

Azure Tagging

Crystal Tenn
Crystal.Tenn@microsoft.com

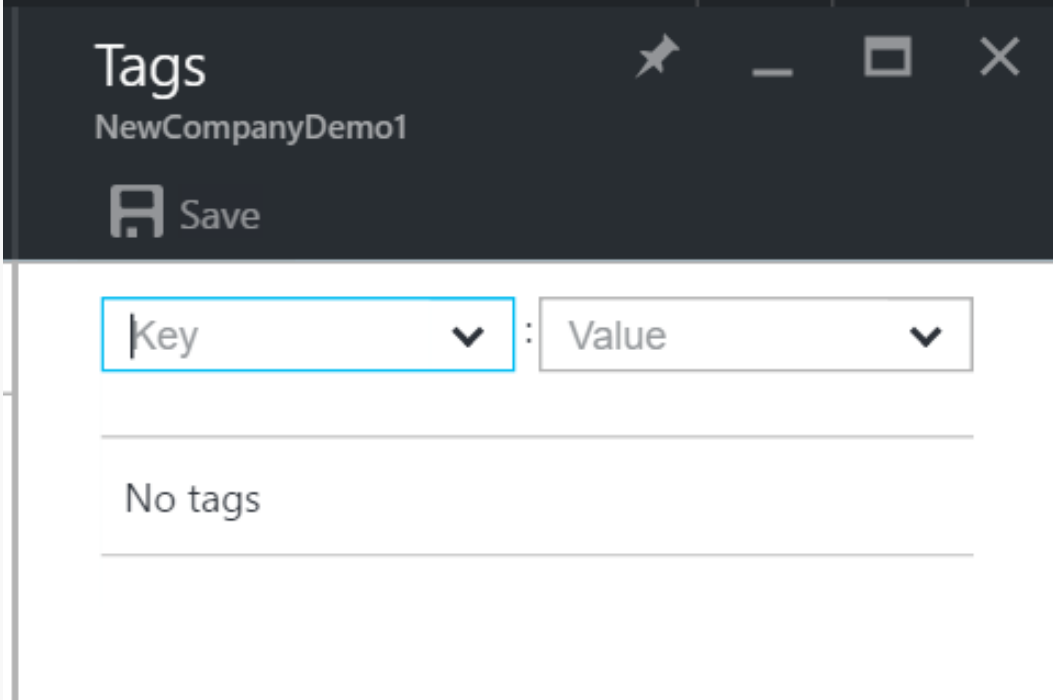
Measuring, Tagging, and Tracking your Azure
Resource Usage.

Azure Tagging

Tags provide a way to logically organize resources with properties that you define. Tags can be **applied to resource groups or resources directly**.

Tags can then be used to select resources or resource groups from the console, web portal, PowerShell, or the API.

Tags are also particularly useful when you need to organize resource for **billing or management**.



The screenshot shows the 'Tags' management window for a resource named 'NewCompanyDemo1'. The window has a dark header bar with the title 'Tags', the resource name 'NewCompanyDemo1', and a 'Save' button with a floppy disk icon. Below the header, there are two dropdown menus: 'Key' and 'Value', separated by a colon. Below these dropdowns, the text 'No tags' is displayed, indicating that no tags are currently applied to the resource.

Azure Tagging Limitations

- Each resource or resource group can have a **maximum of 15 tag name/value pairs**. This limitation only applies 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.
- The **tag name is limited to 512 characters**, and the tag value is limited to 256 characters. For storage accounts, tag name is limited to 128 characters, and tag value is limited to 256 characters.
- Tags applied to the resource group are **not inherited** by the resources in that resource group.
- You can only apply tags to resources that support **Resource Manager operations**. If you created a Virtual Machine, Virtual Network, or Storage through the classic deployment model (such as through the classic portal), you cannot apply a tag to that resource. To support tagging, redeploy these resources through Resource Manager. All other resources support tagging.
- 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. An example of assigning a JSON string to the tag is shown in this article.

Azure Tagging and Billing

- Tags enable you 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 production environment.

