**Subscription Maintenance Best Practices**

v 0.1

AI CAT

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# Resource Groups

## General

1. All resource groups are to be named with the user alias and/or the specific project name unless created dynamically by Azure ( for example DefaultResourceGroup-EUS, fileserverrg-79533144-77f0-4fcb-a0e5-a11764800dc7, etc).
2. To remain in compliance with team standards, all resource groups must have the following tags added to the group in the Azure Portal
   1. alias : Microsoft alias of the owner/creator of the resource group
   2. project: Project name or “internal” for user specific resource groups.
   3. expires: Best guess date in format YYYY-MM-DD for when the resource group will become obsolete due to the project completing. For internal user specific resource groups apply the date 2030-01-01.
3. All resource groups that are not transient, i.e. will live longer than any period of time between the cleanup script that deletes unlocked resource groups runs, must have a ReadOnly or Delete lock applied to it or one of it’s child resources to ensure it is not inadvertently deleted during regular maintenance tasks.

## Project Resource Groups

Resource groups should contain ONLY the resources needed for the specific project whether that is internal or external.

Grouping all resources into a single resource group removes the possibility of cross contamination from other projects which leaves the possibility that certain resources are not cleaned up. Further, it makes cleaning up Azure resources trivial when a project is completed.

## User specific resource groups

There are times when a need arises that team members utilize a Virtual Machine across projects, use a Virtual Machine Long term, or simply want to have a personal repository of data/code.

This concept is completely normal and supported. What is asked of you is:

1. Resource group for Virtual Machine contain ONLY the virtual machine and its associated resources (IP, Network, Disks, etc)
2. Resources groups for an archive of data or code contain only these resources and no other, such as compute resources.

## Team Resource Groups

Teams may opt to have a resource group for any number of purposes:

1. Contain a private VPN connection for external connections.
2. Contain an archive of data/code.

These types of resource groups are also supported. Giving it a name that contains the group name and its general purpose is suggested.

## Resource Group Purging

A script is available in GitHub that can easily remove all unlocked resource groups from any subscription. It is suggested that teams run this script periodically to ensure that unlocked resource groups, which inherently are non-compliant, are cleaned up periodically. This is, however, a team decision typically laid out by the team lead.

The script is located here:

<https://github.com/grecoe/CloudAI/blob/master/Utilities/AzureSubscriptionCleanup/ResourceGroupLevel/ScanResourceGroups.ps1>

## Resource Group Compliance

Validating that the team is complying with tagging and locking resources groups, another script has been put together. This script will output the following information that teams can use for their own internal decisions:

|  |  |
| --- | --- |
| **Object** | **Value** |
| Total | Total number of resource groups in the subscription. |
| Unlocked | Total number of unlocked resource groups in the subscription. |
| Compliant | Total number of compliant resource groups. That is, they have the right tags, are locked, and have not expired. |
| NonCompliant | Key Values of  Key: Resource Group Name  Value: Comma separated list of missing tags |
| InvalidDate | Key Values of:  Key : Resource Group Name  Value: “expires” tag value in Azure. |
| Expired | Key Values of  Key: Resource Group Name  Value: “expires” tag value in Azure |

The script is located here:

<https://github.com/grecoe/CloudAI/blob/master/Utilities/AzureSubscriptionCleanup/ResourceGroupLevel/FindNonCompliantGroups.ps1>

# Virtual Machines

As a data science group, compute is our biggest expense and of that typically it’s the use of Virtual Machines.

While not enforcing how many or what type of machines can be used, some common sense practices can make a big difference in Azure consumption in this area.

For example, most virtual machines are not utilized 24/7, in fact many of them are used only during working hours (if at all). If a virtual machine costs $3K/month to run and a month has approximately 744 hours in it, but working hours are closer to 168 hours then the virtual machine is being utilized only ~22.5% of the time. Simply deallocating that machine on off work hours would bring the cost of that machine down to $677/month.

Aside from common sense approaches like that listed above, some general guidance is to ensure that all virtual machines are deallocated (shut down via the Azure Portal) at some point. Once that is done, as machines are truly required they will be restarted, then :

1. Unless a virtual machine is going to be used in an overnight test, it should be deallocated at the end of each work day.
2. All virtual machines should be shut down for long holiday breaks (weekends or weeks) when the majority of the team will be offline.

There are scripts located on GitHub to help in these tasks.

1. Get information on all Virtual Machines
   1. <https://github.com/grecoe/CloudAI/blob/master/Utilities/AzureSubscriptionCleanup/VirtualMachines/GetVmInfoAndConfig.ps1>
   2. Collects information about VM usage and provides an input file in the proper format for the next script to batch start/stop/deallocate machines.
2. Start/Stop/Deallocate virtual machines in bulk
   1. <https://github.com/grecoe/CloudAI/blob/master/Utilities/AzureSubscriptionCleanup/VirtualMachines/AzureVMStateChange.ps1>
   2. Input is laid out in the example file VMConfiguration.json in the same repository.

# General Guidance

It is the responsibility of every team member to manage Azure resources in a prudent way. This really is a trivial task.

As projects come to completion, deleting unused resources and resource groups goes a long way. Similarly, deallocating compute resources when not currently being used relieves pressure on subscription costs and core usage.

The team should be just as adept and reproducibility with its projects as it is with the data science portions of projects. This means that re-constructing a resource group shouldn’t feel like the end of the world but a part of every day life.