

Platform Engineering Assignment -2

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1)

i) We have to create a VM for Windows by adding the custom data in the advanced section for Node.js file.

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes the Microsoft Azure logo, a search bar, and a Copilot button. The user's name 'nithin.namburi1070' is visible in the top right corner. The main content area displays the details of a virtual machine named 'azureuser'. The left sidebar shows the 'Overview' tab selected, with a list of navigation options including Activity log, Access control (IAM), Tags, Diagnose and solve problems, Connect, Networking, Settings, Availability + scale, Security, Backup + disaster recovery, Operations, Monitoring, Automation, and Help. The main content area is divided into two sections: 'Essentials' and 'Properties'. The 'Essentials' section shows the resource group 'priya', status 'Stopped (deallocated)', location 'Central India (Zone 1)', subscription 'Azure Pass - Sponsorship', subscription ID '9492d944-6c0c-4990-bb4e-f700ea5a2147', and availability zone '1'. The 'Properties' section shows the computer name 'azureuser', operating system 'Linux', VM generation 'V2', and VM architecture 'x64'. The 'Networking' section shows the public IP address '20.40.51.122' and the virtual network/subnet 'nithinvm-vnet/default'.

ii) Now connect this virtual machine to the putty and switch the user to the root.

iii) now open the bash script and put the below code and run the command "nohup nodejs index.js &"

Code:

```
var express = require('express')

var app = express()

var os = require('os');

app.get('/', function (req, res) {

  res.send('Hello World from host ' + os.hostname() + '!')

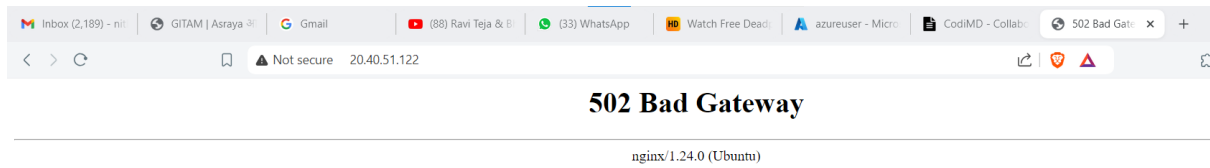
})

app.listen(3000, function () {

  console.log('Hello world app listening on port 3000!')

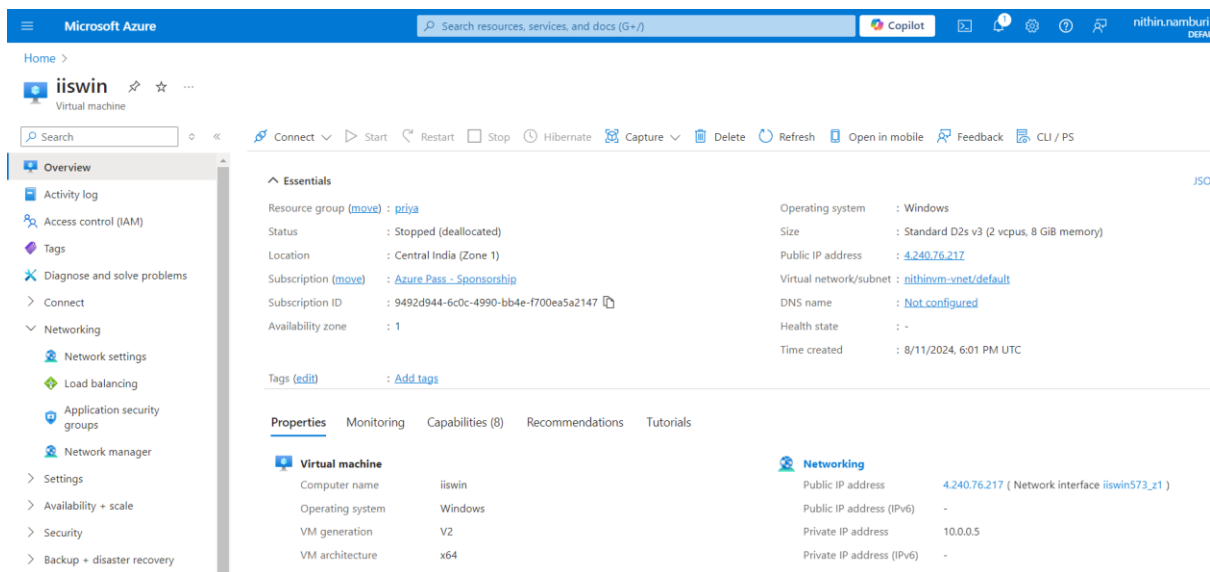
})
```