Daily Usage						
Usage Date	Meter Category	Unit	Consume	Resource Group	Instance Id	Tags
5/14/2015	"Virtual Machines"	"Hours"	3.999984	"computeRG"	"virtualMachines/catalogVM"	"{"costCenter":"finance", "env":"prod"}"
5/14/2015	"Virtual Machines"	"Hours"	3.999984	"businessRG"	"virtualMachines/dataVM"	"{"costCenter":"hr", "env":"test"}"

Azure Tagging and Billing

- 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 accounts 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.**

Daily Usage						
Usage Date	Meter Category	Unit	Consume	Resource Group	Instance Id	Tags
5/14/2015	"Virtual Machines"	"Hours"	3.999984	"computeRG"	"virtualMachines/catalogVM"	"{"costCenter":"finance", "env":"prod"}"
5/14/2015	"Virtual Machines"	"Hours"	3.999984	"businessRG"	"virtualMachines/dataVM"	"{"costCenter":"hr", "env":"test"}"

Viewing Costs by Tag

- 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), environment (production, pre-production, test), or client (Microsoft, Amazon, Google etc...).

TestVM - Tags
Virtual machine

Save

Search (Ctrl+ /)

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Tags are key/value pairs that enable you to categorize resources and view consolidated billing by applying the same tag to multiple resources and resource groups. [Learn more](#)

* Key * Value

costCenter : marketing

env : prod

Viewing Costs by Tag

- 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. You can filter by different properties like tags, resource group, and timespan. Click Apply to confirm the filters and Download to export the view to a Comma-Separated Values (.csv) file.

The screenshot shows the 'Pay-As-You-Go - Cost analysis' window. The left sidebar contains navigation links: Overview, Access control (IAM), Diagnose and solve problems, BILLING, Billing & usage, Cost analysis (selected), External services, and Payment methods. The main area is titled 'Costs by service' and includes a search bar and a table of costs. Above the table, there are filters for Subscription (Pay-As-You-Go), Resource type (All resource types), Resource group (All resource groups), Timespan (Current period), and Tag (All tags). Below the filters are 'Apply' and 'Download' buttons. A search bar for filtering items is also present. The table has columns for NAME, TYPE, RESOURCE GROUP, SPEND (USD), and TAGS. The first row shows 'Server1' as a 'Virtual machine' in the 'Default' resource group, with a spend of 138.88 USD and a tag of 'costCenter: finance'. The second row shows 'TestVM' as a 'Virtual machine' in the 'TestRG1' resource group, with a spend of 34.60 USD and a tag of 'costCenter: marketing, en...'. The third row shows 'testraldicks208' as a 'Storage account' in the 'TestRG1' resource group, with a spend of 12.77 USD and a tag of '...'. A hand cursor is pointing at the 'Default' resource group in the first row.

Pay-As-You-Go - Cost analysis
Subscription

→ Costs by service

Search (Ctrl+/)

Overview
Access control (IAM)
Diagnose and solve problems

BILLING
Billing & usage
Cost analysis
External services
Payment methods

Amounts displayed are estimates, and may not reflect some recent usage. Taxes are not included.

Subscription: Pay-As-You-Go
Resource type: All resource types
Resource group: All resource groups
Timespan: Current period
Tag: All tags

