Microsoft

Azure Tagging

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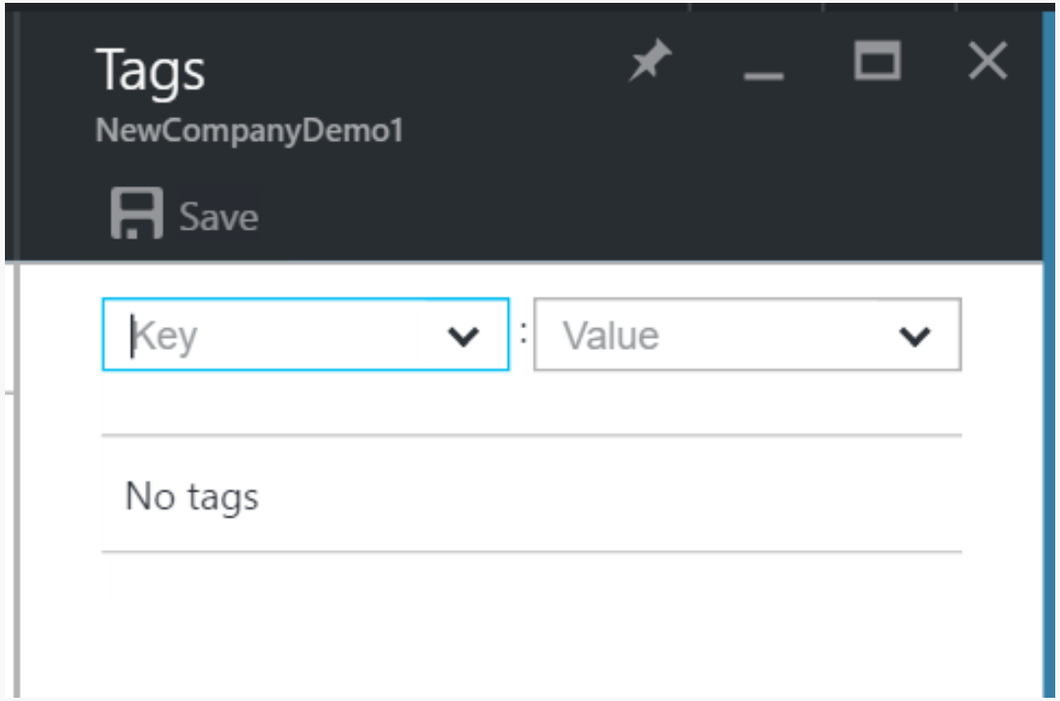
Measuring, Tagging, and Tracking your Azure Resource Usage.

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**.



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 Gr	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.

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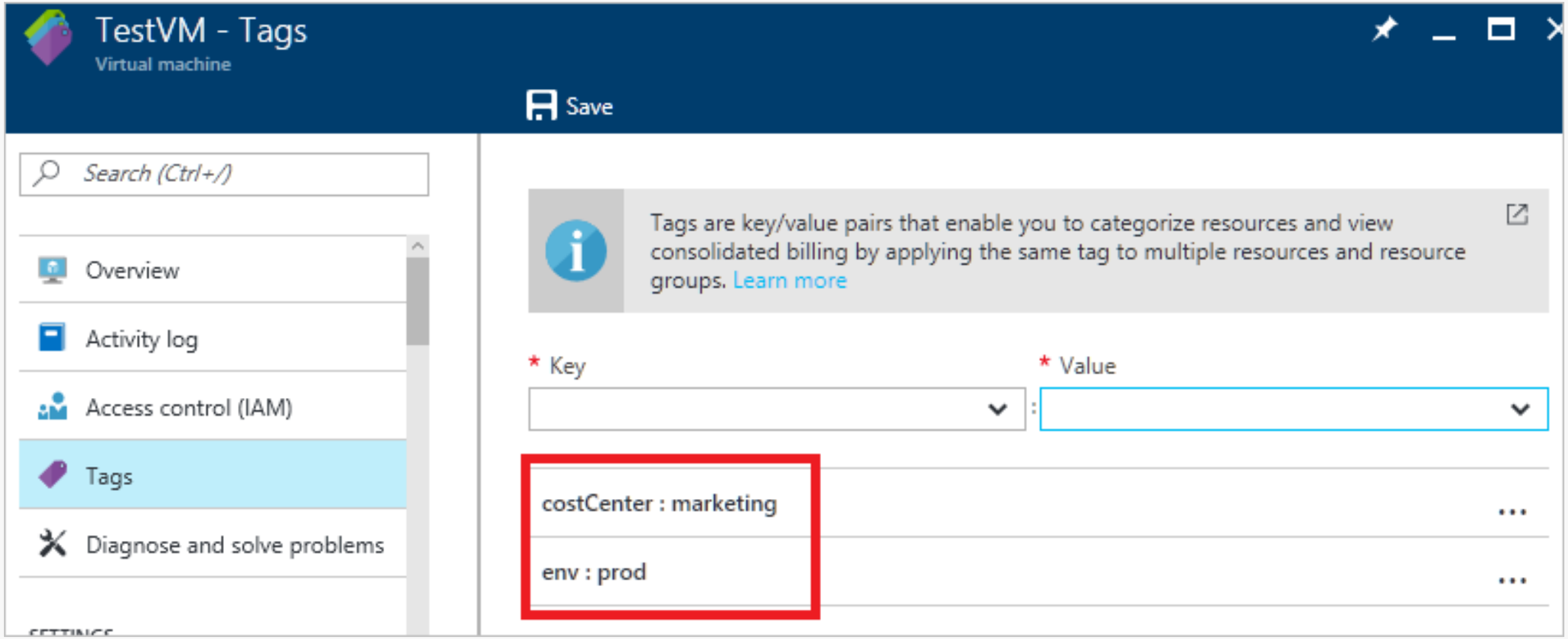
5/14/2015	"Virtual Machines"	"Hours"	3.999984	"businessRG	"virtualMachines/dataVM"	"{"costCenter":"hr", "env":"test"}"

