Cost recommendations](#).

## Reviewing costs at the end of your billing cycle

After the end of your billing cycle, your invoice will become available. You can also [download past invoices](#) and [detail usage files](#) to make sure you were charged correctly. For more information about comparing your daily usage with your invoice, see [Understand your bill for Microsoft Azure](#).

### Billing API

Use our billing API to programmatically get usage data. Use the RateCard API and the Usage API together to get your billed usage. For more information, see [Gain insights into your Microsoft Azure resource consumption](#).

## Additional resources and special cases

### EA, CSP, and Sponsorship customers

Talk to your account manager or Azure partner to get started.

OFFER	RESOURCES
Enterprise Agreement (EA)	<a href="#">EA portal</a> , <a href="#">help docs</a> , and <a href="#">Power BI report</a>
Cloud Solution Provider (CSP)	Talk to your provider
Azure Sponsorship	<a href="#">Sponsorship portal</a>

If you're managing IT for a large organization, we recommend reading [Azure enterprise scaffold](#) and the [enterprise IT white paper](#) (.pdf download, English only).

### Preview Enterprise Agreement cost views within Azure Portal

Enterprise cost views are currently in Public Preview. Items to note:

- Subscription costs are based on usage and do not account for prepaid amounts, overages, included quantities, adjustments, and taxes. Actual charges are computed at the Enrollment level.
- Amounts displayed within the Azure portal might be delayed compared to values in the Enterprise portal.
- If you are not seeing costs, it might be due to one of the following reasons:
  - You don't have enough RBAC permission at the subscription level. To see enterprise cost views, you must be a Billing Reader, Reader, Contributor, or Owner at the subscription level.
  - You are an Account Owner and your Enrollment Administrator has disabled the "AO view charges" setting. Contact your Enrollment Administrator to get access to costs.
  - You are a Department Administrator and your Enrollment Administrator has disabled the "DA view charges" setting. Contact your Enrollment Administrator to gain access.
  - You purchased Azure through a channel partner, and the partner has not released pricing information.
- When settings related to cost access are updated within the Enterprise portal, there is a delay of a few minutes before the changes are reflected in the Azure portal.
- Spending limit, billing alerts, and invoice guidance do not pertain to EA Subscriptions.

### Check your subscription and access

Viewing costs require [subscriptions-level access to billing information](#), but only the Account admin can access the [Account Center](#), change billing info, and manage subscriptions. The Account admin is the person who went through the sign-up process. For more information, see [Add or change Azure administrator roles that manage the subscription or services](#).

To see if you're the Account admin, go to the [Subscriptions blade in the Azure portal](#) and look at the list of subscriptions you have access to. Look under **My role**. If it says *Account admin*, then you're ok. If it says something else like *Owner*, then you don't have full privileges.

Subscriptions					
Role <small>?</small>		Status <small>?</small>			
Subscription	Subscription ID	My Role	Current Spend	Status	...
12-Month Plan (Prepaid)	<subscription ID>	Account admin	\$0.00	Active	...
Pay-As-You-Go	<subscription ID>	Account admin	\$149.69	Active	...

If you're not the Account admin, then somebody probably gave you partial access via [Azure Active Directory Role-based Access Control](#) (RBAC). To manage subscriptions and change billing info, [find the Account admin](#) and ask them to perform the tasks or [transfer the subscription to you](#).

If your Account admin is no longer with your organization and you need to manage billing, [contact support](#).

## Need help? Contact support

If you need help, [contact support](#) to get your issue resolved quickly.

# Set up billing or credit alerts for your Microsoft Azure subscriptions

6/15/2018 • 2 minutes to read • [Edit Online](#)

If you're the Account Admin for an Azure subscription, you can use the Azure Billing Alert Service to create customized billing alerts that help you monitor and manage billing activity for your Azure accounts.

This service is in preview, so you need to enable it in the Preview Features page first.

## NOTE

This article provides steps for how to delete personal data from the device or service and can be used to support your obligations under the GDPR. If you're looking for general info about GDPR, see the [GDPR section of the Service Trust portal](#).

## Set the alert threshold and email recipients

1. Visit [the Preview Features page](#) and enable **Billing Alert Service**.
2. After you receive the email confirmation that the billing service is turned on for your subscription, visit [the Subscriptions page](#) in the account portal. Click the subscription you want to monitor, and then click **Alerts**.

The screenshot shows the Azure Billing History interface. At the top, there are tabs: OVERVIEW, BILLING HISTORY, ALERTS (which is highlighted with a green background), and PREVIEW. Below the tabs, there's a summary bar showing a green progress bar from \$0.00 to \$137.72, followed by a grey bar from \$137.72 to \$150.00. A callout bubble points to the green bar with the text '\$137.72'. To the right, there's a 'SUBSCRIPTION STATUS' section showing '25 days left' and '\$138 credits remaining\*'. A large green button at the bottom right says 'Remove spending limit'. In the center, there's a section titled 'USAGE YOU ARE RESPONSIBLE FOR' showing '0.58 GB' used from 'DATA TRANSFER IN (GB) - ZONE 1'.

3. Next, click **Add Alert** to create your first one. You can set up a total of five billing alerts per subscription, with a different threshold and up to two email recipients for each alert.

The screenshot shows the Azure Alerts configuration page. At the top, there are tabs: OVERVIEW, BILLING HISTORY, ALERTS (which is highlighted with a green background), and PREVIEW. Below the tabs, there's a list of existing alerts:

- + Half way there: Not Sent, Monetary Credits, \$80. There are edit and delete icons next to it.
- + Some money was spent: Not Sent, Monetary Credits, \$120. There are edit and delete icons next to it.

A large green button at the bottom left says '(+) add alert'. A yellow banner at the bottom states 'You can setup 3 more alerts'.

4. When you add an alert, you give it a unique name, choose a spending threshold, and choose the email addresses where alerts are sent. When setting up the threshold, you can choose either a **Billing Total** or a

**Monetary Credit** from the **Alert For** list. For a billing total, an alert is sent when subscription spending exceeds the threshold. For a monetary credit, an alert is sent when monetary credits drop below the limit. Monetary credits usually apply to Free Trial and Visual Studio subscriptions.

The screenshot shows the 'ALERTS' section of the Azure Billing Alert Service. It lists two alerts:

- + Half way there**: Not Sent, Monetary Credits, \$80. Actions: Help (?), Delete (trash can).
- + Some money was spent**: Not Sent, Monetary Credits, \$120. Actions: Help (?), Delete (trash can).

Below the list are configuration fields:

- Alert Name**: Time to be careful
- Alert For**: Monetary Credits (selected)
- Amount Remaining**: \$20
- Email Recipient 1**: alertguy@contoso.com
- Email Recipient 2 (Optional)**: (empty)

At the bottom are 'Save' and 'Discard' buttons.

Azure supports any email address but doesn't verify that the email address works, so double-check for typos.

## Check on your alerts

After you set up alerts, the Account Center lists them and shows how many more you can set up. For each alert, you see the date and time it was sent, whether it's an alert for Billing Total or Monetary Credit, and the limit you set up. The date and time format is 24-hour Universal Time Coordinate (UTC) and the date is yyyy-mm-dd format. Click the plus sign for an alert in the list to edit it, or click the trash-can to delete it.

## Delete alerts or email addresses from the Azure Billing Alert Service

If you ever need to remove any information from the service, update the email address on file, or delete the alert entirely.

The screenshot shows the 'ALERTS' section of the Azure Billing Alert Service. It lists one alert:

- FY18 Budget**: Not Sent, Billing Total, \$100. Actions: Help (?), Delete (trash can).

Below the list are configuration fields:

- Alert Name**: FY18 Budget
- Alert For**: Billing Total (selected)
- Amount Spent**: \$100
- Email Recipient 1**: admin@contoso.com
- Email Recipient 2 (Optional)**: bill@contoso.com

At the bottom are 'Save' and 'Discard' buttons.

Below the main list is a button: **(+ add alert ?)**.

A yellow banner at the bottom states: **(i) You can setup 4 more alerts**.

## Billing alerts for Enterprise Agreement (EA) customers

EA subscriptions are not supported by this service, instead EA customers can get alerts for each department under an enrollment by setting spending quotas. See [Department Spending Quotas](#) in the EA portal to get

started.

## Learn more about Azure cost management

- Estimate costs using the [pricing calculator](#), [total cost of ownership calculator](#), and when you add a service.
- [Review your usage and costs regularly in Azure portal](#).
- Turn on [Azure Advisor cost recommendations](#).

To learn more, see [Azure cost management guidance](#).

# Use tags to organize your Azure resources

5/23/2018 • 9 minutes to read • [Edit Online](#)

You apply tags to your Azure resources to logically organize them by categories. Each tag consists of a name and a value. For example, you can apply the name "Environment" and the value "Production" to all the resources in production.

After you apply tags, you can retrieve all the resources in your subscription with that tag name and value. Tags enable you to retrieve related resources from different resource groups. This approach is helpful when you need to organize resources for billing or management.

The following limitations apply to tags:

- Each resource or resource group can have a maximum of 15 tag name/value pairs. This limitation applies only to tags directly applied to the resource group or resource. A resource group can contain many resources that each have 15 tag name/value pairs. If you have more than 15 values that you need to associate with a resource, use a JSON string for the tag value. The JSON string can contain many values that are applied to a single tag name. This article shows an example of assigning a JSON string to the tag.
- The tag name is limited to 512 characters, and the tag value is limited to 256 characters. For storage accounts, the tag name is limited to 128 characters, and the tag value is limited to 256 characters.
- Tags applied to the resource group are not inherited by the resources in that resource group.
- Tags can't be applied to classic resources such as Cloud Services.
- Tag names can't contain these characters: <, >, %, &, \, ?, /

## NOTE

This article provides steps for how to delete personal data from the device or service and can be used to support your obligations under the GDPR. If you're looking for general info about GDPR, see the [GDPR section of the Service Trust portal](#).

## PowerShell

The examples in this article require version 6.0 or later of Azure PowerShell. If you do not have version 6.0 or later, [update your version](#).

To see the existing tags for a *resource group*, use:

```
(Get-AzureRmResourceGroup -Name examplegroup).Tags
```

That script returns the following format:

Name	Value
---	-----
Dept	IT
Environment	Test

To see the existing tags for a *resource that has a specified resource ID*, use:

```
(Get-AzureRmResource -ResourceId /subscriptions/<subscription-id>/resourceGroups/<rg-name>/providers/Microsoft.Storage/storageAccounts/<storage-name>).Tags
```

Or, to see the existing tags for a *resource that has a specified name and resource group*, use:

```
(Get-AzureRmResource -ResourceName examplevnet -ResourceGroupName examplegroup).Tags
```

To get *resource groups that have a specific tag*, use:

```
(Get-AzureRmResourceGroup -Tag @{ Dept="Finance" }).ResourceGroupName
```

To get *resources that have a specific tag*, use:

```
(Get-AzureRmResource -Tag @{ Dept="Finance" }).Name
```

To get *resources that have a specific tag name*, use:

```
(Get-AzureRmResource -TagName Dept).Name
```

Every time you apply tags to a resource or a resource group, you overwrite the existing tags on that resource or resource group. Therefore, you must use a different approach based on whether the resource or resource group has existing tags.

To add tags to a *resource group without existing tags*, use:

```
Set-AzureRmResourceGroup -Name examplegroup -Tag @{ Dept="IT"; Environment="Test" }
```

To add tags to a *resource group that has existing tags*, retrieve the existing tags, add the new tag, and reapply the tags:

```
$tags = (Get-AzureRmResourceGroup -Name examplegroup).Tags  
$tags.Add("Status", "Approved")  
Set-AzureRmResourceGroup -Tag $tags -Name examplegroup
```

To add tags to a *resource without existing tags*, use:

```
$r = Get-AzureRmResource -ResourceName examplevnet -ResourceGroupName examplegroup  
Set-AzureRmResource -Tag @{ Dept="IT"; Environment="Test" } -ResourceId $r.ResourceId -Force
```

To add tags to a *resource that has existing tags*, use:

```
$r = Get-AzureRmResource -ResourceName examplevnet -ResourceGroupName examplegroup  
$r.Tags.Add("Status", "Approved")  
Set-AzureRmResource -Tag $r.Tags -ResourceId $r.ResourceId -Force
```

To apply all tags from a resource group to its resources, and *not retain existing tags on the resources*, use the following script:

```
$groups = Get-AzureRmResourceGroup  
foreach ($g in $groups)  
{  
    Get-AzureRmResource -ResourceGroupName $g.ResourceGroupName | ForEach-Object {Set-AzureRmResource -  
    ResourceId $_.ResourceId -Tag $g.Tags -Force }  
}
```

To apply all tags from a resource group to its resources, and *retain existing tags on resources that are not duplicates*, use the following script:

```
$group = Get-AzureRmResourceGroup "examplegroup"
if ($group.Tags -ne $null) {
    $resources = Get-AzureRmResource -ResourceGroupName $group.ResourceGroupName
    foreach ($r in $resources)
    {
        $resourcetags = (Get-AzureRmResource -ResourceId $r.ResourceId).Tags
        if ($resourcetags)
        {
            foreach ($key in $group.Tags.Keys)
            {
                if (-not($resourcetags.ContainsKey($key)))
                {
                    $resourcetags.Add($key, $group.Tags[$key])
                }
            }
            Set-AzureRmResource -Tag $resourcetags -ResourceId $r.ResourceId -Force
        }
        else
        {
            Set-AzureRmResource -Tag $group.Tags -ResourceId $r.ResourceId -Force
        }
    }
}
```

To remove all tags, pass an empty hash table:

```
Set-AzureRmResourceGroup -Tag @{} -Name examplegroup
```

## Azure CLI

To see the existing tags for a *resource group*, use:

```
az group show -n examplegroup --query tags
```

That script returns the following format:

```
{
  "Dept"      : "IT",
  "Environment" : "Test"
}
```

Or, to see the existing tags for a *resource that has a specified name, type, and resource group*, use:

```
az resource show -n examplevnet -g examplegroup --resource-type "Microsoft.Network/virtualNetworks" --query tags
```

When looping through a collection of resources, you might want to show the resource by resource ID. A complete example is shown later in this article. To see the existing tags for a *resource that has a specified resource ID*, use:

```
az resource show --id <resource-id> --query tags
```

To get resource groups that have a specific tag, use `az group list`:

```
az group list --tag Dept=IT
```

To get all the resources that have a particular tag and value, use `az resource list`:

```
az resource list --tag Dept=Finance
```

Every time you apply tags to a resource or a resource group, you overwrite the existing tags on that resource or resource group. Therefore, you must use a different approach based on whether the resource or resource group has existing tags.

To add tags to a *resource group without existing tags*, use:

```
az group update -n examplegroup --set tags.Environment=Test tags.Dept=IT
```

To add tags to a *resource without existing tags*, use:

```
az resource tag --tags Dept=IT Environment=Test -g examplegroup -n examplevnet --resource-type "Microsoft.Network/virtualNetworks"
```

To add tags to a resource that already has tags, retrieve the existing tags, reformat that value, and reapply the existing and new tags:

```
jsonrtag=$(az resource show -g examplegroup -n examplevnet --resource-type "Microsoft.Network/virtualNetworks" --query tags)
rt=$(echo $jsonrtag | tr -d '"{},' | sed 's/: /=g')
az resource tag --tags $rt Project=Redesign -g examplegroup -n examplevnet --resource-type "Microsoft.Network/virtualNetworks"
```

To apply all tags from a resource group to its resources, and *not retain existing tags on the resources*, use the following script:

```
groups=$(az group list --query [].name --output tsv)
for rg in $groups
do
    jsontag=$(az group show -n $rg --query tags)
    t=$(echo $jsontag | tr -d '"{},' | sed 's/: /=g')
    r=$(az resource list -g $rg --query [].id --output tsv)
    for resid in $r
    do
        az resource tag --tags $t --id $resid
    done
done
```

To apply all tags from a resource group to its resources, and *retain existing tags on resources*, use the following script:

```

groups=$(az group list --query [].name --output tsv)
for rg in $groups
do
  jsontag=$(az group show -n $rg --query tags)
  t=$(echo $jsontag | tr -d '{},' | sed 's/: /=g')
  r=$(az resource list -g $rg --query [].id --output tsv)
  for resid in $r
  do
    jsonrtag=$(az resource show --id $resid --query tags)
    rt=$(echo $jsonrtag | tr -d '{},' | sed 's/: /=g')
    az resource tag --tags $t$rt --id $resid
  done
done

```

## Templates

To tag a resource during deployment, add the `tags` element to the resource you are deploying. Provide the tag name and value.

### Apply a literal value to the tag name

The following example shows a storage account with two tags (`Dept` and `Environment`) that are set to literal values:

```
{
  "$schema": "https://schema.management.azure.com/schemas/2015-01-01/deploymentTemplate.json#",
  "contentVersion": "1.0.0.0",
  "resources": [
    {
      "apiVersion": "2016-01-01",
      "type": "Microsoft.Storage/storageAccounts",
      "name": "[concat('storage', uniqueString(resourceGroup().id))]",
      "location": "[resourceGroup().location]",
      "tags": {
        "Dept": "Finance",
        "Environment": "Production"
      },
      "sku": {
        "name": "Standard_LRS"
      },
      "kind": "Storage",
      "properties": { }
    }
  ]
}
```

### Apply an object to the tag element

You can define an object parameter that stores several tags, and apply that object to the tag element. Each property in the object becomes a separate tag for the resource. The following example has a parameter named `tagValues` that is applied to the tag element.

```
{
  "$schema": "https://schema.management.azure.com/schemas/2015-01-01/deploymentTemplate.json#",
  "contentVersion": "1.0.0.0",
  "parameters": {
    "tagValues": {
      "type": "object",
      "defaultValue": {
        "Dept": "Finance",
        "Environment": "Production"
      }
    }
  },
  "resources": [
    {
      "apiVersion": "2016-01-01",
      "type": "Microsoft.Storage/storageAccounts",
      "name": "[concat('storage', uniqueString(resourceGroup().id))]",
      "location": "[resourceGroup().location]",
      "tags": "[parameters('tagValues')]",
      "sku": {
        "name": "Standard_LRS"
      },
      "kind": "Storage",
      "properties": {}
    }
  ]
}
```

### Apply a JSON string to the tag name

To store many values in a single tag, apply a JSON string that represents the values. The entire JSON string is stored as one tag that cannot exceed 256 characters. The following example has a single tag named `CostCenter` that contains several values from a JSON string:

```
{
  "$schema": "https://schema.management.azure.com/schemas/2015-01-01/deploymentTemplate.json#",
  "contentVersion": "1.0.0.0",
  "resources": [
    {
      "apiVersion": "2016-01-01",
      "type": "Microsoft.Storage/storageAccounts",
      "name": "[concat('storage', uniqueString(resourceGroup().id))]",
      "location": "[resourceGroup().location]",
      "tags": {
        "CostCenter": "{\"Dept\":\"Finance\", \"Environment\":\"Production\"}"
      },
      "sku": {
        "name": "Standard_LRS"
      },
      "kind": "Storage",
      "properties": { }
    }
  ]
}
```

## Portal

1. To view the tags for a resource or a resource group, looks for existing tags in the overview. If you have not previously applied tags, the list is empty.

The screenshot shows the Azure portal interface for a resource group named 'demoGroup'. On the left, there's a navigation bar with links for 'Overview', 'Activity log', and 'Access control (IAM)'. On the right, under the 'Tags' section, there's a button labeled 'Click here to add tags' which is highlighted with a red box.

2. To add a tag, select **Click here to add tags**.
3. Provide a name and value. Select + to add the tag.

The screenshot shows the 'Edit tags' dialog for the 'demoGroup' resource group. It displays a table with two columns: 'NAME' and 'VALUE'. A new tag 'Dept' with the value 'Finance' is being added, indicated by a red box around the '+' icon.

NAME	VALUE
Dept	Finance

4. Continue adding tags as needed. When done, select **Save**.

The screenshot shows the 'Edit tags' dialog for the 'demoGroup' resource group. It displays a table with two columns: 'NAME' and 'VALUE'. Three tags have been added: 'Dept : Finance', 'Environment : Production', and 'name : value'. At the bottom, there are 'Save' and 'Cancel' buttons, with 'Save' highlighted with a red box.

NAME	VALUE
Dept	Finance
Environment	Production
name	value

5. The tags are now displayed in the overview.

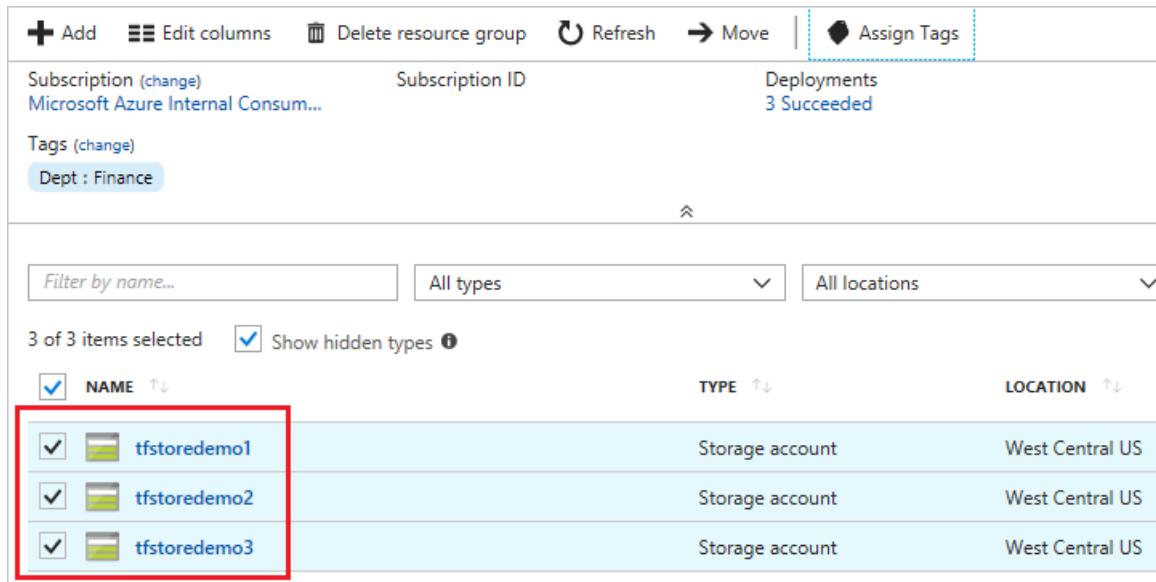
The screenshot shows the resource group overview for 'demoGroup'. The 'Tags' section is highlighted with a red box, showing the tags 'Dept : Finance' and 'Environment : Production'.

6. To add or delete a tag, select **change**.
7. To delete a tag, select the trash icon. Then, select **Save**.

Edit tags	
Tags for demoGroup	
NAME	VALUE
Dept	Finance
Environment	Production
name	value

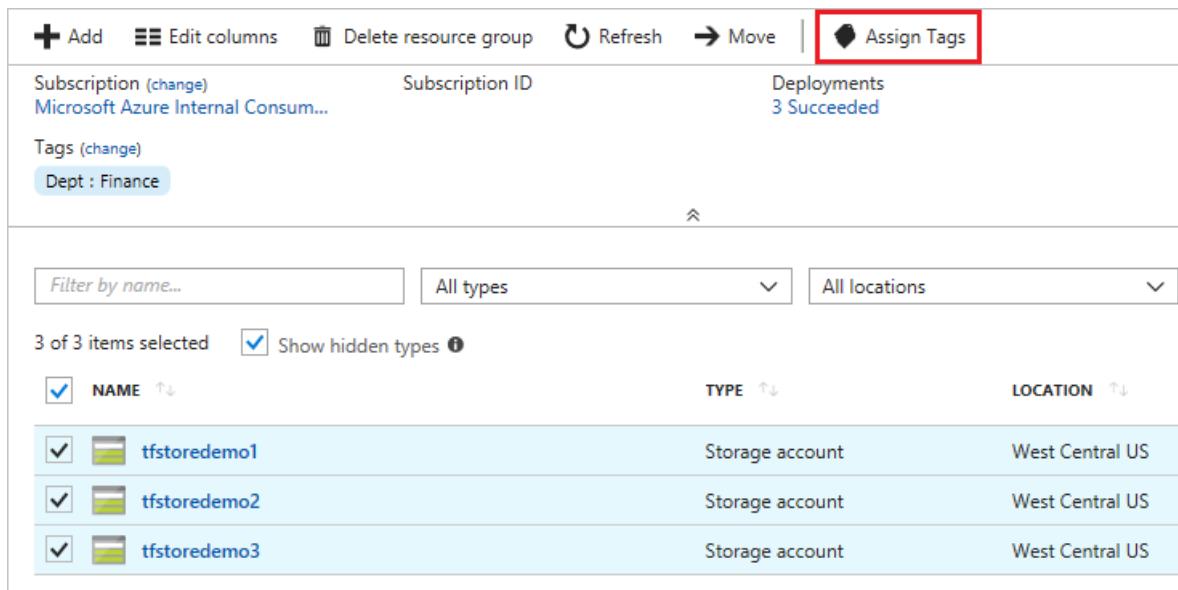
To bulk assign tags to multiple resources:

- From any list of resources, select the checkbox for the resources you want to assign the tag.



The screenshot shows the Azure portal interface for managing resources. At the top, there's a toolbar with 'Add', 'Edit columns', 'Delete resource group', 'Refresh', 'Move', and a highlighted 'Assign Tags' button. Below the toolbar, it displays 'Subscription (change)' and 'Microsoft Azure Internal Consum...' with 'Subscription ID' and 'Deployments 3 Succeeded'. Under 'Tags (change)', there's a tag named 'Dept : Finance'. The main area shows a table of resources with columns: NAME, TYPE, and LOCATION. Three resources are selected and highlighted with a red box: 'tfstoredemo1', 'tfstoredemo2', and 'tfstoredemo3', all of which are Storage accounts located in West Central US.

- Select **Assign tags**



This screenshot is identical to the previous one, showing the same list of resources with three items selected ('tfstoredemo1', 'tfstoredemo2', 'tfstoredemo3'). The 'Assign Tags' button is now highlighted in red, indicating the next step in the process.

- After each name and value, select +. When done, select **Assign**.

**Assign tags**

Assign tags to 3 resources

NAME	VALUE
Status	Approved
Environment	Production
<i>name</i>	<i>value</i>

**Selected resources**

- tfstoredemo1 (Storage account)  
2 to be added ⓘ
- tfstoredemo2 (Storage account)  
2 to be added ⓘ
- tfstoredemo3 (Storage account)  
2 to be added ⓘ

**Buttons:** Assign (highlighted with a red box) | Cancel

To view all resources with a tag:

1. Select **All services** and **Tags**.

**Microsoft Azure**

The screenshot shows the Microsoft Azure portal interface. On the left, there's a sidebar with a 'Create a resource' button and a 'Create a resource' link. Below it, a red box highlights the 'All services' button. The main area is titled 'All services' with a 'Filter' input field and a 'By category' dropdown. Under the 'GENERAL (14)' heading, several services are listed: Dashboard (marked with a star), Management Groups (marked with a star), Cost Management + Billing (marked with a star), Help + support (marked with a star), and Tags. The 'Tags' service is also highlighted with a red box.

2. Select the tag for viewing resources.

The screenshot shows the Microsoft Tags interface. At the top, it says "Subscriptions: 3 of 10 selected – Don't see a subscription? Switch directories". Below that is a dropdown menu showing "3 subscriptions". A tooltip box with an "i" icon provides information about tags: "Tags are name/value pairs that enable you to categorize resources and view consolidated billing by applying the same tag to multiple resources and resource groups." The main list contains four items: "Dept : Finance", "Dept : IT", "Environment : Production" (which is highlighted with a red border), and "Status : Approved". Each item has a "..." button to its right.

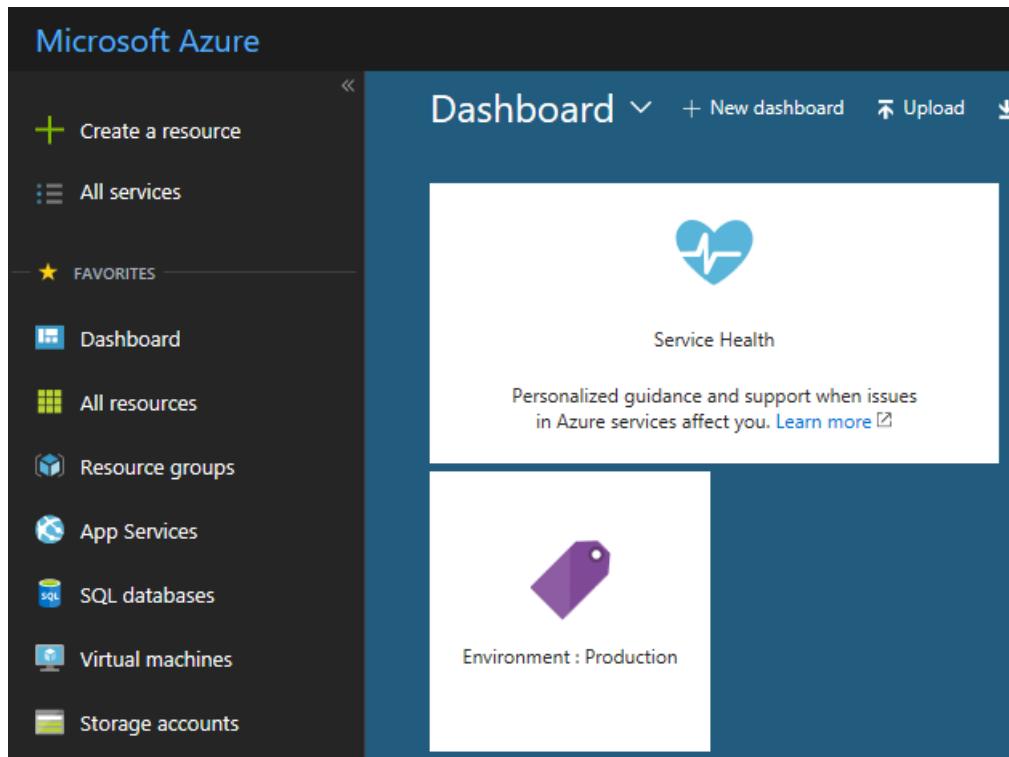
3. All resources with that tag are displayed.

The screenshot shows the Microsoft Tags interface with the tag "Environment : Production" selected. The title bar now says "Environment : Production". The main list displays three resources: "tfstoredemo1", "tfstoredemo2", and "tfstoredemo3", all associated with "Microsoft Azure Internal Consumption". Each resource has a "..." button to its right.

4. For quick access, pin the view to the dashboard.

The screenshot shows the Microsoft Tags interface with the tag "Environment : Production" selected. The title bar now includes a pinned icon. The main list displays the same three resources: "tfstoredemo1", "tfstoredemo2", and "tfstoredemo3", all associated with "Microsoft Azure Internal Consumption". Each resource has a "..." button to its right.

5. The view is available from the dashboard.



## REST API

The Azure portal and PowerShell both use the [Resource Manager REST API](#) behind the scenes. If you need to integrate tagging into another environment, you can get tags by using **GET** on the resource ID and update the set of tags by using a **PATCH** call.

## Tags and billing

You can use tags to group your billing data. For example, if you are running multiple VMs for different organizations, use the tags to group usage by cost center. You can also use tags to categorize costs by runtime environment, such as the billing usage for VMs running in the production environment.

You can retrieve information about tags through the [Azure Resource Usage and RateCard APIs](#) or the usage comma-separated values (CSV) file. You download the usage file from the [Azure account portal](#) or EA portal. For more information about programmatic access to billing information, see [Gain insights into your Microsoft Azure resource consumption](#). For REST API operations, see [Azure Billing REST API Reference](#).

When you download the usage CSV for services that support tags with billing, the tags appear in the **Tags** column. For more information, see [Understand your bill for Microsoft Azure](#).

Daily Usage							Tags
Usage Date	Meter Category	Unit	Consume	Resource Gr	Instance Id		
5/14/2015	"Virtual Machines"	"Hours"	3.999984	"computeRG"	"virtualMachines/catalogVM"		<pre>["costCenter":"finance",  "env":"prod"]</pre>
5/14/2015	"Virtual Machines"	"Hours"	3.999984	"businessRG"	"virtualMachines/dataVM"		<pre>["costCenter":"hr",  "env":"test"]</pre>

## Next steps

- You can apply restrictions and conventions across your subscription by using customized policies. A policy that you define might require that all resources have a value for a particular tag. For more information, see [What is Azure Policy?](#)
- For an introduction to using Azure PowerShell when you're deploying resources, see [Using Azure PowerShell with Azure Resource Manager](#).

- For an introduction to using the Azure CLI when you're deploying resources, see [Using the Azure CLI for Mac, Linux, and Windows with Azure Resource Manager](#).
- For an introduction to using the portal, see [Using the Azure portal to manage your Azure resources](#).
- For guidance on how enterprises can use Resource Manager to effectively manage subscriptions, see [Azure enterprise scaffold - prescriptive subscription governance](#).

# Understand Azure spending limit and how to remove it

6/15/2018 • 3 minutes to read • [Edit Online](#)

Spending limit in Azure exists to prevent spending over your credit amount. All new customers who sign up for the trial or offers that includes credits over multiple months have the spending limit turned on by default. The spending limit is \$0. It can't be changed. The spending limit isn't available for subscription types such as Pay-As-You-Go subscriptions and commitment plans. See the [full list of Azure offers and the availability of the spending limit](#).

**Looking for billing alerts?** See [Set up billing or credit alerts for Azure subscriptions](#).

## What happens when I reach the spending limit?

When your usage results in charges that exhaust the monthly amounts included with your subscription, the services that you deployed are disabled for the rest of that billing period.

For example, when you spend all the credit included with your subscription, Cloud Services that you deployed are removed from production and your Azure virtual machines are stopped and de-allocated. The data in your storage accounts and databases are available in a read-only manner.

At the beginning of the next billing period, if your subscription offer includes credits over multiple months, your subscription would be re-enabled automatically. Then you can redeploy your Cloud Services and have full access to your storage accounts and databases.

We send email notifications when you hit the spending limit for your subscription. Sign in to the [Account Center](#), and you see notifications about subscriptions that have reached the spending limit.

If you have a Free Trial and reach the spending limit, you can [upgrade to Pay-As-You-Go](#) to remove the spending limit and have the subscription automatically re-enabled.

## Remove the spending limit in Account Center

You can remove the spending limit at any time as long as there's a valid payment method associated with your subscription. For offers that have credit over multiple months, you can also re-enable the spending limit at the beginning of your next billing period.

To remove your spending limit, follow these steps:

1. Sign in to the [Account Center](#).
2. Select a subscription. If the subscription is disabled due to the spending limit being reached, click this notification: "Subscription reached the Spending Limit and has been disabled to prevent charges." Otherwise, click **Remove spending limit** in the **SUBSCRIPTION STATUS** area.
3. Select an option that is appropriate for you.

**Remove spending limit**

To ensure you don't get charged, we disable your subscription once it reaches its spending limit.

No, I do not want to remove the spending limit.

Yes, remove the spending limit.

[Remove spending limit indefinitely](#)

[Remove spending limit for the current billing period](#) 

By choosing this option, I authorize Microsoft to charge my current payment method on a monthly basis for the amounts indicated in the [Rate Plan](#) until my subscription is canceled or terminated.

 VISA - \*\*1237 [Change payment method](#)

 If you purchase external services while the spending limit is removed, you will still be charged for them separately once the spending limit is reset.

[Complete](#)

OPTION	EFFECT
Remove spending limit indefinitely	Removes the spending limit without turning it on automatically at the start of the next billing period.
Remove spending limit for the current billing period	Removes the spending limit so that it turns back on automatically at the start of the next billing period.

## Frequently asked questions

### Why would I want to remove the spending limit?

The spending limit could prevent you from deploying or using certain third-party and Microsoft services. Here are the scenarios where you should remove the spending limit on your subscription.

- You plan to deploy first party images like Oracle and services such as Visual Studio Team Services. This scenario causes you to exceed your spending limit almost immediately and causes your subscription to be disabled.
- You have services that cannot be disrupted.
- You have services and resources with settings like virtual IP addresses that you don't want to lose. These settings are lost when the services and resources are de-allocated.

### How do I turn on the spending limit after removing it?

This feature is available only when the spending limit has been removed indefinitely. Change it to turn on automatically at the start of the next billing period.

1. Sign in to the [Account Center](#).
2. Click the yellow banner to change the spending limit option.
3. Choose **Turn on spending limit in the next billing period <start date of billing period>**

### How do I set a custom spending limit?

We don't have custom spend limits today. However, you can opt in to [use billing alerts to control your spend](#).

### Does the spending limit prevent all charges from Azure?

Some external services published in the Azure Marketplace cannot be used with your subscription credits, and can incur separate charges even when your spending limit is set. Examples include Visual Studio licenses, Azure Active Directory premium, support plans, and most third-party branded services. When you provision a new external service, a warning is shown to let you know the services are billed separately:

**Offer details**

NGINX Plus by Nginx, Inc.	0.2100 USD/hr	
<a href="#">Terms of use   privacy policy</a>		
Standard DS1 v2 by Microsoft	0.0730 USD/hr	
<a href="#">Terms of use   privacy policy</a>	<a href="#">Pricing for other VM sizes</a>	

**⚠️ The highlighted Marketplace purchase(s) are not covered by your Azure credits, and will be billed separately.**  
You cannot use your Azure monetary commitment funds or subscription credits for these purchases. You will be billed separately for marketplace purchases.

If you have previously purchased a free trial offering, your free trial period will run 30 days from the date of your original purchase; all use thereafter will be billed at the standard rates listed above.

**ℹ️ Azure resource**  
You may use your Azure monetary commitment funds or subscription credits for these purchases. Prices presented are retail prices and may not reflect discounts associated with your subscription.

## Terms of use

By clicking "Purchase", I (a) agree to the legal terms and privacy statement(s) associated with each Marketplace offering above, (b) authorize Microsoft to charge or bill my current payment method for the fees associated with my use of the offering(s), including applicable taxes, with the same billing frequency as my Azure subscription, until I discontinue use of the offering(s), and (c) agree that Microsoft may share my contact information and transaction details with the seller(s) of the offering(s). Microsoft does not provide rights for third party products or services. See the [Azure Marketplace Terms](#) for additional terms.

## Need help? Contact support

If you still need help, [contact support](#) to get your issue resolved quickly.

# What are Azure Reserved VM Instances?

6/27/2018 • 4 minutes to read • [Edit Online](#)

Azure Reserved VM Instances helps you save money by pre-paying for one-year or three-years of compute capacity allowing you to get a discount on the virtual machines you use. Azure reserved instances can significantly reduce your virtual machine costs—up to 72 percent on pay-as-you-go prices—with one-year or three-year upfront commitment. Reserved instances provide a billing discount and do not affect the runtime state of your virtual machines.

You can buy a reserved instance (RI) in the [Azure portal](#). For more information, see [Prepay for virtual machines and save money with reserved instances](#).

## Why should I buy a reserved instance?

If you have virtual machines that run for long periods of time, purchasing a reserved instance gives you the most cost-effective option. For example, if you continuously run four instances of a Standard D2 VM in the West US region, without a reserved instance you are charged at pay-as-you-go rates. If you purchase a reserved instance for those four VMs, the VMs immediately get the billing benefit. They are no longer charged at the pay-as-you-go rates.

## What charges does a reserved instance cover?

A reserved instance only covers the virtual machine infrastructure charges for your Windows or Linux virtual machines. A reserved instance does not cover additional software, networking, or storage charges. For Windows virtual machines, you can cover the Windows licensing costs with [Azure Hybrid Benefit](#).

## Who's eligible to purchase a reserved instance?

Azure customers with these subscription types can purchase a reserved instance:

- Enterprise agreement subscription offer type (MS-AZR-0017P).
- [Pay-As-You-Go](#) subscription offer type (MS-AZR-003P). You must be in the role "Owner" on the subscription to buy a reserved instance. For purchasing reserved instances in an enterprise enrollment, the enterprise administrator must enable reserved instance purchases in the EA portal. By default, this setting is enabled.
- Cloud Solution Provider (CSP) partners can use Azure Portal or [Partner Center](#) to purchase reserved instances.

## How is a reserved instance purchase billed?

The reserved instance purchase is charged to the payment method tied to the subscription. If you have an Enterprise subscription, the reserved instance cost is deducted from your monetary commitment balance. If your monetary commitment balance doesn't cover the cost of the reserved instance, you're billed the overage. If you have a Pay-As-You-Go subscription, the credit card you have on your account is billed immediately. If you're billed by invoice, you see the charges on your next invoice.

## How is the purchased reserved instance discount applied?

The reserved instance discount applies to the virtual machines that match the attributes you select when you purchase the reserved instance. The attributes include the scope where the matching VMs run. For example, if you want a reserved instance discount for four Standard D2 virtual machines in the West US region, select the

subscription where the VMs are running. If the virtual machines are running in different subscriptions within your enrollment/account, then select the scope as shared. Shared scope allows the reserved instance discount to be applied across subscriptions. You can change the scope after you buy a reserved instance. To change the scope, see [Manage reserved instances in Azure](#).

The reserved instance discount only applies to virtual machines associated with enterprise or Pay-As-You-Go subscription types. Virtual machines running in a subscription with other offer types do not receive the reserved instance discount. For enterprise enrollments, enterprise Dev/Test subscriptions aren't eligible for the reserved instance benefits.

To better understand how reserved instance affects your virtual machine billing, see [Understand how the reserved instance discount is applied](#).

## What happens when the reserved instance term expires?

At the end of the reserved instance term, the billing discount expires, and the virtual machine infrastructure is billed at the pay-as-you go price. Azure reserved instances do not auto-renew. To continue getting the billing discount, you must buy a new reserved instance.

## Sizes and Regional Availability

Reserved instances are available for most VM sizes with some exceptions:

- VMs in Preview – Any VM-series or size that is in preview are not available for reserved instance purchase.
- Clouds – Reserved instances are not available for purchase in the Azure US Government, Germany, or China regions.
- Insufficient quota – A reserved instance that is scoped to a single subscription must have vCPU quota available in the subscription for the new RI. For example, if the target subscription has a quota limit of 10 vCPUs for D-Series, then you can't buy a reserved instance for 11 Standard\_D1 instances. The quota check for reserved instances includes the VMs already deployed in the subscription. For example, if the subscription has a quota of 10 vCPUs for D-Series and has two standard\_D1 instances deployed, then you can buy a reserved instance for 10 standard\_D1 instances in this subscription.
- Capacity restrictions – In rare circumstances, Azure limits the purchase of new reserved instances for subset of VM sizes, due to low capacity in a region.

## Next steps

Start saving on your virtual machines by purchasing a [Azure Reserved Instance](#).

To learn more about reserved instances, see the following articles:

- [What are Azure Reserved VM Instances?](#)
- [Manage reserved instances in Azure](#)
- [Understand how the reserved instance discount is applied](#)
- [Understand reserved instance usage for your Pay-As-You-Go subscription](#)
- [Understand reserved instance usage for your Enterprise enrollment](#)
- [Windows software costs not included with reserved instances](#)
- [Reserved instances in Partner Center Cloud Solution Provider \(CSP\) program](#)

## Need help? Contact support

If you still have further questions, [contact support](#) to get your issue resolved quickly.

# Prepay for Virtual Machines with Azure Reserved VM Instances

6/27/2018 • 3 minutes to read • [Edit Online](#)

Prepay for virtual machines and save money with Azure Reserved Virtual Machine (VM) Instances. For more information, see [Azure Reserved VM Instances offering](#).

You can buy Azure reserved instances in the [Azure portal](#). To buy a Reserved Instance:

- You must be in an Owner role for at least one Enterprise or Pay-As-You-Go subscription.
- For Enterprise subscriptions, Reserved Instance purchases must be enabled in the [EA portal](#).
- For Cloud Solution Provider (CSP) program only the admin agents or sales agents can purchase the reserved instances.

[!IMPORTANT] You must use one of the methods described below to identify the correctly VM size for a reservation purchase.

## Determine the right VM size before purchase

1. Refer to the AdditionalInfo field in your usage file or usage API to determine the correct VM size for a reservation purchase. Do not use the values from Meter Sub-category or Product fields since these fields do not differentiate between S and Non-S versions of a VM.
2. You can also get accurate VM size information using Powershell, Azure Resource Manager or from VM details in the Azure portal.

## Buy a Reserved Virtual Machine Instance

1. Sign in to the [Azure portal](#).
2. Select **All services > Reservations**.
3. Select **Add** to purchase a new Reserved Instance.
4. Fill in the required fields. Running VM instances that match the attributes you select qualify to get the Reserved Instance discount. The actual number of your VM instances that get the discount depend on the scope and quantity selected.

FIELD	DESCRIPTION
Name	The name of this Reserved Instance.
Subscription	The subscription used to pay for the Reserved Instance. The payment method on the subscription is charged the upfront costs for the Reserved Instance. The subscription type must be an enterprise agreement (offer number: MS-AZR-0017P) or Pay-As-You-Go (offer number: MS-AZR-0003P). For an enterprise subscription, the charges are deducted from the enrollment's monetary commitment balance or charged as overage. For Pay-As-You-Go subscription, the charges are billed to the credit card or invoice payment method on the subscription.

FIELD	DESCRIPTION
Scope	The Reserved Instance's scope can cover one subscription or multiple subscriptions (shared scope). If you select: <ul style="list-style-type: none"> <li>Single subscription - The Reserved Instance discount is applied to VMs in this subscription.</li> <li>Shared - The Reserved Instance discount is applied to VMs running in any subscriptions within your billing context. For enterprise customers, the shared scope is the enrollment and includes all subscriptions (except dev/test subscriptions) within the enrollment. For Pay-As-You-Go customers, the shared scope is all Pay-As-You-Go subscriptions created by the account administrator.</li> </ul>
Location	The Azure region that's covered by the Reserved Instance.
VM Size	The size of the VM instances.
Term	One year or three years.
Quantity	The number of instances being purchased within the Reserved Instance. The quantity is the number of running VM instances that can get the billing discount. For example, if you are running 10 Standard_D2 VMs in the East US, then you would specify quantity as 10 to maximize the benefit for all running machines.

5. You can view the cost of the Reserved Instance when you select **Calculate cost**.

**COSTS**

**Calculate cost**

Cost per VM	270	USD
Total VMs	10	Standard_DS1_v2
<b>Reservation cost*</b>	<b>2,700</b>	<b>USD</b>
<i>Estimated savings*</i>	<b>53%</b>	

Payment will be processed using the payment instrument of type 'Enrollment' on file for the Microsoft Azure Enterprise subscription.

\*Additional taxes may apply. Estimated savings are calculated based on the current on-demand rate for Virtual Machines in the selected subscription.

6. Select **Purchase**.

7. Select **View this Reservation** to see the status of your purchase.



Your Reservation ProdDS1VMReservation has been submitted.

Thank you for purchasing an Azure Reservation. The order has been submitted and the Reservation term will begin as soon as payment has been processed.

[View this Reservation \(ID: f39d1c73-af74-4308-9083-fbf5efab37d1\)](#)

Total cost	2700 USD
Payment subscription	Microsoft Azure Enterprise
Scope	Shared
Location	East US
VM size	Standard_DS1_v2
Term	One year
Quantity	10

## Next steps

The Reserved Instance discount is applied automatically to the number of running virtual machines that match the Reserved Instance scope and attributes. You can update the scope of the Reserved Instance through [Azure portal](#), PowerShell, CLI or through the API.

To learn how to manage a reserved instance, see [Manage reserved instances in Azure](#).

To learn more about Azure reserved instances, see the following articles:

- [What are Azure Reserved VM Instances?](#)
- [Manage reserved instances in Azure](#)
- [Understand how the reserved instance discount is applied](#)
- [Understand reserved instance usage for your Pay-As-You-Go subscription](#)
- [Understand reserved instance usage for your Enterprise enrollment](#)
- [Windows software costs not included with reserved instances](#)
- [Reserved instances in Partner Center Cloud Solution Provider \(CSP\) program](#)

## Need help? Contact support

If you still have further questions, [contact support](#) to get your issue resolved quickly.

# Understand how the reserved instance discount is applied

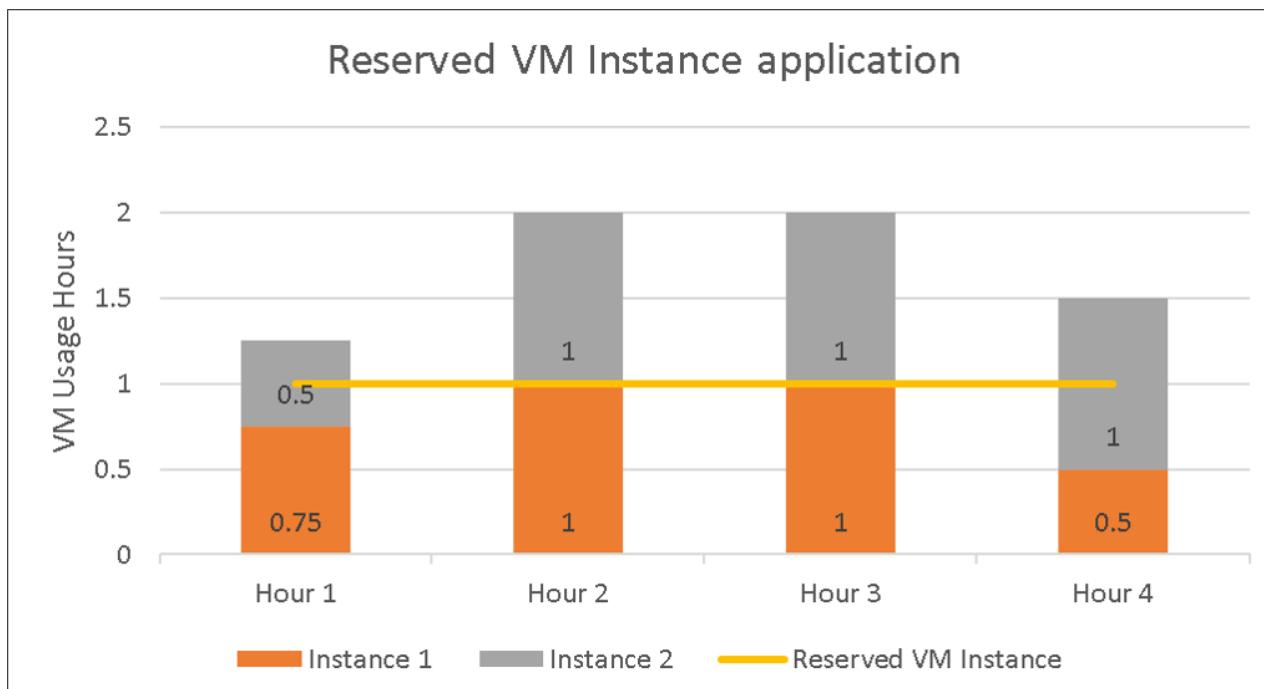
6/27/2018 • 3 minutes to read • [Edit Online](#)

After you buy a Azure Reserved VM Instance, the reserved instance discount is automatically applied to virtual machines matching the attributes and quantity of the reserved instance. A reserved instance covers the infrastructure costs of your virtual machines. The following table illustrates the costs for your virtual machine after you purchase a reserved instance. In all cases, you are charged for storage and networking at the normal rates.