iv) Now copy the IP Address of the VM and paste it on the browser .



2)

i) Firstly we have to create a resource group and create a VM for windows(iiswin).



ii) Make sure RDP port is on.

iii) Now copy the IP address of the VM and connect to the RDP.

iv) Go to the search panel and type server manager and go to add roles and features and check the box of web server IIS.

v) In Azure click the capture option available and create a new Image with the below specifications.

The screenshot shows the Azure portal interface for a VM image version. The left sidebar contains navigation links: Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Settings, Automation, and Help. The main content area is titled '1.0.0 (nithinsgallery/nithindefi/1.0.0)' and includes a search bar and action buttons: Create VM, Create VMSS, Delete, Refresh, and Give feedback. The 'Essentials' section displays the following details:

Property	Value
Resource group	(mouse) : priya
Status	: Succeeded
Location	: Central India
Subscription	(mouse) : Azure Pass - Sponsorship
Subscription ID	: 9492d944-6c0c-4990-bb4e-f700ea5a2147

The right sidebar shows additional details:

Property	Value
Azure compute gallery	: nithinsgallery
VM image definition	: nithindefi
Replication status	: Completed
Replication mode	: Full
Confidential OS disk encryption	: -
Encryption type	: Platform-managed key
End of life date	: -
Exclude from latest	: No
Lock deleting Replicated ...	: Yes
Storage account type	: Standard HDD LRS

At the bottom, there are links for 'Tags (edit)' and 'Add tags'.

vi) Now click on the create VM option to create another VM.

The screenshot shows the Azure portal interface for a Virtual machine named 'chand'. The left sidebar contains navigation links: Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Connect, Networking, Load balancing, Application security groups, Network manager, Settings, Availability + scale, Security, Backup + disaster recovery, Operations, and Monitoring. The main content area displays the VM details:

Property	Value
Operating system	Windows
VM generation	V2
VM architecture	x64
Agent status	Ready
Agent version	2.7.41491.1131
Hibernation	Disabled
Host group	-
Host	-
Proximity placement group	-
Colocation status	N/A
Capacity reservation group	-
Disk controller type	SCSI

The 'Azure Spot' section shows:

Property	Value
Azure Spot	-
Azure Spot eviction policy	-

The 'Availability + scaling' section shows:

Property	Value
Availability zone	(edit) 1

The right sidebar shows the 'Size' and 'Source image details' sections:

Property	Value
Public IP address (IPv6)	-
Private IP address	10.0.0.6
Private IP address (IPv6)	-
Virtual network/subnet	nithinvm-vnet/default
DNS name	Configure

The 'Size' section shows:

Property	Value
Size	Standard D2s v3
vCPUs	2
RAM	8 GiB

The 'Source image details' section shows:

Property	Value
Source image publisher	MicrosoftWindowsServer
Source image offer	WindowsServer
Source image plan	2022-datacenter-azure-edition-hotpatch
Source image definition	nithindefi

The 'Disk' section shows:

Property	Value
OS disk	chand_OsDisk_1_ea24515d91aa4794843710328476

vii) Now connect this IP to RDP and check whether IIS is connected or not.

