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INTRODUCTION

- ARM TEMPLATES.
- MICROSOFT AZURE
- VIRTUAL NETWORKS AND SUBNETS
- INFRASTRUCTURE AS A SERVICE/CODE
- VIRTUAL MACHINES
- CPU ALERTS



ARM TEMPLATES :

- A JSON file to access/configure the MICROSOFT AZURE CLOUD.
- Resources are network cards , virtual machines , hosted databases, etc .
- Has the facility of incremental deployment i.e changes made to already existing resource group.
- Templates offer the functioning of Infrastructure as a Code.

MICROSOFT AZURE:

- Built on a combination of Linux and Microsoft Windows operating systems.
- Used for production, deployment, storage and platform cloud services .
- Provisions for - Software (SaaS),Platform(PaaS), Infrastructure (IaaS) as a service.
- Fulfills requirements of access controlled and hierarchical organisations.



INFRASTRUCTURE AS A SERVICE/CODE

- provisioning computing infrastructure using definition files .
- It is like treating servers , databases, network and other infrastructures as softwares and using a code to configure them.
- Provides consistency and reduces redundancy

VIRTUAL NETWORKS AND SUBNETS

- Heart of network architecture on Azure.
- Can be configured using Azure portal, PowerShell and Azure CLI.
- A Vnet can be partitioned into small sub-networks using subnetting which is called a SUBNETS.
- **OUR AIM: to set up Virtual Subnets using ARM templates.**



CPU ALERTS

- A method to monitor CPU Metrics.
- Metric alerts evaluate at regular intervals to check if conditions on one or more metric time-series are true
- When threshold exceeded notify the concerned authority .
- Can result the efficient and sustainable use of resources.
- **OUR AIM: to create alert of cpu utilisation of more than 70%.**

VIRTUAL MACHINES

- VMs are a fundamental unit of computing in the cloud.
- Similar to Physical devices (PDs) or Physical computers.
- Used with the help of hypervisors i.e middlewares.
- **OUR AIM: to deploy VM via ARM TEMPLATES .**



Problem Statement And Explorations

History

- Earlier, setting up IT infrastructure has been a manual process.
- This lead to problems such as - expenses for hiring professionals, poor quality and inconsistency.
- Keif morris invented Infrastructure as a Code to overcome these.



Problem Statement and Our Ways

Problem 1

- Creating Vnets with subnets is the most basic task and they are created in huge numbers so if we give manual input everytime to create them then it leads to inconsistency, wastage of time, energy and efforts.

Our Ways and Solutions

- Firstly, we created an ARM template for Vnet with subnet and this reduced the redundancy at an exponential rate.
- We deep dived into this subject and then implemented a loop inside this to create the number of subnets asked by the user.

Before

Add subnet



Subnet name *

Subnet address range * ⓘ

(0 Addresses)

Originally , we have to add each subnet like this

After

SETTINGS

Name ⓘ

VNET

Address Prefix ⓘ

10.2.0.0/20

Subnet Address Prefix ⓘ

10.2.0.0/24

Subnet Count ⓘ

3

Now, we just have to tell the starting subnet address prefix and the count of subnets



Problem Statement and Our Ways

Problem 2

- In industries, while creating VMs , we have too many OS image options available which leads to deploying a wrong VM, especially in case of a fresher. This leads to a lot of confusion and wastage of money which could be easily avoided by giving limited options and lead to simplicity .

Solutions

- We made tweaks in our code (as shown in our git file) to limit the OS images to Ubuntu and Windows only. Also , VM size is also set there by default , which could be changed , but this avoids the mistake of sometimes selecting an expensive VM due to lack of knowledge.



Before

Ubuntu Server 18.04 LTS - Gen1
Ubuntu Server 18.04 LTS - Gen1
Red Hat Enterprise Linux 8.2 (LVM) - Gen1
SUSE Enterprise Linux 15 SP1 - Gen1
CentOS-based 8.2 - Gen1
Debian 10 "Buster" - Gen1
Oracle Linux 7.8 - Gen1
Ubuntu Server 16.04 LTS - Gen1
Windows Server 2019 Datacenter - Gen1
Windows Server 2016 Datacenter - Gen1
Windows Server 2012 R2 Datacenter - Gen1

After

Ubuntu
Windows

We restricted the options of OS images to just 2



Problem Statement and Our Ways

Problem 3

- Sometimes, there can be anomalous CPU utilisation which could lead to the VM exhibiting longer response time and inability to accept connections.

Solutions

- We made changes in our code by exploiting the concept of CPU metric such that we are able to set certain threshold value, so if a particular VM uses more CPU than threshold, we get notified via email and we could look into the matter.



After

We have added only the after ARM template snippet as it was a multi step process and could not be depicted using a single snippet

Alert Name *	<input type="text"/>
Alert Description	<input type="text" value="This is a metric alert"/>
Alert Severity	<input type="text" value="3"/>
Is Enabled	<input type="text" value="true"/>
Resource Id *	<input type="text"/>
Metric Name *	<input type="text"/>
Operator	<input type="text" value="GreaterThan"/>
Threshold	<input type="text" value="0"/>
Time Aggregation	<input type="text" value="Average"/>
Window Size	<input type="text" value="PT5M"/>
Evaluation Frequency	<input type="text" value="PT1M"/>
Action Group Id	<input type="text"/>



Thank You.

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