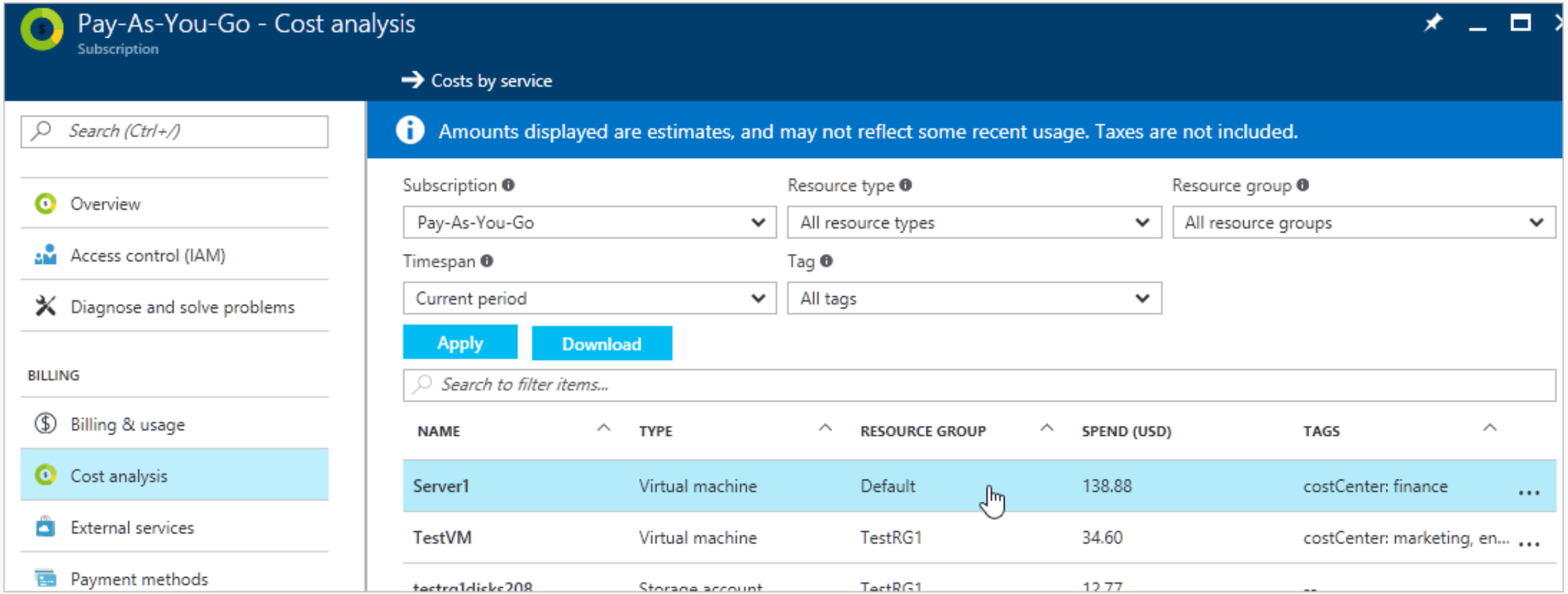
Viewing Costs by Tag

- 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…).