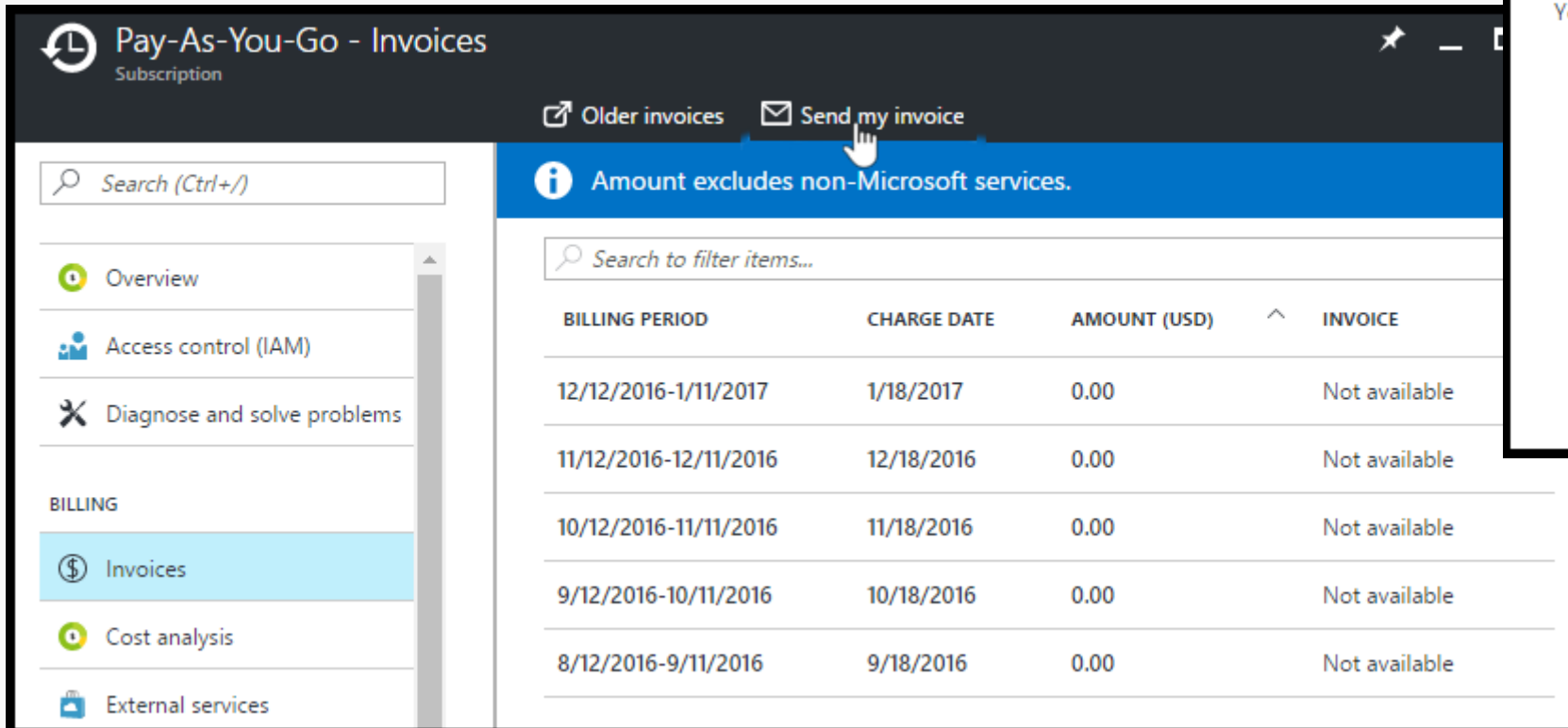
Apply Download

Search to filter items...

NAME	TYPE	RESOURCE GROUP	SPEND (USD)	TAGS
Server1	Virtual machine	Default	138.88	costCenter: finance ...
TestVM	Virtual machine	TestRG1	34.60	costCenter: marketing, en... ...
testraldicks208	Storage account	TestRG1	12.77	...

Pulling Your Bill: Email

1. Have my bill emailed to me:
<https://portal.azure.com/#blade/Microsoft Azure Billing/SubscriptionsBlade>
2. Click Invoices
3. Click Email my invoice
4. Choose to Opt-In



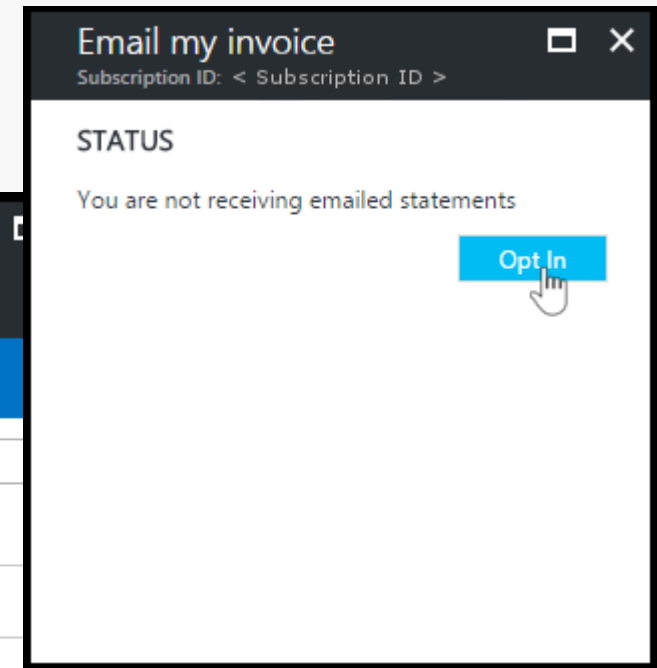
Pay-As-You-Go - Invoices
Subscription

Older invoices Send my invoice

Amount excludes non-Microsoft services.