VIRTUAL MACHINE TYPE	CHARGES WITH RESERVED INSTANCE
Linux VMs without additional software	The reserved instance covers your VM infrastructure costs.
Linux VMs with software charges (For example, Red Hat)	The reserved instance covers the infrastructure costs. You are charged for additional software.
Windows VMs without additional software	The reserved instance covers the infrastructure costs. You are charged for Windows software.
Windows VMs with additional software (For example, SQL server)	The reserved instance covers the infrastructure costs. You are charged for Windows software and for additional software.
Windows VMs with <a href="#">Azure Hybrid Benefit</a>	The reserved instance covers the infrastructure costs. The Windows software costs are covered by the Azure Hybrid Benefit. Any additional software is charged separately.

## Application of reserved instance discount to non-Windows VMs

The Azure Reserved Instance discount is applied to running VM instances on an hourly basis. The reserved instances that you have purchased are matched to the usage emitted by the running VMs to apply the Reserved Instance discount. For VMs that may not run the full hour, the reserved instance will be filled from other VMs not using a reserved instance, including concurrently running VMs. At the end of the hour, the reserved instance application for VMs in the hour is locked. In the event a VM does not run for an hour or concurrent VMs within the hour do not fill the hour of the reserved instance, the reserved instance is underutilized for that hour. The following graph illustrates the application of a reserved instance to billable VM usage. The illustration is based on one reserved instance purchase and two matching VM instances.



1. Any usage that's above the reserved instance line gets charged at the regular pay-as-you-go rates. You're not charged for any usage below the reserved instances line, since it has been already paid as part of reserved instance purchase.
2. In hour 1, instance 1 runs for 0.75 hours and instance 2 runs for 0.5 hours. Total usage for hour 1 is 1.25 hours. You are charged the pay-as-you-go rates for the remaining 0.25 hours.
3. For hour 2 and hour 3, both instances ran for 1 hour each. One instance is covered by the reserved instance and the other is charged at pay-as-you-go rates.
4. For hour 4, instance 1 runs for 0.5 hours and instance 2 runs for 1 hour. Instance 1 is fully covered by the reserved instance and 0.5 hours of instance 2 is covered. You're charged the pay-as-you-go rate for the remaining 0.5 hours.

To understand and view the application of your Azure reserved instances in billing usage reports, see [Understand Reserved Instance usage](#).

## Application of reserved instance discount to Windows VMs

When you are running Windows VM instances, the reserved instance is applied to cover the infrastructure costs. The application of the reserved instance to the VM infrastructure costs for Windows VMs is the same as for non-Windows VMs. You are charged separately for Windows software on a per vCPU basis. See [Windows software costs with reserved instances](#). You can cover your Windows licensing costs with [Azure Hybrid Benefit for Windows Server](#).

## Next steps

To learn more about reserved instances, see the following articles:

- [What are Azure Reserved VM Instances?](#)
- [Prepay for Virtual Machines with Azure Reserved VM Instances](#)
- [Manage reserved instances in Azure](#)
- [Understand how the reserved instance discount is applied](#)
- [Understand reserved instance usage for your Pay-As-You-Go subscription](#)
- [Understand reserved instance usage for your Enterprise enrollment](#)
- [Understand reserved instance usage for CSP subscriptions](#)
- [Windows software costs not included with reserved instances](#)

## Need help? Contact support

If you still have further questions, [contact support](#) to get your issue resolved quickly.

# Windows software costs not included with Azure reserved instances

6/27/2018 • 2 minutes to read • [Edit Online](#)

If you don't have an Azure Hybrid Use Benefit on your reserved instance virtual machines, then you are charged for the Windows software meters listed in the following section.

## Windows software meters not included in reserved instance cost

METERID	METERNAME IN USAGE FILE	USED BY VM
e7e152ac-f29c-4cce-ad6e-026192c01ef2	Reservation-Windows Svr Burst (1 Core)	B Series
cac255a2-9f0f-4c62-8bd6-f0fa449c5f76	Reservation-Windows Svr Burst (2 Core)	B Series
09756b58-3fb5-4390-976d-9ddd14f9ed18	Reservation-Windows Svr Burst (4 Core)	B Series
e828cb37-5920-4dc7-b30f-664e4dbc6c7	Reservation-Windows Svr Burst (8 Core)	B Series
f65a06cf-c9c3-47a2-8104-f17a8542215a	Reservation-Windows Svr (1 Core)	All except B Series
b99d40ae-41fe-4d1d-842b-56d72f3d15ee	Reservation-Windows Svr (2 Core)	All except B Series
1cb88381-0905-4843-9ba2-7914066aab5	Reservation-Windows Svr (4 Core)	All except B Series
07d9e10d-3e3e-4672-ac30-87f58ec4b00a	Reservation-Windows Svr (6 Core)	All except B Series
603f58d1-1e96-460b-a933-ce3775ac7e2e	Reservation-Windows Svr (8 Core)	All except B Series
36aaadda-da86-484a-b465-c8b5ab292d71	Reservation-Windows Svr (12 Core)	All except B Series
02968a6b-1654-4495-ada6-13f378ba7172	Reservation-Windows Svr (16 Core)	All except B Series
175434d8-75f9-474b-9906-5d151b6bed84	Reservation-Windows Svr (20 Core)	All except B Series
77eb6dd0-88f5-4a16-ab39-05d1742efb25	Reservation-Windows Svr (24 Core)	All except B Series

METERID	METERNAME IN USAGE FILE	USED BY VM
0d5bdf46-b719-4b1f-a780-b9bdffd0591	Reservation-Windows Svr (32 Core)	All except B Series
f1214b5c-cc16-445f-be6c-a3bb75f8395a	Reservation-Windows Svr (40 Core)	All except B Series
637b7c77-65ad-4486-9cc7-dc7b3e9a8731	Reservation-Windows Svr (64 Core)	All except B Series
da612742-e7cc-4ca3-9334-0fb7234059cd	Reservation-Windows Svr (72 Core)	All except B Series
a485cb8c-069b-4cf3-9a8e-ddd84b323da2	Reservation-Windows Svr (128 Core)	All except B Series
904c5c71-1eb7-43a6-961c-d305a9681624	Reservation-Windows Svr (256 Core)	All except B Series
6fdab81b-4284-4df9-8939-c237cc7462fe	Reservation-Windows Svr (96 Core)	All except B Series

You can get the cost of each of these meters through Azure RateCard API. For information on how to get the rates for an azure meter, see [Get price and metadata information for resources used in an Azure subscription](#).

## Next steps

To learn more about Azure reserved instances, see the following articles:

- [What are Azure Reserved VM Instances?](#)
- [Prepay for Virtual Machines with Azure Reserved VM Instances](#)
- [Manage reserved instances in Azure](#)
- [Understand how the reserved instance discount is applied](#)
- [Understand reserved instance usage for your Pay-As-You-Go subscription](#)
- [Understand reserved instance usage for your Enterprise enrollment](#)

## Need help? Contact support

If you still have further questions, [contact support](#) to get your issue resolved quickly.

# Understand reserved instance usage for your Pay-As-You-Go subscription

6/27/2018 • 2 minutes to read • [Edit Online](#)

Understand the usage of an Azure Reserved VM Instance by using the ReservationId from [Reservation page](#) and the usage file from the [Azure Accounts portal](#).

## NOTE

This article does not apply to EA customers. If you are an EA customer, see [Understand Reserved Instance usage for your Enterprise enrollment](#). This article also assumes that the reserved instance is applied to a single subscription. If the reserved instance is applied to more than one subscription, reserved instance benefit may span multiple usage csv files.

For the following section, assume that you are running a Standard\_DS1\_v2 Windows VM in the east US region and your reserved instance information looks like the following table:

FIELD	VALUE
ReservationId	8117adfb-1d94-4675-be2b-f3c1bca808b6
Quantity	1
SKU	Standard_DS1_v2
Region	eastus

## Reserved instance application

The hardware portion of the VM is covered because the deployed VM matches the reserved instance attributes. To see what Windows software isn't covered by the Reserved Instance, go to [Azure Reserve VM Instances Windows software costs](#).

### Statement section of csv

This section of your csv shows the total usage for your reserved instance. Apply the filter on Meter Subcategory field that contains "Reservation-" and your data looks like the following screenshot:

Statement	Billing Period	Meter Category	Meter Sub-category	Unit	Consumed Quantity	Rate	Value
	201710(9/28/2017 - 10/27/2017)	"Virtual Machines"	"Reservation-Base VM"	"1 Hour"	48	0	\$0.00 USD
	201710(9/28/2017 - 10/27/2017)	"Virtual Machines"	"Reservation-Windows Svr (1 Core)"	"1 Hour"	48	0.04595893	\$2.20 USD

Reservation-Base VM line has the total number of hours that are covered by the reserved instance. This line is \$0.00 because the reserved instance covers it. Reservation-Windows Svr (1 Core) line covers the cost of Windows software.

### Daily usage section of csv

Filter on additional info and type in your **Reservation ID**. The following screenshot shows the fields related to the reserved instance.

{"ImageType": "", "ServiceType": "Standard_DS1_v2", "VMName": "", "UsageType": "ComputeHR", "ReservationOrderid": "c91f591b-a96c-4665-ab1b-184d18a3c466", "ReservationId": "8117adfb-1d94-4675-be2b-f3c1bca808b6", "ConsumptionMeter": "ceb8e318-0ef5-4b92-9431-ab5f48363646"}						
A	C	1	D	E	2	H
Daily Usage	Meter Id	5	Meter Sub-category	Meter Name	Consumed Quota	Additional Info
Usage Date	9/28/2017	f65a06cf-c9c3-47a2-8104-f17a8542215a	"Reservation-Windows Srv (1 Core)"	"Compute Hours"	24	"ReservationId":8117a
	9/28/2017	32c11975-b464-43d1-bc77-d787694e7c48	"Reservation-Base VM"	"Compute Hours"	24	{"ImageType": "", "ServiceType": "Standard_DS1_v2", "VMName": "", "UsageType": "ComputeHR", "ReservationOrderid": "c91f591b-a96c-4665-ab1b-184d18a3c466", "ReservationId": "8117adfb-1d94-4675-be2b-f3c1bca808b6", "ConsumptionMeter": "ceb8e318-0ef5-4b92-9431-ab5f48363646"}
	9/29/2017	f65a06cf-c9c3-47a2-8104-f17a8542215a	"Reservation-Windows Srv (1 Core)"	"Compute Hours"	24	{"ImageType": "", "ServiceType": "Standard_DS1_v2", "VMName": "", "UsageType": "ComputeHR", "ReservationOrderid": "c91f591b-a96c-4665-ab1b-184d18a3c466", "ReservationId": "8117adfb-1d94-4675-be2b-f3c1bca808b6", "ConsumptionMeter": "ceb8e318-0ef5-4b92-9431-ab5f48363646"}
	9/29/2017	32c11975-b464-43d1-bc77-d787694e7c48	"Reservation-Base VM"	"Compute Hours"	24	{"ImageType": "", "ServiceType": "Standard_DS1_v2", "VMName": "", "UsageType": "ComputeHR", "ReservationOrderid": "c91f591b-a96c-4665-ab1b-184d18a3c466", "ReservationId": "8117adfb-1d94-4675-be2b-f3c1bca808b6", "ConsumptionMeter": "ceb8e318-0ef5-4b92-9431-ab5f48363646"}

1. **ReservationId** in Additional Info field is the reserved instance that was used to apply benefit to the VM.
2. ConsumptionMeter is the Meter Id for the VM.
3. Reservation-Base VM Meter Subcategory line represents the \$0 cost line in statement section. Cost of running this VM is already paid by the reserved instance.
4. This is the Meter Id for reserved instance. Cost of this meter is \$0. Any VM that qualifies for reserved instance has this MeterId in the csv to account for the cost.
5. Standard\_DS1\_v2 is one vCPU VM and the VM is deployed without Azure Hybrid Benefit. Therefore, this meter covers the extra charge of Windows software. See [Azure Reserve VM Instances Windows software costs](#). to find the meter corresponding to D series 1 core VM. If Azure Hybrid Benefit is used, this extra charge is not applied.

## Next steps

To learn more about reserved instances, see the following articles:

- [What are Azure Reserved VM Instances?](#)
- [Prepay for Virtual Machines with Azure Reserved VM Instances](#)
- [Manage reserved instances in Azure](#)
- [Understand how the reserved instance discount is applied](#)
- [Understand reserved instance usage for your Enterprise enrollment](#)
- [Windows software costs not included with reserved instances](#)

## Need help? Contact support

If you still have further questions, [contact support](#) to get your issue resolved quickly.

# Understand Azure reserved instance usage for your Enterprise enrollment

6/27/2018 • 2 minutes to read • [Edit Online](#)

Understand utilization of a reserved instance by using the **ReservationId** from [Reservations page](#) and the usage file from the [EA portal](#). You can also see the reserved instance usage in the usage summary section of [EA portal](#).

## NOTE

If you bought the reserved instance in a Pay-As-You-Go billing context, see [Understand reserved instance usage for your Pay-As-You-Go subscription](#).

For the following section, assume that you are running a Standard\_D1\_v2 Windows VM in the east US region and your reserved instance information looks like the following table:

FIELD	VALUE
ReservationId	8f82d880-d33e-4e0d-bcb5-6bcb5de0c719
Quantity	1
SKU	Standard_D1
Region	eastus

## Reserved instance application

The hardware portion of the VM is covered because the deployed VM matches the reserved instance attributes. To see what Windows software isn't covered by the reserved instance, go to Azure Reserved VM Instances software costs, go to [Azure Reserve VM Instances Windows software costs](#).

### Reserved instance usage in csv

You can download the EA usage csv from EA portal. In the downloaded csv file, filter on additional info and type in your **ReservationID**. The following screenshot shows the fields related to the reserved instance:

{ "ImageType": "", "ServiceType": "Standard_D1", "VMName": "", "VMProperties": "", "UsageType": "ComputeHR", "ReservationOrderId": "87f902a6-bd11-4d73-bcf6-c6ab8d5de467", "ReservationId": "8f82d880-d33e-4e0d-bcb5-6bcb5de0c719", "ConsumptionMeter": "951b2a0e-1a0b-488c-b20a-b4254edba928" }
1
2
G L M N O P Q R S Y
Date Meter ID Meter Sub-Category Meter Meter Consur Resour Extend Additio T
10/18/2017 32c11975-b464-43d1-bc77-d787694e7c48 Virtu: Reservation-Base VM All Region Compute 3 0 0 0 "e0c719", "C
10/18/2017 f65a06cf-c9c3-47a2-8104-f17a8542215a 3 Virtu: Reservation-Windows Svr (1 Core) All Region Compute 3 0.046001 0.138002 {"ImageTyp
10/19/2017 32c11975-b464-43d1-bc77-d787694e7c48 Virtu: Reservation-Base VM All Region Compute 24 0 0 0 {"ImageTyp
10/19/2017 f65a06cf-c9c3-47a2-8104-f17a8542215a 4 Virtu: Reservation-Windows Svr (1 Core) All Region Compute 24 0.046001 1.104018 {"ImageTyp
10/20/2017 32c11975-b464-43d1-bc77-d787694e7c48 Virtu: Reservation-Base VM All Region Compute 24 0 0 0 {"ImageTyp
10/20/2017 f65a06cf-c9c3-47a2-8104-f17a8542215a Virtu: Reservation-Windows Svr (1 Core) All Region Compute 24 0.046001 1.104018 {"ImageTyp
10/21/2017 32c11975-b464-43d1-bc77-d787694e7c48 Virtu: Reservation-Base VM All Region Compute 24 0 0 0 {"ImageTyp
10/21/2017 f65a06cf-c9c3-47a2-8104-f17a8542215a Virtu: Reservation-Windows Svr (1 Core) All Region Compute 24 0.046001 1.104018 {"ImageTyp

1. **ReservationId** in Additional Info field represents the reserved instance that was used to apply benefit to the VM.
2. ConsumptionMeter is the MeterId for the VM.

3. This is the Reservation Meter with \$0 cost since cost of running VM is already paid by the reserved instance.
4. Standard\_D1 is one vCPU VM and the VM is deployed without Azure Hybrid Benefit. Therefore, this meter covers the extra charge of Windows software. See [Azure Reserve VM Instances Windows software costs](#). to find the meter corresponding to D series 1 core VM. If Azure Hybrid Benefit is used, this extra charge will not be applied.

### Reserved instance usage in usage summary page in EA portal

Reserved instance usage also shows up in usage summary section of EA portal:

Charge by Services						Total	\$13,258.57
Azure Service	Unit of Measure	Consumed Units	Included Units	Charged Units	Unit Price	Charge \$	
AD VM - US West	100 Hours	7,4395	0	7,4395	\$0.44	\$3.27	
Reservation-Based VM	1 Hour	744	0	744	\$0.00	\$0.00	
Virtual Machines Reservation-Windows Svr (1 Core)	100 Hours	7.44	0	7.44	\$4.60	\$34.22	

1. You are not charged for hardware component of the VM as it is covered by reserved instance.
2. You are charged for Windows software as Azure Hybrid Benefit is not used.

## Next steps

To learn more about Azure reserved instances, see the following articles:

- [What are Azure Reserved VM Instances?](#)
- [Prepay for Virtual Machines with Azure Reserved VM Instances](#)
- [Manage reserved instances in Azure](#)
- [Understand how the reserved instance discount is applied](#)
- [Understand reserved instance usage for your Pay-As-You-Go subscription](#)
- [Windows software costs not included with reserved instances](#)

## Need help? Contact support

If you still have further questions, [contact support](#) to get your issue resolved quickly.

# Manage reserved instances in Azure

6/27/2018 • 4 minutes to read • [Edit Online](#)

After you buy an Azure Reserved VM Instance, you may want to apply the reserved instance to a different subscription than the one specified during purchase. Alternatively, if your matching virtual machines are running in multiple subscriptions, you may want to change the reserved instance scope to shared. To maximize the reserved instance discount, make sure that the number of instances you bought matches the attributes and number of virtual machines that you have running. To learn more about Azure reserved instances, see [Save money by pre-paying for Azure virtual machines](#).

## Change the scope for a reserved instance

Your reserved instance discount applies to virtual machines that match your reserved instance and run within the reserved instance scope. The scope of a reserved instance can be single subscription or all subscriptions in your billing context. If you set the scope to single subscription, the reserved instance is matched to running virtual machines in the selected subscription. If you set the scope to shared, Azure matches the reserved instance to virtual machines that run in all the subscriptions within the billing context. The billing context is dependent on the subscription used to buy the reserved instance. To learn more, see [Pre-pay for VMs with reserved instances](#).

To update the scope of a reserved instance:

1. Log in to the [Azure portal](#).
2. Select **All Services > Reservations**.
3. Select the reserved instance.
4. Select **Settings > Configuration**.
5. Change the scope. If you change from shared to single scope, you can only select subscriptions where you are the owner. Only subscriptions within the same billing context as the reserved instance, can be selected. The billing context is determined by the subscription that you selected when the reserved instance was bought. The scope only applies to Pay-As-You-Go offer MS-AZR-0003P subscriptions and Enterprise offer MS-AZR-0017P subscriptions. For enterprise agreements, dev/test subscriptions are not eligible to get the reserved instance discount.

## Split a single reserved instance into two reserved instances

After you buy more than one instance, you may want to assign instances within a reserved instance to different subscriptions. By default, all instances (quantity specified during the purchase) have one scope - either single subscription or shared. For example, you purchased 10 Standard D2 VMs and specified the scope to be subscription A. You may now want to change the scope for seven reserved instances to subscription A and the remaining 3 to subscription B. Splitting a reserved instance allows you to distribute instances for granular scope management. You can simplify the allocation to subscriptions by choosing shared scope. But for cost management or budgeting purposes, you can allocate quantities to specific subscriptions.

You can split a reserved instance into two reserved instances though PowerShell, CLI, or through the API.

### Split a reserved instance by using PowerShell

1. Get the reserved instance order ID by running the following command:

```
# Get the reserved instance orders you have access to
Get-AzureRmReservationOrder
```

2. Get the details of a reserved instance:

```
Get-AzureRmReservation -ReservationOrderId a08160d4-ce6b-4295-bf52-b90a5d4c96a0 -ReservationId  
b8be062a-fb0a-46c1-808a-5a844714965a
```

3. Split the reserved instance into two and distribute the instances:

```
# Split the reserved instance. The sum of the reserved instances, the quantity, must equal the total  
number of instances in the reserved instance that you're splitting.  
Split-AzureRmReservation -ReservationOrderId a08160d4-ce6b-4295-bf52-b90a5d4c96a0 -ReservationId  
b8be062a-fb0a-46c1-808a-5a844714965a -Quantity 3,2
```

4. You can update the scope by running the following command:

```
Update-AzureRmReservation -ReservationOrderId a08160d4-ce6b-4295-bf52-b90a5d4c96a0 -ReservationId  
5257501b-d3e8-449d-a1ab-4879b1863aca -AppliedScopeType Single -AppliedScope /subscriptions/15bb3be0-  
76d5-491c-8078-61fe3468d414
```

## Add or change users who can manage a reserved instance

You can delegate management of a reserved instance by adding people to roles on the reserved instance. By default, the person that bought the reserved instance and the account administrator have the Owner role on the reserved instance.

You can manage access to reserved instances independently from the subscriptions that get the reserved instance discount. When you give someone permissions to manage a reserved instance, that doesn't give them rights to manage the subscription. And if you give someone permissions to manage a subscription within the reserved instance's scope, that doesn't give them rights to manage the reserved instance.

To delegate access management for a reserved instance:

1. Log in to the [Azure portal](#).
2. Select **All Services > Reservation** to list reserved instances that you have access to.
3. Select the reserved instance that you want to delegate access to other users.
4. Select **Access Control (IAM)** in the menu.
5. Select **Add > Role > Owner** (or a different role if you want to give limited access).
6. Type the email address of the user you want to add as Owner.
7. Select the user, and then select **Save**.

## Next steps

To learn more about Azure reserved instances, see the following articles:

- [What are Azure Reserved VM Instances?](#)
- [Prepay for Virtual Machines with Azure Reserved VM Instances](#)
- [Understand how the reserved instance discount is applied](#)
- [Understand reserved instance usage for your Pay-As-You-Go subscription](#)
- [Understand reserved instance usage for your Enterprise enrollment](#)
- [Windows software costs not included with reserved instances](#)

## Need help? Contact support

If you still have further questions, [contact support](#) to get your issue resolved quickly.

# Create services included with Azure free account

5/2/2018 • 2 minutes to read • [Edit Online](#)

Azure free account includes a limited quantity of free services for 12 months. For more information, see [What is Azure free account](#). Azure keeps track of your usage of each service and doesn't charge you unless you exceed the limits. Within these limits, Azure free account provides you the flexibility to use various service configurations to meet your needs.

## Create free services in the Azure portal

We recommend you use the [Free service page](#) to create new services. Or you can sign in to the [Azure portal](#), select **All services** on the left, and search on **free services**.

## Services can be created in any region

As long as you are within the limits, you can create services for free in any region where services are available. For example, you get 750 hours of a B1S Windows virtual machine free each month with Azure free account. You can create the virtual machine in any region where B-series virtual machines are available. Azure doesn't charge you unless you exceed 750 hours. For example, a customer in the U.S. can provision a B1S Windows virtual machine in West Europe and use it for 750 hours for free.

To learn about Azure service availability by region, see [Products available by region](#).

## Multiple instances of services can be created within allowed limits

You can create multiple instances of services for free as long as the sum of usage is within the usage limit. For example, you get 750 hours of a B1S Windows virtual machine free each month with your Azure free account. You can use 750 hours in any combination you want. For example, you can create 5 B1S Windows virtual machines and use them for 150 hours each.

## Need help? Contact support

If you need help, [contact support](#) to get your issue resolved quickly.

# Avoid getting charged for your Azure free account

6/27/2018 • 2 minutes to read • [Edit Online](#)

Azure free account gives you \$200 in Azure credits for the first 30 days and a limited quantity of free services for 12 months. For more information, see [Azure free account](#). Depending on the status of your credit, you may use your credit or get charged for usage beyond the free services and quantities.

## You still have active Azure free account credit

If you still have Azure credit that hasn't expired, Azure uses your credit to pay for usage beyond the free services and quantities.

## Your credit ran out or has expired

If your credit ran out or expired at the end of 30 days, Azure disables your subscription. To continue using Azure services, you must upgrade your subscription to a Pay-As-You-Go subscription. For more information, see [Upgrade your Free Trial Azure subscription to Pay-As-You-Go](#). After you upgrade, your subscription still has access to free services for 12 months. You only get charged for usage beyond the free services and quantities.

Let's look at some of the reasons you can incur charges on your Azure free account.

### **Your usage exceeds the limits of free services included with your Azure free account**

You get a limited quantity of free services each month with your Azure free account. The free quantity expires at the end of the month and doesn't roll over to the next month. For example, you get 5 GB of File storage each month. If in a month, you only use 2 GB, the remaining 3 GB doesn't roll over to the next month. To avoid getting charged, keep your usage within the limits. To learn about limits of free services, see [What is Azure free account](#). To check your free service usage, see [Check usage of free services included with Azure free Account](#).

### **You are using services not included for free with your Azure free account**

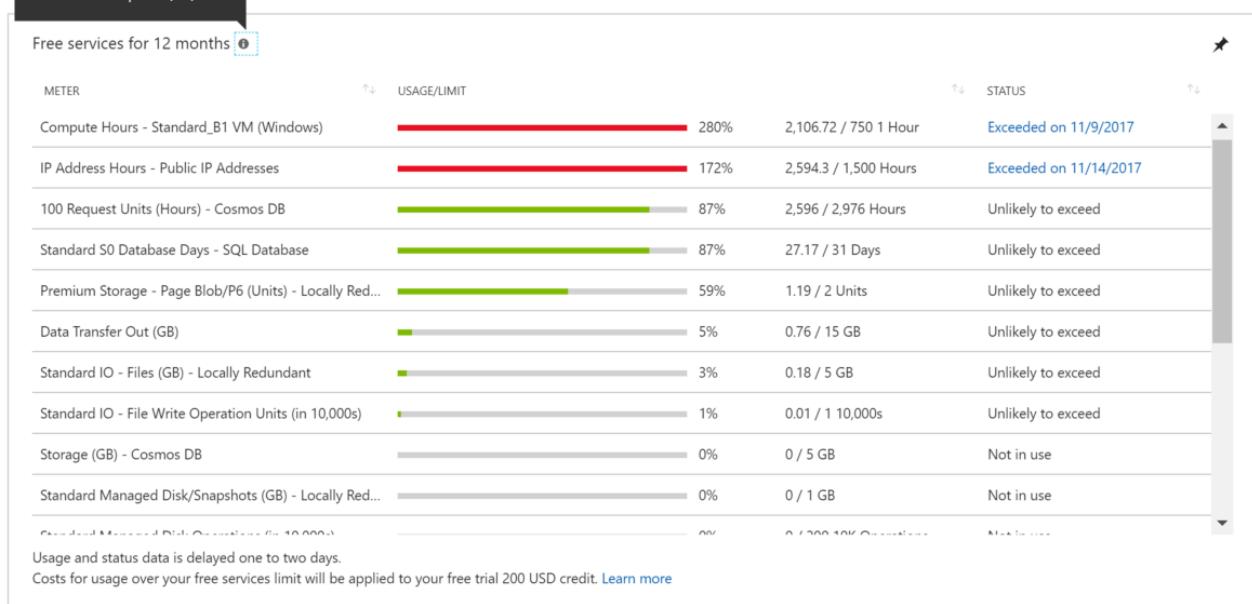
You get charged pay-as-you-go rates for using services, which are not included for free with your Azure free account. To learn about services included with free account, see [What is Azure free account](#). You can check the usage for the services you are using either on the Azure portal or through the Azure usage file. To learn more, see [Regularly check the portal for cost breakdown and burn rate](#) and [Download usage from the Account Center](#).

### **You have reached the end of your 12 months free services**

Your free services and quantities expire at the end of 12 months. You can find out the expiration date on the Azure portal.

1. Log in to the [Azure portal](#).
2. From left navigation area, select **All services**.
3. Select **Subscriptions**.
4. Select the subscription that you created when you signed up for free account.
5. Scroll down to find free services grid. Click the tooltip located on the top left of the grid.

Free services expire 11/30/2018



Once your free services and quantities are expired, Azure charges you pay-as-you-go rates for any services you are using. You can use the Azure portal to delete the resources for the services that you don't use. If you don't intend to use any Azure service, you can [cancel your subscription](#).

## Need help? Contact support

If you need help, [contact support](#) to get your issue resolved quickly.

# Check usage of free services included with your Azure free account

6/27/2018 • 2 minutes to read • [Edit Online](#)

You are not charged for services included for free with Azure free account, unless you exceed the limits of these services. To remain with the limits, you can either use the Azure portal or your usage file to monitor and track the usage of free services.

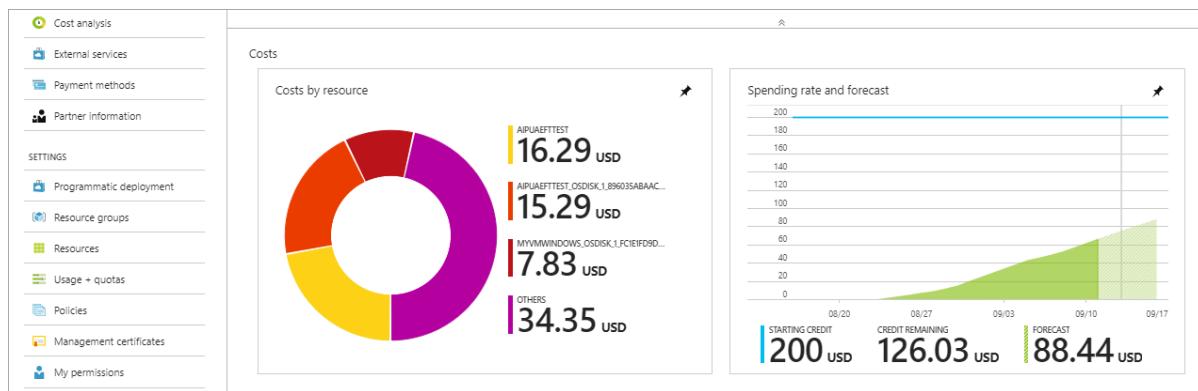
## Check usage on the Azure portal

1. Log in to the [Azure portal](#).
2. From left navigation area, select **All services**.
3. Select **Subscriptions**.
4. Select the subscription that you created when you signed up for free account.

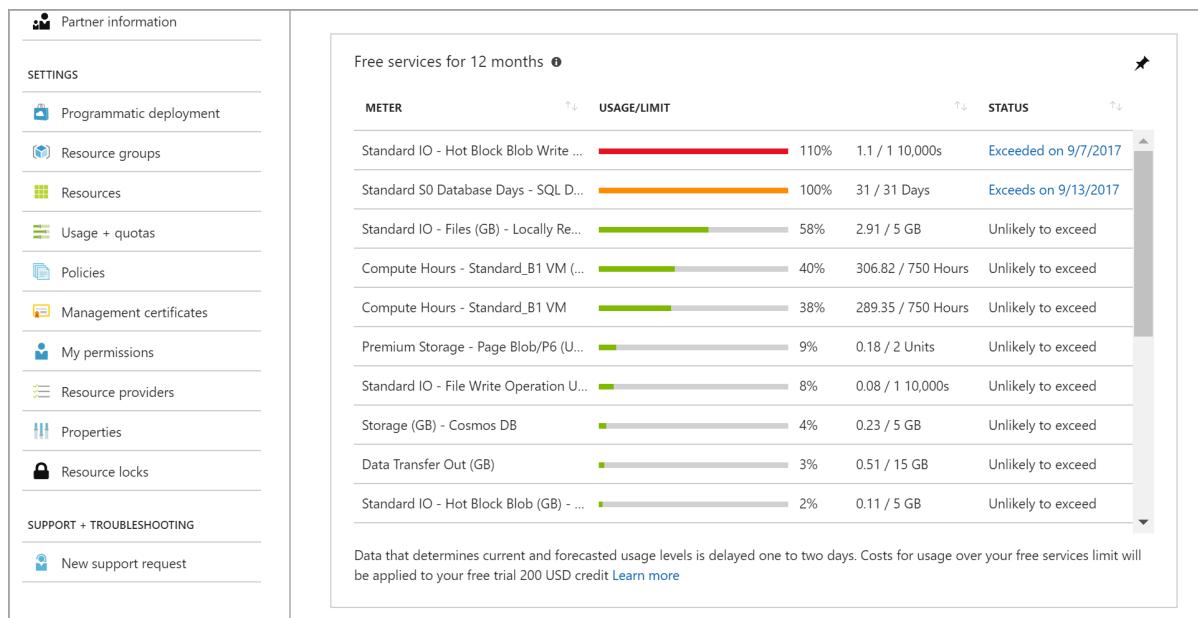
SUBSCRIPTION	SUBSCRIPTION ID
Free Trial	7fd521db-2283-41ea-897d-87b76bd97741

5. The overview section shows you essential information about your subscription such as subscription ID, offer type, and subscription name. You can also find information on when your free account credit would expire.

6. Scroll down to find information on your current and forecasted cost. The cost includes usage of services not included with your free account and usage exceeding the limits of free services.



7. The final part of the overview section has a table on usage of free services.



The table contains the following columns:

- **Meter Name:** Identifies the unit of measure for the meter being consumed. To learn about service to meter mapping, see [Understand free service to meter mapping](#).
- **Usage/Limit:** Current month's usage and limit for the meter. You can also find this information in the status bar.
- **Status:** Usage status of the meter. Based on your usage pattern, you can have one of these statutes.
  - **Not in use:** You have not used the meter or the usage for the meter has not reached the billing system.
  - **Exceeded on <Date>:** You have exceeded the limit for the meter on <Date>.
  - **Unlikely to Exceed:** You are unlikely to exceed the limit for the meter.
  - **Exceeds on <Date>:** You are likely to exceed the limit for the meter on <Date>.

## Check usage through the usage file

Your usage file provides granular information for your Azure subscription. You can download your monthly and daily usage file from Azure Account Center. To learn how to download the usage file and understand the access required, see [Get Invoice and Usage](#). To learn about columns in the usage file, see [Understand terms on your usage](#).

The usage file contains usage information for both free and paid services. Free service meters would have **Free** appended at the end of the meter name. To find free meters, open the file in excel and filter the **Meter Category column** for cells that contain text - **Free** (Use Text Filters → Contains filter)

Billing Period	Meter Category	Meter Sub-category	Meter Name	Meter Region	SKU	Unit	Consumed Quantity
201709(8/17/2017 - 9/16/2017)	"Virtual Machines"	"Standard_B1 VM (Windows"	"Compute Hours - Free"			"Hours"	323.800135
201709(8/17/2017 - 9/16/2017)	"Data Management"	"Data Management"	"Standard IO - File List Operation Units (in 10,000s) - Free"			"10K Operations"	0.0009
201709(8/17/2017 - 9/16/2017)	"Data Services"	"SQL Database"	"Standard SO Database Days - Free"			"Days"	31.00000001
201709(8/17/2017 - 9/16/2017)	"Data Management"	"Data Management"	"Standard IO - File Protocol Operation Units (in 10,000s) - Free"			"10K Operations"	0.0596
201709(8/17/2017 - 9/16/2017)	"Data Services"	"DocumentDB"	"100 Request Units (Hours) - Free"			"Hours"	4
201709(8/17/2017 - 9/16/2017)	"Data Management"	"Data Management"	"Standard IO - Hot Block Blob Write Operations (in 10,000s) - Free"			"10K Operations"	1
201709(8/17/2017 - 9/16/2017)	"Data Management"	"Data Management"	"Standard IO - File Write Operation Units (in 10,000s) - Free"			"10K Operations"	0.0758
201709(8/17/2017 - 9/16/2017)	"Networking"		"Standard IO - File Read Operation Units (in 10,000s) - Free"			"10K Operations"	0.0338
201709(8/17/2017 - 9/16/2017)	"Virtual Machines"	"Standard_B1 VM"	"Data Transfer Out (GB) - Free"			"GB"	0.51777618
201709(8/17/2017 - 9/16/2017)	"Data Services"	"DocumentDB"	"Compute Hours - Free"			"Hours"	305.566738
201709(8/17/2017 - 9/16/2017)	"Storage"	"Locally Redundant"	"Storage (GB) - Free"			"GB"	0.22983939
201709(8/17/2017 - 9/16/2017)	"Storage"	"Locally Redundant"	"Standard IO - Hot Block Blob (GB) - Free"			"GB"	0.131492
201709(8/17/2017 - 9/16/2017)	"Storage"	"Locally Redundant"	"Standard IO - Files (GB) - Free"			"GB"	3.07776
201709(8/17/2017 - 9/16/2017)	"Data Management"	"Data Management"	"Standard IO - Hot Block Blob Read Operations (in 10,000s) - Free"			"10K Operations"	0.0148
201709(8/17/2017 - 9/16/2017)	"Storage"	"Locally Redundant"	"Premium Storage - Page Blob/P6 (Units) - Free"			"Units"	0.217728

## Need help? Contact support

If you need help, [contact support](#) to get your issue resolved quickly.

# Upgrade your Free Trial or Microsoft Imagine Azure subscription to Pay-As-You-Go

7/18/2018 • 2 minutes to read • [Edit Online](#)

Upgrade your [Free Trial](#) or [Microsoft Imagine](#) subscription to [Pay-As-You-Go](#) in the Azure Account Center.

1. Sign in to the [Azure Account Center](#).
2. In the subscription status section, select the **Upgrade now** banner.

The screenshot shows the 'subscriptions' section of the Azure Account Center. At the top, there's a navigation bar with links for HOME, PRICING, DOCUMENTATION, DOWNLOADS, COMMUNITY, SUPPORT, and ACCOUNT. Below the navigation, there are tabs for subscriptions, store, profile, preview, and features. A message 'Click a subscription to view details and usage.' is displayed. Under the 'subscriptions' tab, there's a section for a 'Free Trial'. A yellow banner at the top of this section contains the text 'Your Free Trial expires in 29 day(s)' followed by a link 'Click here to upgrade now.', which is highlighted with a red box. Below this, another yellow banner says 'Please wait while we set up the subscription... (Click here to refresh)'. The overall background is white with blue and yellow accents.

3. Confirm your upgrade.

The screenshot shows a modal dialog box with a light gray background. The title is 'Upgrade your trial'. Inside, there's text explaining the upgrade: 'Upgrade to a Pay-As-You-Go subscription to avoid service interruption and unlock full Azure functionality.' It also states that you will retain remaining credits and be billed for usage beyond what's included. A link 'See pricing overview' is provided. Below this, there's a field labeled 'Give your subscription a friendly name' with the value 'Project Omega - Prod' entered. A note below says 'By upgrading, you authorize Microsoft to charge your payment method on a monthly basis for the amounts indicated in the Offer Details until your subscription is canceled or terminated.' At the bottom right of the modal is a green button labeled 'Upgrade now'.

When you upgrade from a Free Trial subscription, you keep your remaining credit for the full 30 days after you created the subscription. You also have access to free services for 12 months.

If you want to [transfer the subscription](#) after upgrading, you must wait until the subscription offer ID changes to **MS-AZR-003P**. The offer ID changes when

- You consume all the remaining credit, or
- 30 days pass since the start of the free trial

# Understand free service to meter mapping

6/27/2018 • 2 minutes to read • [Edit Online](#)

Every Azure service emits usage against meters, which the Azure billing system utilizes to charge users for services. To better understand the usage of free services, let's look at the service to meter mapping for these services. To learn how to create free services, see [Create free services with Azure free account](#).

## Service to meter mapping for free account eligible services

Service	Meter Name on Azure Portal	Meter Name in Usage File/API	Meter ID
B1S Linux VM	Compute Hours - Standard_B1 VM	Compute Hours - Free	8260cba2-4437-47d1-a31e-2561cd370f50
B1S Windows VM	Compute Hours - Standard_B1 VM (Windows)	Compute Hours - Free	ff3e6fa5-ee46-478e-8d0e-b629f4f8a8ac
B1S VM - Public IP Addresses	IP Address Hours - Public IP Addresses	IP Address Hours - Free	ae56b367-2708-4454-a3d9-2be7b2364ea1
CosmosDB	Storage (GB) - Cosmos DB	Storage (GB) - Free	59c78b09-08e2-466a-9f3b-57a94c9e2f31
CosmosDB	100 Request Units (Hours) - Cosmos DB	100 Request Units (Hours) - Free	5d638a6f-e221-41cf-ae3f-0f81d368cef6
File Storage	Standard IO - Files (GB) - Locally Redundant	Standard IO - Files (GB) - Free	a7f2aa67-b9a2-4593-a413-6ec86d6c8e5b
File Storage	Standard IO - File Read Operation Units (in 10,000s)	Standard IO - File Read Operation Units (in 10,000s) - Free	6207404d-3389-4d20-9087-cc078ddc3fd9
File Storage	Standard IO - File Write Operation Units (in 10,000s)	Standard IO - File Write Operation Units (in 10,000s) - Free	223d8004-d29a-46cf-b4f4-d2d34b12548b
File Storage	Standard IO - File Protocol Operation Units (in 10,000s)	Standard IO - File Protocol Operation Units (in 10,000s) - Free	a347d8cc-51d1-4a0e-b9eb-76f67566c3f5
File Storage	Standard IO - File List Operation Units (in 10,000s)	Standard IO - File List Operation Units (in 10,000s) - Free	e8ae79ad-c2ab-4d82-b226-dd3c33dfd40c
Hot Block Blob Storage	Standard IO - Hot Block Blob Read Operations (in 10,000s)	Standard IO - Hot Block Blob Read Operations (in 10,000s) - Free	fd7cfa1e-026e-4be1-871b-1c2386e8902e
Hot Block Blob Storage	Standard IO - Hot Block Blob (GB) - Locally Redundant	Standard IO - Hot Block Blob (GB) - Free	67a3a3fd-826f-42c1-8843-bffa14f0da13

Service	Meter Name on Azure Portal	Meter Name in Usage File/API	Meter ID
Hot Block Blob Storage	Standard IO - Hot Block Blob Write Operations (in 10,000s)	Standard IO - Hot Block Blob Write Operations (in 10,000s) - Free	b34bbb76-edce-4c2d-a288-81a2db1fea53
Hot Block Blob Storage	Standard IO - Hot Block Blob Write/List Operations (in 10,000s)	Standard IO - Hot Block Blob Write/List Operations (in 10,000s) - Free	7e68cf36-1198-4d3b-baa7-86a74c5b3079
Managed Disk *	Standard Managed Disk/Snapshots (GB) - Locally Redundant	Standard Managed Disk/Snapshots (GB) - Free	ad94c237-52a5-4804-ae65-38c5bf85ef42
Managed Disk *	Standard Managed Disk Operations (in 10,000s)	Standard Managed Disk Operations (in 10,000s) - Free	82cc6ea4-0abd-43ac-acc0-ec34edf0f14c
Managed Disk *	Premium Storage - Page Blob/P6 (Units) - Locally Redundant	Premium Storage - Page Blob/P6 (Units) - Free	2b98c168-27ca-4cc1-b509-e887dec87657
SQL Database	Standard S0 Database Days - SQL Database	Standard S0 Database Days - Free	dd6b69d3-9be0-4a91-abff-2c58bbcafd1d
Shared - Bandwidth **	Data Transfer Out (GB)	Data Transfer Out (GB) - Free	0fc067a1-65d2-46da-b24b-7a9cbe2c69bd

\* If you create a Windows virtual machine and choose managed disk, you will consume managed disk meter as part of the virtual machine.

\*\* Shared meters can be consumed through multiple services. For instance, both Virtual machines and Storage emit usage against Data Transfer Out(GB) meter.

## Need help? Contact support

If you need help, [contact support](#) to get your issue resolved quickly.

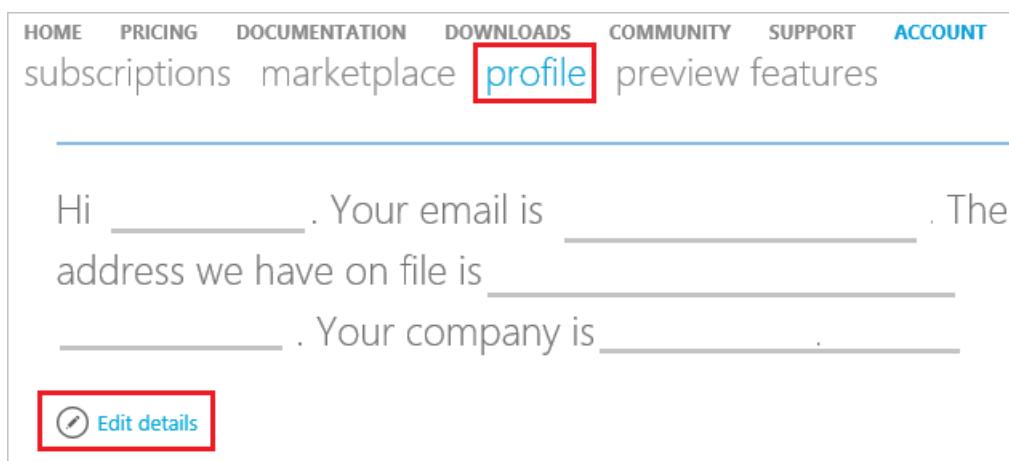
# Change your Azure account profile information such as contact email, address, and phone number

5/11/2018 • 2 minutes to read • [Edit Online](#)

The email address in the Account Administrator's profile is used by Microsoft to notify you about important billing-related updates about the subscription. We recommend that you specify a contact email address that you check regularly.

## How to change your profile information

1. Sign in to the [Azure Account Center](#).
2. Select the **Edit details** button, and then update the **Profile** information.



## Frequently asked questions

### **Can notifications be sent to a different email address other than the Account Administrator email address associated with my account?**

Yes. The email address on the account gets important notifications about all the subscriptions under the account. So we recommend that you specify a contact email address that the Account Administrator checks regularly.

### **Can I change the Account Administrator email address in my profile?**

Yes. The Account Administrator is the person who set up the Azure account and who receives important email notifications about all the subscriptions under the account. We recommend that you specify a contact email address that the Account Administrator checks regularly.

### **Does updating my profile email also update my login email address?**

No. Updating the profile email address does not update your login email address. To change your login email address, you have to transfer ownership of the account.

### **Does updating my profile address also update my credit card billing address?**

To learn how to update your billing information, see [Change the credit card used to pay for an Azure subscription](#).

### **Why can't I update the country?**

Because of technical constraints, we cannot change the country on an existing account. However, you can create an account in the desired country and then contact Azure support to migrate your services to that account.

### **What email address does the Azure Billing Alerts preview feature use?**

You receive alert notifications at the email address you add when you sign up for the alerts. The email address used for the alerts is separate from the Account Administrator email address. For more information, see [Set up billing alerts for your Microsoft Azure subscriptions](#).

## Need help? Contact support.

If you still need help, [contact support](#) to get your issue resolved quickly.

# Manage access to billing information for Azure using role-based access control

5/2/2018 • 2 minutes to read • [Edit Online](#)

You can grant access for Azure billing information to members of your team by assigning one of the following user roles to your subscription: Account Administrator, Service Administrator, Co-administrator, Owner, Contributor, Reader, and Billing Reader. They would have access to billing information in the [Azure portal](#), and they can use the [Billing APIs](#) to programmatically get invoices (once opted-in) and usage details. For more information about who can grant roles, and which roles can do what, see [Roles in Azure RBAC](#).

## Allowing additional users to access invoices

The Account Administrator must opt in using the [Azure portal](#) allow access to invoices for other users and via API.

1. As the Account Administrator, select your subscription from the [Subscriptions blade](#) in Azure portal.
2. Select **Invoices** and then **Access to invoices**.

The screenshot shows the 'PayG Invoice Opted-In - Invoices' blade. On the left, there's a sidebar with 'Overview', 'Access control (IAM)', 'Diagnose and solve problems', 'BILLING' (which is expanded), 'Cost analysis', 'External services', 'Payment methods', 'Partner information', and 'SETTINGS'. Under 'BILLING', 'Invoices' is selected and highlighted with a blue box. At the top right, there are buttons for 'Older invoices', 'Email invoice', and 'Access to invoice...'. A tooltip above the 'Access to invoice...' button says 'Amount excludes non-Microsoft services.' Below the button, a dropdown shows 'Subscription' set to 'PayG Invoice Opted-In'. The main area displays a table of invoices with columns: BILLING PERIOD, CHARGE DATE, AMOUNT (USD), and INVOICE. The table contains several rows with download links for each invoice.

3. Turn **On** the access followed by saving the changes, to allow users in subscription scoped roles to download invoice.

The screenshot shows the 'Access to invoice' dialog. It starts with a warning: 'Allow users/groups with subscription-level access to download invoices.' Below it, it says 'This will also allow them to view personal information (name, email, and addresses) contained inside the invoices. View the [privacy statement](#)'. At the bottom, there's a toggle switch with two options: 'On' (which is highlighted with a blue box) and 'Off'.

Opting in allows Service Administrator, Co-administrator, Owner, Contributor, Reader, and Billing Reader on the

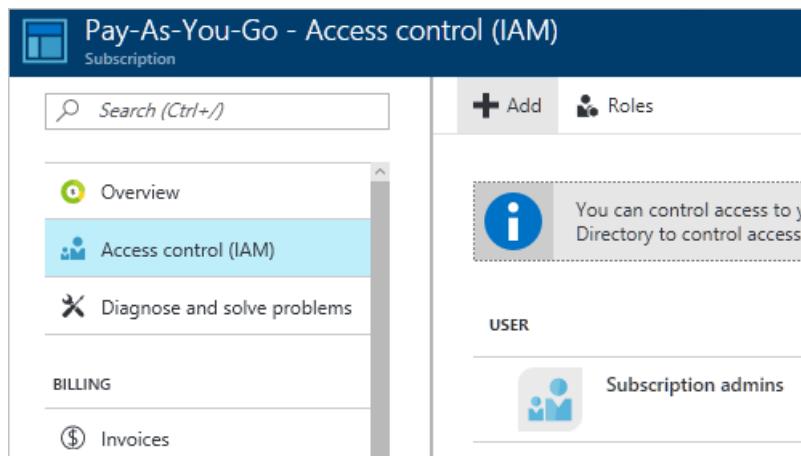
subscription to download PDF invoices in the Azure portal. However, invoices older than December 2016 are available only to the Account Administrator for now.

The Account Administrator can also configure to have invoices sent via email. To learn more, see [Get your invoice in email](#).