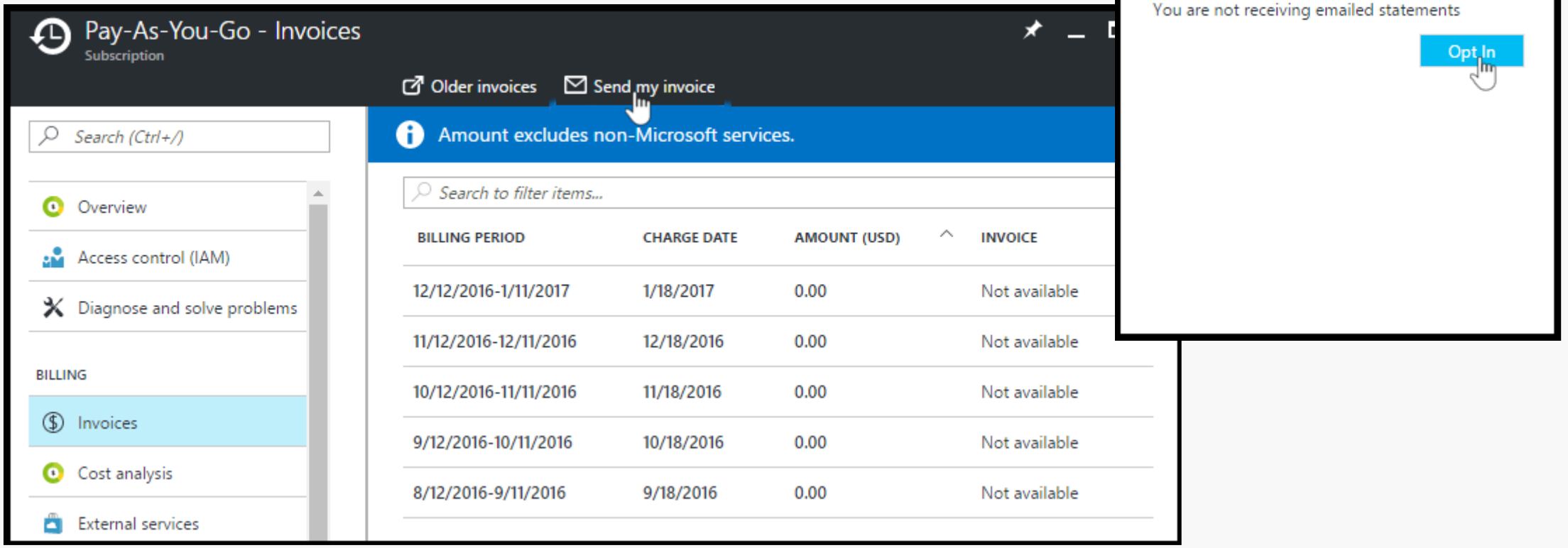
Viewing Costs by Tag

- 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.