The screenshot shows a web browser window with the address bar displaying '20.244.33.84'. The page content is the 'Internet Information Services' welcome page, featuring a blue background with the text 'Welcome' in multiple languages: 'Welcome', 'Bienvenue', 'Tervetuloa', 'ようこそ', 'Benvenuto', '환영합니다', 'Добро пожаловать', 'Üdvözöljük', 'Καλώς ορίσατε', 'Välkommen', 'ברוכים הבאים', 'Vítejte', 'Hoş geldiniz', 'مرحباً', and 'Welkom'. The URL in the address bar is 'https://20.244.33.84/'. The page also includes a link to 'microsoft.com/fwlink/?linkid=66138&clcid=0x409'.

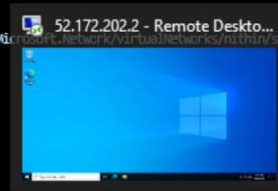
3) Create a windows vm using CLI.

account list and resource group creation

```
nithin [ ~ ]$ az account list
[
  {
    "cloudName": "AzureCloud",
    "homeTenantId": "c7a81446-f2d1-4a4a-ae18-9c83d8f1ee33",
    "id": "9492d944-6c8c-4990-bb4e-f700ea5a2147",
    "isDefault": true,
    "managedByTenants": [],
    "name": "Azure Pass - Sponsorship",
    "state": "Enabled",
    "tenantId": "c7a81446-f2d1-4a4a-ae18-9c83d8f1ee33",
    "user": {
      "cloudShellID": true,
      "name": "live.com\\nithin.namburi10703@outlook.com",
      "type": "user"
    }
  }
]
nithin [ ~ ]$ az group create --name nithin --location centralindia
{
  "id": "/subscriptions/9492d944-6c8c-4990-bb4e-f700ea5a2147/resourceGroups/nithin",
  "location": "centralindia",
  "managedBy": null,
  "name": "nithin",
  "properties": {
    "provisioningState": "Succeeded"
  },
  "tags": null,
  "type": "Microsoft.Resources/resourceGroups"
}
nithin [ ~ ]$ az network vnet create --resource-group training --name training --subnet-name trainingsubnet
```

Creating subnet

```
nithin [ ~ ]$ az network vnet create --resource-group nithin --name nithin --subnet-name nithinsubnet
{
  "newVnet": {
    "addressSpace": {
      "addressPrefixes": [
        "10.0.0.0/16"
      ]
    },
    "enableDdosProtection": false,
    "etag": "W/\"fe5b85b5-d8b3-4432-a716-c7d459bf3ce\"\"",
    "id": "/subscriptions/9492d944-6c8c-4990-bb4e-f700ea5a2147/resourceGroups/nithin/providers/Microsoft.Network/virtualNetworks/nithin",
    "location": "centralindia",
    "name": "nithin",
    "provisioningState": "Succeeded",
    "resourceGroup": "nithin",
    "resourceGuid": "946661a3-9cb2-4d87-a527-3efd6f04f457",
    "subnets": [
      {
        "addressPrefix": "10.0.0.0/24",
        "delegations": [],
        "etag": "W/\"fe5b85b5-d8b3-4432-a716-c7d459bf3ce\"\"",
        "id": "/subscriptions/9492d944-6c8c-4990-bb4e-f700ea5a2147/resourceGroups/nithin/providers/Microsoft.Network/virtualNetworks/nithin/subnets/nithinsubnet",
        "name": "nithinsubnet",
        "privateEndpointNetworkPolicies": "Disabled",
        "privateLinkServiceNetworkPolicies": "Enabled",
        "provisioningState": "Succeeded",
        "resourceGroup": "nithin",
        "type": "Microsoft.Network/virtualNetworks/subnets"
      }
    ]
  },
}
```