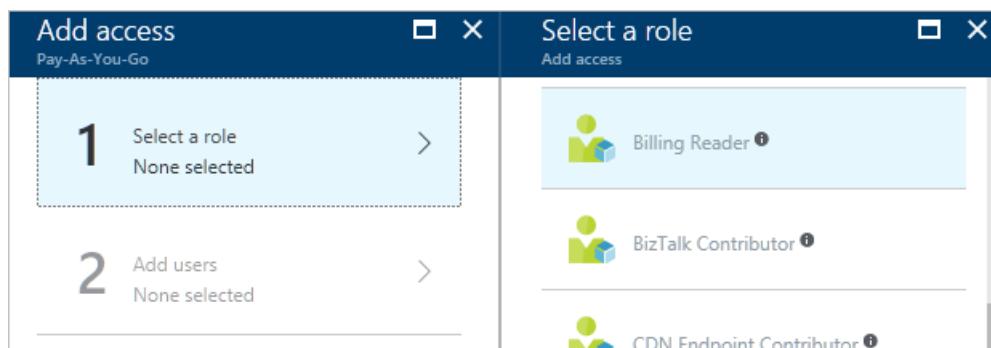
## Adding users to the Billing Reader role

The Billing Reader role has read-only access to subscription billing information in Azure portal, and no access to services such as VMs and storage accounts. Assign the Billing Reader role to someone that needs access to the subscription billing information but not the ability to manage Azure services. This role is appropriate for users in an organization who only perform financial and cost management for Azure subscriptions.

1. Select your subscription from the [Subscriptions blade](#) in Azure portal.
2. Select **Access control (IAM)** and then click **Add**.



3. Choose **Billing Reader** in the **Select a role** page.



4. Type the email for the user you want to invite, then click **OK** to send the invitation.

5. Follow instructions in the invite email to log in as a Billing Reader.

Resource	Cost
SERVER1	175.79 USD
TESTVM	43.79 USD
TESTRG1DISKS208	16.11 USD
OTHERS	6.19 USD

#### NOTE

The Billing Reader feature is in preview, and does not yet support enterprise (EA) subscriptions or non-global clouds.

## Adding users to other roles

Users in other roles, such as Owner or Contributor, can access not just billing information, but Azure services as well. To manage these roles, see [Add or change Azure administrator roles that manage the subscription or services](#).

## Who can access the [Account Center](#)?

Only the Account Administrator can log in to the Account center. The Account Administrator is the legal owner of the subscription. By default, the person who signed up for or bought the Azure subscription is the Account Administrator, unless the [subscription ownership was transferred](#) to somebody else. The Account Administrator can create subscriptions, cancel subscriptions, change the billing address for a subscription, and manage access policies for the subscription.

## Need help? Contact support.

If you still have further questions, [contact support](#) to get your issue resolved quickly.

# Link partner ID to your Azure accounts

5/21/2018 • 2 minutes to read • [Edit Online](#)

As a partner, you can track your impact across your customer engagements by linking your partner ID to the accounts used for managing customer's resources.

This feature is available in a public preview.

## Get access from your customer

Before you link your partner ID, your customer must give you access to their Azure resources by using one of the following options:

- **Guest user:** Your customer can add you as a guest user and assign any RBAC roles. For more information, see [Add guest users from another directory](#).
- **Directory account:** Your customer can create a new user from your organization in their directory and assign any RBAC role.
- **Service principal:** Your customer can add an app or script from your organization in their directory and assign any RBAC role. The identity of the app or script is known as service principal.

## Link partner ID

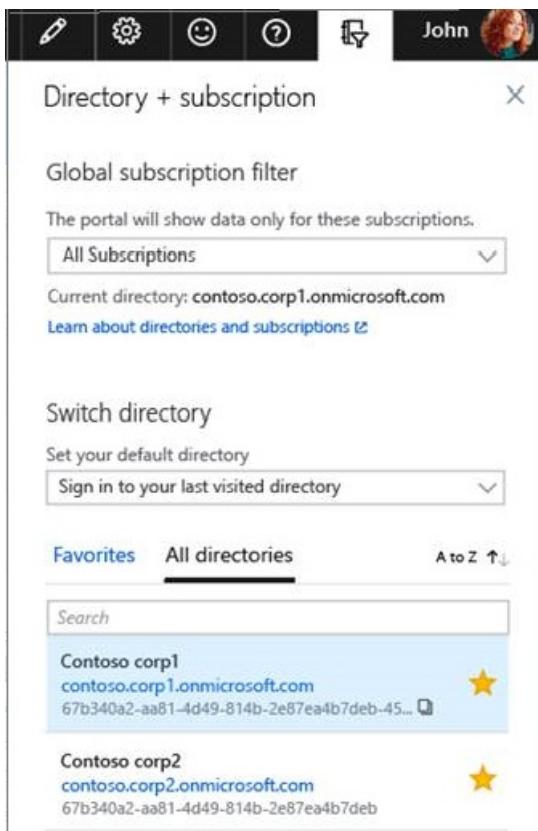
When you have access to the customer's resources, use Azure portal, PowerShell, or CLI to link your Microsoft Partner Network ID (MPN ID) to your user ID or service principal. You have to link the partner ID in each customer tenant.

### Use Azure portal to link new partner ID

1. Go to [link to a partner ID](#) in the Azure portal.
2. Sign in to the Azure portal.
3. Enter the Microsoft partner ID. The partner ID is the [Microsoft Partner Network\(MPN\)](#) ID of your organization.

The screenshot shows the 'Link to a partner ID' page in the Azure portal. At the top, there is a navigation bar with 'Home > Link to a partner ID' and a title 'Link to a partner ID'. Below the title, a sub-instruction reads: 'Partners help to deploy, optimize and manage services. In the section below, a partner can link their user account to their Microsoft partner ID.' A note below states: 'If you're a partner working with this customer, enter your Microsoft partner ID to link to your user account. You'll then be able to track your aggregate contributions to this customer.' A red box highlights the 'Microsoft partner ID' input field, which contains the value '12345'. A note at the bottom says: 'By continuing, you agree that Microsoft can share your activity with this customer. This information can include aggregate data about your contribution to the customer. For more information, please review the [privacy statement](#).' A blue 'Link a partner ID' button is at the bottom.

4. To link partner ID for another customer, use the directory switcher. Under Switch directory, choose your directory.



## Use PowerShell to link new partner ID

1. Install the [AzureRM.ManagementPartner](#) PowerShell Module.
2. Sign in to the customer's tenant either with the user account or service principal, For more information, see [Login with Powershell](#).

```
C:\> Connect-AzureRmAccount -TenantId XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX
```

3. Link the new partner ID. The partner ID is the [Microsoft Partner Network\(MPN\)](#) ID of your organization.

```
C:\> New-AzureRmManagementPartner -PartnerId 12345
```

## Get the linked partner ID

```
C:\> Get-AzureRmManagementPartner
```

## Update the linked partner ID

```
C:\> Update-AzureRmManagementPartner -PartnerId 12345
```

## Delete the linked partner ID

```
C:\> Remove-AzureRmManagementPartner -PartnerId 12345
```

## Use CLI to link new partner ID

1. Install the CLI Extension.

```
C:\> az extension add --name managementpartner
```

- Sign in to the customer's tenant with the user account or service principal. For more information, see [Log in with Azure CLI 2.0](#).

```
C:\ az login --tenant <tenant>
```

- Link the new partner ID. The partner ID is the [Microsoft Partner Network\(MPN\)](#) ID of your organization.

```
C:\ az managementpartner create --partner-id 12345
```

#### Get the linked partner ID

```
C:\ az managementpartner show
```

#### Update the linked partner ID

```
C:\ az managementpartner update --partner-id 12345
```

#### Delete the linked partner ID

```
C:\ az managementpartner delete --partner-id 12345
```

## Next steps

Join the discussion in the [Microsoft Partner Community](#) to receive updates or send feedback.

## Frequently Asked Questions

### Who can link the partner ID?

Any user from the partner organization who is managing customer's resource can link the partner ID to the account.

### Once a partner ID is linked can it be changed?

Yes, linked partner ID can be changed, added, or removed.

### What if a user has an account in multiple customer tenants?

The link between the partner ID and the account is done for each customer tenant. You have to link the partner ID in each customer tenant.

### Can other partner or customer edit or remove the link to the partner ID?

The link is associated at the account level. Only you can edit or remove the link to the partner ID. The customer and other partner can't change the link to the partner ID.

# View all your billing accounts in Azure portal

5/11/2018 • 2 minutes to read • [Edit Online](#)

Billing accounts define your Azure billing relationships. You can have multiple billing accounts. For example, you might have an Azure subscription that you use for personal projects. You could also have access to Azure through your organization's Enterprise Agreement. Go to [Cost Management + Billing](#) in the Azure portal to view all your billing accounts.

Currently you can only view your personal and Enterprise Agreement billing accounts. By default, the [Cost Management + Billing](#) page shows your personal billing account. However, you can navigate to **Billing accounts** and change the account.

For personal billing accounts, you can manage and view all your charges in the [Azure portal](#). However, for Enterprise Agreement accounts, you can only view reserved instance purchases, balance, and month-to-date charges. These Enterprise agreement features are in preview and are available only if you are in an Enterprise administrator role.

## Change billing account view

1. Log in to the [Azure portal](#).
2. From left-hand side of the portal, select **Cost Management + Billing**.
3. By default, if you have one, you see your personal billing account. If you don't have a personal billing account or you want to change to an Enterprise Agreement account, select **Billing accounts**.
4. Select an account to view details. For Enterprise Agreements, you will only see the billing accounts, where you are an Enterprise administrator. Other Enterprise Agreement roles will be supported in the future.

NAME	COUNTRY CODE	MY ROLE
Contoso (Direct) (898912312)	US	Enterprise administrator
mattcontoso12@outlook.com	US	Account administrator

## Need help? Contact support

If you need help, [contact support](#) to get your issue resolved quickly.

# Resolve past due balance for your Azure subscription after getting an email from Azure

5/21/2018 • 2 minutes to read • [Edit Online](#)

If your payment isn't received or if we can't process your payment, you might get an email or see an alert in the Account Center or Azure portal. The message might be like:

**We have been unable to charge your credit card for your subscription. To prevent any service interruptions, please update your payment information.**

Follow the steps in the article to resolve the past due balance.

## Resolve the past due balance

- If the credit card on file is declined or expired, [change the credit card used to pay for the subscription](#) or contact your bank to resolve the issue. When you update the payment method, Azure immediately processes the payment for all outstanding charges. Payment is also processed for any other Microsoft services where you have outstanding charges.
- If you are on an invoice mode of payment, send your payment to the location listed at the bottom of your invoice. If you need help, contact [Azure Support](#).
- If you didn't see a bill because the Account Administrator has left the company or changed roles, contact [Azure Support](#) to resolve the issue.
- If you know your payment has been processed but your subscription is still disabled, contact [Azure Support](#).

## Not getting billing email notifications?

If you're the Account Administrator, [check what email address is used for notifications](#). We recommend that you use an email address that you check regularly. If the email is right, check your spam folder.

## If I forget to pay, what happens?

The service is canceled and your resources are no longer available. Your Azure data is deleted 90 days after the service is terminated. To learn more, see [Microsoft Trust Center - How we manage your data](#).

## Need help? Contact support.

If you still need help, [contact support](#) to get your issue resolved quickly.

# Sign up for an Azure subscription with your Office 365 account

6/15/2018 • 2 minutes to read • [Edit Online](#)

If you have an Office 365 subscription, you can use your Office 365 account to create an Azure subscription. Sign in to the [Azure portal](#) using your Office 365 user name and password. If you want to set up virtual machines or use other Azure services, you must sign up for an Azure subscription. You can share your Azure subscription with others and [use Role-Based Access Control to manage access to your Azure subscription and resources](#).

If you already have both an Office 365 account and an Azure subscription, see [Associate an Office 365 tenant to an Azure subscription](#).

## Get an Azure subscription using your Office 365 account

Save time and avoid account proliferation by signing up for Azure using your Office 365 user name and password.

1. Sign up at [Azure.com](#).
2. Sign in by using your Office 365 user name and password. The account you use doesn't need to have administrator permissions. If you have more than one Office 365 account, make sure you use the credentials for the Office 365 account that you want to associate with your Azure subscription.

The screenshot shows the Microsoft Azure sign-in interface. At the top, it says "Microsoft Azure". Below that, there's a placeholder text "Work or school, or personal Microsoft account". Underneath is a text input field containing "admin@contoso.onmicrosoft.com". Below the email is a password input field showing only dots. There's a checkbox labeled "Keep me signed in" followed by a blue "Sign in" button.

3. Enter the required information and complete the sign-up process. Some information may not be required if you already have an Office 365 account.

## 1 (-) About you

\* Country/Region [i](#)

\* First Name

\* Last Name

\* Email address for important notifications [i](#)

\* Work Phone

Organization

**Next**

## 2 (+) Identity verification by phone [i](#)

## 3 (+) Identity verification by card [i](#)

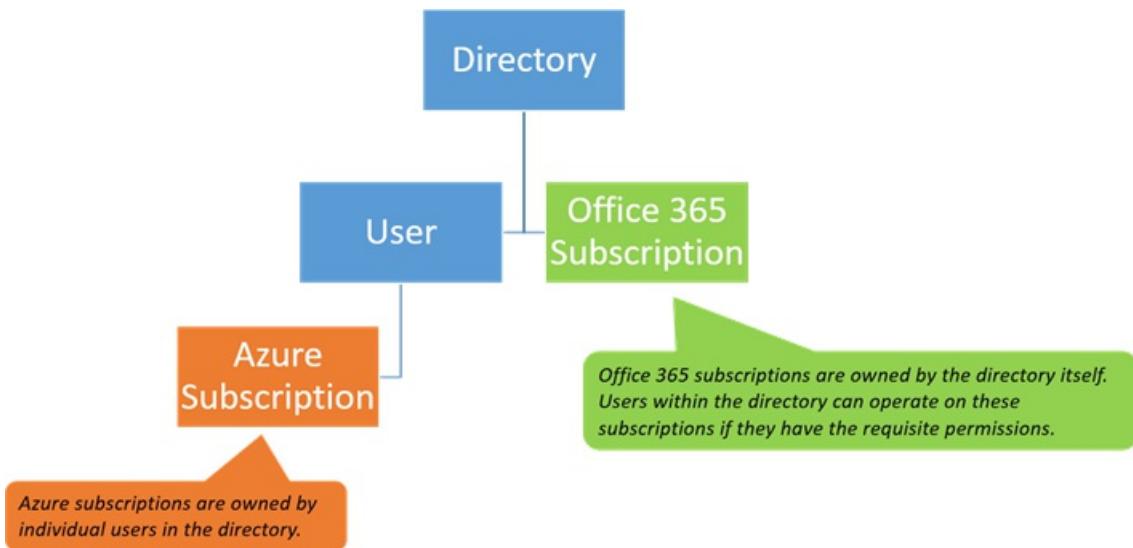
## 4 (+) Agreement

**Sign up **

- If you need to add other people in your organization to the Azure subscription, see [Get started with access management in the Azure portal](#).

Office 365 and Azure use the Azure AD service to manage users and subscriptions. The Azure directory is like a container in which you can group users and subscriptions. To use the same user accounts for your Azure and Office 365 subscriptions, you need to make sure that the Azure subscriptions are created in the same directory as the Office 365 subscriptions. Keep in mind the following points:

- A subscription gets created under a directory
- Users belong to directories
- A subscription lands in the directory of the user who creates the subscription. So your Office 365 subscription is tied to the same account as your Azure subscription.
- Azure subscriptions are owned by individual users in the directory
- Office 365 subscriptions are owned by the directory itself. Users with the right permissions within the directory can manage these subscriptions.



For more information, see [How Azure subscriptions are associated with Azure Active Directory](#).

## Need help? Contact support.

If you still need help, [contact support](#) to get your issue resolved quickly.

# Sign up for an Office 365 subscription with your Azure account

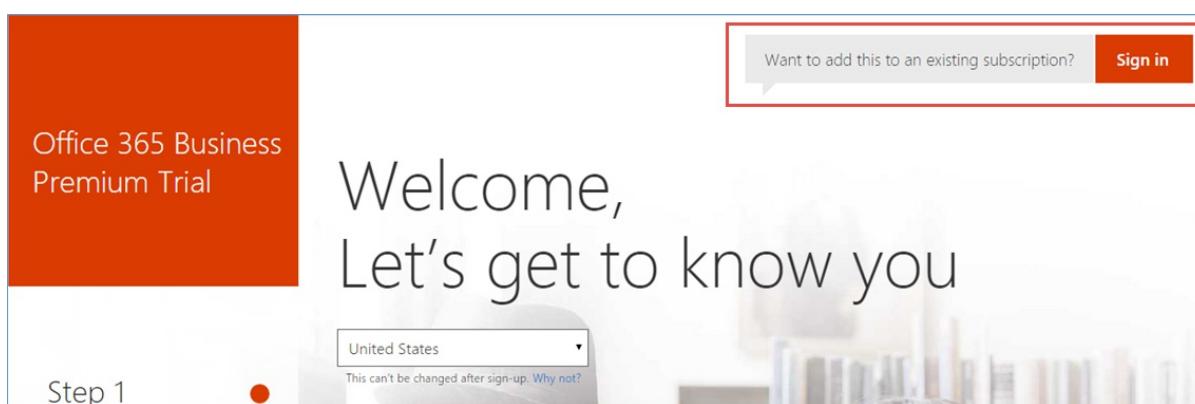
7/3/2018 • 2 minutes to read • [Edit Online](#)

If you're Azure subscriber, you can use your Azure account to sign up for an Office 365 subscription. If you're part of an organization that has an Azure subscription, you can create Office 365 subscriptions for users in your existing Azure Active Directory (Azure AD). Sign up to Office 365 using an account that has Global Admin or Billing Admin permissions in your Azure Active Directory tenant. For more information, see [Check my account permissions in Azure AD](#) and [Assigning administrator roles in Azure Active Directory](#).

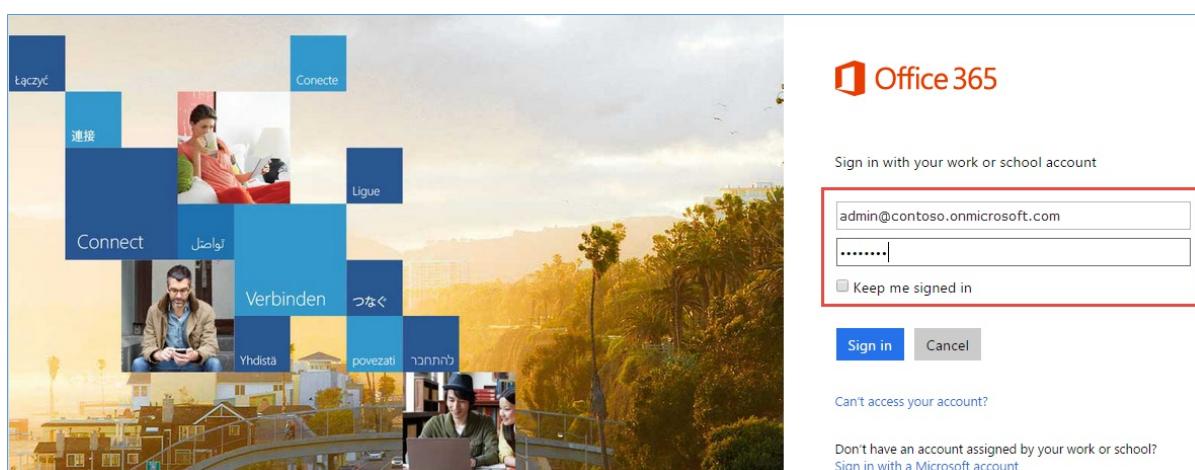
If you already have both an Office 365 account and an Azure subscription, you can [Associate an Office 365 tenant to an Azure subscription](#).

## Get an Office 365 subscription by using your Azure account

1. Go to the [Office 365 product page](#), and select a plan.
2. Click **Sign in** on the upper-right corner of the page.



3. Sign in with your Azure account credentials. If you're creating a subscription for your organization, use an Azure account that's a member of the Global Admin or Billing Admin directory role in your Azure Active Directory tenant.



4. Click **Try now**.

The screenshot shows the Office 365 trial confirmation page. At the top, there's a navigation bar with 'Office 365', 'Admin', a bell icon, a gear icon, a question mark icon, and a dropdown for 'Kelley Wall'. Below the navigation, the text 'Check out' and 'confirm your order' is displayed. It specifies 'Office 365 Business Trial | 1 month term' and '25 users'. At the bottom, there are two buttons: 'Try now' (in blue) and 'Cancel'.

5. On the order receipt page, click **Continue**.

The screenshot shows the 'order receipt' page. At the top, it displays the confirmation number '21000000000000000000000000000000'. Below that, it says 'Important: To use your new licenses, make sure to assign them by editing users on the [Users](#) page.' There is a 'Continue' button. Under 'Order details', it lists 'Office 365 Business Trial | 1 month term' and '25 users'. A printer icon is also present.

Now you're all set. If you created the Office 365 subscription for your organization, use the following steps to check that your Azure AD users are now in Office 365.

1. Open the Office 365 admin center.
2. Expand **USERS**, and then click **Active Users**.

The screenshot shows the 'ACTIVE USERS' section of the Office 365 Admin Center. The left sidebar has 'ACTIVE USERS' selected under 'USERS'. The main area shows a table of users with columns for 'Display name', 'User name', 'Status', and a checkbox. Three user rows (Jane Gould, Kelley Wall, and Tricia Lawson) are highlighted with a red box. To the right, there's a 'Select users to:' section with options: 'Edit user details', 'Delete users', and 'Reset user password'. The status for all three users is 'In cloud'.

After you sign up, the Office 365 subscription is added to the same Azure Active Directory instance that your Azure

subscription belongs to. For more information, see [More about Azure and Office 365 subscriptions](#) and [How Azure subscriptions are associated with Azure Active Directory](#).

## Check my account permissions in Azure AD

1. Sign in to the [Azure portal](#).
2. Click **All services**, and then search for **Active Directory**.

The screenshot shows the Microsoft Azure portal interface. On the left, there is a sidebar with a red box around the 'All services' option. The main area shows a search bar with 'active' typed in, and a result for 'Azure Active Directory' is displayed, also with a red box around it.

3. Click **Users and groups > All users**.

4. Select the user name.

The screenshot shows the 'Users and groups - All users' page in the Azure portal. The left sidebar has a red box around the 'Users and groups' option under the 'MANAGE' section. The main table lists a single user: 'Kelly Wall' (admin@contoso.onmicrosoft.com). A mouse cursor is hovering over the three-dot menu icon next to her name.

5. Click **Directory role**.

The screenshot shows the 'Kelly Wall - Directory role' page. The left sidebar has a red box around the 'Directory role' option under the 'MANAGE' section. The right panel shows the 'Directory role' section with three radio button options: 'User' (unselected), 'Global administrator' (selected), and 'Limited administrator' (unselected). A note states: 'Global administrators have full control over all directory resources.' and a link to 'Learn more about directory roles'.

6. The role **Global administrator** or **Limited administrator** > **Billing administrator** is required to create an Office 365 subscription for users in your existing Azure Active Directory.

Directory role ⓘ

User  
 Global administrator  
 Limited administrator

Select the administrative role or roles for this user.  
[Learn more about directory roles](#)

---

Compliance administrator ⓘ

---

Security administrator ⓘ

---

Exchange administrator ⓘ

---

Intune Service administrator ⓘ

---

Security reader ⓘ

---

Password administrator ⓘ

---

Skype for Business administrator ⓘ

---

Guest inviter ⓘ

---

Application administrator ⓘ

---

Billing administrator ⓘ

---

Privileged role administrator ⓘ

Need help? Contact support.

If you still need help, [contact support](#) to get your issue resolved quickly.

# Why is my Azure subscription disabled and how do I reactivate it?

5/11/2018 • 2 minutes to read • [Edit Online](#)

You might have your Azure subscription disabled because your credit is expired, you reached your spending limit, have an overdue bill, hit your credit card limit, or because the subscription was canceled by the Account Administrator. See what issue applies to you and follow the steps in this article to get your subscription reactivated.

## Your credit is expired

When you sign up for an Azure free account, you get a Free Trial subscription, which provides you \$200 in Azure credits for 30 days and 12 months of free services. At the end of 30 days, Azure disables your subscription. Your subscription is disabled to protect you from accidentally incurring charges for usage beyond the credit and free services included with your subscription. To continue using Azure services, you must [upgrade your subscription to a Pay-As-You-Go subscription](#). After you upgrade, your subscription still has access to free services for 12 months. You only get charged for usage beyond the free services and quantities.

## You reached your spending limit

Azure subscriptions with credit such as Free Trial and Visual Studio Enterprise have spending limits on them. This means you can only use services up to the included credit. When your usage reaches the spending limit, Azure disables your subscription for the remainder of that billing period. Your subscription is disabled to protect you from accidentally incurring charges for usage beyond the credit included with your subscription. To remove your spending limit, see [Remove the spending limit in Account Center](#).

### NOTE

If you have a Free Trial subscription and you remove the spending limit, your subscription converts to Pay-As-You-Go at the end of the Free Trial. You keep your remaining credit for the full 30 days after you created the subscription. You also have access to free services for 12 months.

To monitor and manage billing activity for Azure, see [Prevent unexpected costs with Azure billing and cost management](#) and [Set up billing alerts for your Microsoft Azure subscriptions](#).

## Your bill is past due

To resolve past due balance, see [Resolve past due balance for your Azure subscription after getting an email from Azure](#).

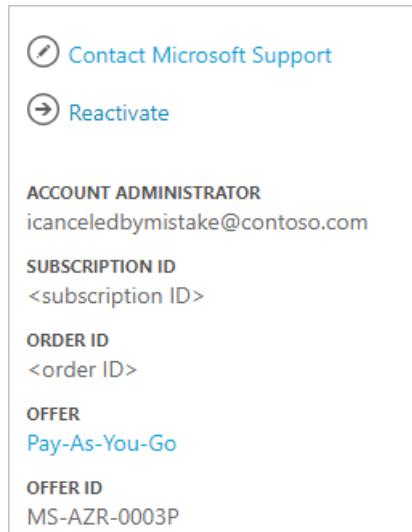
## The bill exceeds your credit card limit

To resolve this issue, [switch to a different credit card](#). Or if you're representing a business, you can [switch to pay by invoice](#).

## The subscription was accidentally canceled and you want to reactivate

If you're the Account Administrator and accidentally canceled a Pay-As-You-Go subscription, you can reactivate it in the Account Center.

1. Sign in to the [Account Center](#).
2. Select the canceled subscription.
3. Click **Reactivate**.



For other subscription types, [contact support](#) to have your subscription reactivated.

## Need help? Contact support

If you still need help, [contact support](#) to get your issue resolved quickly.

# Transfer ownership of an Azure subscription to another account

6/15/2018 • 6 minutes to read • [Edit Online](#)

Transfer your subscription to another user in the Account Center to change the Account Admin and hand over subscription billing ownership. To change your subscription to a different offer, see [Switch your Azure subscription to another offer](#).

## IMPORTANT

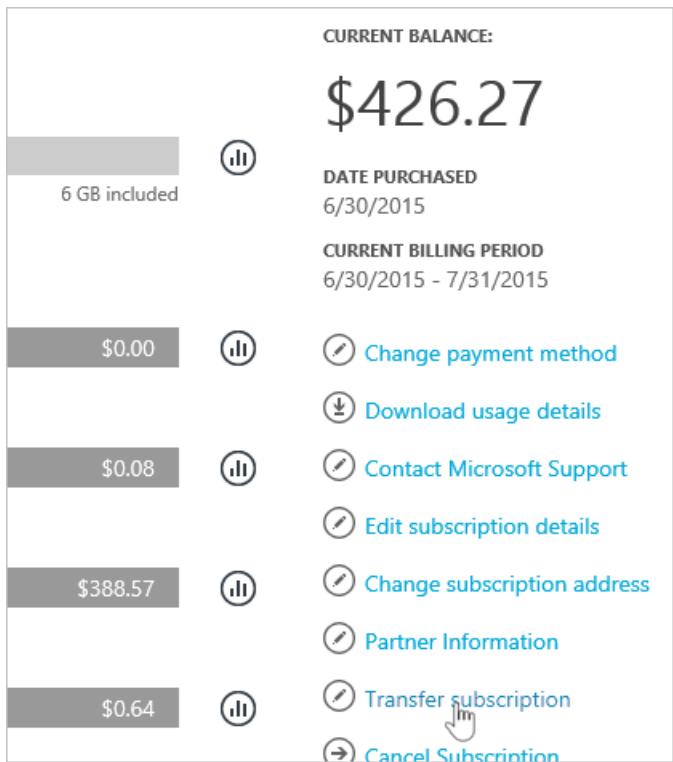
If you transfer a subscription to a new Azure AD tenant, all role assignments in [role-based access control \(RBAC\)](#) are permanently deleted from the source tenant and are not migrated to the target tenant.

## Transfer ownership of an Azure subscription

1. Sign in at [Azure Account Center](#) as the Account Admin. To find out who is the Account Admin of the subscription, see [Frequently asked questions](#).
2. Select the subscription to transfer.
3. Verify that your subscription is eligible for self-serve transfer by checking the **Offer** and **Offer ID** with the [supported offers list](#).

\$2.58	ACCOUNT ADMINISTRATOR contoso_dude@live.com
	SUBSCRIPTION ID <subscription ID>
\$25.48	ORDER ID <order ID>
	OFFER <a href="#">Visual Studio Enterprise</a>
\$0.00	OFFER ID <b>MS-AZR-0063P</b>
GEMENT	CURRENCY USD
\$0.01	STATUS Active
AGEMENT	

4. Click **Transfer subscription**.



5. Specify the recipient.

**IMPORTANT**

If you transfer a subscription to a new Azure AD tenant, all role assignments in [role-based access control \(RBAC\)](#) are permanently deleted from the source tenant and are not migrated to the target tenant.

**TRANSFER SUBSCRIPTION**

## Specify New Owner

RBAC assignments are removed if the subscription moves to a new Azure AD tenant. Only the new owner will have access. Transfer will expose your email address, usage history, and billing history to the new owner. [Read this article](#) before proceeding

**TRANSFER TO**

Retain this subscription within my Azure AD. [Learn More](#)

Enter an existing Microsoft account or work account

Re-enter the above Microsoft account or work account

**Finish**

6. The recipient automatically gets an email with an acceptance link.

# Azure

Someone wants to transfer their subscription to you

[contoso\\_dude@live.com](#) has asked us to transfer billing ownership of this subscription to you.

Subscription name: Pay-As-You-Go  
Subscription ID: <subscription ID>  
Offer: Pay-As-You-Go

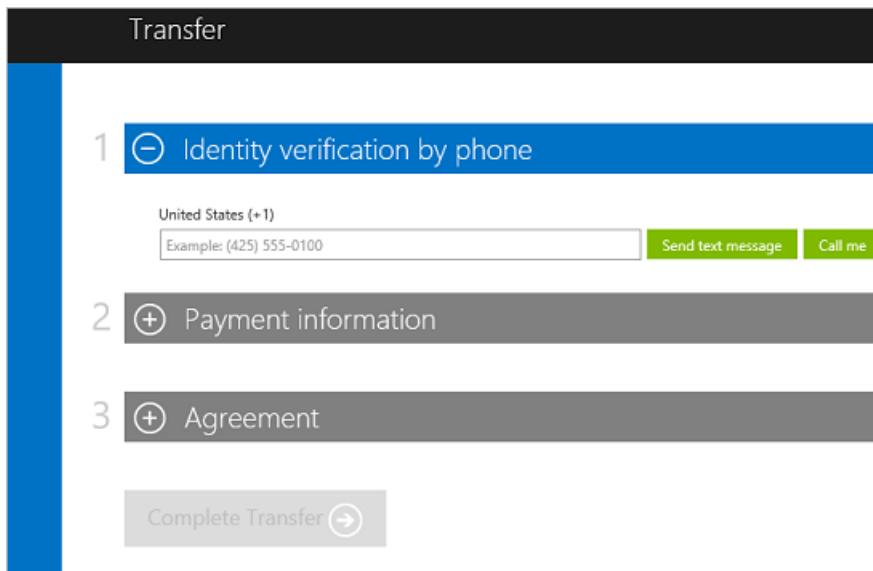
In order to accept this transfer and become the account administrator for this subscription, sign in [here](#) as [dude\\_2@contoso.com](#) and follow the instructions.

If you don't accept this transfer, the request will expire on Tue, 18 Aug 2015 00:25:45 GMT. [Tell me more](#) about subscription transfers.

Thank you,  
Your Azure team

7. The recipient clicks the link and follows the instructions, including entering their payment information.

CURRENT ACCOUNT ADMINISTRATOR
contoso_dude@live.com
SUBSCRIPTION ID
<subscription ID>
SUBSCRIPTION NAME
Pay-As-You-Go
OFFER
Pay-As-You-Go
TRANSFER REQUEST INITIATED ON
9/22/2016
TRANSFER REQUEST EXPIRES ON
9/25/2016
<input checked="" type="checkbox"/> By assuming ownership of this subscription, I assume liability for any outstanding amounts not paid by the previous owner.
<b>Continue ➔</b>



8. Success! The subscription is now transferred.

## Transfer subscription ownership for Enterprise Agreement (EA) customers

The Enterprise Administrator can transfer ownership of subscriptions within an enrollment. To get started, see [Transfer Account Ownership](#) in the EA portal.

## Next steps after accepting ownership of a subscription

1. You are now the Account Admin. Review and update the Service Admin, Co-Admins, and other RBAC roles. To learn more, see [Add or change Azure administrator roles that manage the subscription or services](#).
2. Update credentials associated with this subscription's services including:
  - a. Management certificates that grant the user admin rights to subscription resources. For more information, see [Create and upload a management certificate for Azure](#)
  - b. Access keys for services like Storage. For more information, see [About Azure storage accounts](#)
  - c. Remote Access credentials for services like Azure Virtual Machines.
3. [Update billing alerts for this subscription](#) at the [Azure Account Center](#).
4. If you're working with a partner, consider updating the partner ID on this subscription. You can update the partner ID in the [Azure portal](#).

## What's supported:

Self-serve subscription transfer is available for the offers or subscription types listed in the following table. Currently you can't transfer a Free Trial or [Azure in Open \(AIO\)](#) subscriptions. For a workaround, see [Move resources to new resource group or subscription](#). To transfer other subscriptions, like [Sponsorship](#) or support plans, [contact support](#).

OFFER NAME	OFFER NUMBER
<a href="#">Enterprise Agreement (EA)*</a>	MS-AZR-0017P
<a href="#">Microsoft Partner Network</a>	MS-AZR-0025P
<a href="#">MSDN Platforms</a>	MS-AZR-0062P

OFFER NAME	OFFER NUMBER
Pay-As-You-Go	MS-AZR-0003P
Pay-As-You-Go Dev/Test	MS-AZR-0023P
Visual Studio Enterprise	MS-AZR-0063P
Visual Studio Enterprise: BizSpark	MS-AZR-0064P
Visual Studio Professional	MS-AZR-0059P
Visual Studio Test Professional	MS-AZR-0060P

\* Via the EA portal

## Frequently asked questions (FAQ)

### Who is the Account Administrator of the subscription?

The Account Administrator is the person who signed up for or bought the Azure subscription. They're authorized to access the [Account Center](#) and perform various management tasks like create subscriptions, cancel subscriptions, change the billing for a subscription, or change the Service Administrator. If you're not sure who the account administrator is for a subscription, use the following steps to find out.

1. Visit the [Subscriptions page in Azure portal](#).
2. Select the subscription you want to check, and then look under **Settings**.
3. Select **Properties**. The account administrator of the subscription is displayed in the **Account Admin** box.

### Does everything transfer? Including resource groups, VMs, disks, and other running services?

All your resources like VMs, disks, and websites transfer to the new owner. However, any [administrator roles](#) and [Role-based Access Control \(RBAC\)](#) policies you've set up do not transfer across different directories. Also, [app registrations](#) and other tenant-specific services don't transfer along.

### Why don't I see the "Transfer subscription" button?

Unfortunately, self-serve subscription transfer isn't available for your offer or country. To transfer your subscription, [contact support](#).

### Does a subscription transfer result in any service downtime?

There is no impact to the service. Transferring the subscription cancels the subscription under the current Account Administrator and creates a subscription under the recipient's account. The new subscription is associated to the underlying Azure services. The subscription ID remains the same.

### How do I use this process to change the directory for subscription?

An Azure subscription is created in the directory that the Account Administrator belongs to. To change the directory, transfer the subscription to a user account in the target directory. When that user completes the steps to accept transfer, the subscription is automatically moved to the target directory.

### If I take over billing ownership of a subscription from another organization, do they continue to have access to my resources?

If the subscription is transferred to another tenant, the users associated with the previous tenant lose access to the subscription. Even if a user is not a Service Admin or Co-admin anymore, they might still have access to the subscription through other security mechanisms, including:

- Management certificates that grant the user admin rights to subscription resources. For more information, see

## [Create and Upload a Management Certificate for Azure.](#)

- Access keys for services like Storage. For more information, see [About Azure storage accounts](#).
- Remote Access credentials for services like Azure Virtual Machines.

If the recipient needs to restrict access to their resources, they should consider updating any secrets associated with the service. Most resources can be updated by using the following steps:

1. Go to the [Azure portal](#).
2. On the Hub menu, select **All resources**.
3. Select the resource.
4. In the resource blade, click **Settings**. Here you can view and update existing secrets.

### **If I transfer the subscription in the middle of the billing cycle, does the recipient pay for the entire billing cycle?**

The sender is responsible for payment for any usage that was reported up to the point that the transfer is completed. The recipient is responsible for usage reported from the time of transfer onwards. There may be some usage that took place before transfer but was reported afterwards. The usage is included in the recipient's bill.

### **Does the recipient have access to usage and billing history?**

The only information available to the recipient is the amount of the last bill or if the subscription was transferred before the first bill was generated, the current balance. The rest of the usage and billing history does not transfer with the subscription.

### **Can the offer be changed during a transfer?**

The offer must remain the same. To change your offer, see [Switch your Azure subscription to another offer](#).

### **Can I transfer a subscription to a user account in another country?**

No, transferring a subscription to a user account in another country is not supported. The recipient's user account must be in the same country.

### **Can the recipient use a different payment method?**

Yes. But the subscription billing history is split across two accounts.

### **Is the payment method impacted after I transferred an Azure subscription?**

To accept a subscription transfer, a credit card or similar payment method must be provided to pay for the subscription. For example, if Bob transfers a subscription to Jane and Jane accepts the transfer, Jane must provide a payment method to pay for the subscription. After the transfer is complete, Jane is billed for the subscription not Bob.

### **How do I migrate data and services for my Azure subscription to new subscription?**

If you can't transfer subscription ownership, you can manually migrate your resources. See [Move resources to new resource group or subscription](#).

## Need help? Contact support.

If you still need help, [contact support](#) to get your issue resolved quickly.

# Cancel your subscription for Azure

7/19/2018 • 2 minutes to read • [Edit Online](#)

You can cancel your Azure subscription as the [Account Administrator](#). After you cancel the subscription, your access to Azure services and resources ends.

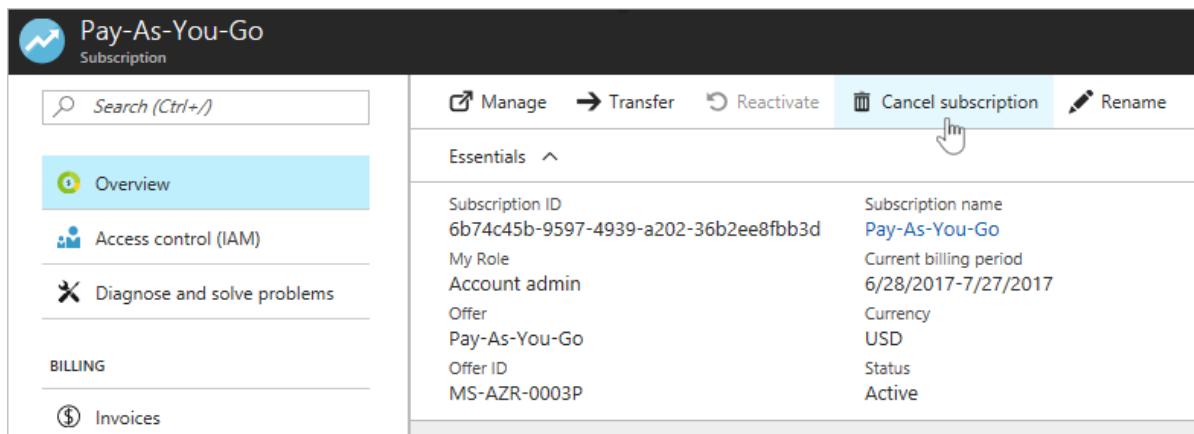
Before you cancel your subscription:

- Back up your data. For example, if you're storing data in Azure storage or SQL, download a copy. If you have a virtual machine, save an image of it locally.
- Shut down your services. Go to the [resources page in the management portal](#), and **Stop** any running virtual machines, applications, or other services.
- Consider migrating your data. See [Move resources to new resource group or subscription](#).

If you cancel a paid Azure Support plan, you are still billed for the rest of the subscription term. For more information, see [Azure support plans](#).

## Cancel subscription using the Azure portal

1. Select your subscription from the [Subscriptions page in Azure portal](#).
2. Select the subscription that you want to cancel and click **Cancel subscription**.



3. Follow prompts and finish cancellation.

## What happens after I cancel my subscription?

Once you cancel, billing is stopped immediately. However, it can take up to 10 minutes for the cancellation show in the portal.

After that, your services are disabled. That means your virtual machines are de-allocated, temporary IP addresses are freed, and storage is read-only.

If you cancel in the middle of a billing period, we send the final bill on your typical invoice date after the period ends.

We wait 90 days before permanently deleting your data in case you need to access it or you change your mind. We don't charge you for retaining the data. To learn more, see [Microsoft Trust Center - How we manage your data](#).

## Reactivate subscription

If you cancel your Pay-As-You-Go subscription accidentally, you can [reactivate it in the Accounts Center](#).

If your subscription is not Pay-As-You-Go, contact support within 90 days of cancellation to reactivate your subscription.

## Need help? Contact support.

If you still have questions, [contact support](#) to get your issue resolved quickly.

# Add, update, or remove a credit or debit card for Azure

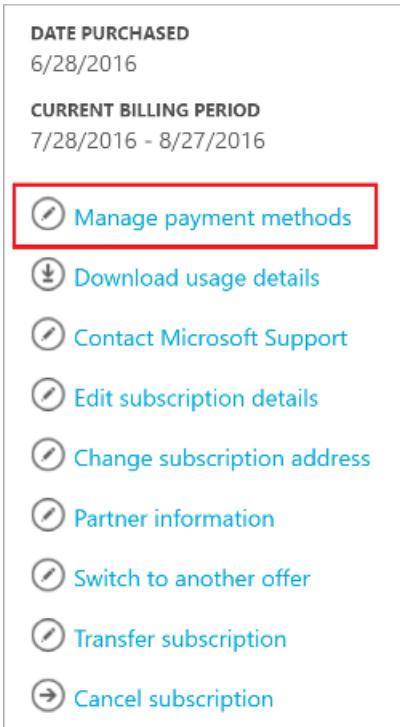
5/11/2018 • 3 minutes to read • [Edit Online](#)

In the Account Center, you can add a new credit card, update an existing credit card, or delete a credit card that you don't use. You must be [Account Administrator](#) to make these changes.

**Want to switch to pay by invoice?** See [Pay for Azure subscriptions by invoice](#).

## Add a new credit or debit card

1. Sign in to the [Account Center](#) as the Account Administrator.
2. Select a subscription.
3. On the right side of the page, select **Manage payment methods**.



4. Select "+" to add a card.

MANAGE PAYMENT METHODS

## Payment methods

MC - **4371	Edit	In Use	
VISA - **1202	Edit	Use Instead	Delete

+ payment method

5. Enter credit or debit card details.
6. Select **Save**.

If you get an error after you add the credit card, see [Credit card declined at Azure sign-up](#).

## Update existing credit or debit card

If your credit card gets renewed and the number remains the same, update the existing credit card details like the expiration date. If your credit card number changes because the card is lost, stolen, or expired, follow the steps in the [Add a credit card as a payment method](#) section. You don't need to update the CVV.

1. Sign in to the [Azure Account Center](#) as the Account Administrator.
2. Select the subscription that's linked to the card.
3. Select **Manage payment methods**.
4. Select **Edit** next to the card you want to update.
5. Update the credit or debit card details.
6. Select **Save**.

## Use a different credit card for the Azure subscription

1. Sign in to the [Azure Account Center](#) as the Account Administrator.
2. Select the subscription that's linked to the card.
3. On the right side of the page, select **Manage payment methods**.
4. Click **Use Instead** next to the card that you want to use. This also updates any other subscriptions currently associated with this card.

## Remove a credit or debit card from the account

1. Sign in to the [Azure Account Center](#) as the account administrator.
2. Select the subscription that's linked to the card.
3. On the right side of the page, select **Manage payment methods**.
4. Click **Delete** for the credit card that you want to delete.

If your credit card is associated with other active Microsoft subscriptions, you can't remove it from your Azure account. Remove the credit card from all active subscriptions that you have with Microsoft and try again.

## Frequently asked questions

### **My subscription is disabled. Why can't I remove my credit card now?**

After your subscription is disabled or canceled, we wait 90 days before permanently deleting your subscription. We keep your payment method on file during the retention period in case you want to reactivate the subscription. After that, the subscription is completely deleted.

If you need to remove your credit or debit card before the 90-day retention period ends, [reactivate your subscription](#). If you can't reactivate, [contact Azure support](#).

### **Why do I keep getting "Your login session has expired. Please click here to log back in"?**

If you keep getting this error message even if already you logged out and back in, try again with a private browsing session.

### **How do I use a different card for each subscription I have?**

Unfortunately, if your subscriptions are already using the same card, it's not possible to separate them to use different cards. However, when you sign up for a new subscription, you can choose to use a new payment method for that subscription.

### **How do I make payments?**

If you set up a credit card or a debit card as your payment method, we automatically charge your card after each billing period. You don't need to do anything.

If you're [paying by invoice](#), send your payment to the location listed at the bottom of your invoice.

### **How do I make a one-time payment?**

Unfortunately, Azure currently doesn't support one-time payments for credit or debit cards.

### **How do I change the tax ID?**

To add or update tax ID, visit [Profile in Azure Account Center](#), then select **Tax record**. This tax ID is used for tax exemption calculations and appears on your invoice.

## Need help? Contact support

If you still need help, [contact support](#) to get your issue resolved quickly.

# Add or change Azure subscription administrators

7/3/2018 • 4 minutes to read • [Edit Online](#)

To manage access to Azure resources, you must have the appropriate administrator role. This article describes how to add or change the administrator role for a user at the subscription level.

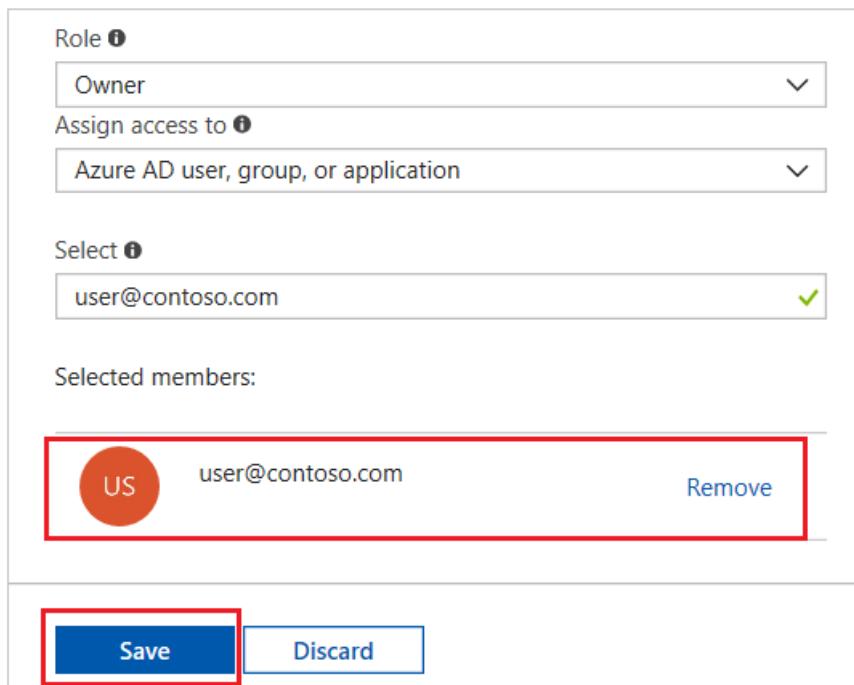
## What administrator role do I use?

Azure has several different roles. To manage access to resources, you can use the classic subscription administrator roles, such as Service administrator and Co-administrator, or a newer authorization system called role-based access control (RBAC). To ensure better control and to simplify access management, we recommend that you use RBAC for all access management needs. If possible, we recommend that you reconfigure existing access policies using RBAC. For more information, see [What is role-based access control \(RBAC\)](#) and [Understand the different roles in Azure](#).

## Add an RBAC Owner for a subscription in Azure portal

To add someone as an administrator for an Azure subscription, assign them the [Owner](#) role (an RBAC role) at the subscription scope. The Owner role can manage the resources in the subscription that you assigned and doesn't have access privilege to other subscriptions.

1. Visit [Subscriptions in Azure portal](#).
2. Select the subscription that you want to give access.
3. Select **Add**. (If the Add button is missing, you do not have permission to add permissions.)
4. Select **Access control (IAM)** in the list.
5. In the **Role** box, select **Owner**.
6. In the **Assign access to** box, select **Azure AD user, group, or application**.
7. In the **Select** box, type the email address of the user you want to add as Owner. Select the user, and then select **Save**.



This gives the user full access to all resources including the right to delegate access to others. To give access at a

different scope, like a resource group, visit the **Access control (IAM)** blade for that scope.