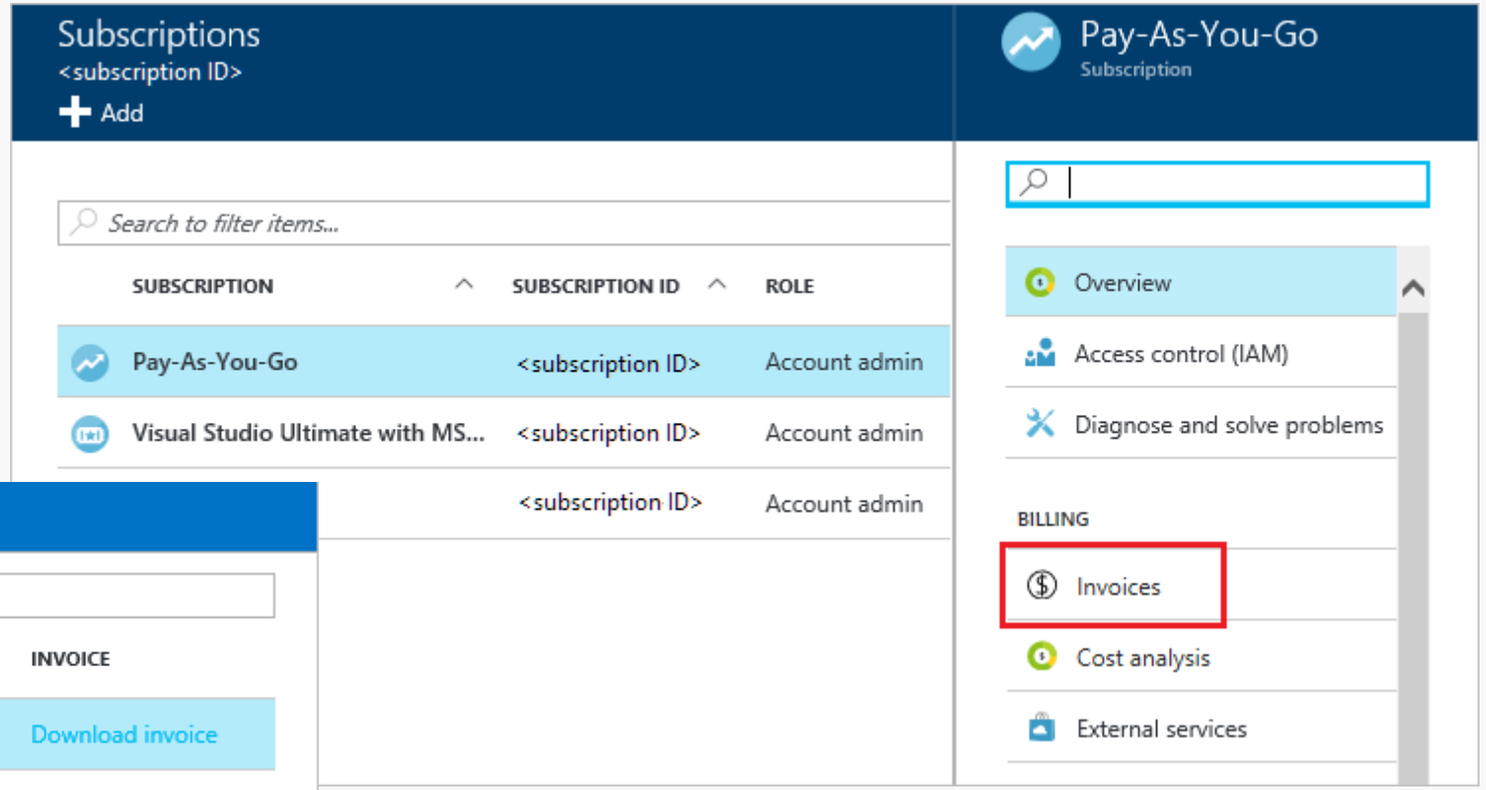
Pulling Your Bill: Email

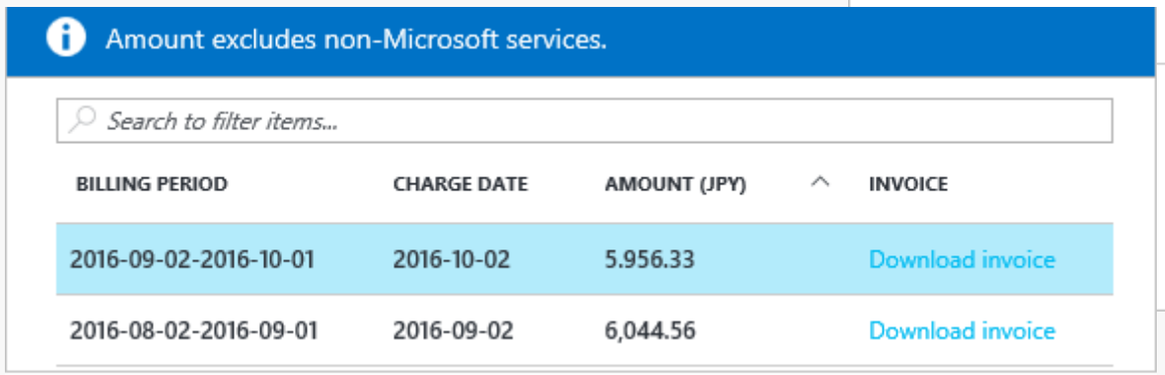
1. Have my bill emailed to me: https://portal.azure.com/#blade/Microsoft_Azure_Billing/SubscriptionsBlade
2. Click Invoices
3. Click Email my invoice
4. Choose to Opt-In