Creating Public IP for the VM

```
nithin [ ~ ]$ az network public-ip create --resource-group nithin --name nithinpublicip
[coming breaking change] In the coming release, the default behavior will be changed as follows when sku is Standard and zone is not provided: For zonal regions, you will get a non zone-redundant IP indicated by zones:null.
{
  "publicIp": {
    "ddosSettings": {
      "protectionMode": "VirtualNetworkInherited"
    },
    "etag": "W/\"ea3329d4-81a7-4796-8d6d-9cde28ecb9ce\"",
    "id": "/subscriptions/9492d944-6c8c-4998-bb4e-f700ea5a2147/resourceGroups/nithin/providers/Microsoft.Network/publicIPAddresses/nithinpublicip",
    "idleTimeoutInMinutes": 4,
    "ipAddress": "52.172.282.2",
    "ipTags": [],
    "location": "centralindia",
    "name": "nithinpublicip",
    "provisioningState": "Succeeded",
    "publicIpAddressVersion": "IPv4",
    "publicIpAllocationMethod": "Static",
    "resourceGroup": "nithin",
    "resourceGuid": "99144028-2fa9-414d-b5cc-d973ae0cc377",
    "sku": {
      "name": "Standard",
      "tier": "Regional"
    },
    "type": "Microsoft.Network/publicIPAddresses"
  }
}
nithin [ ~ ]$ az network nsg create --resource-group nithin --name nithinsecuritygroup
{
  "NewNSG": {
    "defaultSecurityRules": [
      {
        "access": "Allow",
        "description": "Allow inbound traffic from all VMs in VNET",
        "destinationAddressPrefix": "VirtualNetwork",

```

Creating the network security group

```
nithin [ ~ ]$ az network nsg create --resource-group nithin --name nithinsecuritygroup
{
  "NewNSG": {
    "defaultSecurityRules": [
      {
        "access": "Allow",
        "description": "Allow inbound traffic from all VMs in VNET",
        "destinationAddressPrefix": "VirtualNetwork",
        "destinationAddressPrefixes": [],
        "destinationPortRanges": "*",
        "destinationPortRanges": [],
        "direction": "Inbound",
        "etag": "W/\"a953aca5-b8d8-4eda-b288-88b0fcc211f9\"",
        "id": "/subscriptions/9492d944-6c8c-4998-bb4e-f700ea5a2147/resourceGroups/nithin/providers/Microsoft.Network/networkSecurityGroups/nithinsecuritygroup/defaultSecurityRules/AllowVnetInbound",
        "name": "AllowVnetInbound",
        "priority": 65000,
        "protocol": "*",
        "provisioningState": "Succeeded",
        "resourceGroup": "nithin",
        "sourceAddressPrefix": "VirtualNetwork",
        "sourceAddressPrefixes": [],
        "sourcePortRanges": "*",
        "sourcePortRanges": [],
        "type": "Microsoft.Network/networkSecurityGroups/defaultSecurityRules"
      },
      {
        "access": "Allow",
        "description": "Allow inbound traffic from azure load balancer",

```

Creating the Nic card

```
nithin [ ~ ]$ az network nic create --resource-group nithin --name nithinnic --vnet-name nithin --subnet nithinsubnet --network-security-group nithinsecuritygroup --public-ip-address nithinpublicip
{
  "NewNIC": {
    "auxiliaryMode": "None",
    "auxiliarySKU": "None",
    "disableTcpStateTracking": false,
    "dnsSettings": {
      "appliedDnsServers": [],
      "dnsServers": [],
      "internalDomainNameSuffix": "unqwnffstsdutjjh14w8thukh.rx.internal.cloudapp.net"
    },
    "enableAcceleratedNetworking": false,
    "enableIPForwarding": false,
    "etag": "W/\"95549d81-1118-4fd8-a5c7-bb57673485b2\"",
    "hostedWorkloads": [],
    "id": "/subscriptions/9492d944-6c8c-4998-bb4e-f708ea5a2147/resourceGroups/nithin/providers/Microsoft.Network/networkInterfaces/nithinnic",
    "ipConfigurations": [
      {
        "etag": "W/\"95549d81-1118-4fd8-a5c7-bb57673485b2\"",
        "id": "/subscriptions/9492d944-6c8c-4998-bb4e-f708ea5a2147/resourceGroups/nithin/providers/Microsoft.Network/networkInterfaces/nithinnic/ipConfigurations/ipconfig1",
        "name": "ipconfig1",
        "primary": true,
        "privateIpAddress": "10.0.0.4",
        "privateIpAddressVersion": "IPv4",
        "privateIPAllocationMethod": "Dynamic",
        "provisioningState": "Succeeded",
        "publicIpAddress": {
          "id": "/subscriptions/9492d944-6c8c-4998-bb4e-f708ea5a2147/resourceGroups/nithin/providers/Microsoft.Network/publicIPAddresses/nithinpublicip",
          "resourceGroup": "nithin"
        }
      }
    ]
  }
}
```