Search to filter items...

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



Email my invoice
Subscription ID: < Subscription ID >

STATUS

You are not receiving emailed statements

Opt In

Pulling Your Bill: Download

1. Go to the Subscriptions blade:
<https://portal.azure.com/#blade/Microsoft Azure Billing/SubscriptionsBlade>
2. Click Invoices
3. Click Download Invoice
4. You can also view your daily usage by clicking the billing period.

The screenshot displays the Azure portal interface for managing subscriptions. The main area shows a table of subscriptions, including 'Pay-As-You-Go' and 'Visual Studio Ultimate with MS...'. A sidebar on the right contains navigation links for 'Overview', 'Access control (IAM)', 'Diagnose and solve problems', and a 'BILLING' section. The 'Invoices' link in the 'BILLING' section is highlighted with a red box. Below the main table, a detailed view of the 'Pay-As-You-Go' subscription is shown, including a table of billing periods and charges.

Subscriptions
<subscription ID>
+ Add

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

Search to filter items...

Overview

Access control (IAM)

Diagnose and solve problems

BILLING

Invoices

Cost analysis

External services

Amount excludes non-Microsoft services.

Search to filter items...

BILLING PERIOD	CHARGE DATE	AMOUNT (JPY)	INVOICE
2016-09-02-2016-10-01	2016-10-02	5,956.33	Download invoice
2016-08-02-2016-09-01	2016-09-02	6,044.56	Download invoice

Pulling Your Bill: Account Center (.csv)

1. Sign into the Azure Account Center as the Account Admin
<https://account.windowsazure.com/subscriptions>
2. Select the subscription you want
3. Select Billing History
4. Select View Current Statement
5. 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**

[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

Azure CLI Commands for Tagging

To get resource groups with a specific tag

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

To get all the resources with a particular tag and value

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

Add tag to a RESOURCE GROUP WITHOUT existing tags

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

Add tag to a RESOURCE WITHOUT existing tags

```
az resource tag --tags Dept=IT Environment=Test -g TagTestGroup -n storageexample --resource-type "Microsoft.Storage/storageAccounts"
```

To add tags to a resource that already has tags, first retrieve the existing tags (line 1)

Then reapply the existing tags to the resource, and add the new tags (line 2)

```
az resource show --query tags -g TagTestGroup -n storageexample --resource-type "Microsoft.Storage/storageAccounts"
```

```
az resource tag --tags Dept=Finance Environment=Test CostCenter=IT -g TagTestGroup -n storageexample --resource-type "Microsoft.Storage/storageAccounts"
```

Azure Tagging Recommendations

- Tag a certain Resource Group, VM, Storage Account or Batch Account
 - Tagging the Storage used per customer should be simple 😊
- Currently you cannot tag a Job or Task in Batch
- Determine how you want to split up different customer's work so you are able to tag and build it into your workflow
 - Can you put all of one customer's work into a certain Resource Group?
 - Or can you make each customer a Batch Account?

Azure Tagging: Resource Policy

Resource policies enable you to **establish conventions** for resources in your organization. By defining conventions, you can control costs and more easily manage your resources.

For example, you can specify that only certain types of virtual machines are allowed, or you can require that all resources have a particular tag. Policies are inherited by all child resources. So, if a policy is applied to a resource group, it is applicable to all the resources in that resource group.

There are two concepts to understand about policies:

- **policy definition** - you describe when the policy is enforced and what action to take
- **policy assignment** - you apply the policy definition to a scope (subscription or resource group)

Azure Tagging: Resource Policy

Resource policies enable you to **establish conventions** for resources in your organization. By defining conventions, you can control costs and more easily manage your resources.

For example, you can specify that only certain types of virtual machines are allowed, or you can require that all resources have a particular tag. Policies are inherited by all child resources. So, if a policy is applied to a resource group, it is applicable to all the resources in that resource group.