Pulling Your Bill: Download

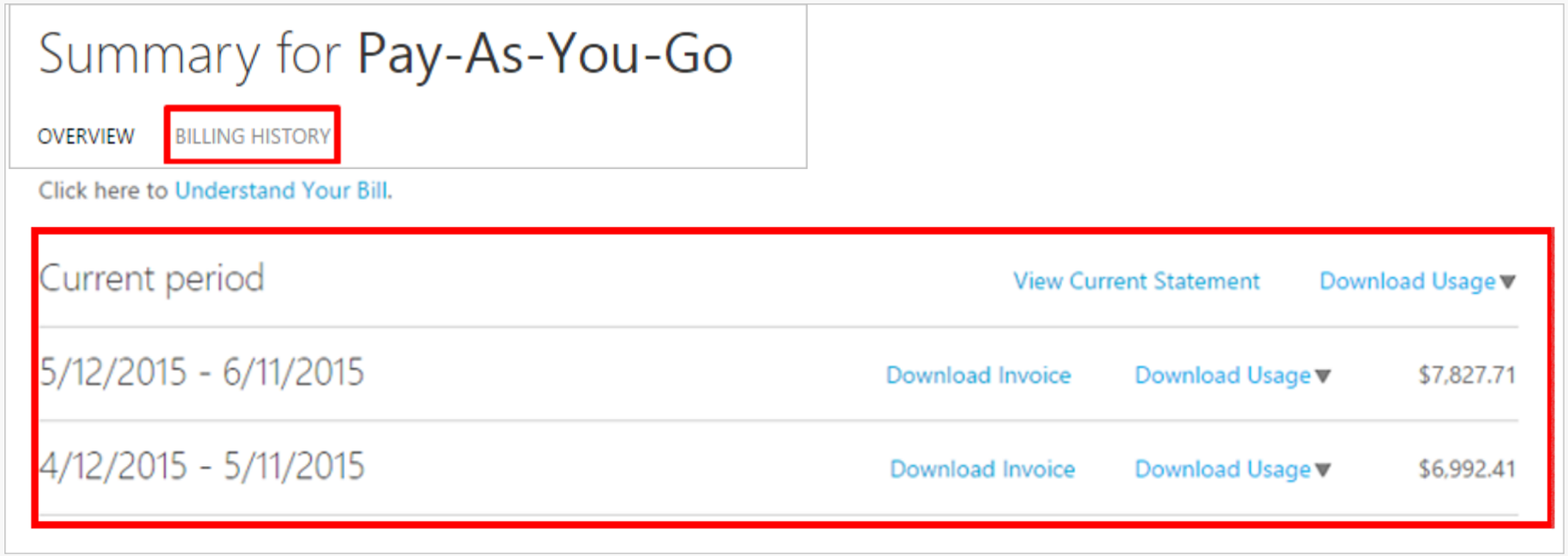
1. Go to the Subscriptions blade: https://portal.azure.com/#blade/Microsoft_Azure_Billing/SubscriptionsBlade
2. Click Invoices
3. Click Download Invoice
4. You can also view your daily usage by clicking the billing period.





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.



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)

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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.

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How To: Enforce Tag and Value