VM creation

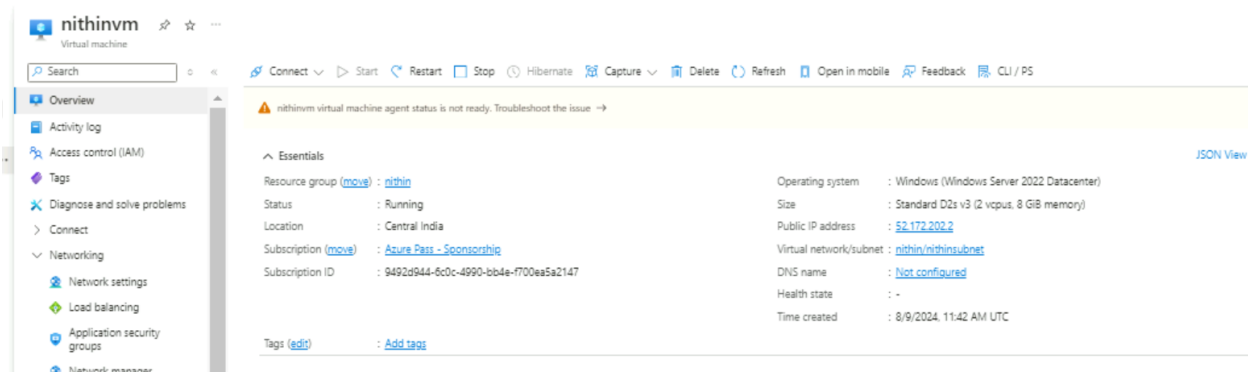
```
nithin [ ~ ]$ az vm create --resource-group nithin --name nithinvm --nics nithinnic --image win2022datacenter --size Standard_D2s_v3 --admin-username nithinvm
Admin Password:
Confirm Admin Password:
{
  "fqdns": "",
  "id": "/subscriptions/9492d944-6c8c-4998-bb4e-f708ea5a2147/resourceGroups/nithin/providers/Microsoft.Compute/virtualMachines/nithinvm",
  "location": "centralindia",
  "macAddress": "7C-1E-52-3C-10-D2",
  "powerState": "VM running",
  "privateIpAddress": "10.0.0.4",
  "publicIpAddress": "52.172.282.2",
  "resourceGroup": "nithin",
  "zones": ""
}
```