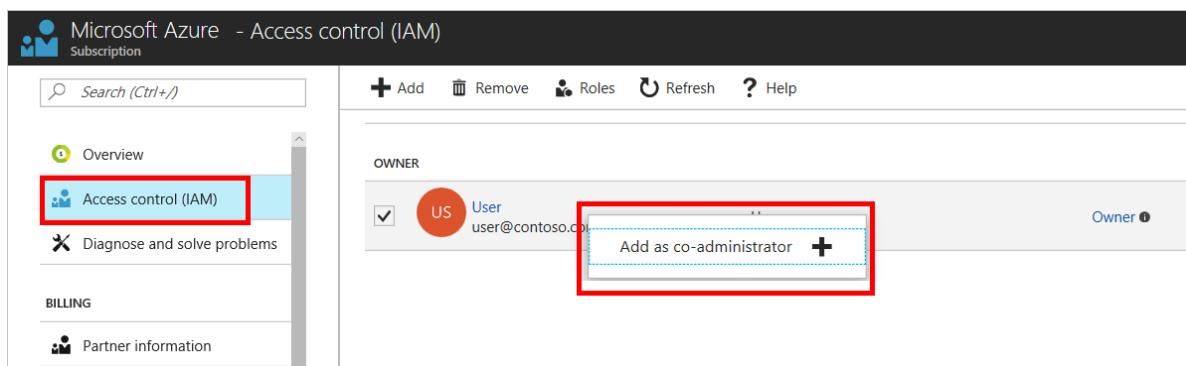
## Add or change Co-administrator

Only an **Owner** can be added as a Co-administrator. Other users with roles such as **Contributor** and **Reader** cannot be added as Co-administrators.

### TIP

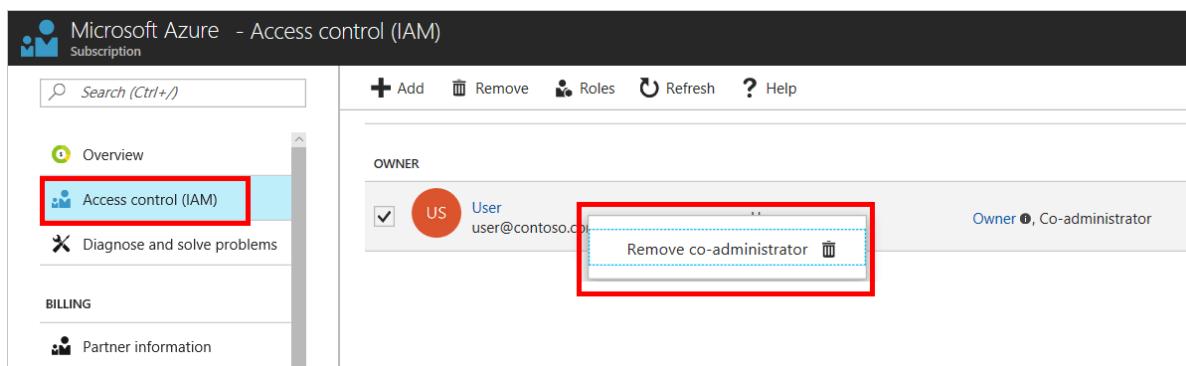
You only need to add the Owner as a Co-administrator if the user needs to manage Azure classic deployments. We recommend using RBAC for all other purposes.

1. If you haven't already, add someone as an Owner following instructions from above.
2. **Right-click** the Owner user you just added, and then select **Add as co-administrator**. If you do not see the **Add as co-administrator** option, refresh the page or try another Internet browser.



The screenshot shows the Microsoft Azure - Access control (IAM) blade. On the left, there's a sidebar with links: 'Overview', 'Access control (IAM)' (which is highlighted with a red box), 'Diagnose and solve problems', 'BILLING', and 'Partner information'. The main content area has a header with 'OWNER' and a table. In the table, there's one row for a user named 'user@contoso.com' with a 'US' icon. To the right of this row is a button labeled 'Add as co-administrator' with a '+' sign, also highlighted with a red box. At the top of the main content area are buttons for '+ Add', 'Remove', 'Roles', 'Refresh', and 'Help'.

To remove the Co-administrator permission, **right-click** the Co-administrator user and then select **Remove co-administrator**.

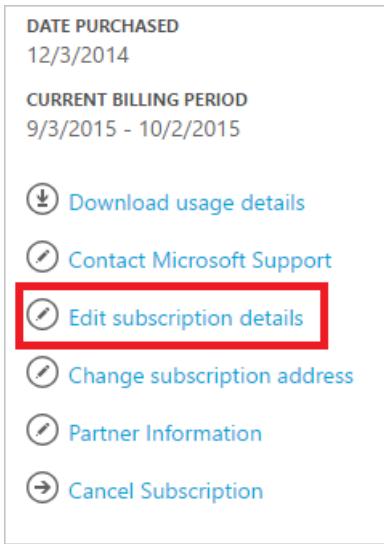


This screenshot is similar to the previous one, but it shows the state after adding a co-administrator. The 'OWNER' table now includes an additional row for the user 'user@contoso.com', which is now listed as 'Owner (1), Co-administrator'. To the right of this row is a button labeled 'Remove co-administrator' with a trash can icon, highlighted with a red box. The rest of the interface remains the same, with the 'Access control (IAM)' link still highlighted in the sidebar.

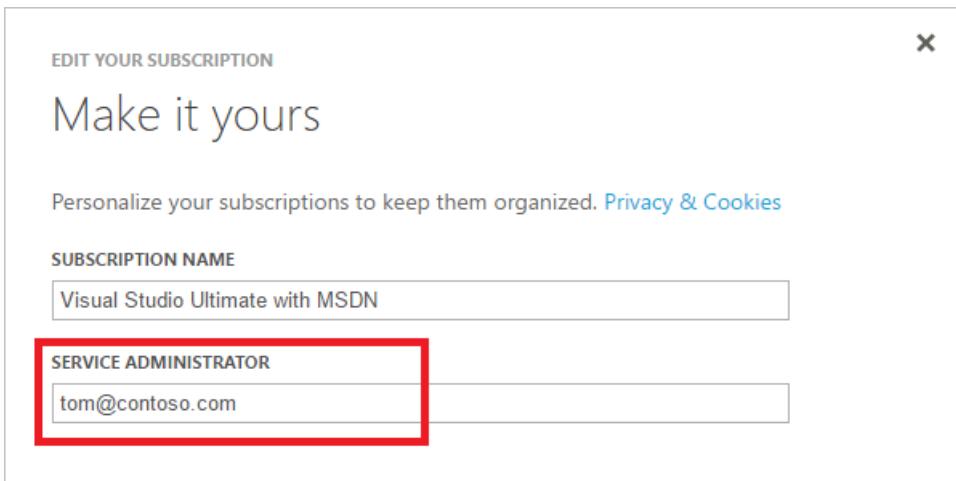
## Change the Service administrator for an Azure subscription

Only the Account administrator can change the Service administrator for a subscription. By default, when you sign up, the Service administrator is the same as the Account administrator. If the Service administrator is changed to a different user, then the Account administrator loses access to Azure portal. However, the Account administrator can always use Account Center to change the Service administrator back to themselves.

1. Make sure your scenario is supported by checking the [limits for changing Service administrators](#).
2. Sign in to [Account Center](#) as the Account administrator.
3. Select a subscription.
4. On the right side, select **Edit subscription details**.



5. In the **SERVICE ADMINISTRATOR** box, enter the email address of the new Service administrator.



#### Limitations for changing Service administrators

- Each subscription is associated with an Azure AD directory. To find the directory the subscription is associated with, go to [Subscriptions](#), then select a subscription to see the directory.
- If you are signed in with a Work or School account, you can add other accounts in your organization as Service administrator. For example, abby@contoso.com can add bob@contoso.com as Service administrator, but can't add john@notcontoso.com unless john@notcontoso.com has presence in the contoso.com directory. Users signed in with Work or School accounts can continue to add Microsoft Account users as Service administrator.

SIGN-IN METHOD	ADD MICROSOFT ACCOUNT USER AS A SERVICE ADMINISTRATOR?	ADD WORK OR SCHOOL ACCOUNT IN THE SAME ORGANIZATION AS A SERVICE ADMINISTRATOR?	ADD WORK OR SCHOOL ACCOUNT IN DIFFERENT ORGANIZATION AS A SERVICE ADMINISTRATOR?
Microsoft Account	Yes	No	No
Work or School Account	Yes	Yes	No

## Change the Account administrator for an Azure subscription

The Account administrator is the user that initially signed up for the Azure subscription, and is responsible as the billing owner of the subscription. To change the Account administrator of a subscription, see [Transfer ownership of an Azure subscription to another account](#).

**Not sure who the Account administrator is?** Follow these steps:

1. Visit [Subscriptions](#) in Azure portal.
2. Select the subscription you want to check, and then look under **Settings**.
3. Select **Properties**. The Account administrator of the subscription is displayed in the **Account Admin** box.

## Learn more about resource access control and Active Directory

- To learn more about RBAC, see [What is role-based access control \(RBAC\)?](#)
- To learn more about all the roles in Azure, see [Understand the different roles in Azure](#).
- For more information about Azure Active Directory, see [How Azure subscriptions are associated with Azure Active Directory](#) and [Assigning administrator roles in Azure Active Directory](#).

## Need help? Contact support.

If you still need help, [contact support](#) to get your issue resolved quickly.

# Change your Azure Pay-As-You-Go subscription to a different offer

5/11/2018 • 3 minutes to read • [Edit Online](#)

As a [Pay-As-You-Go](#) customer, you can switch your Azure subscription to another offer in the [Account Center](#). For example, you can use this feature to take advantage of the [monthly credits for Visual Studio subscribers](#).

**Just want to upgrade from Free Trial?** See [upgrade to Pay-As-You-Go](#).

## What's supported:

FROM	TO
Pay-As-You-Go	<a href="#">Pay-As-You-Go Dev/Test</a>
Pay-As-You-Go	<a href="#">Visual Studio Professional</a>
Pay-As-You-Go	<a href="#">Visual Studio Test Professional</a>
Pay-As-You-Go	<a href="#">MSDN Platforms</a>
Pay-As-You-Go	<a href="#">Visual Studio Enterprise</a>
Pay-As-You-Go	<a href="#">Visual Studio Enterprise (Bizspark)</a>

### NOTE

For other offer changes, [contact support](#).

## Switch subscription offer

1. Sign in at [Azure Account Center](#).
2. Select your Pay-As-You-Go subscription.
3. Click **Switch to another offer**. The button is only available if you're on Pay-As-You-Go and done with your first billing period.

# Summary for Pay-As-You-Go

OVERVIEW BILLING HISTORY

## INCLUDED IN YOUR SUBSCRIPTION

0.00 GB

DATA TRANSFER OUT (GB) - ZONE 1

6 GB included



## USAGE YOU ARE RESPONSIBLE FOR

0.11 GB

\$0.00



DATA TRANSFER IN (GB) - ZONE 1

232.03 10,000s

\$0.08



STORAGE TRANSACTIONS (IN 10,000S) - DATA MANAGEMENT

4317.47 Hours

\$388.57



COMPUTE HOURS - US EAST

6.75 GB

\$0.64



STANDARD IO - PAGE BLOB/DISK (GB) - GEO REDUNDANT

**\$426.27**

## CURRENT BALANCE:

DATE PURCHASED

8/18/2015

## CURRENT BILLING PERIOD

2/18/2016 - 3/17/2016

[Change payment method](#)

[Download usage details](#)

[Contact Microsoft Support](#)

[Edit subscription details](#)

[Change subscription address](#)

[Partner Information](#)

[Switch to another offer](#)

[Transfer Subscription](#)

[Cancel Subscription](#)

4. Select the offer you want from the list of offers your subscription can be switched to. This list varies based on the memberships that your account is associated with. If nothing is available, check the [list of available offers you can switch to](#) and make sure you have the right memberships.

## SELECT AN OFFER



### Pay-As-You-Go Dev/Test

This offer is for teams of active Visual Studio subscribers to run dev/test workloads on Microsoft Azure, providing discounted rates on Windows virtual machines and access to exclusive images in the Azure Gallery.

[Learn more](#)



### Visual Studio Enterprise: BizSpark

Enjoy monthly credits and lower rates.  
Use MSDN software at no additional charge.

[Learn more](#)



### Visual Studio Professional

Enjoy monthly credits and lower rates.  
Use MSDN software for development and test at no additional charge.

[Learn more](#)

5. Depending on the offer you're switching to, you may see a note about the impact of switching. Go through this list carefully and follow the instructions before you proceed.



SWITCHING TO MSDN DEV/TEST PAY-AS-YOU-GO

## Things to note

1. Upon switching to this offer, you will lose your usage and billing history. You should save any past invoices and usage data first.  
 [Download usage and billing history](#)
2. To manage costs, you can apply a spend limit after switching to this offer. This is not applied by default to avoid service disruption.  
 [Learn more](#)
3. This offer is for development and test purposes only; production use is prohibited.

Continue



6. You can rename your subscription. By default, we set it to the new offer name. Click **Switch Offer** to complete the process.

1  [Subscription Name](#) 

2  [Agreement](#)

I agree to the [subscription agreement](#), [offer details](#), and [privacy statement](#).

 [Switch Offer](#) 

7. Success! Your subscription is now switched to the new offer.

## Frequently asked questions

### What is an Azure offer?

An Azure offer is the *type* of the Azure subscription you have. For example, [Pay-As-You-Go](#), [Azure in Open](#), and [Visual Studio Enterprise](#) are all Azure offers. Each offer has different [terms](#) and some have special benefits. The offer of your subscription can be found in the Account Center subscription page. Click the offer name to get more details.

ACCOUNT ADMINISTRATOR
j.smith@contoso.com
SUBSCRIPTION ID
<subscription ID>
ORDER ID
<order ID>
OFFER
Visual Studio Enterprise
OFFER ID
MS-AZR-0063P
CURRENCY
USD
STATUS
Active

## Why don't I see the button?

You might not see the **Switch to another offer** button if:

- You're not on [Pay-As-You-Go](#). Currently only Pay-As-You-Go subscriptions can be converted to another offer.
  - If you're on [Free Trial](#), learn how to [upgrade to Pay-As-You-Go](#).
  - To switch offer from a different subscription, [contact support](#).
- You're still on your first billing period; you must wait for your first billing period to end before you can switch offers.

## Why do I see "There are no offers available in your region or country at this time"?

- You might not be eligible for any offer switches. Check the [list of available offers you can switch to](#) and make sure that you've activated the right benefits with Visual Studio or Bizspark.
- Some offers may not be available in all countries.

## What does switching Azure offers do to my service and billing?

Here are the details of what happens when you switch Azure offers in the Account Center.

### No service downtime

There is no service downtime for any users associated with the subscription. However, the offer you switch to may have restrictions. For instance, some offers prohibit production use, so you would need to move production resources to another subscription.

### Quota increases are reset

When you switch offers, any [limit or quota increases above the default limit](#) are reset. There's no service downtime, even if you have more resources beyond the default limit. For example, you're using 200 cores on your subscription, then switching offers resets your cores quota back to the default of 20 cores. The VMs that use the 200 cores are unaffected and would continue to run. If you don't make another quota increase request, however, you can't provision any more cores.

### Billing

On the day you switch, an invoice is generated for all outstanding charges. Then, your subscription is billed per the new offer's pricing terms. Your subscription billing anniversary changes to the date on which you changed offers. Usage and billing data before the offer change is not retained, so we recommend that you download a copy before switching.

## Can I migrate from Pay-As-You-Go to Cloud Solution Provider (CSP) or Enterprise Agreement (EA)?

- To migrate to CSP, see [Azure Pay-As-You-Go Subscription Migration to CSP](#).
- To migrate to EA, have your Enrollment Admin add your account into the EA. Follow instructions in the invitation email to have your subscriptions moved under EA enrollment. To learn more, see [Associate an Existing Account](#) in the EA portal.

## **Can I migrate data and services to a new subscription?**

- You can migrate the resources directly to the new subscription, see [Move resources to new resource group or subscription](#).
- To transfer ownership of an Azure subscription and everything in it to someone else, see [Transferring ownership of an Azure subscription](#)

## Need help? Contact support.

If you still have further questions, [contact support](#) to get your issue resolved quickly.

# Submit a request to pay Azure subscription by invoice

5/11/2018 • 2 minutes to read • [Edit Online](#)

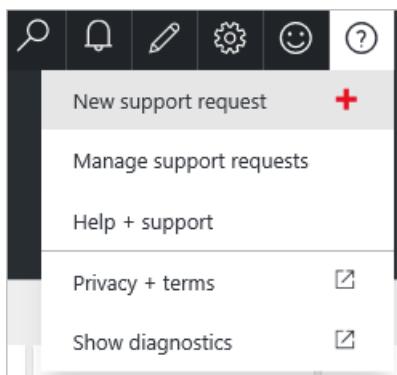
You can change the payment method for your Azure subscription to invoice by submitting a request to Azure support. Once your request is approved, you are provided instructions on how to set up your subscription for the invoice payment method.

## IMPORTANT

- Invoice pay is only available for business accounts.
- [Third party and external services](#) cannot be purchased or paid for using invoice pay. If your subscription contains resources from external services like ClearDB or SendGrid, they need be deleted before changing to invoice pay. To purchase external services after switching to invoice pay, you need a separate subscription with a credit or debit card.
- Once you switch to invoice pay, you can't switch back to credit or debit card payment.

## Request pay by invoice

1. Sign into the [Azure portal](#). Select **Help + support > New support request**.



2. Select **Billing** as the issue type, select the subscription for which you want to pay by invoice, select a support plan, and then select **Next**.
3. Select **Pay by Invoice** in the **Problem Type** box.
4. Enter the following information in the **Details** box, and then select **Next**.
  - Company name
  - Billing address
  - [Account administrator's email address](#)
5. Verify your contact information and preferred contact method, and then click **Create**.

If we need to run a credit check because of the amount of credit that you need, we send you a credit check application. After you submit the application, the credit application can take 5-7 days to process.

## Need help? Contact support.

If you still need help, [contact support](#) to get your issue resolved quickly.

# Create management groups for resource organization and management

7/30/2018 • 2 minutes to read • [Edit Online](#)

Management groups are containers that help you manage access, policy, and compliance across multiple subscriptions. Create these containers to build an effective and efficient hierarchy that can be used with [Azure Policy](#) and [Azure Role Based Access Controls](#). For more information on management groups, see [Organize your resources with Azure management groups](#).

The first management group created in the directory could take up to 15 minutes to complete. There are processes that run the first time to set up the management groups service within Azure for your directory. You receive a notification when the process is complete.

## Create a management group

You can create the management group by using the portal, PowerShell, or Azure CLI.

### Create in portal

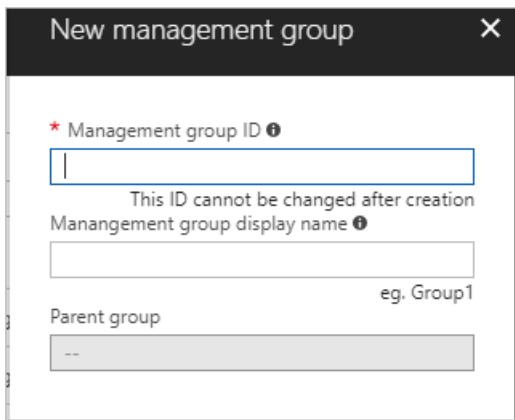
1. Log into the [Azure portal](#).
2. Select **All services > Management groups**.
3. On the main page, select **New Management group**.

The screenshot shows the Azure portal's Management groups page for the 'contoso' tenant. At the top, there's a search bar labeled 'Search by name or ID'. Below it, a table lists ten management groups:

NAME	ID	TYPE	MY ROLE	...
Azure Policy	<MG ID>	Management Group	Owner	...
Contoso IT	<MG ID>	Management Group	Owner	...
Contoso Marketing	<MG ID>	Management Group	Owner	...
Global	<MG ID>	Management Group	Owner	...
Storefront	<MG ID>	Management Group	Owner	...
Azure Test Sub	<MG ID>	Subscription	Owner	...
BillNotifications	<MG ID>	Subscription	Owner	...
Groups	<MG ID>	Subscription	Owner	...
Legacy Groups Classic	<MG ID>	Subscription	Owner	...
mye2esubprod1-C	<MG ID>	Subscription	Owner	...

To the right of the table, there's a note: 'Using management groups helps you manage access, policy, and compliance by grouping multiple subscriptions together.' with a 'Learn more.' link.

4. Fill in the management group ID field.
  - The **Management Group ID** is the directory unique identifier that is used to submit commands on this management group. This identifier is not editable after creation as it is used throughout the Azure system to identify this group.
  - The display name field is the name that is displayed within the Azure portal. A separate display name is an optional field when creating the management group and can be changed at any time.



## 5. Select **Save**

### Create in PowerShell

Within PowerShell, you use the `Add-AzureRmManagementGroups` cmdlets:

```
C:\> New-AzureRmManagementGroup -GroupName Contoso
```

The **GroupName** is a unique identifier being created. This ID is used by other commands to reference this group and it cannot be changed later.

If you wanted the management group to show a different name within the Azure portal, you would add the **DisplayName** parameter with the string. For example, if you wanted to create a management group with the `GroupName` of `Contoso` and the display name of "Contoso Group", you would use the following cmdlet:

```
C:\> New-AzureRmManagementGroup -GroupName Contoso -DisplayName "Contoso Group" -ParentId ContosoTenant
```

Use the **ParentId** parameter to have this management group be created under a different management.

### Create in Azure CLI

On Azure CLI, you use the `az account management-group create` command.

```
C:\> az account management-group create --group-name <YourGroupName>
```

## Next steps

To Learn more about management groups, see:

- [Organize your resources with Azure management groups](#)
- [How to change, delete, or manage your management groups](#)
- [Install the Azure Powershell module](#)
- [Review the REST API Spec](#)
- [Install the Azure CLI Extension](#)

# Move resources to new resource group or subscription

7/2/2018 • 13 minutes to read • [Edit Online](#)

This article shows you how to move resources to either a new subscription or a new resource group in the same subscription. You can use the portal, PowerShell, Azure CLI, or the REST API to move resource. The move operations in this article are available to you without any assistance from Azure support.

When moving resources, both the source group and the target group are locked during the operation. Write and delete operations are blocked on the resource groups until the move completes. This lock means you can't add, update, or delete resources in the resource groups, but it doesn't mean the resources are frozen. For example, if you move a SQL Server and its database to a new resource group, an application that uses the database experiences no downtime. It can still read and write to the database.

You can't change the location of the resource. Moving a resource only moves it to a new resource group. The new resource group may have a different location, but that doesn't change the location of the resource.

## NOTE

This article describes how to move resources within an existing Azure account offering. If you actually want to change your Azure account offering (such as upgrading from pay-as-you-go to pre-pay) while continuing to work with your existing resources, see [Switch your Azure subscription to another offer](#).

## Checklist before moving resources

There are some important steps to perform before moving a resource. By verifying these conditions, you can avoid errors.

1. The source and destination subscriptions must exist within the same [Azure Active Directory tenant](#). To check that both subscriptions have the same tenant ID, use Azure PowerShell or Azure CLI.

For Azure PowerShell, use:

```
(Get-AzureRmSubscription -SubscriptionName <your-source-subscription>).TenantId  
(Get-AzureRmSubscription -SubscriptionName <your-destination-subscription>).TenantId
```

For Azure CLI, use:

```
az account show --subscription <your-source-subscription> --query tenantId  
az account show --subscription <your-destination-subscription> --query tenantId
```

If the tenant IDs for the source and destination subscriptions aren't the same, use the following methods to reconcile the tenant IDs:

- [Transfer ownership of an Azure subscription to another account](#)
  - [How to associate or add an Azure subscription to Azure Active Directory](#)
2. The service must enable the ability to move resources. This article lists which services enable moving resources and which services don't enable moving resources.
  3. The destination subscription must be registered for the resource provider of the resource being moved. If

not, you receive an error stating that the **subscription is not registered for a resource type**. You might encounter this problem when moving a resource to a new subscription, but that subscription has never been used with that resource type.

For PowerShell, use the following commands to get the registration status:

```
Set-AzureRmContext -Subscription <destination-subscription-name-or-id>
Get-AzureRmResourceProvider -ListAvailable | Select-Object ProviderNamespace, RegistrationState
```

To register a resource provider, use:

```
Register-AzureRmResourceProvider -ProviderNamespace Microsoft.Batch
```

For Azure CLI, use the following commands to get the registration status:

```
az account set -s <destination-subscription-name-or-id>
az provider list --query "[].{Provider:namespace, Status:registrationState}" --out table
```

To register a resource provider, use:

```
az provider register --namespace Microsoft.Batch
```

4. The account moving the resources must have at least the following permissions:

- **Microsoft.Resources/subscriptions/resourceGroups/moveResources/action** on the source resource group.
- **Microsoft.Resources/subscriptions/resourceGroups/write** on the destination resource group.

5. Before moving the resources, check the subscription quotas for the subscription you're moving the resources to. If moving the resources means the subscription will exceed its limits, you need to review whether you can request an increase in the quota. For a list of limits and how to request an increase, see [Azure subscription and service limits, quotas, and constraints](#).

6. When possible, break large moves into separate move operations. Resource Manager immediately fails attempts to move more than 800 resources in a single operation. However, moving less than 800 resources may also fail by timing out.

## When to call support

You can move most resources through the self-service operations shown in this article. Use the self-service operations to:

- Move Resource Manager resources.
- Move classic resources according to the [classic deployment limitations](#).

Contact [support](#) when you need to:

- Move your resources to a new Azure account (and Azure Active Directory tenant) and you need help with the instructions in the preceding section.
- Move classic resources but are having trouble with the limitations.

## Services that can be moved

The services that enable moving to both a new resource group and subscription are:

- API Management
- App Service apps (web apps) - see [App Service limitations](#)
- App Service Certificates
- Application Insights
- Analysis Services
- Automation
- Azure Active Directory B2C
- Azure Cosmos DB
- Azure Maps
- Azure Relay
- Azure Stack - registrations
- Azure Migrate
- Batch
- BizTalk Services
- Bot Service
- CDN
- Cloud Services - see [Classic deployment limitations](#)
- Cognitive Services
- Container Registry
- Content Moderator
- Data Catalog
- Data Factory
- Data Lake Analytics
- Data Lake Store
- DNS
- Event Grid
- Event Hubs
- HDInsight clusters - see [HDInsight limitations](#)
- IoT Hubs
- Key Vault
- Load Balancers - see [Load Balancer limitations](#)
- Log Analytics
- Logic Apps
- Machine Learning - Machine Learning Studio web services can be moved to a resource group in the same subscription, but not a different subscription. Other Machine Learning resources can be moved across subscriptions.
- Media Services
- Mobile Engagement
- Notification Hubs
- Operational Insights
- Operations Management
- Portal dashboards
- Power BI - both Power BI Embedded and Power BI Workspace Collection
- Public IP - see [Public IP limitations](#)
- Redis Cache
- Scheduler
- Search

- Service Bus
- Service Fabric
- SignalR Service
- Storage
- Storage (classic) - see [Classic deployment limitations](#)
- Stream Analytics - Stream Analytics jobs can't be moved when in running state.
- SQL Database server - database and server must reside in the same resource group. When you move a SQL server, all its databases are also moved. This behavior applies to Azure SQL Database and Azure SQL Data Warehouse databases.
- Time Series Insights
- Traffic Manager
- Virtual Machines - VMs with managed disks can't be moved. See [Virtual Machines limitations](#)
- Virtual Machines (classic) - see [Classic deployment limitations](#)
- Virtual Machine Scale Sets - see [Virtual Machines limitations](#)
- Virtual Networks - see [Virtual Networks limitations](#)
- Visual Studio Team Services - VSTS accounts with non-Microsoft extension purchases must [cancel their purchases](#) before they can move the account across subscriptions.
- VPN Gateway

## Services that cannot be moved

The services that currently don't enable moving a resource are:

- AD Domain Services
- AD Hybrid Health Service
- Application Gateway
- Azure Database for MySQL
- Azure Database for PostgreSQL
- Azure Database Migration
- Azure Databricks
- Batch AI
- Certificates - App Service Certificates can be moved, but uploaded certificates have [limitations](#).
- Container Service
- Dynamics LCS
- Express Route
- Kubernetes Service
- Lab Services - move to new resource group in same subscription is enabled, but cross subscription move isn't enabled.
- Load Balancers - see [Load Balancer limitations](#)
- Managed Applications
- Managed Disks - see [Virtual Machines limitations](#)
- Microsoft Genomics
- Public IP - see [Public IP limitations](#)
- Recovery Services vault - also don't move the Compute, Network, and Storage resources associated with the Recovery Services vault, see [Recovery Services limitations](#).
- SAP HANA on Azure
- Security
- Site Recovery

- StorSimple Device Manager
- Virtual Networks (classic) - see [Classic deployment limitations](#)

## Virtual Machines limitations

Managed disks don't support move. This restriction means that several related resources can't be moved too. You can't move:

- Managed disks
- Virtual machines with the managed disks
- Images created from managed disks
- Snapshots created from managed disks
- Availability sets with virtual machines with managed disks

Although you can't move a managed disk, you can create a copy and then create a new virtual machine from the existing managed disk. For more information, see:

- Copy managed disks in the same subscription or different subscription with [PowerShell](#) or [Azure CLI](#)
- Create a virtual machine using an existing managed OS disk with [PowerShell](#) or [Azure CLI](#).

Virtual machines created from Marketplace resources with plans attached can't be moved across resource groups or subscriptions. Deprovision the virtual machine in the current subscription, and deploy again in the new subscription.

Virtual Machines with certificate stored in Key Vault can be moved to a new resource group in the same subscription, but not across subscriptions.

## Virtual Networks limitations

When moving a virtual network, you must also move its dependent resources. For example, you must move gateways with the virtual network.

To move a peered virtual network, you must first disable the virtual network peering. Once disabled, you can move the virtual network. After the move, reenable the virtual network peering.

You can't move a virtual network to a different subscription if the virtual network contains a subnet with resource navigation links. For example, if a Redis Cache resource is deployed into a subnet, that subnet has a resource navigation link.

You can't move a virtual network to a different subscription if the virtual network contains a custom DNS server. To move the virtual network, set it to Default (Azure-provided) DNS server. After the move, reconfigure the custom DNS server.

## App Service limitations

The limitations for moving App Service resources differ based on whether you're moving the resources within a subscription or to a new subscription.

The limitations described in these sections apply to uploaded certificates, not App Service Certificates. You can move App Service Certificates to a new resource group or subscription without limitations. If you have multiple web apps that use the same App Service Certificate, first move all the web apps, then move the certificate.

### Moving within the same subscription

When moving a Web App *within the same subscription*, you can't move the uploaded SSL certificates. However, you can move a Web App to the new resource group without moving its uploaded SSL certificate, and your app's SSL functionality still works.

If you want to move the SSL certificate with the Web App, follow these steps:

1. Delete the uploaded certificate from the Web App.
2. Move the Web App.
3. Upload the certificate to the moved Web App.

## Moving across subscriptions

When moving a Web App *across subscriptions*, the following limitations apply:

- The destination resource group must not have any existing App Service resources. App Service resources include:
  - Web Apps
  - App Service plans
  - Uploaded or imported SSL certificates
  - App Service Environments
- All App Service resources in the resource group must be moved together.
- App Service resources can only be moved from the resource group in which they were originally created. If an App Service resource is no longer in its original resource group, it must be moved back to that original resource group first, and then it can be moved across subscriptions.

## Classic deployment limitations

The options for moving resources deployed through the classic model differ based on whether you're moving the resources within a subscription or to a new subscription.

### Same subscription

When moving resources from one resource group to another resource group within the same subscription, the following restrictions apply:

- Virtual networks (classic) can't be moved.
- Virtual machines (classic) must be moved with the cloud service.
- Cloud service can only be moved when the move includes all its virtual machines.
- Only one cloud service can be moved at a time.
- Only one storage account (classic) can be moved at a time.
- Storage account (classic) can't be moved in the same operation with a virtual machine or a cloud service.

To move classic resources to a new resource group within the same subscription, use the standard move operations through the [portal](#), [Azure PowerShell](#), [Azure CLI](#), or [REST API](#). You use the same operations as you use for moving Resource Manager resources.

### New subscription

When moving resources to a new subscription, the following restrictions apply:

- All classic resources in the subscription must be moved in the same operation.
- The target subscription must not contain any other classic resources.
- The move can only be requested through a separate REST API for classic moves. The standard Resource Manager move commands don't work when moving classic resources to a new subscription.

To move classic resources to a new subscription, use the REST operations that are specific to classic resources. To use REST, perform the following steps:

1. Check if the source subscription can participate in a cross-subscription move. Use the following operation:

```
POST  
https://management.azure.com/subscriptions/{sourceSubscriptionId}/providers/Microsoft.ClassicCompute/validateSubscriptionMoveAvailability?api-version=2016-04-01
```

In the request body, include:

```
{  
  "role": "source"  
}
```

The response for the validation operation is in the following format:

```
{  
  "status": "{status}",  
  "reasons": [  
    "reason1",  
    "reason2"  
  ]  
}
```

2. Check if the destination subscription can participate in a cross-subscription move. Use the following operation:

```
POST  
https://management.azure.com/subscriptions/{destinationSubscriptionId}/providers/Microsoft.ClassicCompute/validateSubscriptionMoveAvailability?api-version=2016-04-01
```

In the request body, include:

```
{  
  "role": "target"  
}
```

The response is in the same format as the source subscription validation.

3. If both subscriptions pass validation, move all classic resources from one subscription to another subscription with the following operation:

```
POST https://management.azure.com/subscriptions/{subscription-id}/providers/Microsoft.ClassicCompute/moveSubscriptionResources?api-version=2016-04-01
```

In the request body, include:

```
{  
  "target": "/subscriptions/{target-subscription-id}"  
}
```

The operation may run for several minutes.

## Recovery Services limitations

Move isn't enabled for Storage, Network, or Compute resources used to set up disaster recovery with Azure Site Recovery.

For example, suppose you have set up replication of your on-premises machines to a storage account (Storage1) and want the protected machine to come up after failover to Azure as a virtual machine (VM1) attached to a virtual network (Network1). You can't move any of these Azure resources - Storage1, VM1, and Network1 - across resource groups within the same subscription or across subscriptions.

To move a VM enrolled in **Azure backup** between resource groups:

1. Temporarily stop backup and retain backup data
2. Move the VM to the target resource group
3. Reprotect it under the same/new vault. Users can restore from the available restore points created before the move operation. If the user moves the backed-up VM across subscriptions, step 1 and step 2 remain the same. In step 3, user needs to protect the VM under a new vault present/ created in the target subscription. Recovery Services vault doesn't support cross subscription backups.

## HDInsight limitations

You can move HDInsight clusters to a new subscription or resource group. However, you can't move across subscriptions the networking resources linked to the HDInsight cluster (such as the virtual network, NIC, or load balancer). In addition, you can't move to a new resource group a NIC that is attached to a virtual machine for the cluster.

When moving an HDInsight cluster to a new subscription, first move other resources (like the storage account). Then, move the HDInsight cluster by itself.

## Search limitations

You can't move multiple Search resources placed in different regions all at once. In such a case, you need to move them separately.

## Load Balancer limitations

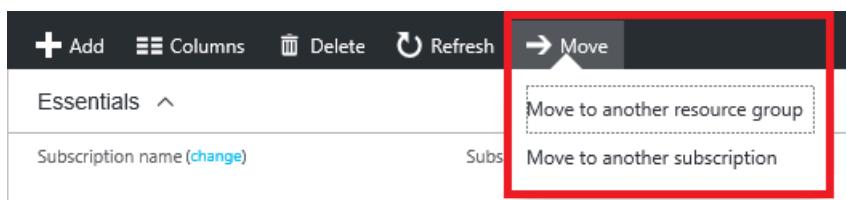
Basic SKU Load Balancer can be moved. Standard SKU Load Balancer can't be moved.

## Public IP limitations

Basic SKU Public IP can be moved. Standard SKU Public IP can't be moved.

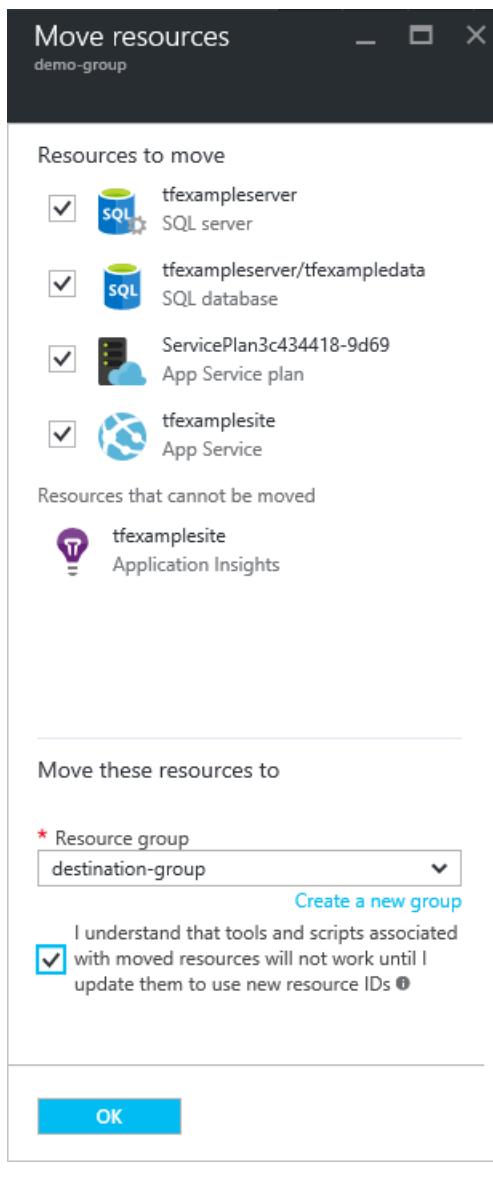
## Use portal

To move resources, select the resource group containing those resources, and then select the **Move** button.



Select whether you're moving the resources to a new resource group or a new subscription.

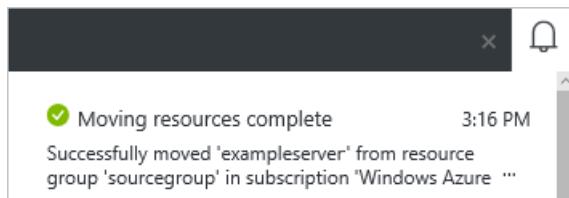
Select the resources to move and the destination resource group. Acknowledge that you need to update scripts for these resources and select **OK**. If you selected the edit subscription icon in the previous step, you must also select the destination subscription.



In **Notifications**, you see that the move operation is running.



When it has completed, you're notified of the result.



## Use PowerShell

To move existing resources to another resource group or subscription, use the [Move-AzureRmResource](#) command. The following example shows how to move multiple resources to a new resource group.

```
$webapp = Get-AzureRmResource -ResourceGroupName OldRG -ResourceName ExampleSite
$plan = Get-AzureRmResource -ResourceGroupName OldRG -ResourceName ExamplePlan
Move-AzureRmResource -DestinationResourceGroupName NewRG -ResourceId $webapp.ResourceId, $plan.ResourceId
```

To move to a new subscription, include a value for the `--destination-subscription-id` parameter.

## Use Azure CLI

To move existing resources to another resource group or subscription, use the [az resource move](#) command. Provide the resource IDs of the resources to move. The following example shows how to move multiple resources to a new resource group. In the `--ids` parameter, provide a space-separated list of the resource IDs to move.

```
webapp=$(az resource show -g OldRG -n ExampleSite --resource-type "Microsoft.Web/sites" --query id --output tsv)
plan=$(az resource show -g OldRG -n ExamplePlan --resource-type "Microsoft.Web/serverfarms" --query id --output tsv)
az resource move --destination-group newgroup --ids $webapp $plan
```

To move to a new subscription, provide the `--destination-subscription-id` parameter.

## Use REST API

To move existing resources to another resource group or subscription, run:

```
POST https://management.azure.com/subscriptions/{source-subscription-id}/resourcegroups/{source-resource-group-name}/moveResources?api-version={api-version}
```

In the request body, you specify the target resource group and the resources to move. For more information about the move REST operation, see [Move resources](#).

## Next steps

- To learn about PowerShell cmdlets for managing your subscription, see [Using Azure PowerShell with Resource Manager](#).
- To learn about Azure CLI commands for managing your subscription, see [Using the Azure CLI with Resource Manager](#).
- To learn about portal features for managing your subscription, see [Using the Azure portal to manage resources](#).
- To learn about applying a logical organization to your resources, see [Using tags to organize your resources](#).

# Programmatically create Azure Enterprise subscriptions (preview)

7/30/2018 • 6 minutes to read • [Edit Online](#)

As an Azure customer on [Enterprise Agreement \(EA\)](#), you can create EA (MS-AZR-0017P) and EA Dev/Test (MS-AZR-0148P) subscriptions programmatically. In this article, you learn how to create subscriptions programmatically using Azure Resource Manager.

When you create an Azure subscription from this API, that subscription is governed by the agreement under which you obtained Microsoft Azure services from Microsoft or an authorized reseller. To learn more, see [Microsoft Azure Legal Information](#).

## Prerequisites

You must have an Owner or Contributor role on the Enrollment Account you wish to create subscriptions under.

There are two ways to get these roles:

- Your Enrollment Administrator can [make you an Account Owner](#) (log-in required) which makes you an Owner of the Enrollment Account. Follow the instructions in the invitation email you receive to manually create an initial subscription. Confirm account ownership and manually create an initial EA subscription before proceeding to the next step. Just adding the account to the enrollment isn't enough.
- An existing Owner of the Enrollment Account can [grant you access](#). Similarly, if you want to use a service principal to create the EA subscription, you must [grant that service principal the ability to create subscriptions](#).

## Find accounts you have access to

After you're added to an Azure EA enrollment as an Account Owner, Azure uses the account-to-enrollment relationship to determine where to bill the subscription charges. All subscriptions created under the account are billed towards the EA enrollment that the account is in. To create subscriptions, you must pass in values about the enrollment account and the user principals to own the subscription.

To run the following commands, you must be logged in to the Account Owner's *home directory*, which is the directory that subscriptions are created in by default.

- [REST](#)
- [PowerShell](#)
- [Azure CLI](#)

Request to list all enrollment accounts:

```
GET https://management.azure.com/providers/Microsoft.Billing/enrollmentAccounts?api-version=2018-03-01-preview
```

Azure responds with a list of all enrollment accounts you have access to:

```
{
  "value": [
    {
      "id": "/providers/Microsoft.Billing/enrollmentAccounts/747ddfe5-xxxx-xxxx-xxxx-xxxxxxxxxxxx",
      "name": "747ddfe5-xxxx-xxxx-xxxx-xxxxxxxxxxxx",
      "type": "Microsoft.Billing/enrollmentAccounts",
      "properties": {
        "principalName": "SignUpEngineering@contoso.com"
      }
    },
    {
      "id": "/providers/Microsoft.Billing/enrollmentAccounts/4cd2fcf6-xxxx-xxxx-xxxx-xxxxxxxxxxxx",
      "name": "4cd2fcf6-xxxx-xxxx-xxxx-xxxxxxxxxxxx",
      "type": "Microsoft.Billing/enrollmentAccounts",
      "properties": {
        "principalName": "BillingPlatformTeam@contoso.com"
      }
    }
  ]
}
```

Use the `principalName` property to identify the account that you want subscriptions to be billed to. Use the `id` as the `enrollmentAccount` value that you use to create the subscription in the next step.

## Create subscriptions under a specific enrollment account

The following example creates a request to create subscription named *Dev Team Subscription* and subscription offer is *MS-AZR-0017P* (regular EA). The enrollment account is `747ddfe5-xxxx-xxxx-xxxx-xxxxxxxxxxxx` (placeholder value, this value is a GUID), which is the enrollment account for SignUpEngineering@contoso.com. It also optionally adds two users as RBAC Owners for the subscription.

- [REST](#)
- [PowerShell](#)
- [Azure CLI](#)

Use the `id` of the `enrollmentAccount` in the path of the request to create subscription.

```
POST https://management.azure.com/providers/Microsoft.Billing/enrollmentAccounts/747ddfe5-xxxx-xxxx-xxxx-
xxxxxxxxxxxx/providers/Microsoft.Subscription/createSubscription?api-version=2018-03-01-preview

{
  "displayName": "Dev Team Subscription",
  "offerType": "MS-AZR-0017P",
  "owners": [
    {
      "objectId": "<userObjectId>"
    },
    {
      "objectId": "<servicePrincipalObjectId>"
    }
  ]
}
```

ELEMENT NAME	REQUIRED	TYPE	DESCRIPTION
--------------	----------	------	-------------

ELEMENT NAME	REQUIRED	TYPE	DESCRIPTION
<code>displayName</code>	No	String	The display name of the subscription. If not specified, it's set to the name of the offer, like "Microsoft Azure Enterprise."
<code>offerType</code>	Yes	String	The offer of the subscription. The two options for EA are <a href="#">MS-AZR-0017P</a> (production use) and <a href="#">MS-AZR-0148P</a> (dev/test, needs to be <a href="#">turned on using the EA portal</a> ).
<code>owners</code>	No	String	The Object ID of any user that you'd like to add as an RBAC Owner on the subscription when it's created.

In the response, you get back a `subscriptionOperation` object for monitoring. When the subscription creation is finished, the `subscriptionOperation` object would return a `subscriptionLink` object, which has the subscription ID.

## Limitations of Azure Enterprise subscription creation API

- Only Azure Enterprise subscriptions can be created using this API.
- There's a limit of 50 subscriptions per account. After that, subscriptions can only be created by using Account Center.
- There needs to be at least one EA or EA Dev/Test subscriptions under the account, which means the Account Owner has gone through manual sign-up at least once.
- Users who aren't Account Owners, but were added to an enrollment account via RBAC, can't create subscriptions using Account Center.
- You can't select the tenant for the subscription to be created in. The subscription is always created in the home tenant of the Account Owner. To move the subscription to a different tenant, see [change subscription tenant](#).

## Next steps

- For an example on creating subscriptions using .NET, see [sample code on GitHub](#).
- Now that you've created a subscription, you can grant that ability to other users and service principals. For more information, see [Grant access to create Azure Enterprise subscriptions \(preview\)](#).
- To learn more about managing large numbers of subscriptions using management groups, see [Organize your resources with Azure management groups](#)

# Export and view your top-level Subscription information

6/15/2018 • 2 minutes to read • [Edit Online](#)

If you need to view the set of subscription IDs associated with your user credentials, [download a .json file with your subscription information from the Azure Account Center](#).

## NOTE

If you're interested in viewing or deleting personal data, please see the [Azure Data Subject Requests for the GDPR](#) article. If you're looking for general info about GDPR, see the [GDPR section of the Service Trust portal](#).

The downloaded .json file provides the following information:

- Email: The email address associated with your account.
- Puid: The unique identifier associated with your billing account.
- SubscriptionIds: A list of subscriptions that belong to your account, enumerated by subscription ID.

## subscriptions.json sample

```
{  
  "Email": "admin@contoso.com",  
  "Puid": "00052xxxxxxxxxx",  
  "SubscriptionIds": [  
    "38124d4d-xxxx-xxxx-xxxx-xxxxxxxxxxxx",  
    "7c8308f1-xxxx-xxxx-xxxx-xxxxxxxxxxxx",  
    "39a25f2b-xxxx-xxxx-xxxx-xxxxxxxxxxxx",  
    "52ec2489-xxxx-xxxx-xxxx-xxxxxxxxxxxx",  
    "e42384b2-xxxx-xxxx-xxxx-xxxxxxxxxxxx",  
    "90757cdc-xxxx-xxxx-xxxx-xxxxxxxxxxxx"  
  ]  
}
```

2 minutes to read

# Azure subscription and service limits, quotas, and constraints

7/20/2018 • 62 minutes to read • [Edit Online](#)

This document lists some of the most common Microsoft Azure limits, which are also sometimes called quotas. This document doesn't currently cover all Azure services. Over time, the list will be expanded and updated to cover more of the platform.

Please visit [Azure Pricing Overview](#) to learn more about Azure pricing. There, you can estimate your costs using the [Pricing Calculator](#) or by visiting the pricing details page for a service (for example, [Windows VMs](#)). For tips to help manage your costs, see [Prevent unexpected costs with Azure billing and cost management](#).

## NOTE

If you want to raise the limit or quota above the **Default Limit**, open an online customer support request at no charge. The limits can't be raised above the **Maximum Limit** value shown in the following tables. If there is no **Maximum Limit** column, then the resource doesn't have adjustable limits.

[Free Trial subscriptions](#) are not eligible for limit or quota increases. If you have a [Free Trial subscription](#), you can upgrade to a [Pay-As-You-Go](#) subscription. For more information, see [Upgrade Azure Free Trial to Pay-As-You-Go](#) and [Free Trial subscription FAQ](#).

## Limits and the Azure Resource Manager

It is now possible to combine multiple Azure resources into a single Azure Resource Group. When using Resource Groups, limits that once were global become managed at a regional level with the Azure Resource Manager. For more information about Azure Resource Groups, see [Azure Resource Manager overview](#).

In the limits below, a new table has been added to reflect any differences in limits when using the Azure Resource Manager. For example, there is a **Subscription Limits** table and a **Subscription Limits - Azure Resource Manager** table. When a limit applies to both scenarios, it is only shown in the first table. Unless otherwise indicated, limits are global across all regions.

## NOTE

It is important to emphasize that quotas for resources in Azure Resource Groups are per-region accessible by your subscription, and are not per-subscription, as the service management quotas are. Let's use vCPU quotas as an example. If you need to request a quota increase with support for vCPUs, you need to decide how many vCPUs you want to use in which regions, and then make a specific request for Azure Resource Group vCPU quotas for the amounts and regions that you want. Therefore, if you need to use 30 vCPUs in West Europe to run your application there, you should specifically request 30 vCPUs in West Europe. But you will not have a vCPU quota increase in any other region -- only West Europe will have the 30-vCPU quota.

As a result, you may find it useful to consider deciding what your Azure Resource Group quotas need to be for your workload in any one region, and request that amount in each region into which you are considering deployment. See [troubleshooting deployment issues](#) for more help discovering your current quotas for specific regions.

## Service-specific limits

- [Active Directory](#)

- [API Management](#)
- [App Service](#)
- [Application Gateway](#)
- [Application Insights](#)
- [Automation](#)
- [Azure Cosmos DB](#)
- [Azure Database for MySQL](#)
- [Azure Database for PostgreSQL](#)
- [Azure Event Grid](#)
- [Azure Maps](#)
- [Azure Redis Cache](#)
- [Backup](#)
- [Batch](#)
- [BizTalk Services](#)
- [CDN](#)
- [Cloud Services](#)
- [Container Instances](#)
- [Container Registry](#)
- [Kubernetes Service](#)
- [Data Factory](#)
- [Data Lake Analytics](#)
- [Data Lake Store](#)
- [Database Migration Service](#)
- [DNS](#)
- [Event Hubs](#)
- [Azure Firewall](#)
- [IoT Hub](#)
- [IoT Hub Device Provisioning Service](#)
- [Key Vault](#)
- [Log Analytics](#)
- [Managed Identity](#)
- [Media Services](#)
- [Mobile Engagement](#)
- [Mobile Services](#)
- [Monitor](#)
- [Multi-Factor Authentication](#)
- [Networking](#)
- [Network Watcher](#)
- [Notification Hub Service](#)
- [Resource Group](#)
- [Role-based access control](#)
- [Scheduler](#)
- [Search](#)
- [Service Bus](#)
- [Site Recovery](#)
- [SQL Database](#)

- [SQL Data Warehouse](#)
- [Storage](#)
- [StorSimple System](#)
- [Stream Analytics](#)
- [Subscription](#)
- [Traffic Manager](#)
- [Virtual Machines](#)
- [Virtual Machine Scale Sets](#)

## Subscription limits

### Subscription limits

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
vCPUs per <a href="#">subscription</a> <sup>1</sup>	20	10,000
Co-administrators per subscription	200	200
<a href="#">Storage accounts</a> per region per subscription <sup>2</sup>	200	250
<a href="#">Cloud services</a> per subscription	20	200
<a href="#">Local networks</a> per subscription	10	500
SQL Database servers per subscription	6	200
DNS servers per subscription	9	100
Reserved IPs per subscription	20	100
Hosted service certificates per subscription	199	199
<a href="#">Affinity groups</a> per subscription	256	256

<sup>1</sup>Extra Small instances count as one vCPU towards the vCPU limit despite using a partial CPU core.