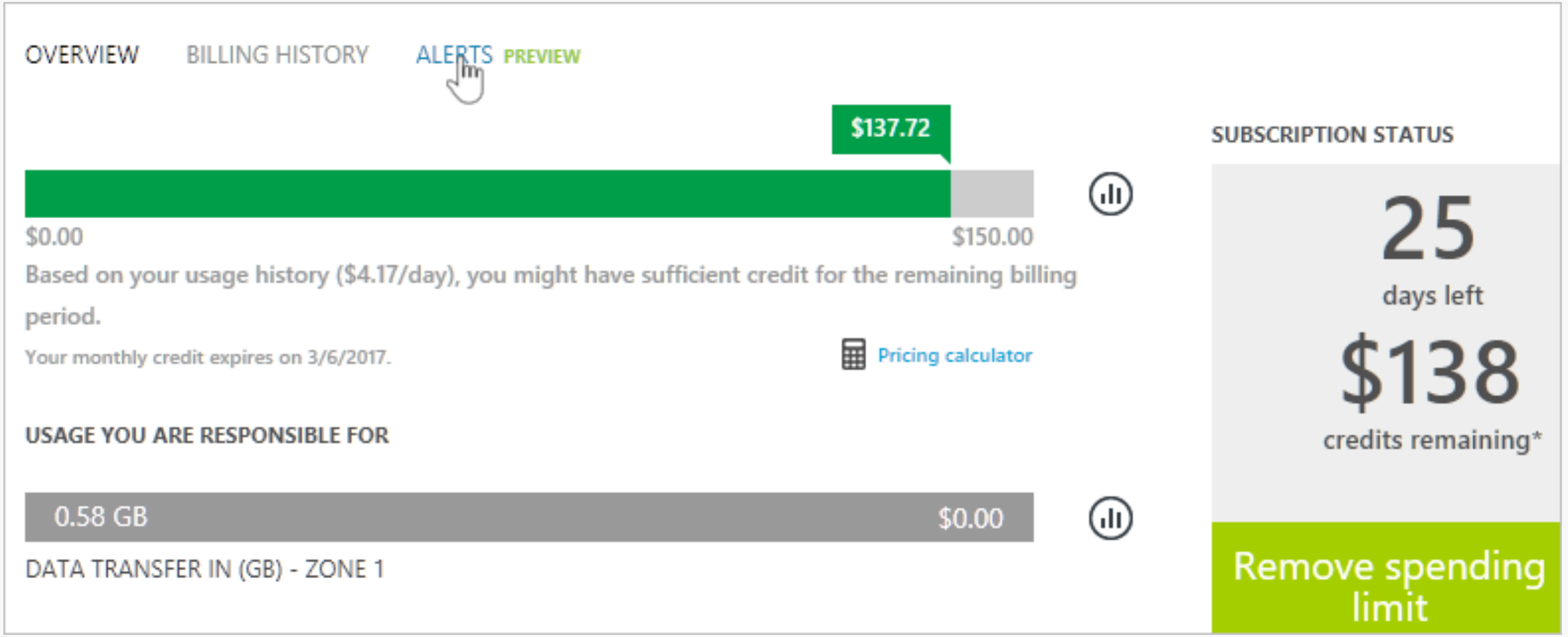
Use Powershell!

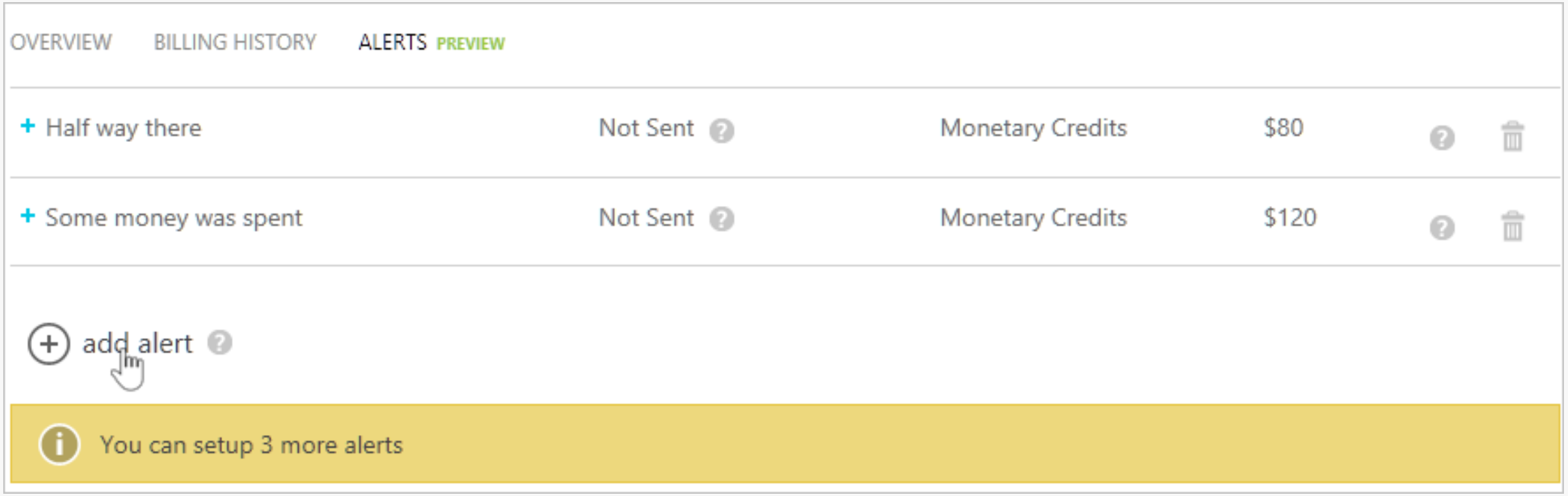
Install PowerShell for Linux if needed: https://github.com/PowerShell/PowerShell