There are two concepts to understand about policies:

- **policy definition** - you describe when the policy is enforced and what action to take
- **policy assignment** - you apply the policy definition to a scope (subscription or resource group)

Built-in Policies

Azure **provides some built-in policy definitions** that may reduce the number of policies you have to define. **Before proceeding with policy definitions, you should consider whether a built-in policy already provides the definition you need.** The built-in policy definitions are:

- Allowed locations
- Allowed resource types
- Allowed storage account SKUs
- Allowed virtual machine SKUs
- Apply tag and default value
- Enforce tag and value
- Not allowed resource types
- Require SQL Server version 12.0
- Require storage account encryption

You can assign any of these policies through the portal, PowerShell, or Azure CLI.

Custom Policies

You use JSON to create a policy definition if you want a policy that is not already built-in. The policy definition contains elements for:

- parameters
- display name
- description
- policy rule
- logical evaluation
- effect

Please see the documentation here for full instructions and JSON examples on custom policies:

<https://docs.microsoft.com/en-us/azure/azure-resource-manager/resource-manager-policy>

How To: Enforce Tag and Value

A common requirement is that all resources in a resource group have a particular tag and value. This requirement is often needed to track costs by department. The following conditions must be met:

- The required tag and value are appended to new and updated resources that do not have the tag.
- The required tag and value cannot be removed from any existing resources.

You accomplish this requirement by applying two built-in policies to a resource group.

ID	Description
2a0e14a6-b0a6-4fab-991a-187a4f81c498	Applies a required tag and its default value when it is not specified by the user.
1e30110a-5ceb-460c-a204-c1c3969c6d62	Enforces a required tag and its value.

How To: Enforce Tag and Value

A common requirement is that all resources in a resource group have a particular tag and value. This requirement is often needed to track costs by department. The following conditions must be met:

- The required tag and value are appended to new and updated resources that do not have the tag.
- The required tag and value cannot be removed from any existing resources.

You accomplish this requirement by applying two built-in policies to a resource group.

ID	Description
2a0e14a6-b0a6-4fab-991a-187a4f81c498	Applies a required tag and its default value when it is not specified by the user.
1e30110a-5ceb-460c-a204-c1c3969c6d62	Enforces a required tag and its value.

How To: Enforce Tag and Value

Use Powershell!

Install PowerShell for Linux if needed: <https://github.com/PowerShell/PowerShell>

The PowerShell script on the link below assigns the two built-in policy definitions to a resource group. Before running the script, assign all required tags to the resource group. Each tag on the resource group is required for the resources in the group. To assign to all resource groups in your subscription, do not provide the -Name parameter when getting the resource groups.

<https://docs.microsoft.com/en-us/azure/azure-resource-manager/resource-manager-policy-tags>

In Preview now... Alerts

OVERVIEW

BILLING HISTORY

ALERTS [PREVIEW](#)



\$137.72



\$0.00

\$150.00



Based on your usage history (\$4.17/day), you might have sufficient credit for the remaining billing period.

Your monthly credit expires on 3/6/2017.



[Pricing calculator](#)

USAGE YOU ARE RESPONSIBLE FOR

0.58 GB

\$0.00



DATA TRANSFER IN (GB) - ZONE 1

SUBSCRIPTION STATUS

25

days left

\$138

credits remaining*

Remove spending
limit

OVERVIEW

BILLING HISTORY

ALERTS **PREVIEW**

+ Half way there

Not Sent ?

Monetary Credits

\$80



+ Some money was spent

Not Sent ?

Monetary Credits

\$120



+ add alert ?



You can setup 3 more alerts

Recommendation: Billing Alert Service

Signup: <https://account.windowsazure.com/PreviewFeatures>

Manage: <https://account.windowsazure.com/Subscriptions>

HOME PRICING DOCUMENTATION DOWNLOADS COMMUNITY SUPPORT ACCOUNT

subscriptions marketplace profile preview features

Portal →

Summary for Visual Studio Enterprise

OVERVIEW BILLING HISTORY ALERTS PREVIEW

+ 100	2017/07/15 23:51:29 ?	Monetary Credits	\$100	?	🗑️
+ 50	Not Sent ?	Monetary Credits	\$50	?	🗑️
+ 130	2017/07/14 22:19:43 ?	Monetary Credits	\$130	?	🗑️
+ 75	2017/07/17 00:16:54 ?	Monetary Credits	\$75	?	🗑️
+ 25	Not Sent ?	Monetary Credits	\$25	?	🗑️



Thank you!