Opening the port for connecting the virtual machine

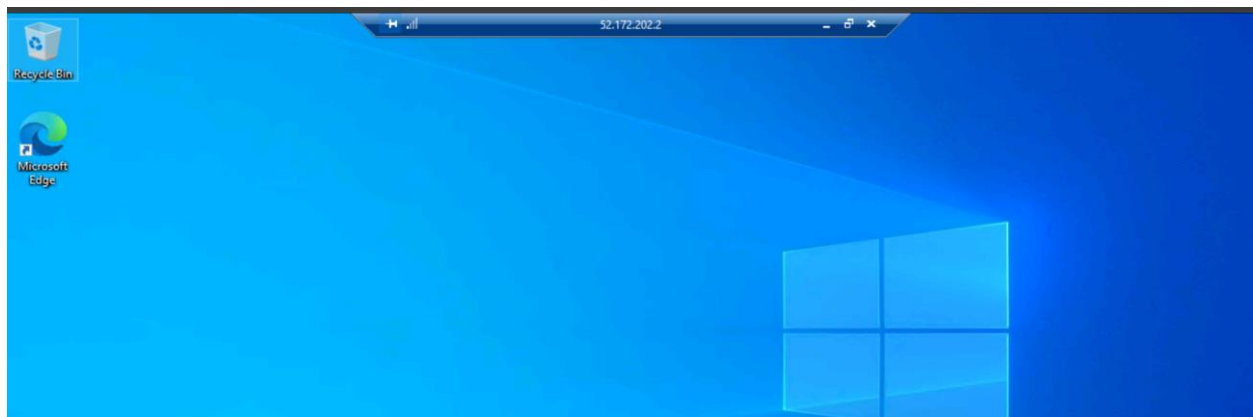
```
nithin [ ~ ]$ az vm open-port --port 3389 --resource-group nithin --name nithinvm
{
  "defaultSecurityRules": [
    {
      "access": "Allow",
      "description": "Allow inbound traffic from all VMs in VNET",
      "destinationAddressPrefix": "VirtualNetwork",
      "destinationAddressPrefixes": [],
      "destinationPortRange": "*",
      "destinationPortRanges": [],
      "direction": "Inbound",
      "etag": "W/\"b6aadd52-6240-477a-b124-bb5b83c8d97e\"",
      "id": "/subscriptions/9492d944-6c8c-4998-bb4e-f708ea5a2147/resourceGroups/nithin/providers/Microsoft.Network/networkSecurityGroups/nithinsecuritygroup/defaultSecurityRules/AllowVnetInbound",
      "name": "AllowVnetInbound",
      "priority": 65000,
      "protocol": "*",
      "provisioningState": "Succeeded",
      "resourceGroup": "nithin",
      "sourceAddressPrefix": "VirtualNetwork",
      "sourceAddressPrefixes": [],
      "sourcePortRange": "*",
      "sourcePortRanges": [],
      "type": "Microsoft.Network/networkSecurityGroups/defaultSecurityRules"
    }
  ],
  {