<sup>2</sup>The storage account limit includes both Standard and Premium storage accounts. If you require more than 200 storage accounts in a given region, make a request through [Azure Support](#). The Azure Storage team will review your business case and may approve up to 250 storage accounts for a given region.

### Subscription limits - Azure Resource Manager

The following limits apply when using the Azure Resource Manager and Azure Resource Groups. Limits that have not changed with the Azure Resource Manager are not listed below. Please refer to the previous table for those limits.

For information about handling limits on Resource Manager requests, see [Throttling Resource Manager requests](#).

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
VMs per <a href="#">subscription</a>	10,000 <sup>1</sup> per Region	10,000 per Region
VM total cores per <a href="#">subscription</a>	20 <sup>1</sup> per Region	Contact support

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
VM per series (Dv2, F, etc.) cores per subscription	20 <sup>1</sup> per Region	Contact support
Co-administrators per subscription	Unlimited	Unlimited
Storage accounts per region per subscription	200	200 <sup>2</sup>
Resource Groups per subscription	980	980
Availability Sets per subscription	2,000 per Region	2,000 per Region
Resource Manager API Reads	15,000 per hour	15,000 per hour
Resource Manager API Writes	1,200 per hour	1,200 per hour
Resource Manager API request size	4,194,304 bytes	4,194,304 bytes
Tags per subscription <sup>3</sup>	unlimited	unlimited
Unique tag calculations per subscription <sup>3</sup>	10,000	10,000
Cloud services per subscription	Not Applicable <sup>4</sup>	Not Applicable <sup>4</sup>
Affinity groups per subscription	Not Applicable <sup>4</sup>	Not Applicable <sup>4</sup>

<sup>1</sup>Default limits vary by offer Category Type, such as Free Trial, Pay-As-You-Go, and series, such as Dv2, F, G, etc.

<sup>2</sup>This includes both Standard and Premium storage accounts. If you require more than 200 storage accounts, make a request through [Azure Support](#). The Azure Storage team will review your business case and may approve up to 250 storage accounts.

<sup>3</sup>You can apply an unlimited number of tags per subscription. The number of tags per resource or resource group is limited to 15. Resource Manager only returns a [list of unique tag name and values](#) in the subscription when the number of tags is 10,000 or less. However, you can still find a resource by tag when the number exceeds 10,000.

<sup>4</sup>These features are no longer required with Azure Resource Groups and the Azure Resource Manager.

#### NOTE

It is important to emphasize that virtual machine cores have a regional total limit as well as a regional per size series (Dv2, F, etc.) limit that are separately enforced. For example, consider a subscription with a US East total VM core limit of 30, an A series core limit of 30, and a D series core limit of 30. This subscription would be allowed to deploy 30 A1 VMs, or 30 D1 VMs, or a combination of the two not to exceed a total of 30 cores (for example, 10 A1 VMs and 20 D1 VMs).

#### Resource Group limits

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
Resources per <a href="#">resource group</a> (per resource type)	800	Varies per resource type

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
Deployments per resource group in the deployment history	800	800
Resources per deployment	800	800
Management Locks (per unique scope)	20	20
Number of Tags (per resource or resource group)	15	15
Tag key length	512	512
Tag value length	256	256

#### Template limits

VALUE	DEFAULT LIMIT	MAXIMUM LIMIT
Parameters	256	256
Variables	256	256
Resources (including copy count)	800	800
Outputs	64	64
Template expression	24,576 chars	24,576 chars
Resources in exported templates	200	200
Template size	1 MB	1 MB
Parameter file size	64 KB	64 KB

You can exceed some template limits by using a nested template. For more information, see [Using linked templates when deploying Azure resources](#). To reduce the number of parameters, variables, or outputs, you can combine several values into an object. For more information, see [Objects as parameters](#).

If you reach the limit of 800 deployments per resource group, delete deployments from the history that are no longer needed. You can delete entries from the history with `az group deployment delete` for Azure CLI, or `Remove-AzureRmResourceGroupDeployment` in PowerShell. Deleting an entry from the deployment history does not affect the deployed resources.

#### Virtual Machines limits

##### Virtual Machine limits

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
<a href="#">Virtual machines</a> per cloud service <sup>1</sup>	50	50
Input endpoints per cloud service <sup>2</sup>	150	150

<sup>1</sup>Virtual machines created in Service Management (instead of Resource Manager) are automatically stored in a

cloud service. You can add more virtual machines to that cloud service for load balancing and availability.

<sup>2</sup>Input endpoints allow communications to a virtual machine from outside the virtual machine's cloud service. Virtual machines in the same cloud service or virtual network can automatically communicate with each other. See [How to Set Up Endpoints to a Virtual Machine](#).

#### **Virtual Machines limits - Azure Resource Manager**

The following limits apply when using the Azure Resource Manager and Azure Resource Groups. Limits that have not changed with the Azure Resource Manager are not listed below. Please refer to the previous table for those limits.

RESOURCE	DEFAULT LIMIT
Virtual machines per availability set	200
Certificates per subscription	Unlimited <sup>1</sup>

<sup>1</sup>With Azure Resource Manager, certificates are stored in the Azure Key Vault. Although the number of certificates is unlimited for a subscription, there is still a 1 MB limit of certificates per deployment (which consists of either a single VM or an availability set).

#### **Virtual Machine Scale Sets limits**

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
Maximum number of VMs in a scale set	1000	1000
Maximum number of VMs based on a custom VM image in a scale set	300	300
Maximum number of scale sets in a region	2000	2000

#### **Container Instances limits**

RESOURCE	DEFAULT LIMIT
Container groups per <a href="#">subscription</a>	20 <sup>1</sup>
Number of containers per container group	60
Number of volumes per container group	20
Ports per IP	5
Container creates per hour	60 <sup>1</sup>
Container creates per 5 minutes	20 <sup>1</sup>
Container deletes per hour	150 <sup>1</sup>
Container deletes per 5 minutes	50 <sup>1</sup>
Multiple containers per container group	Linux only <sup>2</sup>

RESOURCE	DEFAULT LIMIT
Azure Files volumes	Linux only <sup>2</sup>
GitRepo volumes	Linux only <sup>2</sup>
Secret volumes	Linux only <sup>2</sup>

<sup>1</sup> Create an [Azure support request](#) to request a limit increase.

<sup>2</sup> Windows support for this feature is planned.

## Container Registry limits

The following table details the features and limits of the Basic, Standard, and Premium [service tiers](#).

RESOURCE	BASIC	STANDARD	PREMIUM
Storage	10 GiB	100 GiB	500 GiB
Max image layer size	20 GiB	20 GiB	50 GiB
ReadOps per minute <sup>1, 2</sup>	1,000	3,000	10,000
WriteOps per minute <sup>1, 3</sup>	100	500	2,000
Download bandwidth MBps <sup>1</sup>	30	60	100
Upload bandwidth MBps <sup>1</sup>	10	20	50
Webhooks	2	10	100
Geo-replication	N/A	N/A	<a href="#">Supported</a>

<sup>1</sup> *ReadOps*, *WriteOps*, and *Bandwidth* are minimum estimates. ACR strives to improve performance as usage requires.

<sup>2</sup> [docker pull](#) translates to multiple read operations based on the number of layers in the image, plus the manifest retrieval.

<sup>3</sup> [docker push](#) translates to multiple write operations, based on the number of layers that must be pushed. A [docker push](#) includes *ReadOps* to retrieve a manifest for an existing image.

## Kubernetes Service limits

RESOURCE	DEFAULT LIMIT
Max nodes per cluster	100
Max pods per node ( <a href="#">basic networking with Kubenet</a> )	110
Max pods per node ( <a href="#">advanced networking with Azure CNI</a> )	30 <sup>1</sup>
Max cluster per subscription	100

<sup>1</sup> This value can be customized through ARM template deployment. See examples [here](#).

## Networking limits

### ExpressRoute Limits

The following limits apply to ExpressRoute resources per subscription.

RESOURCE	DEFAULT LIMIT
ExpressRoute circuits per subscription	10
ExpressRoute circuits per region per subscription for ARM	10
Maximum number of routes for Azure private peering with ExpressRoute standard	4,000
Maximum number of routes for Azure private peering with ExpressRoute premium add-on	10,000
Maximum number of routes for Azure public peering with ExpressRoute standard	200
Maximum number of routes for Azure public peering with ExpressRoute premium add-on	200
Maximum number of routes for Azure Microsoft peering with ExpressRoute standard	200
Maximum number of routes for Azure Microsoft peering with ExpressRoute premium add-on	200
Maximum number of ExpressRoute circuits linked to the same virtual network in different peering locations	4
Number of virtual network links allowed per ExpressRoute circuit	see table below

### Number of Virtual Networks per ExpressRoute circuit

CIRCUIT SIZE	NUMBER OF VNET LINKS FOR STANDARD	NUMBER OF VNET LINKS WITH PREMIUM ADD-ON
50 Mbps	10	20
100 Mbps	10	25
200 Mbps	10	25
500 Mbps	10	40
1 Gbps	10	50
2 Gbps	10	60
5 Gbps	10	75
10 Gbps	10	100

## Networking limits

The following limits apply only for networking resources managed through the classic deployment model per subscription. Learn how to [view your current resource usage against your subscription limits](#).

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
Virtual networks	50	100
Local network sites	20	contact support
DNS Servers per virtual network	20	100
Private IP Addresses per virtual network	4096	4096
Concurrent TCP or UDP flows per NIC of a virtual machine or role instance	500K	500K
Network Security Groups (NSG)	100	200
NSG rules per NSG	200	1000
User defined route tables	100	200
User defined routes per route table	100	400
Public IP addresses (dynamic)	5	contact support
Reserved public IP addresses	20	contact support
Public VIP per deployment	5	contact support
Private VIP (ILB) per deployment	1	1
Endpoint Access Control Lists (ACLs)	50	50

#### Networking Limits - Azure Resource Manager

The following limits apply only for networking resources managed through Azure Resource Manager per region per subscription. Learn how to [view your current resource usage against your subscription limits](#).

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
Virtual networks	50	1000
Subnets per virtual network	1000	10000
Virtual network peerings per Virtual Network	50**	100
DNS Servers per virtual network	9	25
Private IP Addresses per virtual network	16384**	16384
Private IP Addresses per network interface	256	256

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
Concurrent TCP or UDP flows per NIC of a virtual machine or role instance	500K	500K
Network Interfaces (NIC)	24000**	24000
Network Security Groups (NSG)	100	5000
NSG rules per NSG	1000**	1000
IP addresses and ranges specified for source or destination in a security group	2000	4000
Application security groups	500	3000
Application security groups per IP configuration, per NIC	10	20
IP configurations per application security group	1000	4000
Application security groups that can be specified within all security rules of a network security group	50	100
User defined route tables	100	200
User defined routes per route table	400**	400
Public IP addresses - dynamic	(Basic) 60	contact support
Public IP addresses - static	(Basic) 20	contact support
Public IP addresses - static	(Standard) 20	contact support
Point-to-Site Root Certificates per VPN Gateway	20	20

\*\*These updated default limits apply to subscriptions that have not previously had these limits increased through support. If you have had these limits increased by support in the past and would like to get them updated to new defaults, please [open an online customer support request at no charge](#)

#### Load Balancer limits

The following limits apply only for networking resources managed through Azure Resource Manager per region per subscription. Learn how to [view your current resource usage against your subscription limits](#)

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
Load Balancers	100	1000
Rules per resource, Basic	150	250

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
Rules per resource, Standard	1250	1500
Rules per IP configuration	299	299
Frontend IP configurations, Basic	10	200
Frontend IP configurations, Standard	10	600
Backend pool, Basic	100, single Availability Set	100, single Availability Set
Backend pool, Standard	1000, single VNet	1000, single VNet
Backend resources per Load Balancer, Standard *	50	150
HA Ports, Standard	1 per internal frontend	1 per internal frontend

\* Up to 150 resources, any combination of standalone virtual machines, availability sets, and virtual machine scale sets.

[Contact support](#) in case you need to increase limits from default.

#### Application Gateway limits

RESOURCE	DEFAULT LIMIT	NOTE
Application Gateway	50 per subscription	Maximum 100
Frontend IP Configurations	2	1 public and 1 private
Frontend Ports	20	
Backend Address Pools	20	
Backend Servers per pool	100	
HTTP Listeners	20	
HTTP load balancing rules	200	# of HTTP Listeners * n, n=10 Default
Backend HTTP settings	20	1 per Backend Address Pool
Instances per gateway	10	For more instances, open support ticket
SSL certificates	20	1 per HTTP Listeners
Authentication certificates	5	Maximum 10
Request time out min	1 second	
Request time out max	24 hrs	

RESOURCE	DEFAULT LIMIT	NOTE
Number of sites	20	1 per HTTP Listeners
URL Maps per listener	1	
Maximum URL length	8000	
Maximum file upload size Standard	2 GB	
Maximum file upload size WAF	100 MB	
WAF body size limit (without files)	128 KB	

#### Network Watcher limits

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT	NOTE
Network Watcher	1 per region	1 per region	Network Watcher resource is created to enable access to the service. Only 1 Network Watcher resource is required per subscription per region
Packet Capture sessions	10 per region		# of sessions only, not saved captures

#### Traffic Manager limits

RESOURCE	DEFAULT LIMIT
Profiles per subscription	200 <sup>1</sup>
Endpoints per profile	200

<sup>1</sup>Contact support in case you need to increase these limits.

#### DNS limits

RESOURCE	DEFAULT LIMIT
Zones per subscription	100 <sup>1</sup>
Record sets per zone	5000 <sup>1</sup>
Records per record set	20

<sup>1</sup> Contact Azure Support in case you need to increase these limits.

#### Azure Firewall limits

RESOURCE	DEFAULT LIMIT
Data processed	1000 TB/firewall/month <sup>1</sup>
Rules	10k application rules, 10k network rules

RESOURCE	DEFAULT LIMIT
VNet peering	For hub and spoke implementations, max of 50 spoke VNets.
Global peering	Not supported. You should have at least one firewall deployment per region.

<sup>1</sup> Contact Azure Support in case you need to increase these limits.

## Storage limits

For additional details on storage account limits, see [Azure Storage Scalability and Performance Targets](#).

RESOURCE	DEFAULT LIMIT
Number of storage accounts per region per subscription	200 <sup>1</sup>
Max storage account capacity	500 TiB <sup>2</sup>
Max number of blob containers, blobs, file shares, tables, queues, entities, or messages per storage account	No limit
Maximum request rate per storage account	20,000 requests per second <sup>2</sup>
Max ingress <sup>3</sup> per storage account (US Regions)	10 Gbps if RA-GRS/GRS enabled, 20 Gbps for LRS/ZRS <sup>4</sup>
Max egress <sup>3</sup> per storage account (US Regions)	20 Gbps if RA-GRS/GRS enabled, 30 Gbps for LRS/ZRS <sup>4</sup>
Max ingress <sup>3</sup> per storage account (Non-US regions)	5 Gbps if RA-GRS/GRS enabled, 10 Gbps for LRS/ZRS <sup>4</sup>
Max egress <sup>3</sup> per storage account (Non-US regions)	10 Gbps if RA-GRS/GRS enabled, 15 Gbps for LRS/ZRS <sup>4</sup>

<sup>1</sup>Includes both Standard and Premium storage accounts. If you require more than 200 storage accounts in a given region, make a request through [Azure Support](#). The Azure Storage team will review your business case and may approve up to 250 storage accounts for a given region.

<sup>2</sup> If you need expanded limits for your storage account, please contact [Azure Support](#). The Azure Storage team will review the request and may approve higher limits on a case by case basis. Both general-purpose and Blob storage accounts support increased capacity, ingress/egress, and request rate by request. For the new maximums for Blob storage accounts, see [Announcing larger, higher scale storage accounts](#).

<sup>3</sup> Capped only by the account's ingress/egress limits. *Ingress* refers to all data (requests) being sent to a storage account. *Egress* refers to all data (responses) being received from a storage account.

<sup>4</sup>Azure Storage redundancy options include:

- **RA-GRS:** Read-access geo-redundant storage. If RA-GRS is enabled, egress targets for the secondary location are identical to those for the primary location.
- **GRS:** Geo-redundant storage.
- **ZRS:** Zone-redundant storage.
- **LRS:** Locally redundant storage.

The following limits apply when performing management operations using the Azure Resource Manager only.

RESOURCE	DEFAULT LIMIT
Storage account management operations (read)	800 per 5 minutes
Storage account management operations (write)	200 per hour
Storage account management operations (list)	100 per 5 minutes

#### Azure Blob storage limits

RESOURCE	TARGET
Max size of single blob container	Same as max storage account capacity
Max number of blocks in a block blob or append blob	50,000 blocks
Max size of a block in a block blob	100 MiB
Max size of a block blob	50,000 X 100 MiB (approx. 4.75 TiB)
Max size of a block in an append blob	4 MiB
Max size of an append blob	50,000 x 4 MiB (approx. 195 GiB)
Max size of a page blob	8 TiB
Max number of stored access policies per blob container	5
Target throughput for single blob	Up to 60 MiB per second, or up to 500 requests per second

#### Azure Files limits

For additional details on Azure Files limits, see [Azure Files scalability and performance targets](#).

RESOURCE	TARGET
Max size of a file share	5 TiB
Max size of a file in a file share	1 TiB
Max number of files in a file share	No limit
Max IOPS per share	1000 IOPS
Max number of stored access policies per file share	5
Maximum request rate per storage account	20,000 requests per second for files of any valid size <sup>3</sup>
Target throughput for single file share	Up to 60 MiB per second
Maximum open handles for per file	2000 open handles
Maximum number of share snapshots	200 share snapshots

#### Azure File Sync limits

RESOURCE	TARGET	HARD LIMIT
Storage Sync Services per subscription	15 Storage Sync Services	No
Sync groups per Storage Sync Service	30 sync groups	Yes
Registered servers per Storage Sync Service	99 servers	Yes
Cloud endpoints per Sync Group	1 cloud endpoint	Yes
Server endpoints per Sync Group	50 server endpoints	No
Server endpoints per server	33-99 server endpoints	Yes, but varies based on configuration
Endpoint size	4 TiB	No
File system objects (directories and files) per sync group	25 million objects	No
Maximum number of file system objects (directories and files) in a directory	200,000 objects	Yes
Maximum object (directories and files) name length	255 characters	Yes
File size	100 GiB	No
Minimum file size for a file to be tiered	64 KiB	Yes

#### Azure Queue storage limits

RESOURCE	TARGET
Max size of single queue	500 TiB
Max size of a message in a queue	64 KiB
Max number of stored access policies per queue	5
Maximum request rate per storage account	20,000 messages per second assuming 1 KiB message size
Target throughput for single queue (1 KiB messages)	Up to 2000 messages per second

#### Azure Table storage limits

RESOURCE	TARGET
Max size of single table	500 TiB
Max size of a table entity	1 MiB
Max number of properties in a table entity	255 (including 3 system properties: PartitionKey, RowKey and Timestamp)

RESOURCE	TARGET
Max number of stored access policies per table	5
Maximum request rate per storage account	20,000 transactions per second (assuming 1 KiB entity size)
Target throughput for single table partition (1 KiB entities)	Up to 2000 entities per second

#### **Virtual machine disk limits**

An Azure virtual machine supports attaching a number of data disks. This article describes scalability and performance targets for a VM's data disks. Use these targets to help decide the number and type of disk that you need to meet your performance and capacity requirements.

#### **IMPORTANT**

For optimal performance, limit the number of highly utilized disks attached to the virtual machine to avoid possible throttling. If all attached disks are not highly utilized at the same time, then the virtual machine can support a larger number of disks.

- **For Azure Managed Disks:**

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
Standard Managed Disks	10,000	50,000
Standard SSD Managed Disks	10,000	50,000
Premium Managed Disks	10,000	50,000
Standard_LRS Snapshots	10,000	50,000
Standard_ZRS Snapshots	10,000	50,000
Premium_LRS Snapshots	10,000	50,000
Managed Image	10,000	50,000

- **For standard storage accounts:** A standard storage account has a maximum total request rate of 20,000 IOPS. The total IOPS across all of your virtual machine disks in a standard storage account should not exceed this limit.

You can roughly calculate the number of highly utilized disks supported by a single standard storage account based on the request rate limit. For example, for a Basic Tier VM, the maximum number of highly utilized disks is about 66 (20,000/300 IOPS per disk), and for a Standard Tier VM, it is about 40 (20,000/500 IOPS per disk).

- **For premium storage accounts:** A premium storage account has a maximum total throughput rate of 50 Gbps. The total throughput across all of your VM disks should not exceed this limit.

See [Virtual machine sizes](#) for additional details.

**Managed virtual machine disks**

**Standard managed virtual machine disks**

<b>STANDARD DISK TYPE</b>	<b>S4</b>	<b>S6</b>	<b>S10</b>	<b>S20</b>	<b>S30</b>	<b>S40</b>	<b>S50</b>
Disk size	32 GB	64 GB	128 GB	512 GB	1024 GB (1 TB)	2048 GB (2TB)	4095 GB (4 TB)
IOPS per disk	500	500	500	500	500	500	500
Throughput per disk	60 MB/sec	60 MB/sec	60 MB/sec	60 MB/sec	60 MB/sec	60 MB/sec	60 MB/sec

#### Premium managed virtual machine disks: per disk limits

<b>PREMIUM DISKS TYPE</b>	<b>P4</b>	<b>P6</b>	<b>P10</b>	<b>P20</b>	<b>P30</b>	<b>P40</b>	<b>P50</b>
Disk size	32 GB	64 GB	128 GB	512 GB	1024 GB (1 TB)	2048 GB (2TB)	4095 GB (4 TB)
IOPS per disk	120	240	500	2300	5000	7500	7500
Throughput per disk	25 MB/sec	50 MB/sec	100 MB/sec	150 MB/sec	200 MB/sec	250 MB/sec	250 MB/sec

#### Premium managed virtual machine disks: per VM limits

<b>RESOURCE</b>	<b>DEFAULT LIMIT</b>
Max IOPS Per VM	80,000 IOPS with GS5 VM
Max throughput per VM	2,000 MB/s with GS5 VM

#### Unmanaged virtual machine disks

##### Standard unmanaged virtual machine disks: per disk limits

<b>VM TIER</b>	<b>BASIC TIER VM</b>	<b>STANDARD TIER VM</b>
Disk size	4095 GB	4095 GB
Max 8 KB IOPS per persistent disk	300	500
Max number of disks performing max IOPS	66	40

#### Premium unmanaged virtual machine disks: per account limits

<b>RESOURCE</b>	<b>DEFAULT LIMIT</b>
Total disk capacity per account	35 TB
Total snapshot capacity per account	10 TB
Max bandwidth per account (ingress + egress <sup>1</sup> )	<=50 Gbps

<sup>1</sup>Ingress refers to all data (requests) being sent to a storage account. Egress refers to all data (responses) being received from a storage account.

### Premium unmanaged virtual machine disks: per disk limits

PREMIUM STORAGE DISK TYPE	P10	P20	P30	P40	P50
Disk size	128 GiB	512 GiB	1024 GiB (1 TB)	2048 GiB (2 TB)	4095 GiB (4 TB)
Max IOPS per disk	500	2300	5000	7500	7500
Max throughput per disk	100 MB/s	150 MB/s	200 MB/s	250 MB/s	250 MB/s
Max number of disks per storage account	280	70	35	17	8

### Premium unmanaged virtual machine disks: per VM limits

RESOURCE	DEFAULT LIMIT
Max IOPS Per VM	80,000 IOPS with GS5 VM
Max throughput per VM	2,000 MB/s with GS5 VM

### Cloud Services limits

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
Web/worker roles per deployment <sup>1</sup>	25	25
Instance Input Endpoints per deployment	25	25
Input Endpoints per deployment	25	25
Internal Endpoints per deployment	25	25

<sup>1</sup>Each Cloud Service with Web/Worker roles can have two deployments, one for production and one for staging. Also note that this limit refers to the number of distinct roles (configuration) and not the number of instances per role (scaling).

### App Service limits

The following App Service limits include limits for Web Apps, Mobile Apps, API Apps, and Logic Apps.

RESOURCE	FREE	SHARED (PREVIEW)	BASIC	STANDARD	PREMIUM
Web, mobile, or API apps per App Service plan <sup>1</sup>	10	100	Unlimited <sup>2</sup>	Unlimited <sup>2</sup>	Unlimited <sup>2</sup>

RESOURCE	FREE	SHARED (PREVIEW)	BASIC	STANDARD	PREMIUM
Logic apps per App Service plan <sup>1</sup>	10	10	10	20 per core	20 per core
App Service plan	1 per region	10 per resource group	100 per resource group	100 per resource group	100 per resource group
Compute instance type	Shared	Shared	Dedicated <sup>3</sup>	Dedicated <sup>3</sup>	Dedicated <sup>3</sup>
Scale-Out (max instances)	1 shared	1 shared	3 dedicated <sup>3</sup>	10 dedicated <sup>3</sup>	20 dedicated (50 in ASE) <sup>3,4</sup>
Storage <sup>5</sup>	1 GB <sup>5</sup>	1 GB <sup>5</sup>	10 GB <sup>5</sup>	50 GB <sup>5</sup>	500 GB <sup>4,5</sup>
CPU time (5 min) <sup>6</sup>	3 minutes	3 minutes	Unlimited, pay at standard <a href="#">rates</a>	Unlimited, pay at standard rates	Unlimited, pay at standard rates
CPU time (day) <sup>6</sup>	60 minutes	240 minutes	Unlimited, pay at standard <a href="#">rates</a>	Unlimited, pay at standard rates	Unlimited, pay at standard rates
Memory (1 hour)	1024 MB per App Service plan	1024 MB per app	N/A	N/A	N/A
Bandwidth	165 MB	Unlimited, <a href="#">data transfer rates apply</a>	Unlimited, data transfer rates apply	Unlimited, data transfer rates apply	Unlimited, data transfer rates apply
Application architecture	32-bit	32-bit	32-bit/64-bit	32-bit/64-bit	32-bit/64-bit
Web Sockets per instance <sup>7</sup>	5	35	350	Unlimited	Unlimited
Concurrent debugger connections per application	1	1	1	5	5
azurewebsites.net subdomain with FTP/S and SSL	X	X	X	X	X
Custom domain support		X	X	X	X
Custom domain SSL support			Unlimited SNI SSL connections	Unlimited SNI SSL and 1 IP SSL connections included	Unlimited SNI SSL and 1 IP SSL connections included
Integrated Load Balancer		X	X	X	X

RESOURCE	FREE	SHARED (PREVIEW)	BASIC	STANDARD	PREMIUM
Always On			X	X	X
Scheduled Backups				Scheduled backups every 2 hours, a max of 12 backups per day (manual + scheduled)	Scheduled backups every hour, a max of 50 backups per day (manual + scheduled)
Auto Scale				X	X
WebJobs <sup>8</sup>	X	X	X	X	X
Azure Scheduler support		X	X	X	X
Endpoint monitoring			X	X	X
Staging Slots				5	20
Custom domains per app		500	500	500	500
SLA			99.9%	99.95% <sup>10</sup>	99.95% <sup>9</sup>

<sup>1</sup>Apps and storage quotas are per App Service plan unless noted otherwise.

<sup>2</sup>The actual number of apps that you can host on these machines depends on the activity of the apps, the size of the machine instances, and the corresponding resource utilization.

<sup>3</sup>Dedicated instances can be of different sizes. See [App Service Pricing](#) for more details.

<sup>4</sup>Premium tier allows up to 50 compute instances (subject to availability) and 500 GB of disk space when using App Service Environments, and 20 compute instances and 250 GB storage otherwise.

<sup>5</sup>The storage limit is the total content size across all apps in the same App Service plan. More storage options are available in [App Service Environment](#)

<sup>6</sup>These resources are constrained by physical resources on the dedicated instances (the instance size and the number of instances).

<sup>7</sup>If you scale an app in the Basic tier to two instances, you have 350 concurrent connections for each of the two instances.

<sup>8</sup>Run custom executables and/or scripts on demand, on a schedule, or continuously as a background task within your App Service instance. Always On is required for continuous WebJobs execution. Azure Scheduler Free or Standard is required for scheduled WebJobs. There is no predefined limit on the number of WebJobs that can run in an App Service instance, but there are practical limits that depend on what the application code is trying to do.

<sup>9</sup>SLA of 99.95% provided for deployments that use multiple instances with Azure Traffic Manager configured for failover.

## Scheduler limits

The following table describes each of the major quotas, limits, defaults, and throttles in Azure Scheduler.

RESOURCE	LIMIT DESCRIPTION
----------	-------------------

RESOURCE	LIMIT DESCRIPTION
<b>Job size</b>	Maximum job size is 16K. If a PUT or a PATCH results in a job larger than these limits, a 400 Bad Request status code is returned.
<b>Request URL size</b>	Maximum size of the request URL is 2048 chars.
<b>Aggregate header size</b>	Maximum aggregate header size is 4096 chars.
<b>Header count</b>	Maximum header count is 50 headers.
<b>Body size</b>	Maximum body size is 8192 chars.
<b>Recurrence span</b>	Maximum recurrence span is 18 months.
<b>Time to start time</b>	Maximum "time to start time" is 18 months.
<b>Job history</b>	Maximum response body stored in job history is 2048 bytes.
<b>Frequency</b>	The default max frequency quota is 1 hour in a free job collection and 1 minute in a standard job collection. The max frequency is configurable on a job collection to be lower than the maximum. All jobs in the job collection are limited the value set on the job collection. If you attempt to create a job with a higher frequency than the maximum frequency on the job collection then request will fail with a 409 Conflict status code.
<b>Jobs</b>	The default max jobs quota is 5 jobs in a free job collection and 50 jobs in a standard job collection. The maximum number of jobs is configurable on a job collection. All jobs in the job collection are limited the value set on the job collection. If you attempt to create more jobs than the maximum jobs quota, then the request fails with a 409 Conflict status code.
<b>Job collections</b>	Maximum number of job collection per subscription is 200,000.
<b>Job history retention</b>	Job history is retained for up to 2 months or up to the last 1000 executions.
<b>Completed and faulted job retention</b>	Completed and faulted jobs are retained for 60 days.
<b>Timeout</b>	There's a static (not configurable) request timeout of 60 seconds for HTTP actions. For longer running operations, follow HTTP asynchronous protocols; for example, return a 202 immediately but continue working in the background.

## Batch limits

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
Batch accounts per region per subscription	1 - 3	50

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
Dedicated cores per Batch account	10 - 100	N/A <sup>1</sup>
Low-priority cores per Batch account	10 - 100	N/A <sup>2</sup>
Active jobs and job schedules <sup>3</sup> per Batch account	100 - 300	2500 <sup>4</sup>
Pools per Batch account	20 - 100	500

#### NOTE

Default limits vary depending on the type of subscription you use to create a Batch account. Cores quotas shown are for Batch accounts in Batch service mode. [View the quotas in your Batch account.](#)

<sup>1</sup> The number of dedicated cores per Batch account can be increased, but the maximum number is unspecified. Contact Azure support to discuss increase options.

<sup>2</sup> The number of low-priority cores per Batch account can be increased, but the maximum number is unspecified. Contact Azure support to discuss increase options.

<sup>3</sup> Completed jobs and job schedules are not limited.

<sup>4</sup> Contact Azure support if you want to request an increase beyond this limit.

#### BizTalk Services limits

The following table shows the limits for Azure Biztalk Services.

RESOURCE	FREE (PREVIEW)	DEVELOPER	BASIC	STANDARD	PREMIUM
Scale out	N/A	N/A	Yes, in increments of 1 Basic Unit	Yes, in increments of 1 Standard Unit	Yes, in increments of 1 Premium Unit
Scale Limit	N/A	N/A	Up to 8 units	Up to 8 units	Up to 8 units
EAI Bridges per Unit	N/A	25	25	125	500
EDI Agreements per Unit	N/A	10	50	250	1000
Hybrid Connections per Unit	5	5	10	50	100
Hybrid Connection Data Transfer (GBs) per Unit	5	5	50	250	500

RESOURCE	FREE (PREVIEW)	DEVELOPER	BASIC	STANDARD	PREMIUM
Number of connections using BizTalk Adapter Service per Unit	N/A	1	2	5	25
Archiving	N/A	Available	N/A	N/A	Available
High Availability	N/A	N/A	Available	Available	Available

### Azure Cosmos DB limits

Azure Cosmos DB is a global scale database in which throughput and storage can be scaled to handle whatever your application requires. If you have any questions about the scale Azure Cosmos DB provides, please send email to [askcosmosdb@microsoft.com](mailto:askcosmosdb@microsoft.com).

### Azure Database for MySQL

For Azure Database for MySQL limits, see [Limitations in Azure Database for MySQL](#).

### Azure Database for PostgreSQL

For Azure Database for PostgreSQL limits, see [Limitations in Azure Database for PostgreSQL](#).

### Mobile Engagement limits

RESOURCE	MAXIMUM LIMIT
App Collection Users	5 per App Collection
Average Data points	200 per Active User/Day
Average App-Info set	50 per Active User/Day
Average Messages pushed	20 per Active User/Day
Segments	100 per app
Criteria per segment	10
Active Push Campaigns	50 per app
Total Push Campaigns (includes Active & Completed)	1000 per app

### Search limits

Pricing tiers determine the capacity and limits of your search service. Tiers include:

- *Free* multi-tenant service, shared with other Azure subscribers, intended for evaluation and small development projects.
- *Basic* provides dedicated computing resources for production workloads at a smaller scale, with up to three replicas for highly available query workloads.
- *Standard (S1, S2, S3, S3 High Density)* is for larger production workloads. Multiple levels exist within the standard tier so that you can choose a resource configuration that best matches your workload profile.

### Limits per subscription

You can create multiple services within a subscription, each one provisioned at a specific tier, limited only by the number of services allowed at each tier. For example, you could create up to 12 services at the Basic tier and another 12 services at the S1 tier within the same subscription. For more information about tiers, see [Choose a SKU or tier for Azure Search](#).

Maximum service limits can be raised upon request. Contact Azure Support if you need more services within the same subscription.

RESOURCE	FREE <sup>1</sup>	BASIC	S1	S2	S3	S3 HD
Maximum services	1	12	12	6	6	6
Maximum scale in SU <sup>2</sup>	N/A	3 SU	36 SU	36 SU	36 SU	36 SU

<sup>1</sup> Free is based on shared, not dedicated, resources. Scale-up is not supported on shared resources.

<sup>2</sup> Search units (SU) are billing units, allocated as either a *replica* or a *partition*. You need both resources for storage, indexing, and query operations. To learn more about SU computations, see [Scale resource levels for query and index workloads](#).

## Limits per search service

Storage is constrained by disk space or by a hard limit on the *maximum number* of indexes, document, or other high-level resources, whichever comes first. The following table documents storage limits. For maximum limits on indexes, documents, and other objects, see [limits by resource](#).

RESOURCE	FREE	BASIC <sup>1</sup>	S1	S2	S3	S3 HD <sup>2</sup>
Service Level Agreement (SLA) <sup>3</sup>	No	Yes	Yes	Yes	Yes	Yes
Storage per partition	50 MB	2 GB	25 GB	100 GB	200 GB	200 GB
Partitions per service	N/A	1	12	12	12	3
Partition size	N/A	2 GB	25 GB	100 GB	200 GB	200 GB
Replicas	N/A	3	12	12	12	12

<sup>1</sup> Basic has one fixed partition. At this tier, additional SUs are used for allocating more replicas for increased query workloads.

<sup>2</sup> S3 HD has a hard limit of 3 partitions, which is lower than the partition limit for S3. The lower partition limit is imposed because the index count for S3 HD is substantially higher. Given that service limits exist for both computing resources (storage and processing) and content (indexes and documents), the content limit is reached first.

<sup>3</sup> Service level agreements (SLAs) are offered for billable services on dedicated resources. Free services and preview features have no SLA. For billable services, SLAs take effect when you provision sufficient redundancy for your service. Two or more replicas are required for query (read) SLA. Three or more replicas are required for query and indexing (read-write) SLA. The number of partitions is not an SLA consideration.

To learn more about limits on a more granular level, such as document size, queries per second, keys, requests, and responses, see [Service limits in Azure Search](#).

## Media Services limits

### NOTE

For resources that are not fixed, you may ask for the quotas to be raised, by opening a support ticket. Do **not** create additional Azure Media Services accounts in an attempt to obtain higher limits.

RESOURCE	DEFAULT LIMIT
Azure Media Services (AMS) accounts in a single subscription	25 (fixed)
Media Reserved Units (RUs) per AMS account	25 (S1) 10 (S2, S3) <sup>(1)</sup>
Jobs per AMS account	50,000 <sup>(2)</sup>
Chained tasks per job	30 (fixed)
Assets per AMS account	1,000,000
Assets per task	50
Assets per job	100
Unique locators associated with an asset at one time	5 <sup>(4)</sup>
Live channels per AMS account	5
Programs in stopped state per channel	50
Programs in running state per channel	3
Streaming endpoints in running state per AMS account	2
Streaming units per streaming endpoint	10
Storage accounts	1,000 <sup>(5)</sup> (fixed)
Policies	1,000,000 <sup>(6)</sup>
File size	In some scenarios, there is a limit on the maximum file size supported for processing in Media Services. <sup>7</sup>

<sup>1</sup> If you change the type (for example, from S2 to S1,) the max RU limits are reset.

<sup>2</sup> This number includes queued, finished, active, and canceled jobs. It does not include deleted jobs. You can delete the old jobs using **IJob.Delete** or the **DELETE** HTTP request.

As of April 1, 2017, any Job record in your account older than 90 days will be automatically deleted, along with its associated Task records, even if the total number of records is below the maximum quota. If you need to archive the job/task information, you can use the code described [here](#).

<sup>3</sup> When making a request to list Job entities, a maximum of 1,000 jobs is returned per request. If you need to keep track of all submitted Jobs, you can use top/skip as described in [OData system query options](#).

<sup>4</sup> Locators are not designed for managing per-user access control. To give different access rights to individual users, use Digital Rights Management (DRM) solutions. For more information, see [this](#) section.

<sup>5</sup> The storage accounts must be from the same Azure subscription.

<sup>6</sup> There is a limit of 1,000,000 policies for different AMS policies (for example, for Locator policy or ContentKeyAuthorizationPolicy).

#### NOTE

You should use the same policy ID if you are always using the same days / access permissions / etc. For information and an example, see [this](#) section.

<sup>7</sup>If you are uploading content to an Asset in Azure Media Services to process it with one of the media processors in the service (that is, encoders like Media Encoder Standard and Media Encoder Premium Workflow, or analysis engines like Face Detector), then you should be aware of the constraints on the maximum file sizes supported.

The maximum size supported for a single blob is currently up to 5 TB in Azure Blob Storage. However, additional limits apply in Azure Media Services based on the VM sizes that are used by the service. The following table shows the limits on each of the Media Reserved Units (S1, S2, S3.) If your source file is larger than the limits defined in the table, your encoding job will fail. If you are encoding 4K resolution sources of long duration, you are required to use S3 Media Reserved Units to achieve the performance needed. If you have 4K content that is larger than 260 GB limit on the S3 Media Reserved Units, contact us at [amshelp@microsoft.com](mailto:amshelp@microsoft.com) for potential mitigations to support your scenario.

MEDIA RESERVED UNIT TYPE	MAXIMUM INPUT SIZE (GB)
S1	325
S2	640
S3	260

#### CDN limits

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
CDN profiles	25	25
CDN endpoints per profile	10	25
Custom domains per endpoint	10	25

A CDN subscription can contain one or more CDN profiles and a CDN profile can contain one or more CDN endpoints. You may wish to use multiple profiles to organize your CDN endpoints by internet domain, web application, or some other criteria.

To request an update to your subscription's default limits, open a support ticket.

#### Mobile Services limits

TIER:	FREE	BASIC	STANDARD
API Calls	500 K	1.5 M / unit	15 M / unit
Active Devices	500	Unlimited	Unlimited
Scale	N/A	Up to 6 units	Unlimited units
Push Notifications	Notification Hubs Free Tier included, up to 1 M pushes	Notification Hubs Basic Tier included, up to 10 M pushes	Notification Hubs Standard Tier included, up to 10 M pushes
Real time messaging/ Web Sockets	Limited	350 / mobile service	Unlimited
Offline synchronizations	Limited	Included	Included
Scheduled jobs	Limited	Included	Included
SQL Database (required) Standard rates apply for additional capacity	20 MB included	20 MB included	20 MB included
CPU capacity	60 minutes / day	Unlimited	Unlimited
Outbound data transfer	165 MB per day (daily Rollover)	Included	Included

For additional details on these limits and for information on pricing, see [Mobile Services Pricing](#).

## Monitor limits

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
Autoscale Settings	100 per region per subscription	same as default
Metric Alerts (classic)	100 active alert rules per subscription	call support
Newer Metric Alerts	100 active alert rules per subscription	call support

## Notification Hub Service limits

TIER:	FREE	BASIC	STANDARD
Included Pushes	1 Million	10 Million	10 Million
Active Devices	500	200,000	10 million
Tag quota per installation/registration	60	60	60

For additional details on these limits and for information on pricing, see [Notification Hubs Pricing](#).

## Event Hubs limits

The following table lists quotas and limits specific to [Azure Event Hubs](#). For information about Event Hubs pricing,

see [Event Hubs pricing](#).

LIMIT	SCOPE	NOTES	VALUE
Number of event hubs per namespace	Namespace	Subsequent requests for creation of a new event hub will be rejected.	10
Number of partitions per event hub	Entity	-	32
Number of consumer groups per event hub	Entity	-	20
Number of AMQP connections per namespace	Namespace	Subsequent requests for additional connections will be rejected and an exception is received by the calling code.	5,000
Maximum size of Event Hubs event	Entity	-	256 KB
Maximum size of an event hub name	Entity	-	50 characters
Number of non-epoch receivers per consumer group	Entity	-	5
Maximum retention period of event data	Entity	-	1-7 days
Maximum throughput units	Namespace	Exceeding the throughput unit limit causes your data to be throttled and generates a <a href="#">ServerBusyException</a> . You can request a larger number of throughput units for a Standard tier by filing a <a href="#">support request</a> . <a href="#">Additional throughput units</a> are available in blocks of 20 on a committed purchase basis.	20
Number of authorization rules per namespace	Namespace	Subsequent requests for authorization rule creation will be rejected.	12

## Service Bus limits

The following table lists quota information specific to Service Bus messaging. For information about pricing and other quotas for Service Bus, see the [Service Bus Pricing](#) overview.

Quota Name	Scope	Notes	Value
Maximum number of basic / standard namespaces per Azure subscription	Namespace	Subsequent requests for additional basic / standard namespaces are rejected by the portal.	100
Maximum number of premium namespaces per Azure subscription	Namespace	Subsequent requests for additional premium namespaces are rejected by the portal.	10
Queue/topic size	Entity	<p>Defined upon creation of the queue/topic.</p> <p>Subsequent incoming messages are rejected and an exception is received by the calling code.</p>	<p>1, 2, 3, 4 GB or 5 GB.</p> <p>In the Premium SKU, as well as Standard with <a href="#">partitioning</a> enabled, the maximum queue/topic size is 80 GB.</p>
Number of concurrent connections on a namespace	Namespace	Subsequent requests for additional connections are rejected and an exception is received by the calling code. REST operations do not count towards concurrent TCP connections.	<p>NetMessaging: 1,000</p> <p>AMQP: 5,000</p>
Number of concurrent receive requests on a queue/topic/subscription entity	Entity	Subsequent receive requests are rejected and an exception is received by the calling code. This quota applies to the combined number of concurrent receive operations across all subscriptions on a topic.	5,000
Number of topics/queues per namespace	Namespace	Subsequent requests for creation of a new topic or queue on the namespace are rejected. As a result, if configured through the <a href="#">Azure portal</a> , an error message is generated. If called from the management API, an exception is received by the calling code.	<p>10,000</p> <p>The total number of topics plus queues in a namespace must be less than or equal to 10,000.</p>
Number of <a href="#">partitioned topics/queues</a> per namespace	Namespace	<p>Subsequent requests for creation of a new partitioned topic or queue on the namespace are rejected. As a result, if configured through the <a href="#">Azure portal</a>, an error message is generated. If called from the management API, a <b>QuotaExceededException</b> exception is received by the calling code.</p>	<p>Basic and Standard Tiers - 100</p> <p>Partitioned entities are not supported in the <a href="#">Premium</a> tier.</p> <p>Each partitioned queue or topic counts towards the quota of 10,000 entities per namespace.</p>

Quota Name	Scope	Notes	Value
Maximum size of any messaging entity path: queue or topic	Entity	-	260 characters
Maximum size of any messaging entity name: namespace, subscription, or subscription rule	Entity	-	50 characters
Maximum size of a message <a href="#">SessionID</a>	Entity	-	128
Message size for a queue/topic/subscription entity	Entity	<p>Incoming messages that exceed these quotas are rejected and an exception is received by the calling code.</p> <p>Due to system overhead, this limit is less than these values.</p> <p>Maximum header size: 64 KB</p> <p>Maximum number of header properties in property bag: <b>byte/int.MaxValue</b></p> <p>Maximum size of property in property bag: No explicit limit. Limited by maximum header size.</p>	<p>Maximum message size: 256 KB (<a href="#">Standard tier</a>) / 1 MB (<a href="#">Premium tier</a>).</p>
Message property size for a queue/topic/subscription entity	Entity	A <b>SerializationException</b> exception is generated.	<p>Maximum message property size for each property is 32 K. Cumulative size of all properties cannot exceed 64 K. This limit applies to the entire header of the <a href="#">BrokeredMessage</a>, which has both user properties as well as system properties (such as <a href="#">SequenceNumber</a>, <a href="#">Label</a>, <a href="#">MessageId</a>, and so on).</p>
Number of subscriptions per topic	Entity	Subsequent requests for creating additional subscriptions for the topic are rejected. As a result, if configured through the portal, an error message is shown. If called from the management API an exception is received by the calling code.	2,000
Number of SQL filters per topic	Entity	Subsequent requests for creation of additional filters on the topic are rejected and an exception is received by the calling code.	2,000

Quota name	Scope	Notes	Value
Number of correlation filters per topic	Entity	Subsequent requests for creation of additional filters on the topic are rejected and an exception is received by the calling code.	100,000
Size of SQL filters/actions	Namespace	Subsequent requests for creation of additional filters are rejected and an exception is received by the calling code.	Maximum length of filter condition string: 1024 (1 K). Maximum length of rule action string: 1024 (1 K). Maximum number of expressions per rule action: 32.
Number of <a href="#">SharedAccessAuthorizationRule</a> rules per namespace, queue, or topic	Entity, namespace	Subsequent requests for creation of additional rules are rejected and an exception is received by the calling code.	Maximum number of rules: 12. Rules that are configured on a Service Bus namespace apply to all queues and topics in that namespace.
Number of messages per transaction	Transaction	Additional incoming messages are rejected and an exception stating "Cannot send more than 100 messages in a single transaction" is received by the calling code.	100 For both <b>Send()</b> and <b>SendAsync()</b> operations.

## IoT Hub limits

The following table lists the limits associated with the different service tiers (S1, S2, S3, F1). For information about the cost of each *unit* in each tier, see [IoT Hub Pricing](#).

Resource	S1 Standard	S2 Standard	S3 Standard	F1 Free
Messages/day	400,000	6,000,000	300,000,000	8,000
Maximum units	200	200	10	1

### Note

If you anticipate using more than 200 units with an S1 or S2 or 10 units with an S3 tier hub, contact Microsoft support.

The following table lists the limits that apply to IoT Hub resources:

Resource	Limit
Maximum paid IoT hubs per Azure subscription	50
Maximum free IoT hubs per Azure subscription	1

RESOURCE	LIMIT
Maximum number of characters in a Device Id	128
Maximum number of device identities returned in a single call	1000
IoT Hub message maximum retention for device-to-cloud messages	7 days
Maximum size of device-to-cloud message	256 KB
Maximum size of device-to-cloud batch	256 KB
Maximum messages in device-to-cloud batch	500
Maximum size of cloud-to-device message	64 KB
Maximum TTL for cloud-to-device messages	2 days
Maximum delivery count for cloud-to-device messages	100
Maximum delivery count for feedback messages in response to a cloud-to-device message	100
Maximum TTL for feedback messages in response to a cloud-to-device message	2 days
Maximum size of device twin (tags, reported properties, and desired properties)	8 KB
Maximum size of device twin string value	4 KB
Maximum depth of object in device twin	5
Maximum size of direct method payload	128 KB
Job history maximum retention	30 days
Maximum concurrent jobs	10 (for S3), 5 for (S2), 1 (for S1)
Maximum additional endpoints	10 (for S1, S2, S3)
Maximum message routing rules	100 (for S1, S2, S3)

**NOTE**

If you need more than 50 paid IoT hubs in an Azure subscription, contact Microsoft support.

**NOTE**

Currently, the maximum number of devices you can connect to a single IoT hub is 500,000. If you want to increase this limit, contact [Microsoft Support](#).

