**Challenge#2:**

We need to write code that will query the meta data of an instance within AWS or Azure or GCP and provide a json formatted output.

**Introduction:**

When a VM is running in any cloud service (Azure, AWS or GCP), the guest OS running in the VM will have no details about the environment in which it is running such as the name, resource group, tags, network, etc.

Azure/AWS/GCP Cloud

Scheduled Events

Name  
Resource Group   
Tags  
Public IP

Network

VM

Guest OS

In this scenario, the Azure Instance Metadata Service comes into picture. This Azure service provides data about the currently running virtual machines. This information includes Name of the resource, resource group, SKU, storage, network configurations, etc. This service is only available for running instances of virtual machines and VMs created by Azure Resource Manager.

Azure Instance Metadata Service is a REST API that is available at a non-routable IP address 169.254.169.254 which can be only accessed within the VM.

The command to get the metadata is: The query

|  |
| --- |
| curl -s -H Metadata:true --noproxy "\*" “<http://169.254.169.254/metadata/instance?api-version=2021-02-01>” |

The query should contain “Metadata:true” option to ensure that all requests are directly intended for IMDS.

The above command gives a generic json formatted data. To get specific information, the below command can be used:

|  |
| --- |
| http://169.254.169.254/metadata/<endpoint>/[<filter parameter>/...]?<query parameters> |

The endpoint “instance” can be used to get specific data.

The command to get just the compute property, we can use the below URL:

|  |
| --- |
| [http://169.254.169.254/metadata/instance/compute?api-version=<version](http://169.254.169.254/metadata/instance/compute?api-version=%3cversion)> |

If we want to get a nested property, we keep on appending keys as shown:

|  |
| --- |
| [http://169.254.169.254/metadata/instance/network/interface/0?api-version=<version](http://169.254.169.254/metadata/instance/network/interface/0?api-version=%3cversion)> |

**Schema:**

By default, Azure Instance Metadata Service provided output in the json format. By explicitly mentioning the required format as text, we can get the output in the form of text as shown:

|  |
| --- |
| curl -s -H Metadata:true --noproxy "\*" "http://169.254.169.254/metadata/instance?api-version=2017-08-01&format=text" |

**Endpoint Categories:**

The Azure Instance Metadata Service contains multiple endpoint categories representing various data sources, each of which contains more endpoints.

|  |  |
| --- | --- |
| **Category Root** | **Description** |
| /metadata/attested | Helps to get guarantee that the data is coming from Azure |
| /metadata/identity | By assigning user-assigned managed identities to the VM, we can request tokens and get data from Azure Vault. |
| /metadata/instance | Helps to get information about the VM such as network, storage and compute. |
| /metadata/loadbalancer | Helps us to get information about the load balancers |
| /metadata/schedulevents | Helps to get the status of the scheduled events |