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

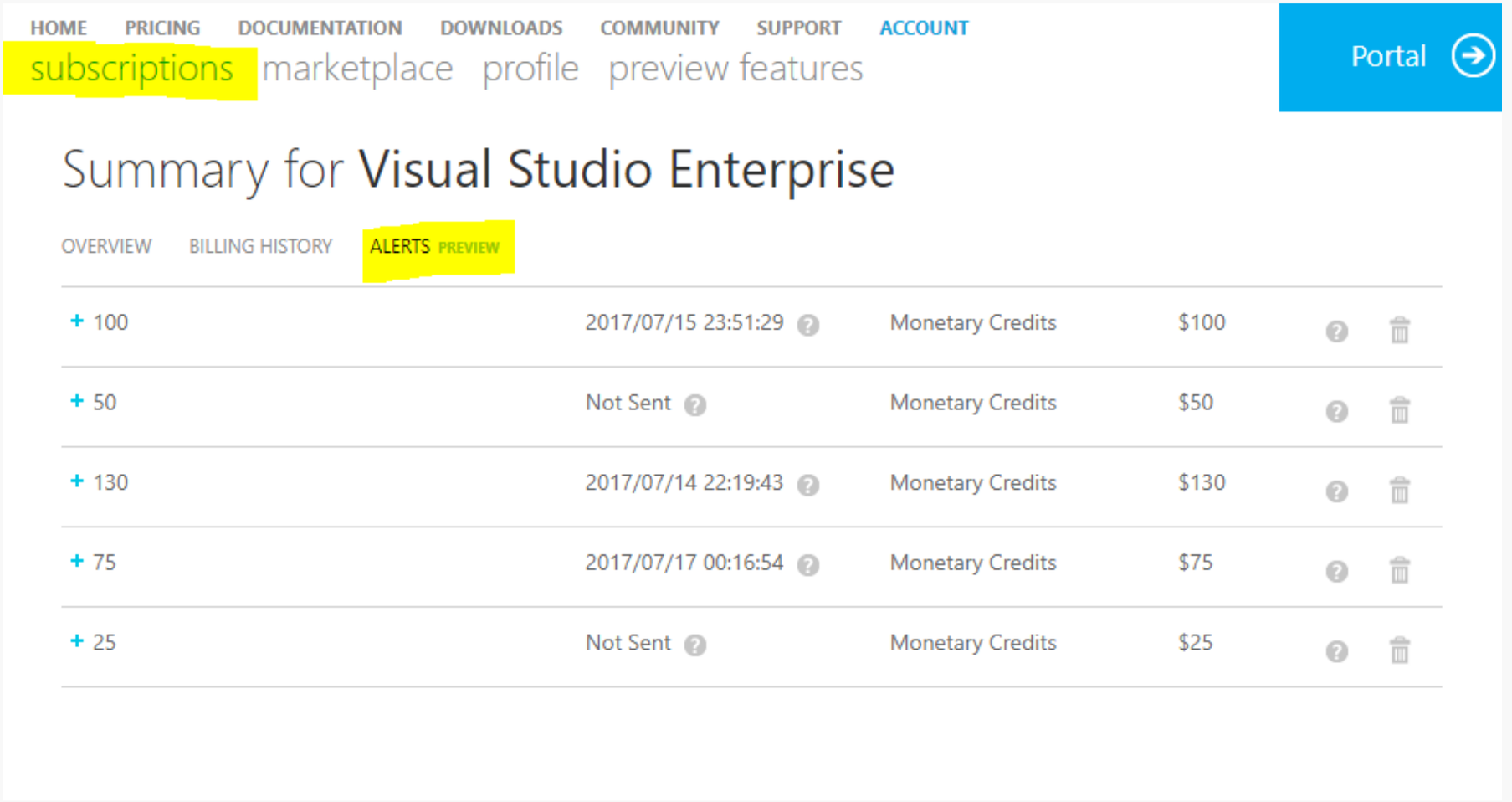
In Preview now… **Alerts**


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



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Thank you!