The IoT Hub service throttles requests when the following quotas are exceeded:

THROTTLE	PER-HUB VALUE
Identity registry operations (create, retrieve, list, update, delete), individual or bulk import/export	83.33/sec/unit (5000/min/unit) (for S3) 1.67/sec/unit (100/min/unit) (for S1 and S2).
Device connections	6000/sec/unit (for S3), 120/sec/unit (for S2), 12/sec/unit (for S1). Minimum of 100/sec.
Device-to-cloud sends	6000/sec/unit (for S3), 120/sec/unit (for S2), 12/sec/unit (for S1). Minimum of 100/sec.
Cloud-to-device sends	83.33/sec/unit (5000/min/unit) (for S3), 1.67/sec/unit (100/min/unit) (for S1 and S2).
Cloud-to-device receives	833.33/sec/unit (50000/min/unit) (for S3), 16.67/sec/unit (1000/min/unit) (for S1 and S2).
File upload operations	83.33 file upload notifications/sec/unit (5000/min/unit) (for S3), 1.67 file upload notifications/sec/unit (100/min/unit) (for S1 and S2). 10000 SAS URIs can be out for an Azure Storage account at one time. 10 SAS URIs/device can be out at one time.
Direct methods	24MB/sec/unit (for S3), 480KB/sec/unit (for S2), 160KB/sec/unit (for S1) Based on 8KB throttling meter size.
Device twin reads	50/sec/unit (for S3), Maximum of 10/sec or 1/sec/unit (for S2), 10/sec (for S1)
Device twin updates	50/sec/unit (for S3), Maximum of 10/sec or 1/sec/unit (for S2), 10/sec (for S1)
Jobs operations (create, update, list, delete)	83.33/sec/unit (5000/min/unit) (for S3), 1.67/sec/unit (100/min/unit) (for S2), 1.67/sec/unit (100/min/unit) (for S1)
Jobs per-device operation throughput	50/sec/unit (for S3), Maximum of 10/sec or 1/sec/unit (for S2), 10/sec (for S1)

## IoT Hub Device Provisioning Service limits

The following table lists the limits that apply to IoT Hub Device Provisioning Service resources:

RESOURCE	LIMIT
Maximum Device Provisioning Services per Azure subscription	10
Maximum number of enrollments	500,000
Maximum number of registrations	500,000
Maximum number of enrollment groups	100
Maximum number of CAs	25

**NOTE**

You can contact [Microsoft Support](#) to increase the number of instances in your subscription.

**NOTE**

You can contact [Microsoft Support](#) to increase the number of enrollments and registrations on your provisioning service.

The Device Provisioning Service throttles requests when the following quotas are exceeded:

THROTTLE	PER-SERVICE VALUE
Operations	100/min
Device registrations	100/min

### Data Factory limits

Data factory is a multi-tenant service that has the following default limits in place to make sure customer subscriptions are protected from each other's workloads. Many of the limits can be easily raised for your subscription up to the maximum limit by contacting support.

### Version 2

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
Data factories in an Azure subscription	50	<a href="#">Contact support</a>
Total number of entities (Pipeline, Datasets, Triggers, Linked Services, Integration runtimes) within a data factory	5000	<a href="#">Contact support</a>
Total CPU cores for Azure-SSIS Integration Runtime(s) under one subscription	128	<a href="#">Contact support</a>
Concurrent pipeline runs per pipeline	100	<a href="#">Contact support</a>
Concurrent pipeline runs per data factory	10,000	<a href="#">Contact support</a>

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
Max activities per pipeline (includes inner activities for containers)	40	40
Max parameters per pipeline	50	50
ForEach items	100,000	100,000
ForEach parallelism	20	50
Characters per expression	8,192	8,192
Minimum Tumbling Window Trigger interval	15 min	15 min
Max Timeout for pipeline activity runs	7 days	7 days
Bytes per object for pipeline objects <sup>1</sup>	200 KB	200 KB
Bytes per object for dataset and linked service objects <sup>1</sup>	100 KB	2000 KB
Data integration units per copy activity run <sup>3</sup>	256	<a href="#">Contact support</a>
Write API calls	2500/hr  This limit is imposed by Azure Resource Manager, not Azure Data Factory.	<a href="#">Contact support</a> .
Read API calls	12,500/hr  This limit is imposed by Azure Resource Manager, not Azure Data Factory.	<a href="#">Contact support</a>

## Version 1

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
Data factories in an Azure subscription	50	<a href="#">Contact support</a>
Pipelines within a data factory	2500	<a href="#">Contact support</a>
Datasets within a data factory	5000	<a href="#">Contact support</a>
Concurrent slices per dataset	10	10
Bytes per object for pipeline objects <sup>1</sup>	200 KB	200 KB
Bytes per object for dataset and linked service objects <sup>1</sup>	100 KB	2000 KB
HDInsight on-demand cluster cores within a subscription <sup>2</sup>	60	<a href="#">Contact support</a>

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
Cloud data movement units per copy activity run <sup>3</sup>	32	Contact support
Retry count for pipeline activity runs	1000	MaxInt (32 bit)

<sup>1</sup> Pipeline, dataset, and linked service objects represent a logical grouping of your workload. Limits for these objects do not relate to amount of data you can move and process with the Azure Data Factory service. Data factory is designed to scale to handle petabytes of data.

<sup>2</sup> On-demand HDInsight cores are allocated out of the subscription that contains the data factory. As a result, the above limit is the Data Factory enforced core limit for on-demand HDInsight cores and is different from the core limit associated with your Azure subscription.

<sup>3</sup> Data Integration Unit (DIU) for v2 or Cloud Data Movement Unit (DMU) for v1 is being used in a cloud-to-cloud copy operation. It is a measure that represents the power (a combination of CPU, memory, and network resource allocation) of a single unit in Data Factory. You can achieve higher copy throughput by using more DMUs for some scenarios. Refer to [Data integration units \(V2\)](#) and [Cloud data movement units \(V1\)](#) section on details, and [Azure Data Factory pricing page](#) for billing implication.

<sup>4</sup> The Integration Runtime (IR) is the compute infrastructure used by Azure Data Factory to provide the following data integration capabilities across different network environments: data movement, dispatching activities to compute services, execution of SSIS packages. For more information, see [Integration Runtime overview](#).

RESOURCE	DEFAULT LOWER LIMIT	MINIMUM LIMIT
Scheduling interval	15 minutes	15 minutes
Interval between retry attempts	1 second	1 second
Retry timeout value	1 second	1 second

#### Web service call limits

Azure Resource Manager has limits for API calls. You can make API calls at a rate within the [Azure Resource Manager API limits](#).

#### Data Lake Analytics limits

Data Lake Analytics makes the complex task of managing distributed infrastructure and complex code easy. It dynamically provisions resources and lets you do analytics on exabytes of data. When the job completes, it winds down resources automatically, and you pay only for the processing power used. As you increase or decrease the size of data stored or the amount of compute used, you don't have to rewrite code. Many of the default limits can be easily raised for your subscription by contacting support.

RESOURCE	DEFAULT LIMIT	COMMENTS
Maximum number of concurrent jobs	20	
Maximum number of Analytics Units (AUs) per account	250	Use any combination of up to a maximum of 250 AUs across 20 jobs. Contact Microsoft support to increase this limit.
Maximum script size for job submission	3 MB	

RESOURCE	DEFAULT LIMIT	COMMENTS
Maximum number of ADLA accounts per region per subscription	5	Contact Microsoft support to increase this limit.

## Data Lake Store limits

Azure Data Lake Store is an enterprise-wide hyper-scale repository for big data analytic workloads. Data Lake Store enables you to capture data of any size, type, and ingestion speed in one single place for operational and exploratory analytics. There is no limit to the amount of data you can store in a Data Lake Store account.

RESOURCE	DEFAULT LIMIT	COMMENTS
Max number of Data Lake Store accounts, per subscription, per region	10	Contact Support to request an increase for this limit
Max number of access ACLs, per file or folder	32	This is a hard limit. Use groups to manage access with fewer entries
Max number of default ACLs, per file or folder	32	This is a hard limit. Use groups to manage access with fewer entries

## Database Migration Service Limits

The Azure Database Migration Service is a fully managed service designed to enable seamless migrations from multiple database sources to Azure Data platforms with minimal downtime.

RESOURCE	DEFAULT LIMIT	COMMENTS
Maximum number of services per subscription, per region	2	Contact Support to request an increase for this limit

## Stream Analytics limits

LIMIT IDENTIFIER	LIMIT	COMMENTS
Maximum number of Streaming Units per subscription per region	200	A request to increase streaming units for your subscription beyond 200 can be made by contacting <a href="#">Microsoft Support</a> .
Maximum number of inputs per job	60	There is a hard limit of 60 inputs per Stream Analytics job.
Maximum number of outputs per job	60	There is a hard limit of 60 outputs per Stream Analytics job.
Maximum number of functions per job	60	There is a hard limit of 60 functions per Stream Analytics job.
Maximum number of Streaming Units per job	120	There is a hard limit of 120 Streaming Units per Stream Analytics job.
Maximum number of jobs per region	1500	Each subscription may have up to 1500 jobs per geographical region.

LIMIT IDENTIFIER	LIMIT	COMMENTS
Reference data blob MB	100	Reference data blobs cannot be larger than 100 MB each.

## Active Directory limits

Here are the usage constraints and other service limits for the Azure Active Directory (Azure AD) service.

CATEGORY	LIMITS
Directories	A single user can belong to a maximum of 500 Azure AD directories as a member or a guest. A single user can create a maximum of 20 directories.
Domains	You can add no more than 900 managed domain names. If you're setting up all of your domains for federation with on-premises Active Directory, you can add no more than 450 domain names in each directory.
Objects	<ul style="list-style-type: none"> <li>A maximum of 500,000 objects can be created in a single directory by users of the Free edition of Azure Active Directory.</li> <li>A non-admin user can create no more than 250 objects.</li> </ul>
Schema extensions	<ul style="list-style-type: none"> <li>String type extensions can have maximum of 256 characters.</li> <li>Binary type extensions are limited to 256 bytes.</li> <li>100 extension values (across ALL types and ALL applications) can be written to any single object.</li> <li>Only "User", "Group", "TenantDetail", "Device", "Application" and "ServicePrincipal" entities can be extended with "String" type or "Binary" type single-valued attributes.</li> <li>Schema extensions are available only in Graph API-version 1.21-preview. The application must be granted write access to register an extension.</li> </ul>
Applications	A maximum of 100 users can be owners of a single application.
Groups	<ul style="list-style-type: none"> <li>A maximum of 100 users can be owners of a single group.</li> <li>Any number of objects can be members of a single group in Azure Active Directory.</li> <li>The number of members in a group you can synchronize from your on-premises Active Directory to Azure Active Directory using Azure AD Connect is limited to 50 K members.</li> </ul>

CATEGORY	LIMITS
Access Panel	<ul style="list-style-type: none"> <li>There is no limit to the number of applications that can be seen in the Access Panel per end user, for users assigned licenses for Azure AD Premium or the Enterprise Mobility Suite.</li> <li>A maximum of 10 app tiles (examples: Box, Salesforce, or Dropbox) can be seen in the Access Panel for each end user for users assigned licenses for Free or Azure AD Basic editions of Azure Active Directory. This limit does not apply to Administrator accounts.</li> </ul>
Reports	A maximum of 1,000 rows can be viewed or downloaded in any report. Any additional data is truncated.
Administrative units	An object can be a member of no more than 30 administrative units.

### Azure Event Grid limits

RESOURCE	LIMIT
Custom topics per Azure subscription	100
Event subscriptions per topic	500
Publish rate for a custom topic (ingress)	5,000 events per second per topic

### Azure Maps limits

Here are the usage constraints for the Azure Maps service. For information about the cost, see [Azure Maps pricing details](#). [Contact us](#) to increase maximum request rate for your subscription.

RESOURCE	LIMIT
Maximum request rate per subscription	50 requests per second

### StorSimple System limits

LIMIT IDENTIFIER	LIMIT	COMMENTS
Maximum number of storage account credentials	64	
Maximum number of volume containers	64	
Maximum number of volumes	255	
Maximum number of schedules per bandwidth template	168	A schedule for every hour, every day of the week (24*7).
Maximum size of a tiered volume on physical devices	64 TB for 8100 and 8600	8100 and 8600 are physical devices.

LIMIT IDENTIFIER	LIMIT	COMMENTS
Maximum size of a tiered volume on virtual devices in Azure	30 TB for 8010 64 TB for 8020	8010 and 8020 are virtual devices in Azure that use Standard Storage and Premium Storage respectively.
Maximum size of a locally pinned volume on physical devices	9 TB for 8100 24 TB for 8600	8100 and 8600 are physical devices.
Maximum number of iSCSI connections	512	
Maximum number of iSCSI connections from initiators	512	
Maximum number of access control records per device	64	
Maximum number of volumes per backup policy	24	
Maximum number of backups retained per backup policy	64	
Maximum number of schedules per backup policy	10	
Maximum number of snapshots of any type that can be retained per volume	256	This includes local snapshots and cloud snapshots.
Maximum number of snapshots that can be present in any device	10,000	
Maximum number of volumes that can be processed in parallel for backup, restore, or clone	16	<ul style="list-style-type: none"> <li>If there are more than 16 volumes, they will be processed sequentially as processing slots become available.</li> <li>New backups of a cloned or a restored tiered volume cannot occur until the operation is finished. However, for a local volume, backups are allowed after the volume is online.</li> </ul>

LIMIT IDENTIFIER	LIMIT	COMMENTS
Restore and clone recover time for tiered volumes	< 2 minutes	<ul style="list-style-type: none"> <li>The volume is made available within 2 minutes of restore or clone operation, regardless of the volume size.</li> <li>The volume performance may initially be slower than normal as most of the data and metadata still resides in the cloud. Performance may increase as data flows from the cloud to the StorSimple device.</li> <li>The total time to download metadata depends on the allocated volume size. Metadata is automatically brought into the device in the background at the rate of 5 minutes per TB of allocated volume data. This rate may be affected by Internet bandwidth to the cloud.</li> <li>The restore or clone operation is complete when all the metadata is on the device.</li> <li>Backup operations cannot be performed until the restore or clone operation is fully complete.</li> </ul>

LIMIT IDENTIFIER	LIMIT	COMMENTS
Restore recover time for locally pinned volumes	< 2 minutes	<ul style="list-style-type: none"> <li>The volume is made available within 2 minutes of the restore operation, regardless of the volume size.</li> <li>The volume performance may initially be slower than normal as most of the data and metadata still resides in the cloud. Performance may increase as data flows from the cloud to the StorSimple device.</li> <li>The total time to download metadata depends on the allocated volume size. Metadata is automatically brought into the device in the background at the rate of 5 minutes per TB of allocated volume data. This rate may be affected by Internet bandwidth to the cloud.</li> <li>Unlike tiered volumes, in the case of locally pinned volumes, the volume data is also downloaded locally on the device. The restore operation is complete when all the volume data has been brought to the device.</li> <li>The restore operations may be long and the total time to complete the restore will depend on the size of the provisioned local volume, your Internet bandwidth and the existing data on the device. Backup operations on the locally pinned volume are allowed while the restore operation is in progress.</li> </ul>
Thin-restore availability	Last failover	
Maximum client read/write throughput (when served from the SSD tier)*	920/720 MB/s with a single 10GbE network interface	Up to 2x with MPIO and two network interfaces.
Maximum client read/write throughput (when served from the HDD tier)*	120/250 MB/s	
Maximum client read/write throughput (when served from the cloud tier)*	11/41 MB/s	Read throughput depends on clients generating and maintaining sufficient I/O queue depth.

\* Maximum throughput per I/O type was measured with 100 percent read and 100 percent write scenarios. Actual throughput may be lower and depends on I/O mix and network conditions.

## Log Analytics limits

The following limits apply to Log Analytics resources per subscription:

RESOURCE	DEFAULT LIMIT	COMMENTS
Number of free workspaces per subscription	10	This limit cannot be increased.
Number of paid workspaces per subscription	N/A	You are limited by the number of resources within a resource group and number of resource groups per subscription

#### NOTE

As of April 2, 2018, new workspaces in a new subscription will automatically use the *Per GB* pricing plan. For existing subscriptions created before April 2, or a subscription that was tied to an existing EA enrollment, you can continue choosing between the three pricing tiers for new workspaces.

The following limits apply to each Log Analytics workspace:

	FREE	STANDARD	PREMIUM	STANDALONE	OMS	PER GB
Data volume collected per day	500 MB <sup>1</sup>	None	None	None	None	None
Data retention period	7 days	1 month	12 months	1 month <sup>2</sup>	1 month <sup>2</sup>	1 month <sup>2</sup>

<sup>1</sup> When customers reach their 500 MB daily data transfer limit, data analysis stops and resumes at the start of the next day. A day is based on UTC.

<sup>2</sup> The data retention period for the Standalone, OMS, and Per GB pricing plans can be increased to 730 days.

CATEGORY	LIMITS	COMMENTS
Data Collector API	Maximum size for a single post is 30 MB Maximum size for field values is 32 KB	Split larger volumes into multiple posts Fields longer than 32 KB are truncated.
Search API	5000 records returned for non-aggregated data 500000 records for aggregated data	Aggregated data is a search that includes the <code>summarize</code> command

#### Backup limits

The following limits apply to Azure Backup.

LIMIT IDENTIFIER	DEFAULT LIMIT
Number of servers/machines that can be registered against each vault	50 for Windows Server/Client/SCDPM 1000 for IaaS VMs
Size of a data source for data stored in Azure vault storage	54400 GB max <sup>1</sup>
Number of backup vaults that can be created in each Azure subscription	500 Recovery Services vaults per region

LIMIT IDENTIFIER	DEFAULT LIMIT
Number of times backup can be scheduled per day	3 per day for Windows Server/Client 2 per day for SCDPM Once a day for IaaS VMs
Data disks attached to an Azure virtual machine for backup	16
Size of individual data disk attached to an Azure virtual machine for backup	4095 GB <sup>2</sup>

- <sup>1</sup>The 54400 GB limit does not apply to IaaS VM backup.

## Site Recovery limits

The following limits apply to Azure Site Recovery:

LIMIT IDENTIFIER	DEFAULT LIMIT
Number of vaults per subscription	25
Number of servers per Azure vault	250
Number of protection groups per Azure vault	No limit
Number of recovery plans per Azure vault	No limit
Number of servers per protection group	No limit
Number of servers per recovery plan	50

## Application Insights limits

There are some limits on the number of metrics and events per application (that is, per instrumentation key). Limits depend on the [pricing plan](#) that you choose.

RESOURCE	DEFAULT LIMIT	NOTE
Total data per day	100 GB	You can reduce data by setting a cap. If you need more data, you can increase the limit in the portal, up to 1,000 GB. For capacities greater than 1,000 GB, send mail to <a href="mailto:AIDataCap@microsoft.com">AIDataCap@microsoft.com</a> .
Throttling	32 K events/second	The limit is measured over a minute.
Data retention	90 days	This resource is for <a href="#">Search</a> , <a href="#">Analytics</a> , and <a href="#">Metrics Explorer</a> .
<a href="#">Availability multi-step test</a> detailed results retention	90 days	This resource provides detailed results of each step.
Maximum event size	64 K	
Property and metric name length	150	See <a href="#">type schemas</a> .

RESOURCE	DEFAULT LIMIT	NOTE
Property value string length	8,192	See <a href="#">type schemas</a> .
Trace and exception message length	10 K	See <a href="#">type schemas</a> .
<a href="#">Availability tests</a> count per app	100	
<a href="#">Profiler</a> data retention	5 days	
<a href="#">Profiler</a> data sent per day	10 GB	

For more information, see [About pricing and quotas in Application Insights](#).

## API Management limits

RESOURCE	LIMIT
Units of scale	10 per region <sup>1</sup>
Cache	5 GB per unit <sup>1</sup>
Concurrent backend connections <sup>2</sup> per HTTP authority	2048 per unit <sup>3</sup>
Maximum cached response size	10MB
Maximum policy document size	256KB
Maximum custom gateway domains	20 per service instance <sup>4</sup>

<sup>1</sup>API Management limits are different for each pricing tier. To see the pricing tiers and their scaling limits go to [API Management Pricing](#). <sup>2</sup> Connections are pooled and re-used, unless explicitly closed by the backend. <sup>3</sup> Per unit of Basic, Standard and Premium tiers. Developer tier is limited to 1024. <sup>4</sup> Available in Premium tier only.

## Azure Redis Cache limits

RESOURCE	LIMIT
Cache size	530 GB
Databases	64
Max connected clients	40,000
Redis Cache replicas (for high availability)	1
Shards in a premium cache with clustering	10

Azure Redis Cache limits and sizes are different for each pricing tier. To see the pricing tiers and their associated sizes, see [Azure Redis Cache Pricing](#).

For more information on Azure Redis Cache configuration limits, see [Default Redis server configuration](#).

Because configuration and management of Azure Redis Cache instances is done by Microsoft, not all Redis commands are supported in Azure Redis Cache. For more information, see [Redis commands not supported in](#)

## Azure Redis Cache.

### Key Vault limits

Key transactions (Max transactions allowed in 10 seconds, per vault per region<sup>1</sup>):

KEY TYPE	HSM-KEY CREATE KEY	HSM-KEY ALL OTHER TRANSACTIONS	SOFTWARE-KEY CREATE KEY	SOFTWARE-KEY ALL OTHER TRANSACTIONS
RSA 2048-bit	5	1000	10	2000
RSA 3072-bit	5	250	10	500
RSA 4096-bit	5	125	10	250
ECC P-256	5	1000	10	2000
ECC P-384	5	1000	10	2000
ECC P-521	5	1000	10	2000
ECC SECP256K1	5	1000	10	2000

Secrets, Managed Storage Account Keys, and vault transactions:

TRANSACTIONS TYPE	MAX TRANSACTIONS ALLOWED IN 10 SECONDS, PER VAULT PER REGION <sup>1</sup>
All transactions	2000

See [Azure Key Vault throttling guidance](#) for information on how to handle throttling when these limits are exceeded.

<sup>1</sup> There is a subscription-wide limit for all transaction types, that is 5x per key vault limit. For example, HSM- other transactions per subscription are limited to 5000 transactions in 10 seconds per subscription.

### Multi-Factor Authentication

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
Max number of Trusted IP addresses/ranges per subscription	0	50
Remember my devices - number of days	14	60
Max number of app passwords?	0	No Limit
Allow <b>X</b> attempts during MFA call	1	99
Two-way Text message Timeout Seconds	60	600
Default one-time bypass seconds	300	1800

RESOURCE	DEFAULT LIMIT	MAXIMUM LIMIT
Lock user account after <b>X</b> consecutive MFA denials	Not Set	99
Reset account lockout counter after <b>X</b> minutes	Not Set	9999
Unlock account after <b>X</b> minutes	Not Set	9999

## Automation limits

RESOURCE	MAXIMUM LIMIT	NOTES
Max number of new jobs that can be submitted every 30 seconds per Automation Account (non Scheduled jobs)	100	When this limit is hit, the subsequent requests to create a job fail. The client receives an error response.
Max number of concurrent running jobs at the same instance of time per Automation Account (non Scheduled jobs)	200	When this limit is hit, the subsequent requests to create a job fail. The client receives an error response.
Max number of modules that can be imported every 30 seconds per Automation Account	5	
Max size of a Module	100 MB	
Job Run Time - Free tier	500 minutes per subscription per calendar month	
Max amount of disk space allowed per sandbox <sup>1</sup>	1 GB	Applies to Azure sandboxes only
Max amount of memory given to a sandbox <sup>1</sup>	400 MB	Applies to Azure sandboxes only
Max number of network sockets allowed per sandbox <sup>1</sup>	1000	Applies to Azure sandboxes only
Maximum runtime allowed per runbook <sup>1</sup>	3 hours	Applies to Azure sandboxes only
Max number of Automation Accounts in a subscription	No Limit	
Max number of concurrent jobs that are run on a single Hybrid Runbook Worker	50	

<sup>1</sup> A sandbox is a shared environment that can be used by multiple jobs; jobs using the same sandbox are bound by the resource limitations of the sandbox.

## Managed Identity limits

CATEGORY	LIMIT
User assigned managed identities	<ul style="list-style-type: none"> <li>When creating user assigned managed identities, only alphanumeric characters (0-9, a-z, A-Z) and the hyphen (-) are supported. Additionally, the name should be limited to 24 characters in length for the assignment to VM/VMSS to work properly.</li> <li>If using the managed identity virtual machine extension, the supported limit is 32 user assigned managed identities. Without the managed identity virtual machine extension, the supported limit is 512 user assigned identities.</li> </ul>

## Role-based access control limits

RESOURCE	LIMIT
Role assignments per Azure subscription	2000
Custom roles per tenant	2000

## SQL Database limits

For SQL Database limits, see [SQL Database Resource Limits for single databases](#) and [SQL Database Resource Limits for elastic pools and pooled databases](#).

## SQL Data Warehouse limits

For SQL Data Warehouse limits, see [SQL Data Warehouse Resource Limits](#).

## See also

[Understanding Azure Limits and Increases](#)

[Virtual Machine and Cloud Service Sizes for Azure](#)

[Sizes for Cloud Services](#)

# No subscriptions found error in Azure portal or Azure account center

5/11/2018 • 2 minutes to read • [Edit Online](#)

You might receive a "No subscriptions found" error message when you try to sign in to the [Azure portal](#) or the [Azure Account Center](#). This article provides a solution for this problem.

## Symptom

When you try to sign in to the [Azure portal](#) or the [Azure account center](#), you receive the following error message: "No subscriptions found".

## Cause

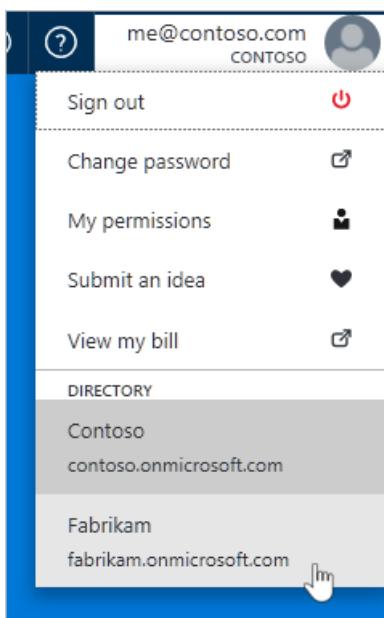
This problem occurs if you selected at the wrong directory, or if your account doesn't have sufficient permissions.

## Solution

### Scenario 1: Error message is received in the [Azure portal](#)

To fix this issue:

- Make sure that the correct Azure directory is selected by clicking your account at the top right.



- If the right Azure directory is selected but you still receive the error message, [have your account added as an Owner](#).

### Scenario 2: Error message is received in the [Azure Account Center](#)

Check whether the account that you used is the Account Administrator. To verify who the Account Administrator is, follow these steps:

1. Sign in to the [Subscriptions view in the Azure portal](#).
2. Select the subscription you want to check, and then look under **Settings**.
3. Select **Properties**. The account administrator of the subscription is displayed in the **Account Admin** box.

## Need help? Contact support.

If you still need help, [contact support](#) to get your issue resolved quickly.

# Troubleshoot enterprise cost views

6/27/2018 • 2 minutes to read • [Edit Online](#)

Within enterprise enrollments, there are multiple settings that could cause users within the enrollment to not be able to view costs. These settings are managed by the enrollment administrator, or by the partner if the enrollment is not purchased directly with Microsoft. This article helps you understand what the settings are and how they impact the enrollment. These settings are independent of the [Azure RBAC Roles](#).

## Enabling access to costs

Are you seeing a message Unauthorized, or "Cost views are disabled in your enrollment." when looking for cost information?

SUBSCRIPTION	SUBSCRIPTION ID	MY ROLE	CURRENT COST	STATUS	...
EA Microsoft Azure Enterprise	[REDACTED]	Billing reader	Unauthorized	Active	...
EA Microsoft Azure Enterprise	[REDACTED]	Billing reader	Unauthorized	Active	...

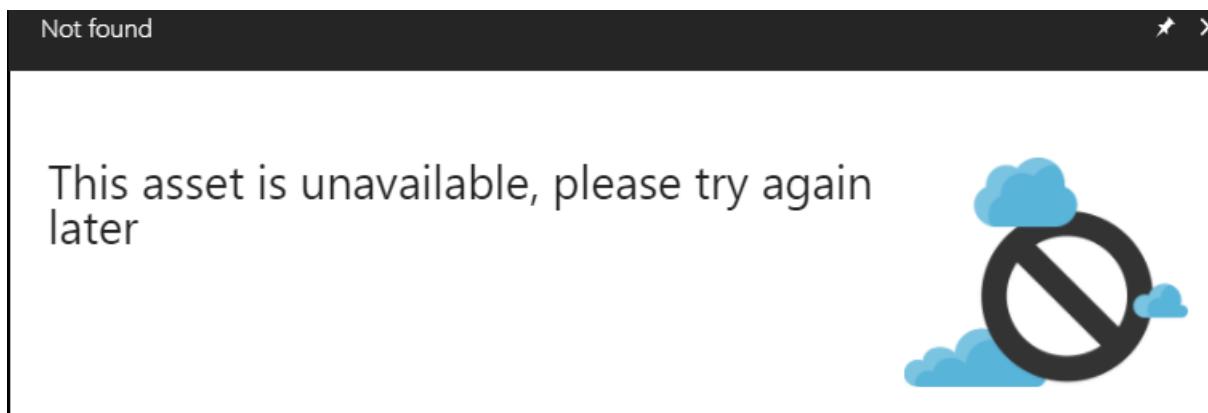
It might be due to one of the following reasons:

1. You've purchased Azure through an enterprise partner, and the partner hasn't released pricing yet. To release pricing, contact your partner to do update the setting within the [Enterprise portal](#).
2. Alternatively, if you're an EA Direct customer, there are a couple of possibilities:
  - You are an Account Owner and your Enrollment Administrator has disabled the "AO view charges" setting.
  - You are a Department Administrator and your Enrollment Administrator has disabled the "DA view charges" setting.
  - Contact your Enrollment Administrator to get access. The Enrollment Admin can visit the [Enterprise portal](#) and update the setting as seen here:

The screenshot shows the 'Manage' section of an Azure Enterprise enrollment. The 'DA view charges' and 'AO view charges' settings are highlighted with a red box. Other visible settings include Enrollment Number, Company Name, Country, Auth Level, Start/End Date, Billing Cycle, Status, Support Level, Support Coverage, and Azure Marketplace.

Asset is unavailable?

If you are receiving an error message "This asset is unavailable" when trying to access a subscription or management group, then you do not have the correct role to view this item.



Contact the administer of the subscription or management groups to be given access.

- For subscriptions, reference [Azure Role-Based Access Control \(RBAC\)](#) document for help on which role is needed.

# How to create an Azure support request

4/16/2018 • 3 minutes to read • [Edit Online](#)

## Summary

Azure customers can create and manage support requests in the Azure portal, <https://portal.azure.com>.

### NOTE

Azure portal for Germany is <https://portal.microsoftazure.de>

Azure portal for the United States government is <https://portal.azure.us>.

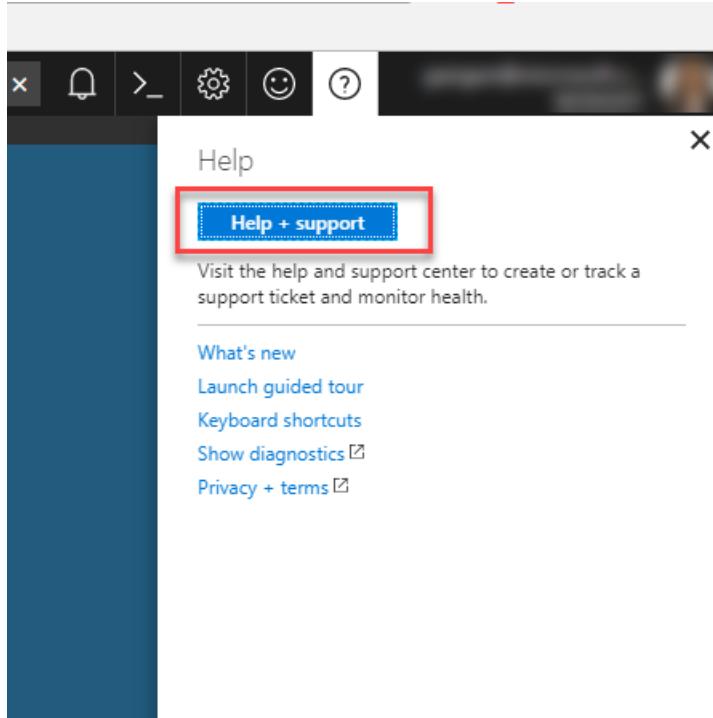
Based on customer feedback, we've updated the support request experience to focus on three main goals:

- **Streamlined:** Reduce clicks and blades to make the process of submitting a support request simple.
- **Integrated:** When you're troubleshooting an issue with an Azure resource, it should be easy to open a support request for that resource without switching context.
- **Efficient:** Gather the key information your support engineer needs to efficiently resolve your issue.

## Getting started

You can create a support request from the top navigation menu or directly from a resource blade.

### From the top navigation bar



From the Help and Support page, select "New support request"

Home > Help + support

## Help + support

Have you tried one of these?

- Get started** Learn about Azure's most-used features
- Documentation** Azure tutorials and how-to articles
- Learn about billing** Tips for monitoring usage and understanding your bill
- Support plans** Choose the right Azure support plan

**Community**

- MSDN Forums** Information and discussion by Microsoft and the community
- Stackoverflow** Answers to a wide range of Azure programming issues
- @AzureSupport** Quickly connect with our problem-solving experts
- Serverfault** Answers to network infrastructure problems

**Recent support requests**

TITLE	ID	CREATED (UTC)	SUBSCRIPTION	RESOURCE TYPE	UPDATED	STATUS
users having reader permissions to subscriptio...	118041217987367	Thu, Apr 12, 2018, 7:39:05 ...	[REDACTED]	Subscription management	5 hrs ago	<span>Open</span>
Test ticket	118041217987285	Wed, Apr 11, 2018, 10:43:00 ...	[REDACTED]	File	9 hrs ago	<span>Closed</span>
This is test case. Please ignore.	118041217987135	Wed, Apr 11, 2018, 10:10:3...	[REDACTED]	Virtual Machine running ...	9 hrs ago	<span>Closed</span>
Quota request for Azure RemoteApp	118041117984951	Wed, Apr 11, 2018, 9:08:12 ...	[REDACTED]	Quota	20 hrs ago	<span>Closed</span>
Quota request for Batch	118041117984949	Wed, Apr 11, 2018, 9:07:51 ...	[REDACTED]	Quota	20 hrs ago	<span>Closed</span>

[See all support requests](#)

## From a resource blade

Home > Virtual machines > CaseSubTestVM > New support request > Basics

**Virtual machines**

**CaseSubTestVM** Virtual machine

**New support request**

**Basics**

**ISSUE TYPE**: Technical

**Subscription**: IBIZA - Test (76cb77fa-8b17-4eab-9493-b65dace99813)

**Service**: My Services

**Virtual Machine running Windows**

**Resource**: CaseSubTestVM

**Support plan**: Premier

## Basics

The first step of the support request process gathers basic information about your issue and your support plan.

Let's take an example: You're facing technical difficulties with your virtual machine and suspect a network connectivity issue. Selecting the service ("Virtual Machine running Windows") and the resource (the name of your virtual machine) in the first step of the wizard starts the process of getting help for this issue.

New support request

HELP + SUPPORT

1 Basics >

2 Problem >

3 Contact information >

Basics

NEW SUPPORT REQUEST

\* Issue type  
Technical

\* Subscription  
IBIZA - Test (76cb77fa-8b17-4eab-9493-b65dace99813)

\* Service  
 My Services  All Services

\* Resource  
Virtual Machine running Windows

\* Resource health did not detect any issues with your resource.

\* Support plan  
Premier

Next

**NOTE**

Azure provides unlimited support for subscription management (things like billing, quota adjustments, and account transfers). For technical support, you need a support plan. [Learn more about support plans](#).

## Problem

The second step of the wizard gathers additional details about the issue. Providing accurate details in this step allows us to route your case to the best support engineer for the issue and to begin diagnosing the issue as soon as possible.

New support request

Problem  
NEW SUPPORT REQUEST

1 Basics ✓

2 Problem >

3 Contact information >

**\* Severity** C - minimal impact

**\* Problem type** Connectivity

**\* Category** Cannot connect to virtual machine by ...

Found solutions based on your problem-category selection. See solutions on the right.

**\* Title** In a few words, describe your issue.

**\* Details** Provide additional information about your issue including error messages.

When did the problem start? Choose a date Enter a local time

File upload Select a file

Share diagnostic information

**Next**

Want a solution right now?

Solutions based on your problem-category selection

**Recommended steps**

To resolve common issues, try one or more of the following steps.

- Verify if your VM is running by viewing your VM's console screenshot or logs. These can be accessed by selecting the Boot Diagnostics menu item under the Support + Troubleshooting sub-header for your virtual machine. Review errors in the logs such as FSTAB (file systems table), FSCK (file system consistency), or networking
- Click here to ensure that Network Security Group is allowing traffic
- Click here to troubleshoot connectivity issues when trying RDP from Azure
- Review effective security group rules to ensure inbound "Allow" NSG rule exists and is prioritized for RDP port(default 3389)
- Reset Remote Access to address remote server issues [Reset remote access using PowerShell or CLI](#)
- If you are using VPN S2S, RDP to your VM from Internet may not work with forced tunneling enabled. Review effective routes. With forced tunneling, all outbound traffic destined to Internet will be redirected to on-premises
- Restart the Virtual Machine to address startup issues by clicking 'Restart' at the top of the VM resource blade
- Address Azure host issues by [redeploying](#), which will migrate the VM to a new Azure host
- If you're getting an RDP license error, use 'mstsc/admin' as a work around. If needed, uninstall or buy an RDS license. [Address Remote Desktop License Server error](#)

**Recommended documents**

Troubleshoot specific Remote Desktop connection errors  
Detailed troubleshooting across network components

Was this helpful? Yes No

Continuing with the virtual machine connectivity example from above, you would fill out this form to indicate a network connectivity issue, and you would provide further details about the issue, including the approximate time when you experienced the issue.

New support request

Problem  
NEW SUPPORT REQUEST

1 Basics ✓

2 Problem >

3 Contact information >

**\* Severity** C - minimal impact

**\* Problem type** Connectivity

**\* Category** Cannot connect to virtual machine by ...

**\* Title** Connectivity issues ✓

**\* Details** Unable to access my virtual machine resource.

Found solutions based on your problem description. See solutions on the right.

When did the problem start? 2018-04-09 2:35 PM

File upload Select a file

Share diagnostic information

**Next**

Want a solution right now?

Solutions based on your problem description

**Unable to connect to 'running' azure vm**  
Apr 11, 2018 – [Anders Bengtsson](#), Do you have Another VM on the same subnet that you can try connect from? When connecting to the machine, The IP number might have changed since last time you used the virtual machine. If you can do remote powershell to the machine you can verify that RDP and FW is configured correct. One alternativ is to delete the machine, - [Continue reading on MSDN](#)

Was this helpful? Yes No

**My Virtual Machines have disappeared!**  
Apr 11, 2018 – [Rachit Sikriana](#), Hi Geoff, Below blog post has 2 common reasons and explanation for this issue. Also refer Windows Azure Virtual Machines – Gotcha's! Hope this helps! Please mark as answer or vote as helpful if my reply does - [Continue reading on MSDN](#)

Was this helpful? Yes No

**I can't connect to my Windows VM**

**Recommended steps**

To resolve common issues, try one or more of the following steps.

- Verify if your VM is running by viewing your VM's console screenshot or logs. These can be accessed by selecting the Boot Diagnostics menu item under the Support + Troubleshooting sub-header for your virtual machine. Review errors in the logs such as

**See full solution ▾**

## Related Help

Based on problem type and the category you select, we provide a solution that can help resolve your issue.

The screenshot shows three windows side-by-side. On the left is the 'New support request' window, step 2 'Problem'. It contains fields for Severity (C - minimal impact), Problem type (Connectivity), Category (Cannot connect to virtual machine by ...), Title (In a few words, describe your issue.), and Details (Provide additional information about your issue including error messages.). Below these is a section for 'When did the problem start?' with a date picker set to 2018-04-09 and a time picker set to 2:35 PM. There is also a 'File upload' field and a checked 'Share diagnostic information' checkbox. A 'Next' button is at the bottom. On the right is the 'Problem' window, step 3 'Contact information'. At the top is a 'Related help' section titled 'Want a solution right now?'. It says 'Solutions based on your problem-category selection'. A red box highlights the 'Recommended steps' section, which lists 10 troubleshooting steps. Below this is a 'Recommended documents' section with links to 'Troubleshoot specific Remote Desktop connection errors' and 'Detailed troubleshooting across network components'. At the bottom is a 'Was this helpful? Yes No' button. The middle window is partially visible, showing the 'Problem' step with the same fields as the left window.

We also provide contextual self-help solutions based on the textual description of your issue.

This screenshot is similar to the one above, but the 'Title' field in the 'Problem' step has been changed to 'Connectivity issues'. The 'Details' field now reads 'Unable to access my virtual machine resource.' A red box highlights the 'Solutions based on your problem description' section in the 'Related help' window. This section contains two entries: 'Unable to connect to 'running' azure vm' and 'My Virtual Machines have disappeared!'. Each entry includes a timestamp, a brief description, and a 'Was this helpful? Yes No' button. The 'I can't connect to my Windows VM' section is also visible at the bottom of the 'Related help' window.

If the recommended solutions do not help, you can continue through the process to create a support request.

The screenshot shows the 'New support request' wizard at the 'Problem' step. The left sidebar lists steps 1 (Basics), 2 (Problem, currently selected), and 3 (Contact information). The main area shows a problem description: 'Connectivity issues' and 'Details: Unable to access my virtual machine resource.' Below this is a note: 'Found solutions based on your problem description. See solutions on the right.' A timestamp 'When did the problem start?' is set to '2018-04-09 2:35 PM'. A file upload field 'Select a file' is present. A checkbox 'Share diagnostic information' is checked. A note states: 'Yes, Azure Support can access your virtual machine's memory to diagnose the problem. Keep your virtual machine turned on. Support will pause your machine for up to 10 minutes.' A dropdown menu shows 'Agree'. A link 'Learn more about the information we collect' is available. A 'Next' button is at the bottom.

## Contact Information

The last step of the wizard confirms your contact options and contact information so we know how to reach you.

The screenshot shows the 'New support request' wizard at the 'Contact information' step. The left sidebar lists steps 1 (Basics), 2 (Problem), and 3 (Contact information, currently selected). The main area shows 'Contact options' with 'Preferred contact method' set to 'Email'. It also shows 'Response' (Business Hours) and 'Language' (English). Under 'Contact information', fields include 'First name' (Ganga), 'Last name' (N), 'Email' (gangan@microsoft.com), 'Who else should we email?' (empty), 'Phone number' (4256678989), 'Country/region' (United States), and a checked checkbox 'Save contact changes for future support requests.' A note at the bottom says: 'By clicking create you accept the [terms and conditions](#). View our [privacy policy](#).' A 'Create' button is at the bottom. The right panel is identical to the previous screenshot, showing related help articles for connectivity issues.

Depending on the severity of your issue, you may be asked to indicate if you would like us to contact you during business hours or if you would prefer a 24x7 response, which means we may contact you at any time.

The screenshot shows the Microsoft Support Center interface. On the left, a navigation pane lists three steps: 1 Basics (done), 2 Problem (done), and 3 Contact information (in progress). The main area is titled "Contact information" and "NEW SUPPORT REQUEST". It contains sections for "Contact options" (Preferred contact method: Phone, Response: 24x7, Language: English), "Contact information" (First name: Ganga, Last name: N, Phone number: 4256678989, Email: gangan@microsoft.com), and "Who else should we email?". A note states: "By clicking create you accept the [terms and conditions](#). View our [privacy policy](#)." A "Create" button is at the bottom. To the right, a sidebar titled "Want a solution right now?" shows "Solutions based on your problem description" for issues like "Unable to connect to 'running' azure vm", "My Virtual Machines have disappeared!", and "I can't connect to my Windows VM". Each solution has a "Was this helpful? Yes | No" link.

## All support requests

After you create the support request, you can view the details from the **All support requests** page.

### From the top navigation bar

The screenshot shows the "Help" page of the Microsoft Support Center. At the top, there are icons for Home, Notifications, Settings, and Help. Below the title "Help" is a red box around the "Help + support" button. A note below it says: "Visit the help and support center to create or track a support ticket and monitor health." Below the button is a list of links: "What's new", "Launch guided tour", "Keyboard shortcuts", "Show diagnostics", and "Privacy + terms".

From the Help and Support page, select "All support requests" from the left menu.

Home > Help + support

## Help + support

Search (Ctrl+ /)

- [Overview](#)
- [SUPPORT](#)
- [New support request](#)
- [All support requests](#) (Selected)
- [Support plans](#)

Have you tried one of these?

**Get started**

Learn about Azure's most-used features



**Documentation**

Azure tutorials and how-to articles



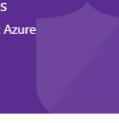
**Learn about billing**

Tips for monitoring usage and understanding your bill



**Support plans**

Choose the right Azure support plan



Community

 **MSDN Forums**  
Information and discussion by Microsoft and the community

MSDN forums

 **Stackoverflow**  
Answers to a wide range of Azure programming issues

Azure @ Stackoverflow

 **@AzureSupport**  
Quickly connect with our problem-solving experts

Tweet @AzureSupport

 **Serverfault**  
Answers to network infrastructure problems

Azure @ Serverfault

Recent support requests

[+ New support request](#) | [Choose the right support plan](#)

TITLE	ID	CREATED (UTC)	SUBSCRIPTION	RESOURCE TYPE	UPDATED	STATUS
users having reader permissions to subscriptio...	118041217987367	Thu, Apr 12, 2018, 7:39:05 ...	[REDACTED]	Subscription management	5 hrs ago	<span style="color: gray;">... Open</span>
Test ticket	118041217987285	Wed, Apr 11, 2018, 10:43:00 ...	[REDACTED]	File	9 hrs ago	<span style="color: green;">✓ Closed</span>
This is test case. Please ignore.	118041217987135	Wed, Apr 11, 2018, 10:10:30 ...	[REDACTED]	Virtual Machine running ...	9 hrs ago	<span style="color: green;">✓ Closed</span>
Quota request for Azure RemoteApp	118041117984951	Wed, Apr 11, 2018, 9:08:12 ...	[REDACTED]	Quota	20 hrs ago	<span style="color: green;">✓ Closed</span>
Quota request for Batch	118041117984949	Wed, Apr 11, 2018, 9:07:51 ...	[REDACTED]	Quota	20 hrs ago	<span style="color: green;">✓ Closed</span>

[See all support requests](#)

On the **All support requests** page, you can view all support requests and their status.

Help + support - All support requests

Search (Ctrl+ /)

- [Overview](#)
- [SUPPORT](#)
- [New support request](#)
- [All support requests](#) (Selected)
- [Support plans](#)

Subscriptions: 2 Subscriptions | Created (UTC): Past 7 days | Status: Open

[Search to filter items...](#)

TITLE	ID	CREATED (UTC)	SUBSCRIPTION	RESOURCE TYPE	UPDATED	STATUS
testing scoping questions	118040517948064	Thu, Apr 5, 2018, 7:48:29 PM	IBIZA - Test	Virtual Machine running Windows	51 min ago	<span style="color: gray;">... Open</span>
testing scoping questions	118040517947930	Thu, Apr 5, 2018, 7:29:50 PM	IBIZA - Test	Web App (Windows)	6 days ago	<span style="color: gray;">... Open</span>

The support requests page, provides customers to filter cases by Subscription, Created date (UTC) and status. Additionally, you can sort and search for support requests on this page.

Select the support request to view details, including severity and the expected time it will take for a support

The screenshot shows the Microsoft Support Request interface. At the top, there's a header with a profile icon, the ID '116032213860159', and the title 'Network connectivity issues. Unable to acc...'. Below the header, there's a 'New Message' button. The main area is divided into three sections: 'Overview', 'Details', and 'Conversation'.  
  
\*\*Overview Section:\*\*  
- \*\*Title:\*\* 116032213860159  
- \*\*Type:\*\* TECHNICAL SUPPORT REQUEST  
- \*\*Icon:\*\* Briefcase  
- \*\*Description:\*\* Network connectivity issues. Unable to access my VM resource. [Time frame] Started seeing the issue starting March 15, 2016 from 9 AM (PST). The issue is still on going.  
- \*\*Status:\*\* Microsoft has the action  
  
\*\*Details Section:\*\*  
- \*\*Contacts:\*\* John Doe, johndoe@microsoft.c...  
- \*\*Technical:\*\* Virtual Machine running Windows  
- \*\*Service health:\*\* MY RESOURCES (West Europe, East Asia, Australia East, East US)  
  
\*\*Conversation Section:\*\*  
- \*\*Text:\*\* No results.  
- \*\*Action:\*\* Add a section

engineer to respond.

If you want to change the severity of the request, click the **Business impact** tile. In the preceding example, the request is currently set to Severity C.

Clicking the tile shows you the list of severities you can assign to an open support request.

**NOTE**

The maximum severity level depends on your support plan. [Learn more about support plans](#).

116032213860159 - Network connectivity issues. Unable to acc...

New Message

Overview

116032213860159  
TECHNICAL SUPPORT REQUEST

DESCRIPTION

Network connectivity issues. Unable to access my VM resource. [Time frame] Started seeing the issue starting March 15, 2016 from 9 AM (PST). The issue is still on going.

STATUS

Microsoft has the action

Add tiles +

Quickstart

Business impact  
WE'LL RESPOND WITHIN  
4 hours

C

Details

Contacts

John Doe  
johndoe@microsoft.c...

Technical

Virtual Machine  
running Windows

Service health  
MY RESOURCES

West Europe

East Asia

Australia East

East US

Add tiles +

Conversation

No results.

Add a section +

**A Critical impact**  
Significant loss or degradation of services

**B Moderate impact**  
Moderate loss or degradation of services

**C Minimal impact**  
Minimal loss or degradation of services

## Feedback

We are always open to feedback and suggestions! Please send us your [suggestions](#). Additionally, you can engage with us via [Twitter](#) or the [MSDN forums](#).

## Learn more

[Azure Support FAQ](#)

# Review enterprise enrollment billing using REST APIs

6/27/2018 • 2 minutes to read • [Edit Online](#)

Azure Reporting APIs help you review and manage your Azure costs.

Here, you learn to retrieve the current bill associated with an enterprise account enrollment.

To retrieve the current bill:

```
GET https://consumption.azure.com/v2/enrollments/{enrollmentID}/usagedetails
Content-Type: application/json
Authorization: Bearer
```

## Build the request

The `{enrollmentID}` parameter is required and should contain the enrollment ID for the Enterprise Account (EA).

The following headers are required:

REQUEST HEADER	DESCRIPTION
<code>Content-Type:</code>	Required. Set to <code>application/json</code> .
<code>Authorization:</code>	Required. Set to a valid <code>Bearer API key</code> .

This example shows a synchronous call that returns details for the current billing cycle. For performance reasons, synchronous calls return information for the last month. You can also call the [API asynchronously](#) to return data for 36 months.

## Response

Status code 200 (OK) is returned for a successful response, which contains a list of detailed costs for your account.

```
{
  "id": "${id}",
  "data": [
    {
      "cost": ${cost},
      "departmentId": ${departmentID},
      "subscriptionGuid" : ${subscriptionGuid}
      "date": "${date}",
      "tags": "${tags}",
      "resourceGroup": "${resourceGroup}"
    } // ...
  ],
  "nextLink": "${nextLinkURL}"
}
```

Each item in **data** represents a charge:

RESPONSE PROPERTY	DESCRIPTION
<b>cost</b>	The amount charged, in a currency appropriate for the datacenter location.
<b>subscriptionGuid</b>	Globally unique ID for the subscription.
<b>departmentId</b>	ID for the department, if any.
<b>date</b>	Date the charge was billed.
<b>tags</b>	JSON string containing tags associated with the subscription.
<b>resourceGroup</b>	Name of the resource group containing the object that incurred the cost.
<b>nextLink</b>	When set, specifies a URL for the next "page" of details. Blank when the page is the last one.

Department IDs, resource groups, tags, and related fields are defined by the EA administrator.

This example is abbreviated; see [Get usage detail](#) for a complete description of each response field.

Other status codes indicate error conditions. In these cases, the response object explains why the request failed.

```
{
  "error": [
    {
      "code": "Error type."
      "message": "Error response describing why the operation failed."
    }
  ]
}
```

## Next steps

- Review [Enterprise reporting overview](#)
- Investigate [Enterprise Billing REST API](#)
- [Get started with Azure REST API](#)

# Review subscription billing using REST APIs

6/27/2018 • 2 minutes to read • [Edit Online](#)

Azure Reporting APIs help you review and manage your Azure costs.

Filters help customize results to meet your needs.

Here, you learn to use a REST API to return subscription billing details for a given date range.

GET

```
https://management.azure.com/subscriptions/${subscriptionID}/providers/Microsoft.Billing/billingPeriods/${billingPeriod}/providers/Microsoft.Consumption/usageDetails?$filter=properties/usageEnd ge '${startDate}' AND properties/usageEnd le '${endDate}'  
Content-Type: application/json  
Authorization: Bearer
```

## Build the request

The `{subscriptionID}` parameter is required and identifies the target subscription.

The `{billingPeriod}` parameter is required and specifies a current [billing period](#).

The `${startDate}` and `${endDate}` parameters are required for this example, but optional for the endpoint. They specify the date range as strings in the form of YYYY-MM-DD (examples: `'20180501'` and `'20180615'`).

The following headers are required:

REQUEST HEADER	DESCRIPTION
<code>Content-Type</code> :	Required. Set to <code>application/json</code> .
<code>Authorization</code> :	Required. Set to a valid <code>Bearer</code> <a href="#">access token</a> .

## Response

Status code 200 (OK) is returned for a successful response, which contains a list of detailed costs for your account.

```
{
  "value": [
    {
      "id": "/subscriptions/{$subscriptionID}/providers/Microsoft.Billing/billingPeriods/201702/providers/Microsoft.Consumption/usageDetails/{$detailsID}",
      "name": "{$detailsID}",
      "type": "Microsoft.Consumption/usageDetails",
      "properties": {
        "billingPeriodId": "/subscriptions/${subscriptionID}/providers/Microsoft.Billing/billingPeriods/${billingPeriod}",
        "invoiceId": "/subscriptions/${subscriptionID}/providers/Microsoft.Billing/invoices/${invoiceID}",
        "usageStart": "{$startDate}",
        "usageEnd": "{$endDate}",
        "currency": "USD",
        "usageQuantity": ${usageQuantity},
        "billableQuantity": ${billableQuantity},
        "pretaxCost": ${cost},
        "meterId": "{$meterID}",
        "meterDetails": ${meterDetails}
      }
    }
  ],
  "nextLink": "${nextLinkURL}"
}
```

Each item in **value** represents a details regarding the use of a service:

RESPONSE PROPERTY	DESCRIPTION
<b>subscriptionGuid</b>	Globally unique ID for the subscription.
<b>startDate</b>	Date the use started.
<b>endDate</b>	Date the use ended.
<b>useageQuantity</b>	Quantity used.
<b>billableQuantity</b>	Quantity actually billed.
<b>pretaxCost</b>	Cost invoiced, before applicable taxes.
<b>meterDetails</b>	Detailed information about the use.
<b>nextLink</b>	When set, specifies a URL for the next "page" of details. Blank when the page is the last one.

This example is abbreviated; see [List usage details](#) for a complete description of each response field.

Other status codes indicate error conditions. In these cases, the response object explains why the request failed.

```
{  
  "error": [  
    { "code": "Error type."  
      "message": "Error response describing why the operation failed."  
    }  
  ]  
}
```

## Next steps

- Review [Enterprise reporting overview](#)
- Investigate [Enterprise Billing REST API](#)
- [Get started with Azure REST API](#)

# Billing and cost management automation scenarios

6/15/2018 • 7 minutes to read • [Edit Online](#)

Common scenarios for the billing and cost management space are identified below and mapped to different APIs that can be used in those scenarios. A summary of all the APIs available and the functionality they offer can be found underneath the scenario to API mapping.

## Common scenarios

You can use the billing and cost management APIs in a variety of scenarios to answer cost and usage related questions. An outline of common scenarios is provided below.

- **Invoice Reconciliation** - Did Microsoft charge me the right amount? What is my bill and can I calculate it myself?
- **Cross Charges** - Now that I know how much I'm being charged, who in my organization needs to pay?
- **Cost Optimization** - I know how much I've been charged, however, how can I get more out of the money I am spending on Azure?
- **Cost Tracking** – I want to see how much I am spending and using Azure over time. What are the trends? How could I be doing better?
- **Azure spend during the month** – How much is my current month's spend to date? Do I need to make any adjustments in my spending and/or usage of Azure? When during the month am I consuming Azure the most?
- **Set up alerts** – I would like to set up resource-based consumption or monetary-based alerting.

## Scenario to API mappings

API/SCENARIO	INVOICE RECONCILIATION	CROSS CHARGES	COST OPTIMIZATION	COST TRACKING	MID MONTH SPEND	ALERTS
Budgets			X			X
Marketplaces	X	X	X	X	X	X
Price Sheet	X	X	X	X	X	
Reservation Recommendations			X			
Reservation Details			X	X		
Reservation Summaries			X	X		
Usage Details	X	X	X	X	X	X

API/SCENARIO	INVOICE RECONCILIATION	CROSS CHARGES	COST OPTIMIZATION	COST TRACKING	MID MONTH SPEND	ALERTS
Billing Periods	X	X	X	X		
Invoices	X	X	X	X		
RateCard	X		X	X	X	
Unrated Usage	X		X		X	

#### NOTE

The scenario to API mappings below do not include the Enterprise Consumption APIs. Where possible, please utilize the general Consumption APIs to address net new development scenarios moving forward.

## API summaries

### Consumption

(Web Direct + Enterprise customers for all APIs except those called out below)

- **Budgets** (*Enterprise customers ONLY*): Use the [Budgets API](#) to create either cost or usage budgets for resources, resource groups, or billing meters. Once you have created budgets, alerting can be configured to notify when user defined budget thresholds are exceeded. Actions can also be configured to occur when budget amounts are reached.
- **Marketplaces**: Use the [Marketplace Charges API](#) to get charge and usage data on all Marketplace resources (Azure 3rd party offerings). This data can be used to add up costs across all Marketplace resources or investigate costs/usage on specific resource(s).
- **Price Sheet** (*Enterprise customers ONLY*): Enterprise customers can use the [Price Sheet API](#) to retrieve their custom pricing for all meters. Enterprises can use this data in combination with usage details and marketplaces usage info to perform cost calculations using usage and marketplace data.
- **Reservation Recommendations**: Use the [Reservation Recommendations API](#) to get recommendations for purchasing VM reserved instances. Recommendations are designed to allow customers to analyze expected cost savings and purchase amounts.
- **Reservation Details**: Use the [Reservation Details API](#) to see info on previously purchased VM reservations, such as how much consumption has been reserved versus how much is actually being used. You can see data at per-VM-level detail.
- **Reservation Summaries**: Use the [Reservation Summaries API](#) to see aggregate information on previously purchased VM reservations, such as how much consumption has been reserved versus how much is actually being used in the aggregate.
- **Usage Details**: Use the [Usage Details API](#) to get charge and usage on all Azure 1st party resources. Information is in the form of usage detail records, which are currently emitted once per meter per day. Information can be used to add up the costs across all resources or investigate costs/usage on specific resource(s).
- **RateCard**: Web Direct customers can use the [RateCard API](#) to get their meter rates. They can then use the returned information with their resource usage information to manually calculate expected bill.
- **Unrated Usage**: You can use the [Unrated Usage API](#) to obtain raw usage information, prior to any metering/charging done by Azure.

### Billing

- **Billing Periods:** Use the [Billing Periods API](#) to determine a billing period to analyze, along with the invoice ID's for that period. Invoice ID's can be used with the [Invoice API](#) below.
- **Invoices:** Use the [Invoices API](#) to get the download URL for an invoice for a given billing period in PDF form.

## Enterprise Consumption

(All APIs Enterprise ONLY)

- **Balance Summary:** Use the [Balance Summary API](#) to get a monthly summary of information on balances, new purchases, Azure Marketplace service charges, adjustments, and overage charges. You can get this information for the current billing period or any period in the past. Enterprises can use this data to perform a comparison with manually calculated summary charges. This API does not provide resource-specific information or an aggregate view of costs.
- **Usage Details:** Use the [Usage Details API](#) to get 1st party Azure usage detail information for the current month, a specific billing period, or a custom date period. Enterprises can use this data to manually calculate bill based on rate and consumption and can also use department/organization information present to attribute costs across organizations. The data provides a resource-specific view of usage/cost.
- **Marketplace Store Charge:** Use the [Marketplace Store Charge API](#) to get 3rd party Azure usage detail information for the current month, a specific billing period, or a custom date period. Enterprises can use this data to manually calculate bill based on rate and consumption and can also use department/organization information present to attribute costs across organizations. The Marketplace store charge API provides a resource-specific view of usage/cost.
- **Price Sheet:** The [Price Sheet API](#) provides the applicable rate for each Meter for the given Enrollment and Billing Period. This rate information can be used in combination with usage details and marketplaces usage info to manually calculate expected bill.
- **Billing Periods:** Use the [Billing Periods API](#) to get a list of billing periods along with a property pointing to the API route for the four sets of Enterprise API data that pertain to that billing period - BalanceSummary, UsageDetails, Marketplace Charges, and PriceSheet.
- **Reserved Instance Recommendations:** The [Reserved Instance Recommendations API](#) looks at Customer's 7 days, 30 days, or 60 days of virtual machine usage and offers Single and Shared Purchase recommendations. The reserved instance API allows customers to analyze expected cost savings and recommended purchase amounts.

## Frequently asked questions

### What is the difference between the Enterprise Reporting APIs and the Consumption APIs? When should I use each?

These APIs have a similar set of functionality and can answer the same broad set of questions in the billing and cost management space. However, each API targets different audiences:

- **Enterprise Reporting APIs:** These APIs are available to customers who have signed an Enterprise Agreement with Microsoft that grants them access to negotiated monetary commitments and custom pricing. The APIs require a key to use that can be obtained through the [Enterprise Portal](#). For a description of these APIs, see [Overview of Reporting APIs for Enterprise customers](#).
- **Consumption APIs:** These APIs are available to all customers, with a few exceptions. For more information, see [Azure consumption API overview](#) and the [Azure Consumption API reference](#). The provided APIs are the recommended solution for the latest development scenarios.

### What is the difference between the Usage Details API and the Usage API?

These APIs provide fundamentally different data:

- **Usage Details:** The [Usage Details API](#) provides Azure usage and cost information per meter instance. The data provided has already passed through Azure's cost metering system and had cost applied to it along with other possible changes:

- Changes to account for the use of prepaid monetary commitments
- Changes to account for usage discrepancies discovered by Azure
- **Usage:** The [Usage API](#) provides raw Azure usage information before it passes through Azure's cost metering system. This data may not have any correlation with the usage and/or charge amount that is seen after the Azure charge metering system.

### **What is the difference between the Invoice API and the Usage Details API?**

These APIs provide a different view of the same data. The [Invoice API](#) is for Web Direct customers only and provides a monthly roll up of your bill based on the aggregate charges for each meter type. The [Usage Details API](#) provides a granular view of the usage/cost records for each day and can be used by both Enterprise and Web Direct customers.

### **What is the difference between the Price Sheet API and the RateCard API?**

These APIs provide similar sets of data but have different audiences. Information below.

- Price Sheet API: The [Price Sheet API](#) provides the custom pricing that has been negotiated for an Enterprise customer.
- RateCard API: The [RateCard API](#) provides the public facing pricing that applies to Web Direct customers.

## Next Steps

- For information about using Azure APIs to programmatically get insight into your Azure usage, see [Azure Consumption API Overview](#) and [Azure Billing API Overview](#).
- To compare your invoice with the detailed daily usage file and the cost management reports in the Azure portal, see [Understand your bill for Microsoft Azure](#)
- If you still have further questions, [contact support](#) to get your issue resolved quickly.

# Manage costs with Azure Budgets

7/25/2018 • 17 minutes to read • [Edit Online](#)

Cost control is a critical component to maximizing the value of your investment in the cloud. There are several scenarios where cost visibility, reporting, and cost-based orchestration are critical to continued business operations. [Azure Cost Management APIs](#) provide a set of APIs to support each of these scenarios. The APIs provide usage details, allowing you to view granular instance level costs.

Budgets are commonly used as part of cost control. Budgets can be scoped in Azure. For instance, you could narrow your budget view based on subscription, resource groups, or a collection of resources. In addition to using the budgets API to notify you via email when a budget threshold is reached, you can use [Azure Monitor action groups](#) to trigger an orchestrated set of actions as a result of a budget event.

A common budgets scenario for a customer running a non-critical workload could occur when they want to manage against a budget and also get to a predictable cost when looking at the monthly invoice. This scenario requires some cost-based orchestration of resources that are part of the Azure environment. In this scenario, a monthly budget of \$1000 for the subscription is set. Also, notification thresholds are set to trigger a few orchestrations. This scenario starts with an 80% cost threshold, which will stop all VMs in the resource group **Optional**. Then, at the 100% cost threshold, all VM instances will be stopped. To configure this scenario, you will complete the following actions by following the steps provided in each section of this tutorial.

These actions included in this tutorial allow you to:

- Create an Azure Automation Runbook to stop VMs by using webhooks.
- Create an Azure Logic App to be triggered based on the budget threshold value and call the runbook with the right parameters.
- Create an Azure Monitor Action Group that will be configured to trigger the Azure Logic App when the budget threshold is met.
- Create the Azure budget with the desired thresholds and wire it to the action group.

## Create an Azure Automation Runbook

[Azure Automation](#) is a service that enables you to script most of your resource management tasks and run those tasks as either scheduled or on-demand. As part of this scenario, you will create an [Azure Automation runbook](#) that will be used to stop VMs. You will use the [Stop Azure V2 VMs](#) graphical runbook from the [gallery](#) to build this scenario. By importing this runbook into your Azure account and publishing it, you will be able to stop VMs when a budget threshold is reached.

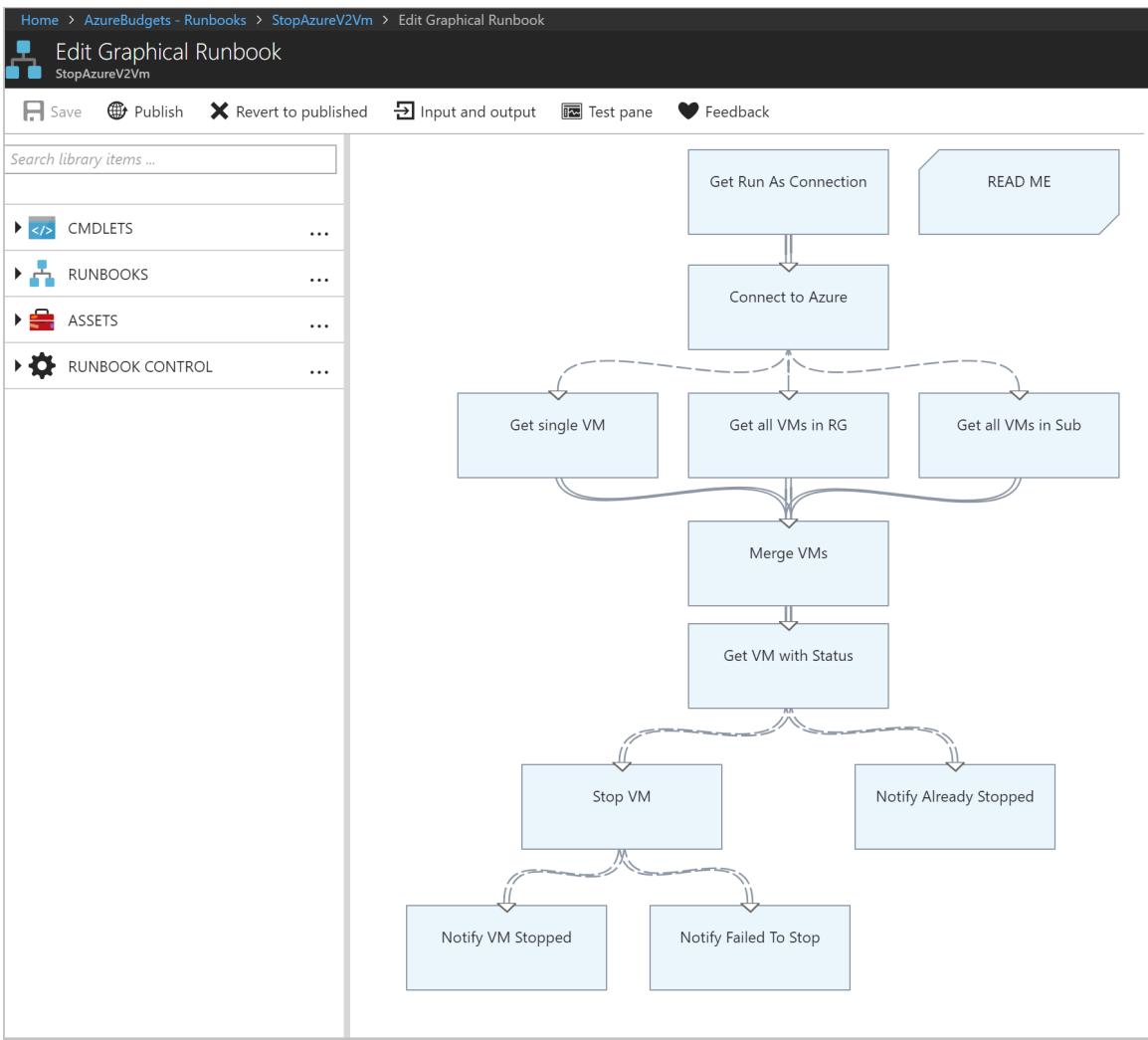
### Create an Azure Automation account

1. Sign in to the [Azure portal](#) with your Azure account credentials.
2. Click the **Create a resource** button found on the upper left corner of Azure.
3. Select **Management Tools > Automation**. > [!NOTE] > If you don't have an Azure account, you can create a [free account](#).
4. Enter your account information. For **Create Azure Run As account**, choose **Yes** to automatically enable the settings needed to simplify authentication to Azure.
5. When complete, click **Create**, to start the Automation account deployment.

### Import the Stop Azure V2 VMs runbook

Using an [Azure Automation runbook](#), import the [Stop Azure V2 VMs](#) graphical runbook from the gallery.

1. Sign in to the [Azure portal](#) with your Azure account credentials.
2. Open your Automation account by selecting **All services > Automation Accounts**. Then, select your Automation Account.
3. Click **Runbooks gallery** from the **Process Automation** section.
4. Set the **Gallery Source** to **Script Center** and select **OK**.
5. Locate and select the [Stop Azure V2 VMs](#) gallery item within the Azure portal.
6. Click the **Import** button to display the **Import** blade and select **OK**. The runbook overview blade will be displayed.
7. Once the runbook has completed the import process, select **Edit** to display the graphical runbook editor and publishing option.



- Click the **Publish** button to publish the runbook and then select **Yes** when prompted. When you publish a runbook, you override any existing published version with the draft version. In this case, you have no published version because you have created the runbook.

For more information about publishing a runbook, see [Create a graphical runbook](#).

## Create webhooks for the runbook

Using the [Stop Azure V2 VMs](#) graphical runbook, you will create two Webhooks to start the runbook in Azure Automation through a single HTTP request. The first webhook will invoke the runbook at an 80% budget threshold with the resource group name as a parameter, allowing the optional VMs to be stopped. Then, second webhook will invoke the runbook with no parameters (at 100%), which will stop all remaining VM instances.

- From the **Runbooks** page in the [Azure portal](#), click the **StopAzureV2Vm** runbook that displays the runbook's overview blade.
- Click **Webhook** at the top of the page to open the **Add Webhook** blade.
- Click **Create new webhook** to open the **Create a new webhook** blade.
- Set the **Name** of the Webhook to **Optional**. The **Enabled** property must be **Yes**. The **Expires** value does not need to be changed. For more information about Webhook properties, see [Details of a webhook](#).
- Next to the URL value, click the copy icon to copy the URL of the webhook. > **[!IMPORTANT]** > Save the URL of the webhook named **Optional** in a safe place. You will use the URL later in this tutorial. For security reasons, once you create the webhook, you cannot view or retrieve the URL again.
- Click **OK** to create the new webhook.
- Click **Configure parameters and run settings** to view parameter values for the runbook. > **[!NOTE]** > If the runbook has mandatory parameters, then you are not able to create the webhook unless values are provided.
- Click **OK** to accept the webhook parameter values.
- Click **Create** to create the webhook.
- Next, follow the steps above to create a second webhook named **Complete**. > **[!IMPORTANT]** > Be sure to save both webhook URLs to use later in this tutorial. For security reasons, once you create the webhook, you cannot view or retrieve the URL again.

You should now have two configured webhooks that are each available using the URLs that you saved.

NAME	EXPIRATION	LAST TRIGGERED	STATUS
Complete	7/18/2019, 4:06 PM		✓ Enabled
Optional	7/11/2019, 11:03 AM		✓ Enabled

You're now done with the Azure Automation setup. You can test the webhooks with a simple Postman test to validate that the webhook works. Next, you must create the Logic App for orchestration.

## Create an Azure Logic App for orchestration

Logic Apps help you build, schedule, and automate processes as workflows so you can integrate apps, data, systems, and services across enterprises or organizations. In this scenario, the [Logic App](#) you create will do a little more than just call the automation webhook you created.

Budgets can be set up to trigger a notification when a specified threshold is met. You can provide multiple thresholds to be notified at and the Logic App will demonstrate the ability for you to perform different actions based on the threshold met. In this example, you will set up a scenario where you get a couple of notifications, the first notification is for when 80% of the budget has been reached and the second notification is when 100% of the budget has been reached. The logic app will be used to shut down all VMs in the resource group. First, the **Optional** threshold will be reached at 80%, then the second threshold will be reached where all VMs in the subscription will be shut down.

Logic apps allow you to provide a sample schema for the HTTP trigger, but require you to set the **Content-Type** header. Because the action group does not have custom headers for the webhook, you must parse out the payload in a separate step. You will use the **Parse** action and provide it with a sample payload.

### Create the logic app

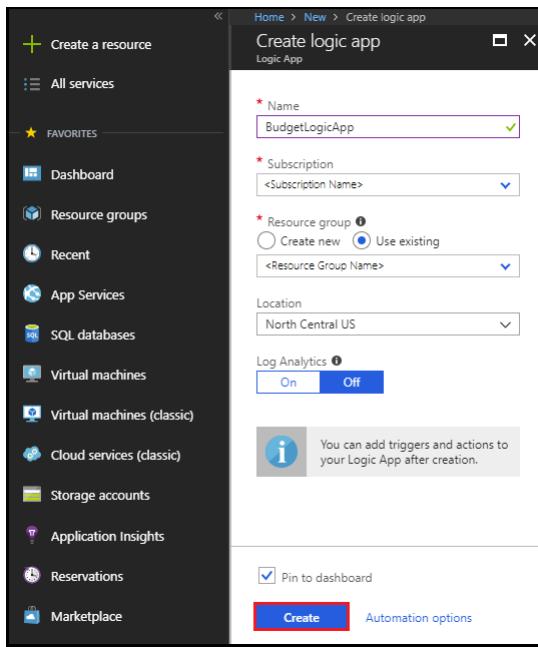
The logic app will perform several actions. The following list provides a high-level set of actions that the logic app will perform:

- Recognizes when an HTTP request is received
- Parse the passed in JSON data to determine the threshold value that has been reached
- Use a conditional statement to check whether the threshold amount has reached 80% or more of the budget range, but not greater than or equal to 100%.
  - If this threshold amount has been reached, send an HTTP POST using the webhook named **Optional**. This action will shut down the VMs in the "Optional" group.
- Use a conditional statement to check whether the threshold amount has reached or exceeded 100% of the budget value.
  - If the threshold amount has been reached, send an HTTP POST using the webhook named **Complete**. This action will shut down all remaining VMs.

The following steps are needed to create the logic app that will perform the above steps:

- In the [Azure portal](#), select **Create a resource** > **Integration** > **Logic App**.

- In the **Create logic app** blade, provide the details need to create your logic app, select **Pin to dashboard**, and click **Create**.

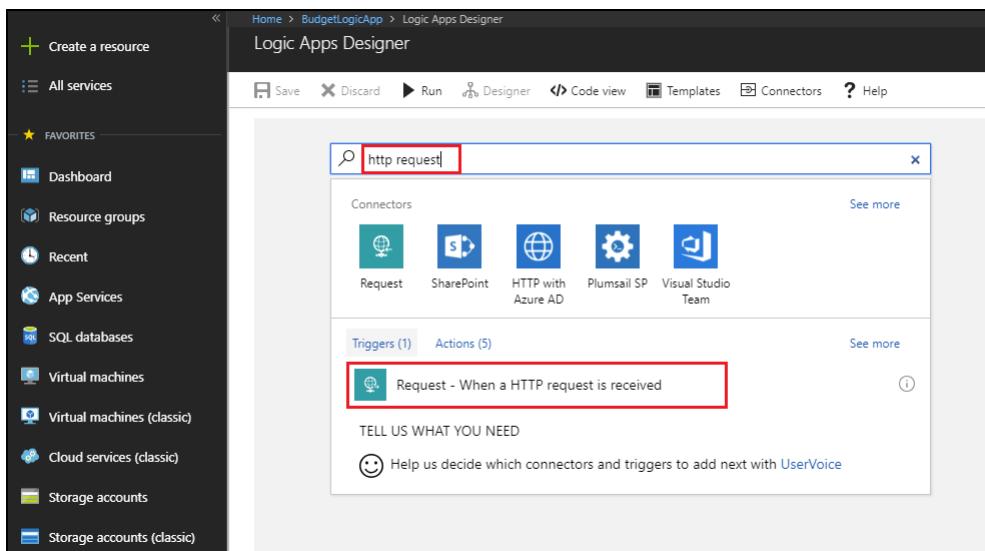


After Azure deploys your logic app, the **Logic Apps Designer** opens and shows a blade with an introduction video and commonly used triggers.

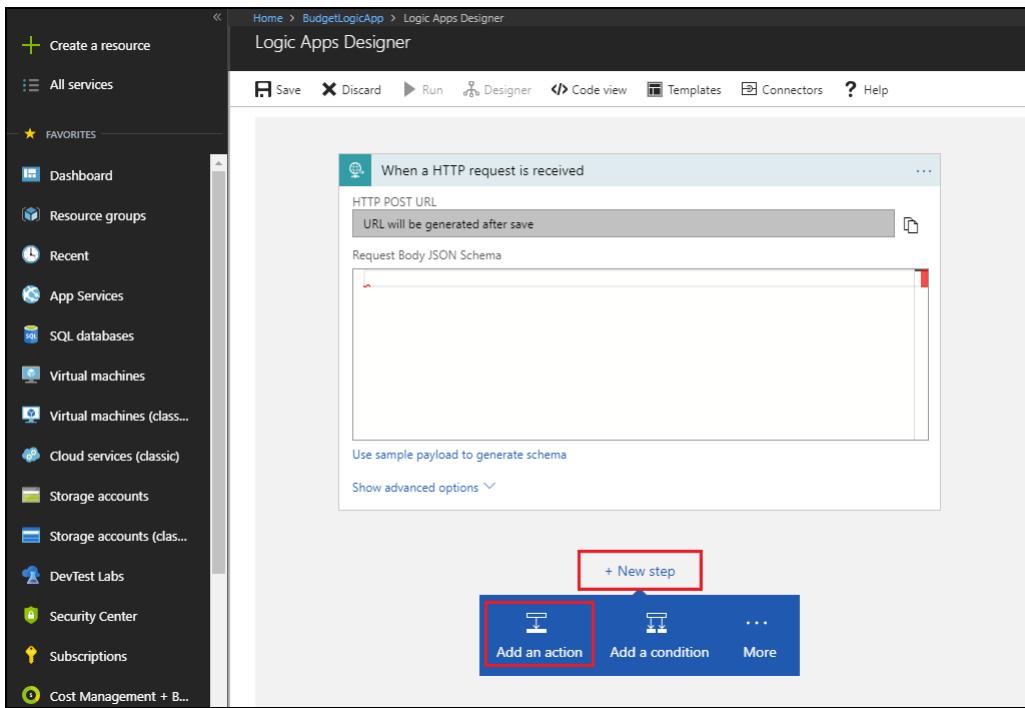
#### Add a trigger

Every logic app must start with a trigger, which fires when a specific event happens or when a specific condition is met. Each time the trigger fires, the Logic Apps engine creates a logic app instance that starts and runs your workflow. Actions are all the steps that happen after the trigger.

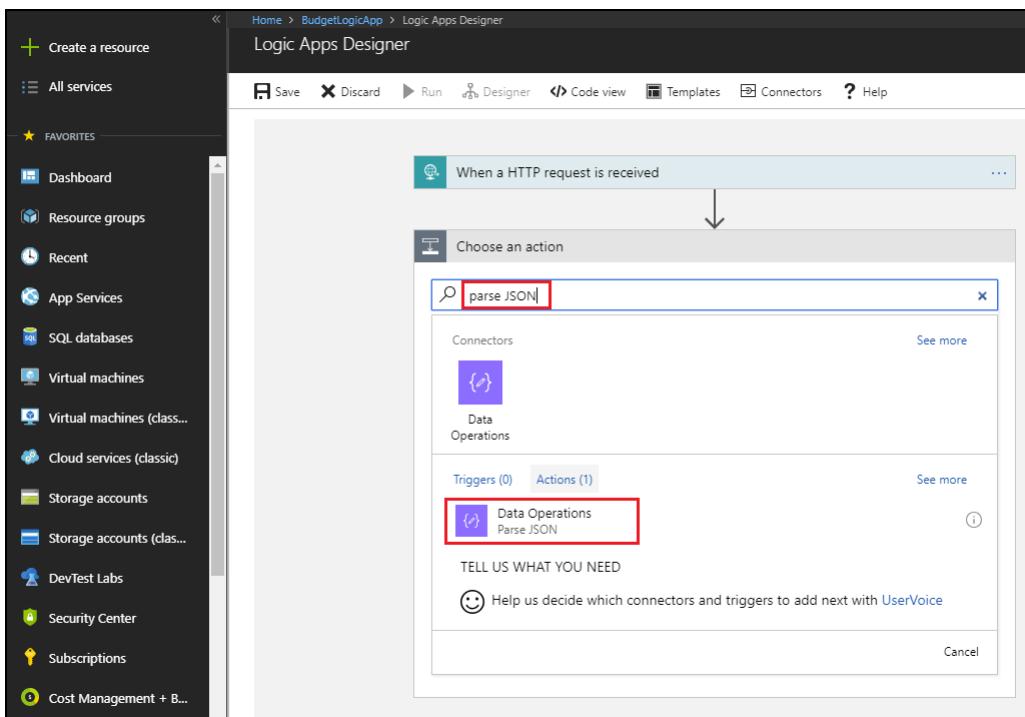
1. Under **Templates** of the **Logic Apps Designer** blade, choose **Blank Logic App**.
2. Add a **trigger** by entering "http request" in the **Logic Apps Designer** search box to find and select the trigger named **Request – When an HTTP request is received**.



3. Select **New step > Add an action**.

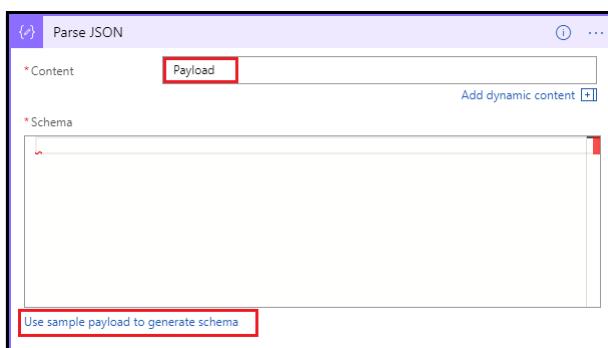


4. Search for "parse JSON" in the **Logic Apps Designer** search box to find and select the **Data Operations - Parse JSON action**.



5. Enter "Payload" as the **Content** name for the Parse JSON payload.

6. Select the **Use sample payload to generate schema** option in the **Parse JSON** box.



7. Paste the following JSON sample payload into the textbox:

```
{"schemaId": "AIP Budget Notification", "data": {"SubscriptionName": "CCM - Microsoft Azure Enterprise - 1", "SubscriptionId": "GUID", "SpendingAmount": "100", "BudgetStartDate": "6/1/2018", "Budget": "50", "Unit": "USD", "BudgetCreator": "email@contoso.com", "BudgetName": "BudgetName", "BudgetType": "Cost", "ResourceGroup": "RG"}}
```

The textbox will appear as the following:

Enter or paste a sample JSON payload.

```
getNome": "BudgetName", "BudgetType": "Cost", "ResourceGroup": "", "NotificationThresholdAmount": "0.8"}]
```

**Done**

8. Click **Done**.

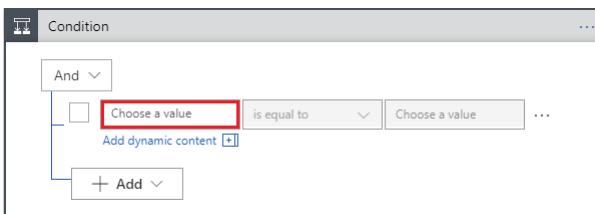
#### Add the first conditional action

Use a conditional statement to check whether the threshold amount has reached 80% or more of the budget range, but not greater than or equal to 100%. If this threshold amount has been reached, send an HTTP POST using the webhook named **Optional**. This action will shut down the VMs in the **Optional** group.

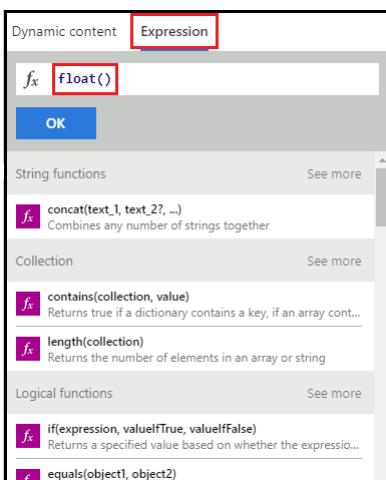
1. Select **New step > Add a condition**.



2. In the **Condition** box, click the textbox containing **Choose a value** to display a list of available values.



3. Click **Expression** at the top of the list and enter the following expression in the expression editor: `float()`



4. Select **Dynamic content**, place the cursor inside the parenthesis (), and select **NotificationThresholdAmount** from the list to populate the complete expression.

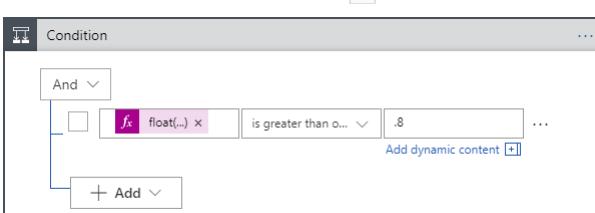
The expression will be the following:

```
float(body('Parse_JSON')?['data']?['NotificationThresholdAmount'])
```

5. Select **OK** to set the expression.

6. Select **is greater than or equal to** in the dropdown box of the **Condition**.

7. In the **Choose a value** box of the condition enter `.8`.



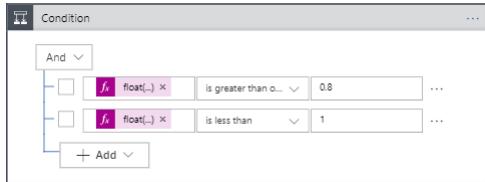
8. Click **Add > Add row** within the Condition box to add an additional part of the condition.

9. In the **Condition** box, click the textbox containing **Choose a value**.

10. Click **Expression** at the top of the list and enter the following expression in the expression editor: `float()`

11. Select **Dynamic content**, place the cursor inside the parenthesis (), and select **NotificationThresholdAmount** from the list to populate the complete expression.

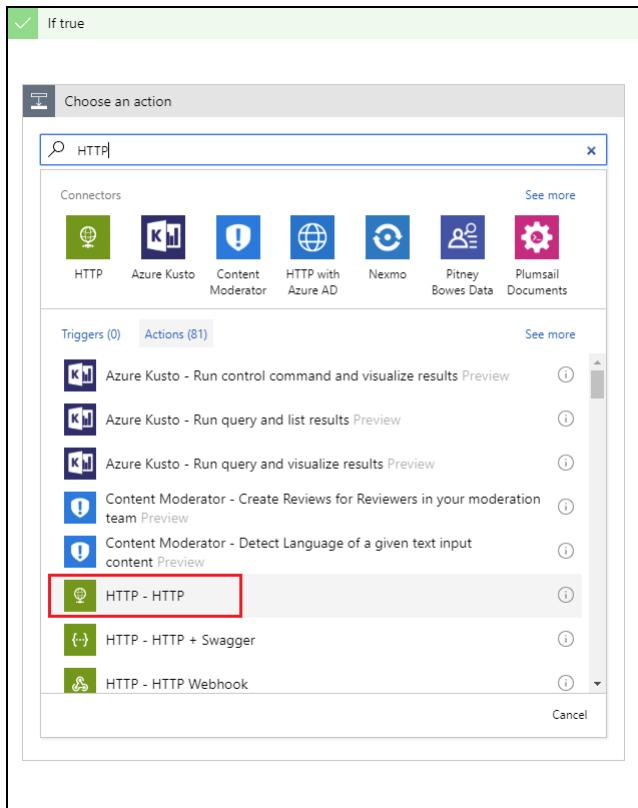
12. Select **OK** to set the expression.
13. Select **is less than** in the dropdown box of the **Condition**.
14. In the **Choose a value** box of the condition enter **1**.



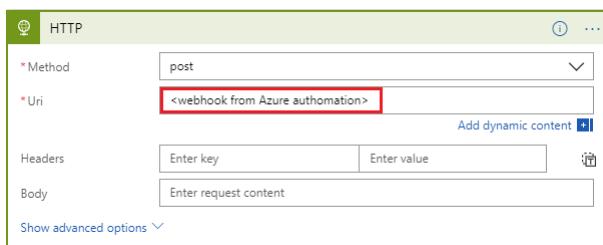
15. In the **If true** box, select **Add an action**. You will add an HTTP POST action that will shut down optional VMs.



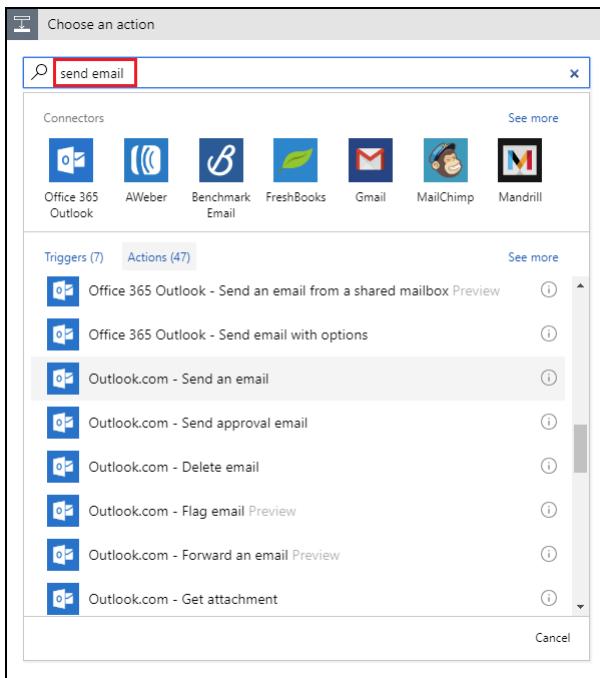
16. Enter **HTTP** to search for the HTTP action and select the **HTTP - HTTP** action.



17. Select **Post** as the for the **Method** value.
18. Enter the URL for the webhook named **Optional** that you created earlier in this tutorial as the **Uri** value.

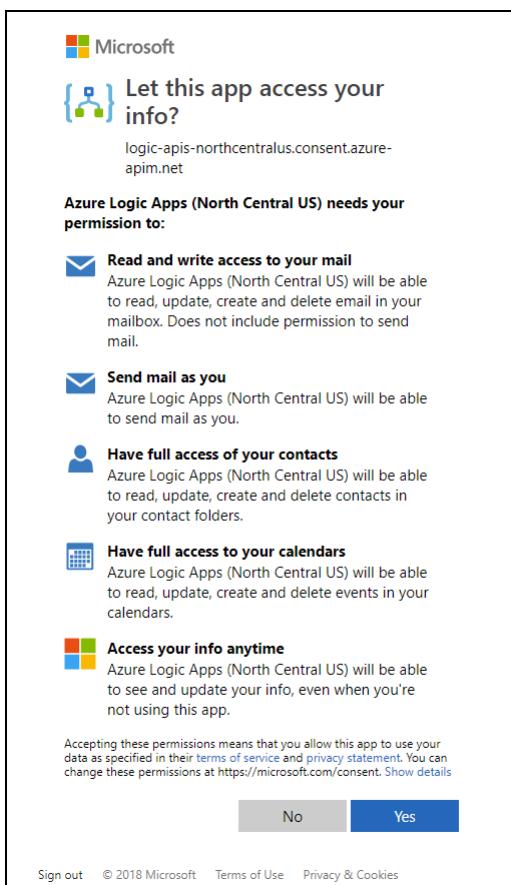


19. Select **Add an action** in the **If true** box. You will add an email action that will send an email notifying the recipient that the optional VMs have been shut down.
20. Search for "send email" and select a *send email* action based on the email service you use.

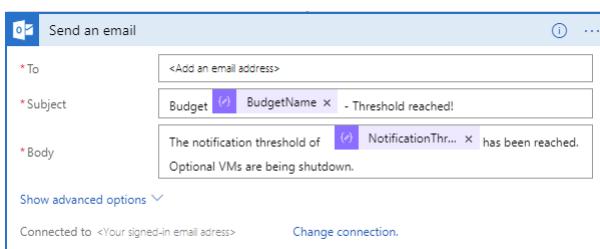


For personal Microsoft accounts, select **Outlook.com**. For Azure work or school accounts, select **Office 365 Outlook**. If you don't already have a connection, you're asked to sign in to your email account. Logic Apps creates a connection to your email account.

You will need to allow the Logic App to access your email information.



- Add the **To**, **Subject**, and **Body** text for the email that notifies the recipient that the optional VMs have been shut down. Use the **BudgetName** and the **NotificationThresholdAmount** dynamic content to populate the subject and body fields.



#### Add the second conditional action

Use a conditional statement to check whether the threshold amount has reached or exceeded 100% of the budget value. If the threshold amount has been reached, send an

HTTP POST using the webhook named **Complete**. This action will shut down all remaining VMs.

1. Select **New step > Add a Condition**.



2. In the **Condition** box, click the textbox containing **Choose a value** to display a list of available values.

3. Click **Expression** at the top of the list and enter the following expression in the expression editor: `float()`

4. Select **Dynamic content**, place the cursor inside the parenthesis (), and select **NotificationThresholdAmount** from the list to populate the complete expression.

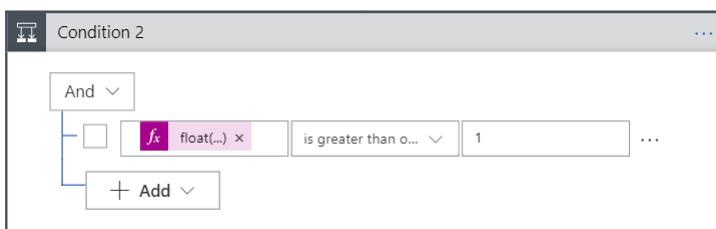
The expression will be the following:

```
float(body('Parse_JSON')?['data']?['NotificationThresholdAmount'])
```

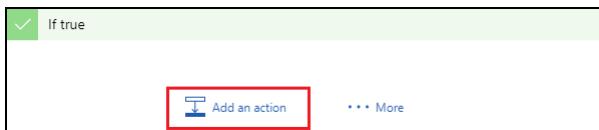
5. Select **OK** to set the expression.

6. Select **is greater than or equal to** in the dropdown box of the **Condition**.

7. In the **Choose a value box** of the condition enter `1`.



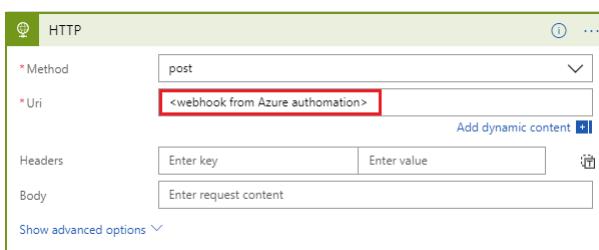
8. In the **If true** box, select **Add an action**. You will add an HTTP POST action that will shut down all the remaining VMs.



9. Enter **HTTP** to search for the HTTP action and select the **HTTP – HTTP** action.

10. Select **Post** as the for the **Method** value.

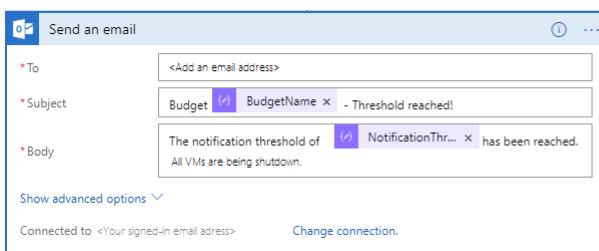
11. Enter the URL for the webhook named **Complete** that you created earlier in this tutorial as the **Uri** value.



12. Select **Add an action** in the **If true** box. You will add an email action that will send an email notifying the recipient that the remaining VMs have been shut down.

13. Search for "send email" and select a *send email* action based on the email service you use.

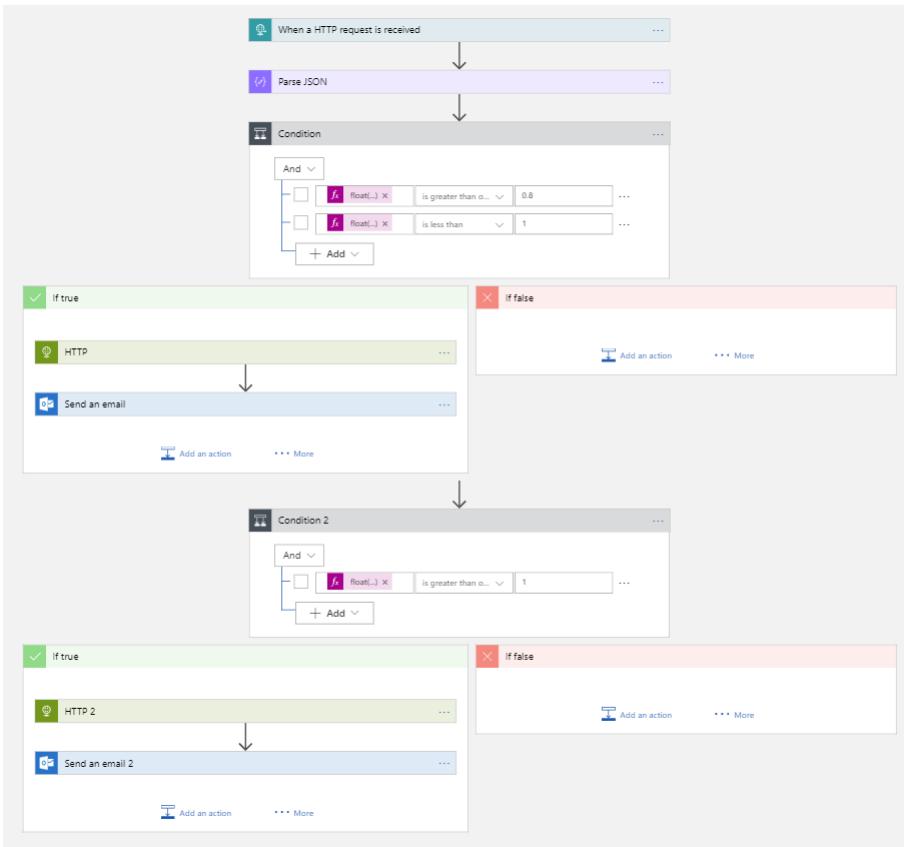
14. Add the **To**, **Subject**, and **Body** text for the email that notifies the recipient that the optional VMs have been shut down. Use the **BudgetName** and the **NotificationThresholdAmount** dynamic content to populate the subject and body fields.



15. Click **Save** at the top of the **Logic App Designer** blade.

#### Logic App summary

Here's what your Logic App looks like once you're done. In the most basic of scenarios where you don't need any threshold-based orchestration, you could directly call the automation script from **Monitor** and skip the **Logic App** step.



When you saved your logic app, a URL was generated that you will be able to call. You'll use this URL in the next section of this tutorial.

## Create an Azure Monitor Action Group

An action group is a collection of notification preferences that you define. When an alert is triggered, a specific action group can receive the alert by being notified. An Azure alert proactively raises a notification based on specific conditions and provides the opportunity to take action. An alert can use data from multiple sources, including metrics and logs.

Action groups are the only endpoint that you will integrate with your budget. You can set up notifications in a number of channels, but for this scenario you will focus on the Logic App you created earlier in this tutorial.

### Create an action group in Azure Monitor

When you create the action group, you will point to the Logic App that you created earlier in this tutorial.

1. If you are not already signed-in to the [Azure portal](#), sign-in and select **All services > Monitor**.
2. Select **Actions groups** from the **Setting** section.
3. Select **Add an action group** from the **Action groups** blade.
4. Add and verify the following items:

- Action group name
- Short name
- Subscription
- Resource group

Action group name	BudgetAlert.ag
Short name	budget
Subscription	Microsoft Azure Enterprise
Resource group	Default-ActivityLogAlerts (to be created)

5. Within the **Add action group** pane, add a LogicApp action. Name the action **Budget-BudgetLA**. In the **Logic App** pane, select the **Subscription** and the **Resource group**. Then, select the **Logic app** that you created earlier in this tutorial.

6. Click **OK** to set the Logic App. Then, select **OK** in the **Add action group** pane to create the action group.

You're done with all the supporting components needed to effectively orchestrate your budget. Now all you need to do is create the budget and configure it to use the action group you created.

## Create the Azure Budget

Budgets don't currently have a portal experience in Azure. However, you are able to call either REST APIs, Powershell cmdlets, or use the CLI. The following procedure uses the REST API. Before calling the REST API, you will need an authorization token. To create an authorization token, you can use the [ARMClient](#) project. The **ARMClient** allows you to authenticate yourself to the Azure Resource Manager and get a token to call the APIs.

### Create an authentication token

1. Navigate to the [ARMClient](#) project on GitHub.
2. Clone the repo to get a local copy.
3. Open the project in Visual Studio and build it.

- Once the build is successful, the executable should be in the `\bin\debug` folder.
- Run the ARMClient. Open a command prompt and navigate to the `\bin\debug` folder from the project root.
- To login and authenticate, enter the following command at the command prompt:

```
ARMClient login prod
```

- Copy the **subscription guid** from the output.
- To copy an authorization token to your clipboard, enter the following command at the command prompt, but sure to use the copied subscription ID from the step above:

```
ARMClient token <subscription GUID from previous step>
```

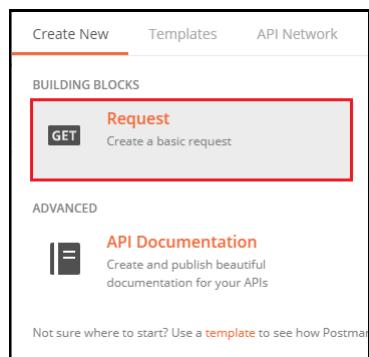
Once you have completed the step above, you will see the following:  
**Token copied to clipboard successfully.**

- Save the token to be used for steps in the next section of this tutorial.

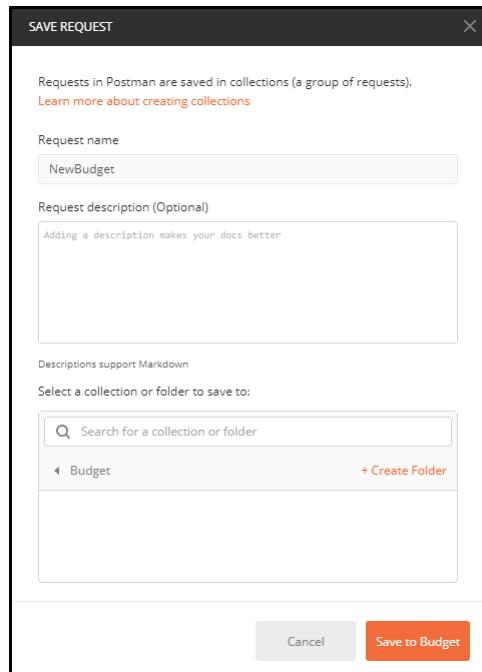
### Create the Budget

Next, you will configure **Postman** to create a budget by calling the Azure Consumption REST APIs. Postman is an API Development environment. You will import environment and collection files into Postman. The collection contains grouped definitions of HTTP requests that call Azure Consumption REST APIs. The environment file contains variables that are used by the collection.

- Download and open the [Postman REST client](#) to execute the REST APIs.
- In Postman, create a new request.



- Save the new request as a collection, so that the new request has nothing on it.



- Change the request from a `Get` to a `Put` action.
- Modify the following URL by replacing `{subscriptionId}` with the **Subscription ID** that you used in the previous section of this tutorial. Also, modify the URL to include "SampleBudget" as the value for `{budgetName}`:

```
https://management.azure.com/subscriptions/{subscriptionId}/providers/Microsoft.Consumption/budgets/{budgetName}?api-version=2018-03-31
```

- Select the **Headers** tab within Postman.
- Add a new **Key** named "Authorization".
- Set the **Value** to the token that was created using the ArmClient at the end of the last section.
- Select the **Body** tab within Postman.
- Select the **raw** button option.
- In the textbox, paste in the below sample budget definition, however you must replace the **subscriptionid**, **budgetname**, and **actiongroupname** parameters with your subscription id, a unique name for your budget, and the action group name you created in both the URL and the request body:

```
{
  "properties": {
    "category": "Cost",
    "amount": 100.00,
    "timeGrain": "Monthly",
    "timePeriod": {
      "startDate": "2018-06-01T00:00:00Z",
      "endDate": "2018-10-31T00:00:00Z"
    },
    "filters": {},
    "notifications": {
      "Actual_GreaterThan_80_Percent": {
        "enabled": true,
        "operator": "GreaterThan",
        "threshold": 80,
        "contactEmails": [
        ],
        "contactRoles": [
        ],
        "contactGroups": [
          "/subscriptions/{subscriptionid}/resourceGroups/{resourcegroupname}/providers/microsoft.insights/actionGroups/{actiongroupname}"
        ]
      },
      "Actual_EqualTo_100_Percent": {
        "operator": "EqualTo",
        "threshold": 100,
        "contactGroups": [
          "/subscriptions/{subscriptionid}/resourceGroups/{resourcegroupname}/providers/microsoft.insights/actionGroups/{actiongroupname}"
        ]
      }
    }
  }
}
```

12. Press **Send** to send the request.

You now have all the pieces you need to call the [budgets API](#). The budgets API reference has additional details on the specific requests, including the following:

- **budgetName** - Multiple budgets are supported. Budget names must be unique.
- **category** - Must be either **Cost** or **Usage**. The API supports both cost and usage budgets.
- **timeGrain** - A monthly, quarterly, or yearly budget. The amount resets at the end of the period.
- **filters** - Filters allow you to narrow the budget to a specific set of resources within the selected scope. For example, a filter could be a collection of resource groups for a subscription level budget.
- **notifications** - Determines the notification details and thresholds. You can set up multiple thresholds and provide an email address or an action group to receive a notification.

## Summary

By following this tutorial, you learned:

- How to create an Azure Automation Runbook to stop VMs.
- How to create an Azure Logic App that is triggered based on the budget threshold values and call the related runbook with the right parameters.
- How to create an Azure Monitor Action Group that will be configured to trigger the Azure Logic App when the budget threshold is met.
- How to create the Azure budget with the desired thresholds and wire it to the action group.

You now have a fully functional budget for your subscription that will shut down your VMs when you reach your configured budget thresholds.

## Next steps

- For more information about Azure billing scenarios, see [Billing and cost management automation scenarios](#).

# Use Azure Billing APIs to programmatically get insight into your Azure usage

5/21/2018 • 4 minutes to read • [Edit Online](#)

Use Azure Billing APIs to pull usage and resource data into your preferred data analysis tools. The Azure Resource Usage and RateCard APIs can help you accurately predict and manage your costs. The APIs are implemented as a Resource Provider and part of the family of APIs exposed by the Azure Resource Manager.

## Azure Invoice Download API (Preview)

Once the [opt-in has been complete](#), download invoices using the preview version of [Invoice API](#). The features include:

- **Azure Role-based Access Control** - Configure access policies on the [Azure portal](#) or through [Azure PowerShell cmdlets](#) to specify which users or applications can get access to the subscription's usage data. Callers must use standard Azure Active Directory tokens for authentication. Add the caller to either the Billing Reader, Reader, Owner, or Contributor role to get access to the usage data for a specific Azure subscription.
- **Date Filtering** - Use the `$filter` parameter to get all the invoices in reverse chronological order by the invoice period end date.

### NOTE

This feature is in first version of preview and may be subject to backward-incompatible changes. Currently, it's not available for certain subscription offers (EA, CSP, AIO not supported) and Azure Germany.

## Azure Resource Usage API (Preview)

Use the Azure [Resource Usage API](#) to get your estimated Azure consumption data. The API includes:

- **Azure Role-based Access Control** - Configure access policies on the [Azure portal](#) or through [Azure PowerShell cmdlets](#) to specify which users or applications can get access to the subscription's usage data. Callers must use standard Azure Active Directory tokens for authentication. Add the caller to either the Billing Reader, Reader, Owner, or Contributor role to get access to the usage data for a specific Azure subscription.
- **Hourly or Daily Aggregations** - Callers can specify whether they want their Azure usage data in hourly buckets or daily buckets. The default is daily.
- **Instance metadata (includes resource tags)** – Get instance-level detail like the fully qualified resource uri (`/subscriptions/{subscription-id}/..`), the resource group information, and resource tags. This metadata helps you deterministically and programmatically allocate usage by the tags, for use-cases like cross-charging.
- **Resource metadata** - Resource details such as the meter name, meter category, meter sub category, unit, and region give the caller a better understanding of what was consumed. We're also working to align resource metadata terminology across the Azure portal, Azure usage CSV, EA billing CSV, and other public-facing experiences, to let you correlate data across experiences.
- **Usage for different offer types** – Usage data is available for offer types like Pay-as-you-go, MSDN, Monetary commitment, Monetary credit, and EA, except [CSP](#).

## Azure Resource RateCard API (Preview)

Use the [Azure Resource RateCard API](#) to get the list of available Azure resources and estimated pricing

information for each. The API includes:

- **Azure Role-based Access Control** - Configure your access policies on the [Azure portal](#) or through [Azure PowerShell cmdlets](#) to specify which users or applications can get access to the RateCard data. Callers must use standard Azure Active Directory tokens for authentication. Add the caller to either the Reader, Owner, or Contributor role to get access to the usage data for a particular Azure subscription.
- **Support for Pay-as-you-go, MSDN, Monetary commitment, and Monetary credit offers (EA and CSP not supported)** - This API provides Azure offer-level rate information. The caller of this API must pass in the offer information to get resource details and rates. We're currently unable to provide EA rates because EA offers have customized rates per enrollment.

## Scenarios

Here are some of the scenarios that are made possible with the combination of the Usage and the RateCard APIs:

- **Azure spend during the month** - Use the combination of the Usage and RateCard APIs to get better insights into your cloud spend during the month. You can analyze the hourly and daily buckets of usage and charge estimates.
- **Set up alerts** – Use the Usage and the RateCard APIs to get estimated cloud consumption and charges, and set up resource-based or monetary-based alerts.
- **Predict bill** – Get your estimated consumption and cloud spend, and apply machine learning algorithms to predict what the bill would be at the end of the billing cycle.
- **Pre-consumption cost analysis** – Use the RateCard API to predict how much your bill would be for your expected usage when you move your workloads to Azure. If you have existing workloads in other clouds or private clouds, you can also map your usage with the Azure rates to get a better estimate of Azure spend. This estimate gives you the ability to pivot on offer, and compare and contrast between the different offer types beyond Pay-As-You-Go, like Monetary commitment and Monetary credit. The API also gives you the ability to see cost differences by region and allows you to do a what-if cost analysis to help you make deployment decisions.
- **What-if analysis** -
  - You can determine whether it is more cost-effective to run workloads in another region, or on another configuration of the Azure resource. Azure resource costs may differ based on the Azure region you're using.
  - You can also determine if another Azure offer type gives a better rate on an Azure resource.

## Partner solutions

[Cloud Cruiser and Microsoft Azure Billing API Integration](#) describes how [Cloud Cruiser's Express for Azure Pack](#) works directly from the Windows Azure Pack (WAP) portal. You can seamlessly manage both the operational and financial aspects of the Microsoft Azure private or hosted public cloud from a single user interface.

## Next steps

- Check out the code samples on GitHub:
  - [Invoice API code sample](#)
  - [Usage API code sample](#)
  - [RateCard API code sample](#)
- To learn more about the Azure Resource Manager, see [Azure Resource Manager Overview](#).

# Cloud Cruiser and Microsoft Azure Billing API Integration

5/2/2018 • 10 minutes to read • [Edit Online](#)

This article describes how the information collected from the new Microsoft Azure Billing APIs can be used in Cloud Cruiser for workflow cost simulation and analysis.

## Azure RateCard API

The RateCard API provides rate information from Azure. After authenticating with the proper credentials, you can query the API to collect metadata about the services available on Azure, along with the rates associated with your Offer ID.

The following sample response is from the API showing the prices for the A0 (Windows) instance:

```
{  
    "MeterId": "0e59ad56-03e5-4c3d-90d4-6670874d7e29",  
    "MeterName": "Compute Hours",  
    "MeterCategory": "Virtual Machines",  
    "MeterSubCategory": "A0 VM (Windows)",  
    "Unit": "Hours",  
    "MeterRates":  
    {  
        "0": 0.029  
    },  
    "EffectiveDate": "2014-08-01T00:00:00Z",  
    "IncludedQuantity": 0.0,  
    "MeterStatus": "Active"  
},
```

### Cloud Cruiser's Interface to Azure RateCard API

Cloud Cruiser can use the RateCard API information in different ways. For this article, we show how it can be used to make IaaS workload cost simulation and analysis.

To demonstrate this use case, imagine a workload of several instances running on Microsoft Azure Pack (WAP). The goal is to simulate this same workload on Azure, and estimate the costs of doing such migration. In order to create this simulation, there are two main tasks to be performed:

1. **Import and process the service information collected from the RateCard API.** This task is also performed on the workbooks, where the extract from the RateCard API is transformed and published to a new rate plan. This new rate plan is used on the simulations to estimate the Azure prices.
2. **Normalize WAP services and Azure services for IaaS.** By default, WAP services are based on individual resources (CPU, Memory Size, Disk Size, etc.) while Azure services are based on instance size (A0, A1, A2, etc.). This first task can be performed by Cloud Cruiser's ETL engine, called workbooks, where these resources can be bundled on instance sizes, analogous to Azure instance services.

### Import data from the RateCard API

Cloud Cruiser workbooks provide an automated way to collect and process information from the RateCard API. ETL (extract-transform-load) workbooks allow you to configure the collection, transformation, and publishing of data into the Cloud Cruiser database.

Each workbook can have one or multiple collections, allowing you to correlate information from different sources

to complement or augment the usage data. The following two screenshots show how to create a new *collection* in an existing workbook, and importing information into the *collection* from the RateCard API:

The screenshot shows the Cloud Cruiser Data Integration interface. A modal dialog titled 'Collector Type' is open, listing various data sources. The 'Microsoft Azure' option is highlighted with a blue background. The main interface shows a 'Flow' area on the right.

The screenshot shows the Cloud Cruiser Data Integration interface after data has been imported. The main area displays a table of data with columns: Period, StartTime, EndTime, Meters.MeterSubCategory, @feed, Meters.Currency, Meters.EffectiveDate, Meters.IsTaxIncluded, and Meters. The table contains 16 rows of data. The top navigation bar shows 'ImportCollections(RateCard)' selected. The bottom status bar indicates 2,892 sample rows, 0 exceptions, 10 dimensions, and 2 measures.

	Period		Meters.MeterSubCategory	@feed	Meters.Currency	Meters.EffectiveDate	Meters.IsTaxIncluded	Meters.
Start Time	End Time							
1 20150526 00:00:00	20150526 23:59:59	Basic_D6 VM (Non-Windows)	RateCard			2015-02-01T00:00:00Z		
2 20150526 00:00:00	20150526 23:59:59	Basic_D6 VM (Non-Windows)	RateCard			2015-02-01T00:00:00Z		
3 20150526 00:00:00	20150526 23:59:59	ExpressRoute (IXP)	RateCard			2014-08-01T00:00:00Z		
4 20150526 00:00:00	20150526 23:59:59	ExpressRoute (IXP)	RateCard			2014-08-01T00:00:00Z		
5 20150526 00:00:00	20150526 23:59:59	A8 VM (Windows)	RateCard			2014-01-01T00:00:00Z		
6 20150526 00:00:00	20150526 23:59:59	A8 VM (Windows)	RateCard			2014-01-01T00:00:00Z		
7 20150526 00:00:00	20150526 23:59:59	A6 Cloud Services	RateCard			2013-12-01T00:00:00Z		
8 20150526 00:00:00	20150526 23:59:59	A6 Cloud Services	RateCard			2013-12-01T00:00:00Z		
9 20150526 00:00:00	20150526 23:59:59	A11 VM (Non-Windows)	RateCard			2015-01-01T00:00:00Z		
10 20150526 00:00:00	20150526 23:59:59	A11 VM (Non-Windows)	RateCard			2015-01-01T00:00:00Z		
11 20150526 00:00:00	20150526 23:59:59	A11 VM (Windows)	RateCard			2014-10-01T00:00:00Z		
12 20150526 00:00:00	20150526 23:59:59	A11 VM (Windows)	RateCard			2014-10-01T00:00:00Z		
13 20150526 00:00:00	20150526 23:59:59	ExpressRoute (IXP)	RateCard			2014-08-01T00:00:00Z		
14 20150526 00:00:00	20150526 23:59:59	ExpressRoute (IXP)	RateCard			2014-08-01T00:00:00Z		
15 20150526 00:00:00	20150526 23:59:59	DNS	RateCard			2015-03-01T00:00:00Z		
16 20150526 00:00:00	20150526 23:59:59	DNS	RateCard			2015-03-01T00:00:00Z		

After importing the data into the workbook, it's possible to create multiple steps and transformation processes, to modify and model the data. For this example, since we are only interested in infrastructure-as-a-Service (IaaS) we can use the transformation steps to remove unnecessary rows, or records, related to services other than IaaS.

The following screenshot shows the transformation steps used to process the data collected from RateCard API:

The screenshot shows the Cloud Cruiser WAP\_RateCard interface. At the top, there are tabs for Workbook, Sheet, and Rows & Columns. Below the tabs is a toolbar with icons for New, Open, Close, Save, Save As, Delete, Settings, Parameters, Status, Run, Worksheet, Collections, Lookup Data, and Simulation. A status bar at the bottom indicates Sample rows: 9, Exceptions: 0, Dimensions: 11, Measures: 3.

The main area displays a table with columns: Meters.Locale, Meters.MeterCategory, Meters.MeterId, Meters.MeterName, Meters.Unit, ServiceName, and MeterRates.0. Meters.IncludedQuantity. The table contains 11 rows of data for various virtual machines.

To the right of the table is a sidebar titled "Flow" which shows the transformation process:

- Import Collections
- Transformation Step 1 (4 steps)
- Transformation Step 2 (1 step)
- Aggregate Rows

At the bottom of the sidebar, there is a link: "AggregateRows measureCalculation : AVG, interval : DAILY, sortOrder : {Meters.MeterSubCategory}, dimensionsToIgnore : {\*}".

## Defining New Services and Rate Plans

There are different ways to define services on Cloud Cruiser. One of the options is to import the services from the usage data. This method is commonly used when working with public clouds, where the services are already defined by the provider.

A Rate Plan is a set of rates or prices that can be applied to different services, based on effective dates, or group of customers, among other options. Rate Plans can also be used on Cloud Cruiser to create simulation or "What-if" scenarios, to understand how changes in services can affect the total cost of a workload.

In this example, we use the service information from the RateCard API to define new services in Cloud Cruiser. In the same way, we can use the rates associated to the services to create a new Rate Plan on Cloud Cruiser.

At the end of the transformation process, it is possible to create a new step and publish the data from the RateCard API as new services and rates.

The screenshot shows the Cloud Cruiser WAP\_RateCard interface with a context menu open over the table data. The menu options are:

- New Processor
- New Step
- Publish Data
- Publish Config
- Pause Simulation
- View Expert Flow
- Merge Processors

The main interface below the menu shows a table with columns: Period, StartTime, EndTime, Meters.MeterSub..., @feed, Meters.Currency, Meters.Effective..., Meters.IsTaxIncl..., and Meters.Locale. The table contains 11 rows of data for various Azure VM instances.

## Verify Azure Services and Rates

After publishing the services and rates, you can verify the list of imported services in Cloud Cruiser's Services tab:

Service Name: A0 VM (Windows) - US West

Description:

Charge For:  Access to the service (Allocated)

Charge Interval: Hourly

Proration: Full: Charge only for hours used

Units Label: vm

Unit Precision: 0

Active: YES

Tags: Name = Value

On the *Rate Plans* tab, you can check the new rate plan called "AzureSimulation" with the rates imported from the RateCard API.

Group	Service	Rate Type	Charge Interval	Unit Price	Fixed Price
Windows Azure Pack	A0 VM (Windows) - US West	Basic	Monthly	0.029 / vm month	
Windows Azure Pack	A1 VM (Windows) - US West	Basic	Monthly	0.0958 / vm month	
Windows Azure Pack	A10 VM (Windows) - US West	Basic	Monthly	1.830625 / vm month	
Windows Azure Pack	A11 VM (Windows) - US West	Basic	Monthly	3.3925 / vm month	
Windows Azure Pack	A5 VM (Windows) - US West	Basic	Monthly	0.331 / vm month	
Windows Azure Pack	A6 VM (Windows) - US West	Basic	Monthly	0.662 / vm month	
Windows Azure Pack	A7 VM (Windows) - US West	Basic	Monthly	1.324 / vm month	
Windows Azure Pack	A8 VM (Windows) - US West	Basic	Monthly	2.5631875 / vm month	
Windows Azure Pack	A9 VM (Windows) - US West	Basic	Monthly	5.126375 / vm month	

## Normalize WAP and Azure Services

By default, WAP provides usage information based on the use of compute, memory, and network resources. In Cloud Cruiser, you can define your services based directly on the allocation or metered usage of these resources. For example, you can set a basic rate for each hour of CPU usage, or charge the GB of memory allocated to an instance.

For this example, in order to compare costs between WAP and Azure, we need to aggregate the resource usage on WAP into bundles, which can then be mapped to Azure services. This transformation can be implemented easily in the workbooks:

The screenshot shows the Cloud Cruiser WAP\_RateCard workbook interface. The main workspace displays a table of data with columns: RegionName, VMSize, Department, CPUCount, CPU.Utilization, MemorySizeGB, VMCount, DiskSize.Allo..., MemoryCons..., and @ccrcd. The sidebar on the right shows the workflow steps: Import Collections, Set VM Sizes, Aggregate Rows, Setup Reporting Hierarchy, Transformation Step, Transformation Step 1, and Publish to Windows Azure Pack.

The last step at the workbook is to publish the data into the Cloud Cruiser database. During this step, the usage data is now bundled into services (that map to the Azure Services) and tied to default rates to create the charges.

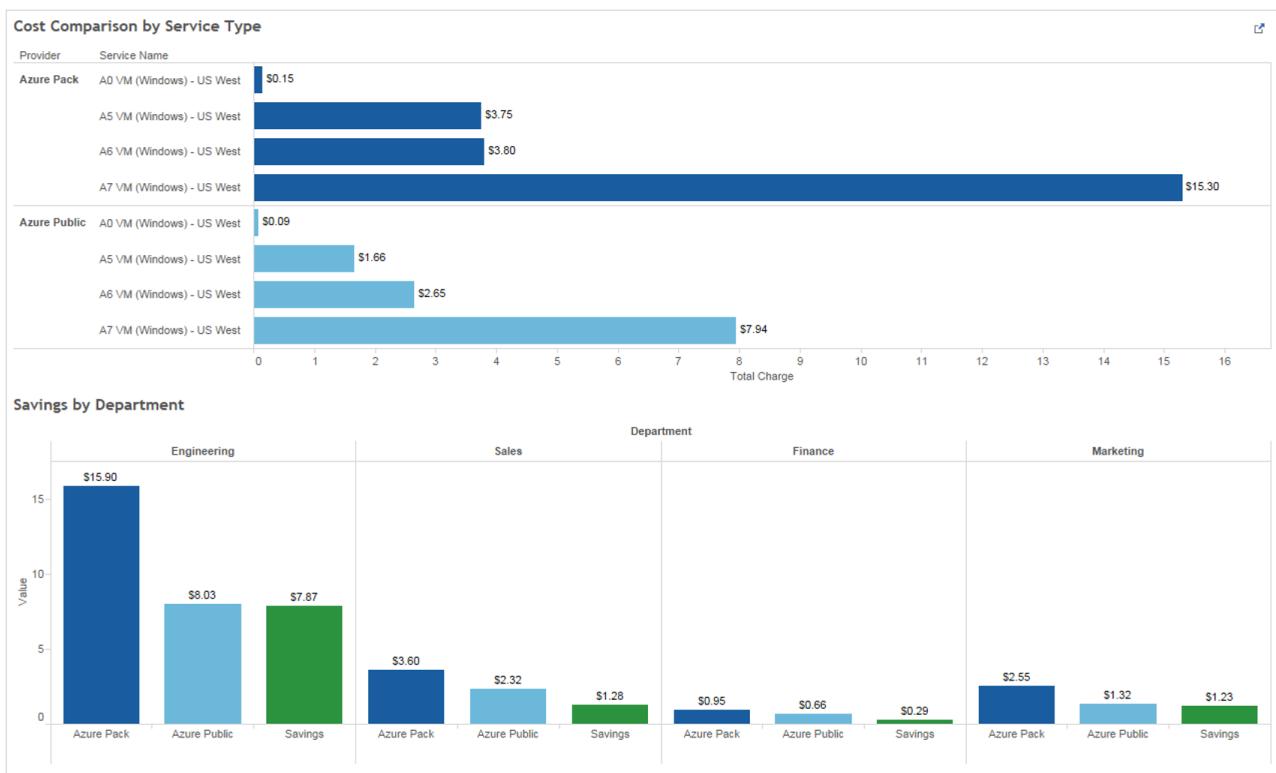
After finishing the workbook, you can automate the processing of the data, by adding a task on the scheduler and specifying the frequency and time for the workbook to run.

The screenshot shows the Cloud Cruiser Scheduling interface. A 'New Schedule' dialog is open, setting up a schedule for a 'Workbook' job type. The schedule is named 'WAP Rate Card daily collection and load' and is set to run daily from '05/01/2015' to '06/15/2015' at '01:00' UTC. The dialog also includes sections for 'Workbook Settings' and 'Parameters'.

## Create Reports for Workload Cost Simulation Analysis

After the usage is collected and charges are loaded into the Cloud Cruiser database, we can use the Cloud Cruiser Insights module to create the workload cost simulation that we desire.

In order to demonstrate this scenario, we created the following report:



The top graph shows a cost comparison by services, comparing the price of running the workload for each specific service between WAP (dark blue) and Azure (light blue).

The bottom graph shows the same data but broken down by department. The costs for each department to run their workload on WAP and Azure, along with the difference between them is displayed in the Savings bar (green).

## Azure Usage API

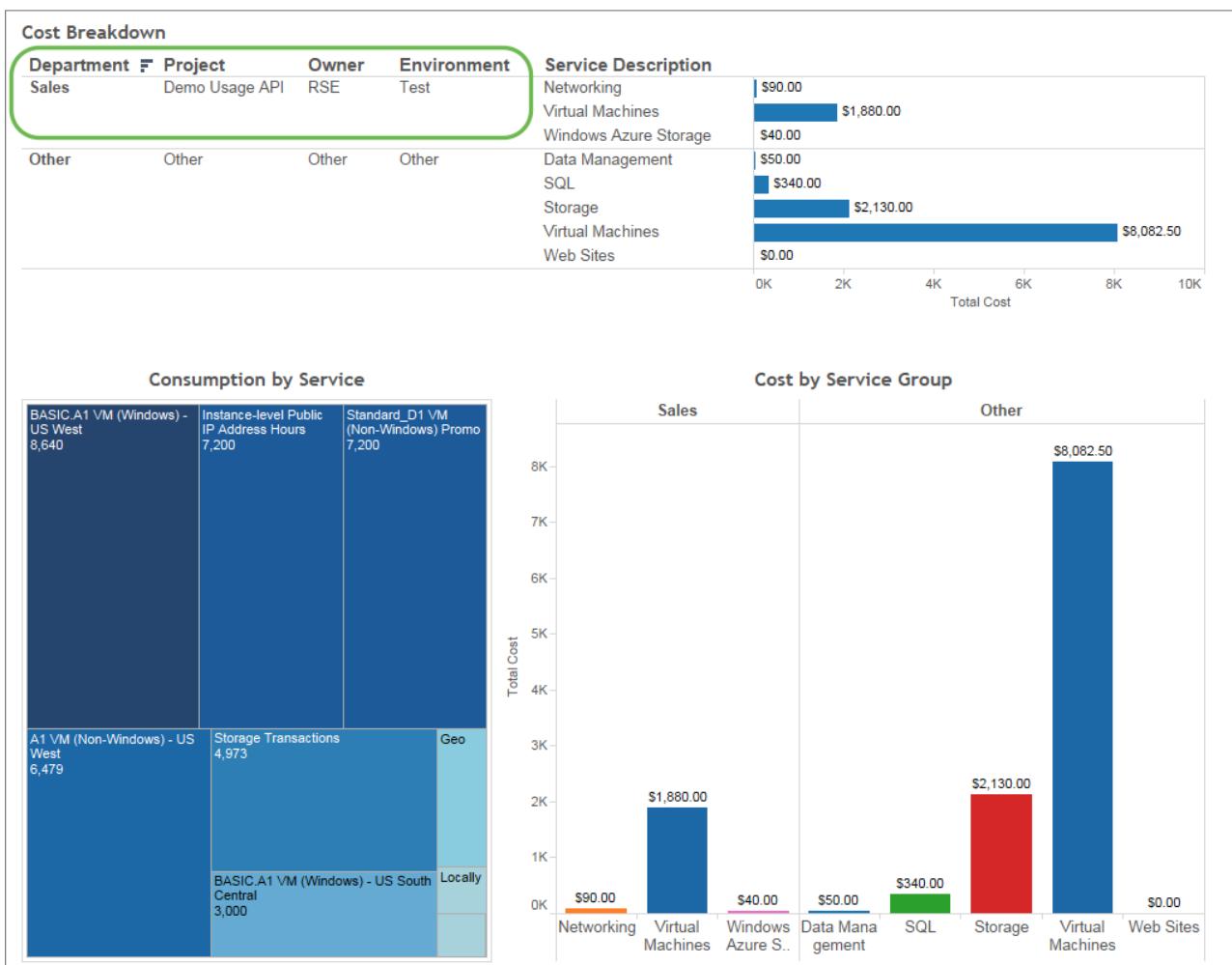
### Introduction

Microsoft recently introduced the Azure Usage API, allowing subscribers to programmatically pull in usage data to gain insights into their consumption. Cloud Cruiser customers can take advantage of the richer dataset available through this API.

Cloud Cruiser can use the integration with the Usage API in several ways. The granularity (hourly usage information) and resource metadata information available through the API provides the necessary dataset to support flexible Showback or Chargeback models.

In this tutorial, we present one example of how Cloud Cruiser can benefit from the Usage API information. More specifically, we will create a Resource Group on Azure, associate tags for the account structure, then describe the process of pulling and processing the tag information into Cloud Cruiser.

The final goal is to be able to create reports like the following one, and be able to analyze cost and consumption based on the account structure populated by the tags.



## Microsoft Azure Tags

The data available through the Azure Usage API includes not only consumption information, but also resource metadata including any tags associated with it. Tags provide an easy way to organize your resources, but in order to be effective, you need to ensure that:

- Tags are correctly applied to the resources at provision time
- Tags are properly used on the Showback/Chargeback process to tie the usage to the organization's account structure.

Both of these requirements can be challenging, especially when there is a manual process on the provision or charging side. Mistyped, incorrect, or even missing tags are common complaints from customers when using tags and these errors can make life on the charging side difficult.

With the new Azure Usage API, Cloud Cruiser can pull resource tagging information, and through a sophisticated ETL tool called workbooks, fix these common tagging errors. Through transformation using regular expressions and data correlation, Cloud Cruiser can identify incorrectly tagged resources and apply the correct tags, ensuring the correct association of the resources with the consumer.

On the charging side, Cloud Cruiser automates the Showback/Chargeback process, and can use the tag information to tie the usage to the appropriate consumer (Department, Division, Project, etc.). This automation provides a huge improvement and can ensure a consistent and auditable charging process.

## Creating a Resource Group with tags on Microsoft Azure

The first step in this tutorial is to create a Resource Group in the Azure portal, then create new tags to associate to the resources. For this example, we will be creating the following tags: Department, Environment, Owner, Project.

The following screenshot shows a sample Resource Group with the associated tags.

The next step is to pull the information from the Usage API into Cloud Cruiser. The Usage API currently provides responses in JSON format. Here is a sample of the data retrieved:

```
{
  "id": "/subscriptions/bb678b04-0e48-4b44-XXXX-
XXXXXXXX/providers/Microsoft.Commerce/UsageAggregates/Daily_BRSDT_20150623_0000",
  "name": "Daily_BRSDT_20150623_0000",
  "type": "Microsoft.Commerce/UsageAggregate",
  "properties":
  {
    "subscriptionId": "bb678b04-0e48-4b44-XXXX-XXXXXX",
    "usageStartTime": "2015-06-22T00:00:00+00:00",
    "usageEndTime": "2015-06-23T00:00:00+00:00",
    "meterName": "Compute Hours",
    "meterRegion": "",
    "meterCategory": "Virtual Machines",
    "meterSubCategory": "Standard_D1 VM (Non-Windows)",
    "unit": "Hours",
    "instanceData": "{\"Microsoft.Resources\":{\"resourceUri\":\"/subscriptions/bb678b04-0e48-4b44-XXXX-
XXXXXXXX/resourceGroups/DEMOUSAGEAPI/providers/Microsoft.Compute/virtualMachines/MyDockerVM\",\"location\":\"ea-
stus\"},\"tags\":{\"Department\":\"Sales\",\"Project\":\"Demo Usage
API\",\"Environment\":\"Test\",\"Owner\":\"RSE\"},\"additionalInfo\":
{\"ImageType\":\"Canonical\",\"ServiceType\":\"Standard_D1\"}}}",
    "meterId": "e60caf26-9ba0-413d-a422-6141f58081d6",
    "infoFields": {},
    "quantity": 8
  },
}
```

## Import data from the Usage API into Cloud Cruiser

Cloud Cruiser workbooks provide an automated way to collect and process information from the Usage API. An ETL (extract-transform-load) workbook allows you to configure the collection, transformation, and publishing of data into the Cloud Cruiser database.

Each workbook can have one or multiple collections. This allows you to correlate information from different sources to complement or augment the usage data. For this example, we create a new sheet in the Azure template workbook (*UsageAPI*) and set a new *collection* to import information from the Usage API.

The screenshot shows the Power BI interface for the *Azure\_UsageAPI* workbook. The *UsageAPI* sheet is selected. A collection named *ImportCollections(Azure\_UsageAPI\_collect)* is visible in the top right corner of the sheet area. The sheet displays a table of data with columns: *id*, *name*, *type*, and several *@feed* columns containing JSON-like data. The Power BI ribbon at the top includes tabs for *ImportServices*, *UsageAPI* (which is highlighted), and *PublishData*.

Notice that this workbook already has other sheets to import services from Azure (*ImportServices*), and process the consumption information from the Billing API (*PublishData*).

Next, we use the Usage API to populate the *UsageAPI* sheet, and correlate the information with the consumption data from the Billing API on the *PublishData* sheet.

### Processing the tag information from the Usage API

After importing the data into the workbook, we create transformation steps in the *UsageAPI* sheet in order to process the information from the API. First step is to use a "JSON split" processor to extract the tags from a single field, then create fields for each one of them (Department, Project, Owner, and Environment).

The screenshot shows the Power BI interface for the *Azure\_UsageAPI* workbook. The *UsageAPI* sheet is selected. A transformation step named *AggregateRows measureCalculation : SUM, interval : DAILY, sortOrder : {ResourceGUID}, dimensionsToIgnore : {\*\*}* is visible in the top right corner of the sheet area. The sheet displays a table of data with columns: *Category*, *SubCategory*, *Unit*, *ResourceGUID*, *Department*, *Project*, *Environment*, *Owner*, and *ResourceGroupName*. A yellow box highlights the last two columns, *ResourceGroupName* and *Owner*. The Power BI ribbon at the top includes tabs for *ImportServices*, *UsageAPI* (highlighted), and *PublishData*.

Notice the "Networking" service is missing the tag information (yellow box), but we can verify that it is part of the same Resource Group by looking at the *ResourceGroupName* field. Since we have the tags for the other resources from this Resource Group, we can use this information to apply the missing tags to this resource later in the process.

The next step is to create a lookup table associating the information from the tags to the *ResourceGroupName*. This lookup table is used on the next step to enrich the consumption data with tag information.

## Adding the tag information to the consumption data

Now we can jump to the *PublishData* sheet, which processes the consumption information from the Billing API, and add the fields extracted from the tags. This process is performed by looking at the lookup table created on the previous step, using the *ResourceGroupName* as the key for the lookups.

untlOwnerID	Department	Environment	Owner	Product	Project	ResourceGroup...	Service	ServiceRegion	Service
ol@cloudcruise	Other	Other	Other	A1 VM (Non-Windows) - US	Other	Other	Virtual Machines	US West	Compute
al@cloudcruise	Other	Other	Other	Geo Redundant Storage St	Other	Other	Storage	All Regions	Standard
ol@cloudcruise	Other	Other	Other	Standard_D2 VM (Windows	Other	Other	Virtual Machines	All Regions	Compute
ol@cloudcruise	Other	Other	Other	Windows Azure Data Trans	Other	Other	All	Zone 1	Data Tra
ol@cloudcruise	Other	Other	Other	BASIC_A1 VM (Windows) - U	Other	Other	Virtual Machines	US South Central	Compute
ol@cloudcruise	Other	Other	Other	Developer API Management	Other	Other	App Services	All Regions	Develop
ol@cloudcruise	Other	Other	Other	Storage Transactions	Other	Other	Data Management	All Regions	Storage
ol@cloudcruise	Other	Other	Other	BASIC_A1 VM (Windows) - U	Other	Other	Virtual Machines	US West	Compute
ol@cloudcruise	Sales	Test	RSE	Windows Azure Data Trans	Demo Usage API	demousageapi	All	Zone 1	Data Tra
ol@cloudcruise	Other	Other	Other	A1 VM (Windows) - US	West Other	Other	Virtual Machines	US West	Compute
ol@cloudcruise	Other	Other	Other	Windows Azure Web Sites	I Other	Other	Web Sites	All Regions	Free Wel
ol@cloudcruise	Other	Other	Other	SQL Azure Database Web E	Other	Other	SQL	All	Database
ol@cloudcruise	Sales	Test	RSE	Locally Redundant Storage	Demo Usage API	demousageapi	Windows Azure Stora	All Regions	Standard
ol@cloudcruise	Sales	Test	RSE	Standard_D1 VM (Non-Wi	Demo Usage API	demousageapi	Virtual Machines	All Regions	Compute
ol@cloudcruise	Sales	Test	RSE	Instance-level Public IP Ad	Demo Usage API	demousageapi	Networking	All Regions	IP Addre

Notice that the appropriate account structure fields for the "Networking" service were applied, fixing the issue with the missing tags. We also populated the account structure fields for resources other than our target Resource Group with "Other", in order to differentiate them on the reports.

Now we just need to add a step to publish the usage data. During this step, the appropriate rates for each service defined on our Rate Plan be applied to the usage information, with the resulting charge loaded into the database.

The best part is that you only have to go through this process once. When the workbook is completed, you just need to add it to the scheduler and it runs hourly or daily at the scheduled time. Then it's just a matter of creating new reports, or customizing existing ones, in order to analyze the data to get meaningful insights from your cloud usage.

## Next Steps

- For detailed instructions on creating Cloud Cruiser workbooks and reports, refer to Cloud Cruiser's online documentation (valid login required). For more information about Cloud Cruiser, contact [info@cloudcruiser.com](mailto:info@cloudcruiser.com).
- See [Gain insights into your Microsoft Azure resource consumption](#) for an overview of the Azure Resource Usage and RateCard APIs.
- Check out the [Azure Billing REST API Reference](#) for more information on both APIs, which are part of the set of APIs provided by the Azure Resource Manager.
- If you would like to dive right into the sample code, check out our Microsoft Azure Billing API Code Samples on [Azure Code Samples](#).

## Learn More

- To learn more about the Azure Resource Manager, see the [Azure Resource Manager Overview](#) article.

# Azure consumption API overview

6/8/2018 • 8 minutes to read • [Edit Online](#)

The Azure Consumption APIs give you programmatic access to cost and usage data for your Azure resources. These APIs currently only support Enterprise Enrollments and Web Direct Subscriptions (with a few exceptions). The APIs are continually updated to support other types of Azure subscriptions.

Azure Consumption APIs provide access to:

- Enterprise and Web Direct Customers
  - Usage Details
  - Marketplace Charges
  - Reservation Recommendations
  - Reservation Details
  - Reservation Summaries
- Enterprise Customers Only
  - Price sheet
  - Budgets
  - Balances

## Usage Details API

Use the Usage Details API to get charge and usage data for all Azure 1st party resources. Information is in the form of usage detail records which are currently emitted once per meter per resource per day. Information can be used to add up the costs across all resources or investigate costs / usage on specific resource(s).

The API includes:

- **Meter Level Consumption Data** - See data including usage cost, the meter emitting the charge, and what Azure resource the charge pertains to. All usage detail records map to a daily bucket.
- **Azure Role-based Access Control** - Configure access policies on the [Azure portal](#), the [Azure CLI](#) or [Azure PowerShell cmdlets](#) to specify which users or applications can get access to the subscription's usage data. Callers must use standard Azure Active Directory tokens for authentication. Add the caller to either the Billing Reader, Reader, Owner, or Contributor role to get access to the usage data for a specific Azure subscription.
- **Filtering** - Trim your API result set down to a smaller set of usage detail records using the following filters:
  - Usage end / usage start
  - Resource Group
  - Resource Name
- **Data Aggregation** - Use OData to apply expressions to aggregate usage details by tags or filter properties
- **Usage for different offer types** - Usage detail information is currently available for Enterprise and Web Direct customers.

For more information, see the technical specification for the [Usage Details API](#).

## Marketplace Charges API

Use the Marketplace Charges API to get charge and usage data on all Marketplace resources (Azure 3rd party offerings). This data can be used to add up costs across all Marketplace resources or investigate costs / usage on specific resource(s).

The API includes:

- **Meter Level Consumption Data** - See data including marketplace usage cost, the meter emitting the charge, and what resource the charge pertains to. All usage detail records map to a daily bucket.
- **Azure Role-based Access Control** - Configure access policies on the [Azure portal](#), the [Azure CLI](#) or [Azure PowerShell cmdlets](#) to specify which users or applications can get access to the subscription's usage data. Callers must use standard Azure Active Directory tokens for authentication. Add the caller to either the Billing Reader, Reader, Owner, or Contributor role to get access to the usage data for a specific Azure subscription.
- **Filtering** - Trim your API result set down to a smaller set of marketplace records using the following filters:
  - Usage start / usage end
  - Resource Group
  - Resource Name
- **Usage for different offer types** - Marketplace information is currently available for Enterprise and Web Direct customers.

For more information, see the technical specification for the [Marketplace Charges API](#).

## Balances API

Enterprise customers can use the Balances API to get a monthly summary of information on balances, new purchases, Azure Marketplace service charges, adjustments, and overage charges. You can get this information for the current billing period or any period in the past. Enterprises can use this data to perform a comparison with manually calculated summary charges. This API does not provide resource-specific information and an aggregate view of costs.

The API includes:

- **Azure Role-based Access Control** - Configure access policies on the [Azure portal](#), the [Azure CLI](#) or [Azure PowerShell cmdlets](#) to specify which users or applications can get access to the subscription's usage data. Callers must use standard Azure Active Directory tokens for authentication. Add the caller to either the Billing Reader, Reader, Owner, or Contributor role to get access to the usage data for a specific Azure subscription.
- **Enterprise Customers Only** This API is only available EA customers.
  - Customers must have Enterprise Admin permissions to call this API

For more information, see the technical specification for the [Balances API](#).

## Budgets API

Enterprise customers can use this API to create either cost or usage budgets for resources, resource groups, or billing meters. Once this information has been determined, alerting can be configured to notify when user-defined budget thresholds are exceeded.

The API includes:

- **Azure Role-based Access Control** - Configure access policies on the [Azure portal](#), the [Azure CLI](#) or [Azure PowerShell cmdlets](#) to specify which users or applications can get access to the subscription's usage data. Callers must use standard Azure Active Directory tokens for authentication. Add the caller to either the Billing Reader, Reader, Owner, or Contributor role to get access to the usage data for a specific Azure subscription.
- **Enterprise Customers Only** - This API is only available EA customers.
- **Configurable Notifications** - Specify user(s) to be notified when the budget is tripped.
- **Usage or Cost Based Budgets** - Create your budget based on either consumption or cost as needed by your scenario.
- **Filtering** - Filter your budget to a smaller subset of resources using the following configurable filters
  - Resource Group

- Resource Name
- Meter
- **Configurable budget time periods** - Specify how often the budget should reset and how long the budget is valid for.

For more information, see the technical specification for the [Budgets API](#).

## Reservation Recommendations API

Use this API to get recommendations for purchasing VM reserved instances. Recommendations are designed to allow customers to analyze expected cost savings and purchase amounts.

The API includes:

- **Azure Role-based Access Control** - Configure access policies on the [Azure portal](#), the [Azure CLI](#) or [Azure PowerShell cmdlets](#) to specify which users or applications can get access to the subscription's usage data. Callers must use standard Azure Active Directory tokens for authentication. Add the caller to either the Billing Reader, Reader, Owner, or Contributor role to get access to the usage data for a specific Azure subscription.
- **Filtering** - Tailor your recommendation results using the following filters:
  - Scope
  - Lookback period
- **Reservation info for different offer types** - Reservation information is currently available for Enterprise and Web Direct customers.

For more information, see the technical specification for the [Reservation Recommendations API](#).

## Reservation Details API

Use the Reservation Details API to see info on previously purchased VM reservations such as how much consumption has been reserved versus how much is actually being used. You can see data at a per VM level detail.

The API includes:

- **Azure Role-based Access Control** - Configure access policies on the [Azure portal](#), the [Azure CLI](#) or [Azure PowerShell cmdlets](#) to specify which users or applications can get access to the subscription's usage data. Callers must use standard Azure Active Directory tokens for authentication. Add the caller to either the Billing Reader, Reader, Owner, or Contributor role to get access to the usage data for a specific Azure subscription.
- **Filtering** - Trim your API result set down to a smaller set of reservations using the following filter:
  - Date range
- **Reservation info for different offer types** - Reservation information is currently available for Enterprise and Web Direct customers.

For more information, see the technical specification for the [Reservation Details API](#).

## Reservation Summaries API

Use this API to see aggregate information on previously purchased VM reservations such as how much consumption has been reserved versus how much is actually being used in the aggregate.

The API includes:

- **Azure Role-based Access Control** - Configure access policies on the [Azure portal](#), the [Azure CLI](#) or [Azure PowerShell cmdlets](#) to specify which users or applications can get access to the subscription's usage data. Callers must use standard Azure Active Directory tokens for authentication. Add the caller to either the Billing Reader, Reader, Owner, or Contributor role to get access to the usage data for a specific Azure subscription.

- **Filtering** - Tailor your results when using the daily grain with the following filter:
  - Usage Date
- **Reservation info for different offer types** - Reservation information is currently available for Enterprise and Web Direct customers.
- **Daily or monthly aggregations** – Callers can specify whether they want their reservation summary data in the daily or monthly grain.

For more information, see the technical specification for the [Reservation Summaries API](#).

## Price Sheet API

Enterprise customer can use this API to retrieve their custom pricing for all meters. Enterprises can use this in combination with usage details and marketplaces usage info to perform cost calculations using usage and marketplace data.

The API includes:

- **Azure Role-based Access Control** - Configure access policies on the [Azure portal](#), the [Azure CLI](#) or [Azure PowerShell cmdlets](#) to specify which users or applications can get access to the subscription's usage data. Callers must use standard Azure Active Directory tokens for authentication. Add the caller to either the Billing Reader, Reader, Owner, or Contributor role to get access to the usage data for a specific Azure subscription.
- **Enterprise Customers Only** - This API is only available EA customers. Web Direct customers should use the RateCard API to get pricing.

For more information, see the technical specification for the [Price Sheet API](#).

## Scenarios

Here are some of the scenarios that are made possible via the consumption APIs:

- **Invoice Reconciliation** - Did Microsoft charge me the right amount? What is my bill and can I calculate it myself?
- **Cross Charges** - Now that I know how much I'm being charged, who in my org needs to pay?
- **Cost Optimization** - I know how much I've been charged... how can I get more out of the money I am spending on Azure?
- **Cost Tracking** - I want to see how much I am spending and using Azure over time. What are the trends? How could I be doing better?
- **Azure spend during the month** - How much is my current month's spend to date? Do I need to make any adjustments in my spending and/or usage of Azure? When during the month am I consuming Azure the most?
- **Set up alerts** - I would like to set up resource-based consumption or monetary-based alerting based on a budget.

## Next Steps

- For information about using Azure Billing APIs to programmatically get insight into your Azure usage, see [Azure Billing API Overview](#).

# Overview of Reporting APIs for Enterprise customers

6/15/2018 • 2 minutes to read • [Edit Online](#)

The Reporting APIs enable Enterprise Azure customers to programmatically pull consumption and billing data into preferred data analysis tools. Enterprise customers have signed an [Enterprise Agreement \(EA\)](#) with Azure to make negotiated monetary commitments and gain access to custom pricing for Azure resources.

## Enabling data access to the API

- **Generate or retrieve the API key** - Log in to the Enterprise portal, and navigate to Reports > Download Usage > API Access Key to generate or retrieve the API key.
- **Passing keys in the API** - The API key needs to be passed for each call for Authentication and Authorization.  
The following property needs to be to the HTTP headers

REQUEST HEADER KEY	VALUE
Authorization	Specify the value in this format: <b>bearer {API_KEY}</b> Example: bearer eyr....09

## Consumption APIs

A Swagger endpoint is available [here](#) for the APIs described below which should enable easy introspection of the API and the ability to generate client SDKs using [AutoRest](#) or [Swagger CodeGen](#). Data beginning May 1, 2014 is available through this API.

- **Balance and Summary** - The [Balance and Summary API](#) offers a monthly summary of information on balances, new purchases, Azure Marketplace service charges, adjustments and overage charges.
- **Usage Details** - The [Usage Detail API](#) offers a daily breakdown of consumed quantities and estimated charges by an Enrollment. The result also includes information on instances, meters and departments. The API can be queried by Billing period or by a specified start and end date.
- **Marketplace Store Charge** - The [Marketplace Store Charge API](#) returns the usage-based marketplace charges breakdown by day for the specified Billing Period or start and end dates (one time fees are not included).
- **Price Sheet** - The [Price Sheet API](#) provides the applicable rate for each Meter for the given Enrollment and Billing Period.

## Data Freshness

Etags will be returned in the response of all the above API. A change in Etag indicates the data has been refreshed. In subsequent calls to the same API using the same parameters, pass the captured Etag with the key "If-None-Match" in the header of http request. The response status code would be "NotModified" if the data has not been refreshed any further and no data will be returned. API will return the full dataset for the required period whenever there is an etag change.

## Helper APIs

**List Billing Periods** - The [Billing Periods API](#) returns a list of billing periods that have consumption data for the specified Enrollment in reverse chronological order. Each Period contains a property pointing to the API route for

the four sets of data - BalanceSummary, UsageDetails, Marketplace Charges, and Price Sheet.

## API Response Codes

RESPONSE STATUS CODE	MESSAGE	DESCRIPTION
200	OK	No error
401	Unauthorized	API Key not found, Invalid, Expired etc.
404	Unavailable	Report endpoint not found
400	Bad Request	Invalid params – Date ranges, EA numbers etc.
500	Server Error	Unexoected error processing request