```

Overview of the VM created in the Azure

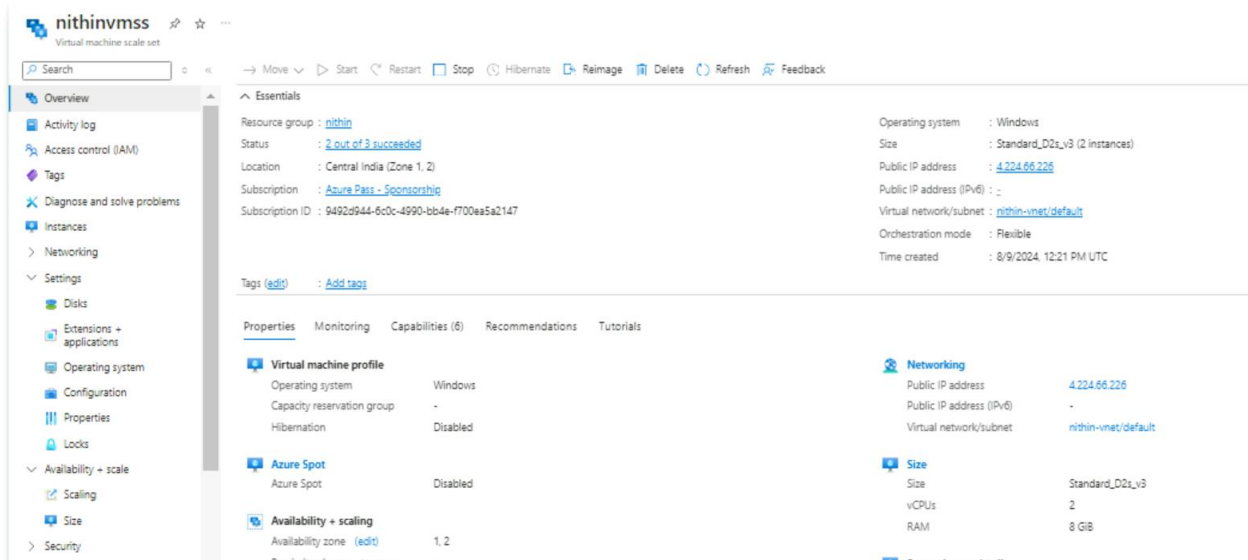


Created Virtual desktop Interface

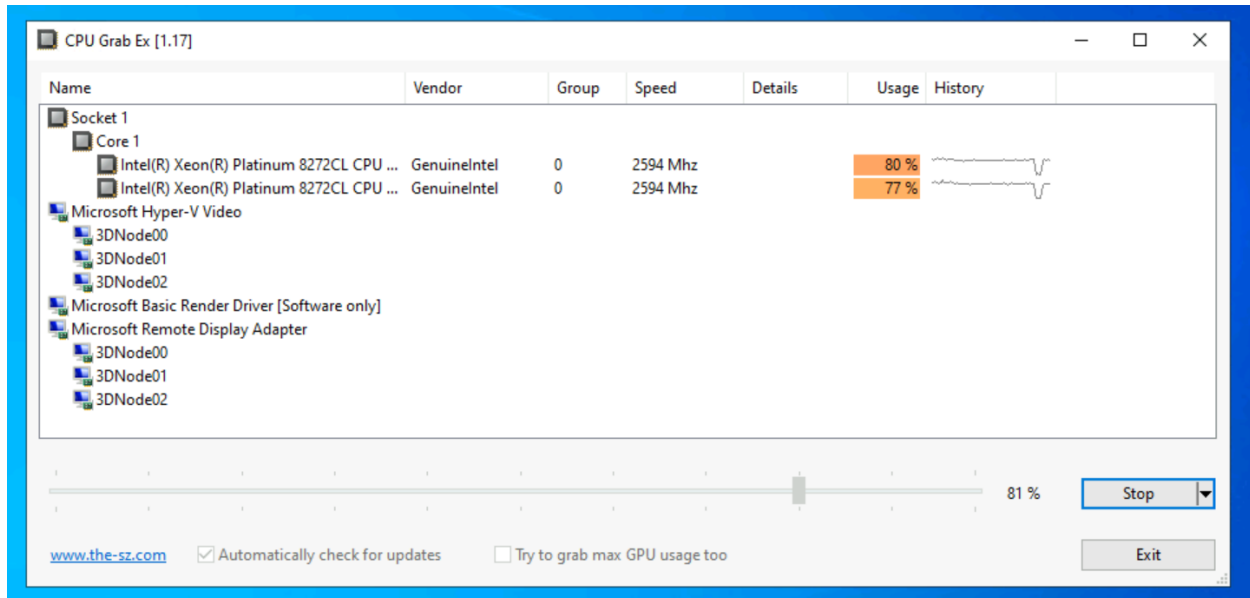


4) Create a VM scale set for window OS where average CPU utilization is > 50 regarding that its should scale up and scale down.

i) First we have to create a VMSS to scale the VM based on the CPU load.



ii)we increased the load of CPU using an app.



iii)Because the CPU load is more than 50% , so it is creating a instance to balance the load.

The screenshot shows the Azure portal interface with a table of VM instances. The table has columns: Name, Computer name, Status, Type, and Provisioning state. Two instances are listed: 'nithinvmss_a2873651' with status 'Running' and 'nithinvmss_497a73ca' with status 'Creating'.

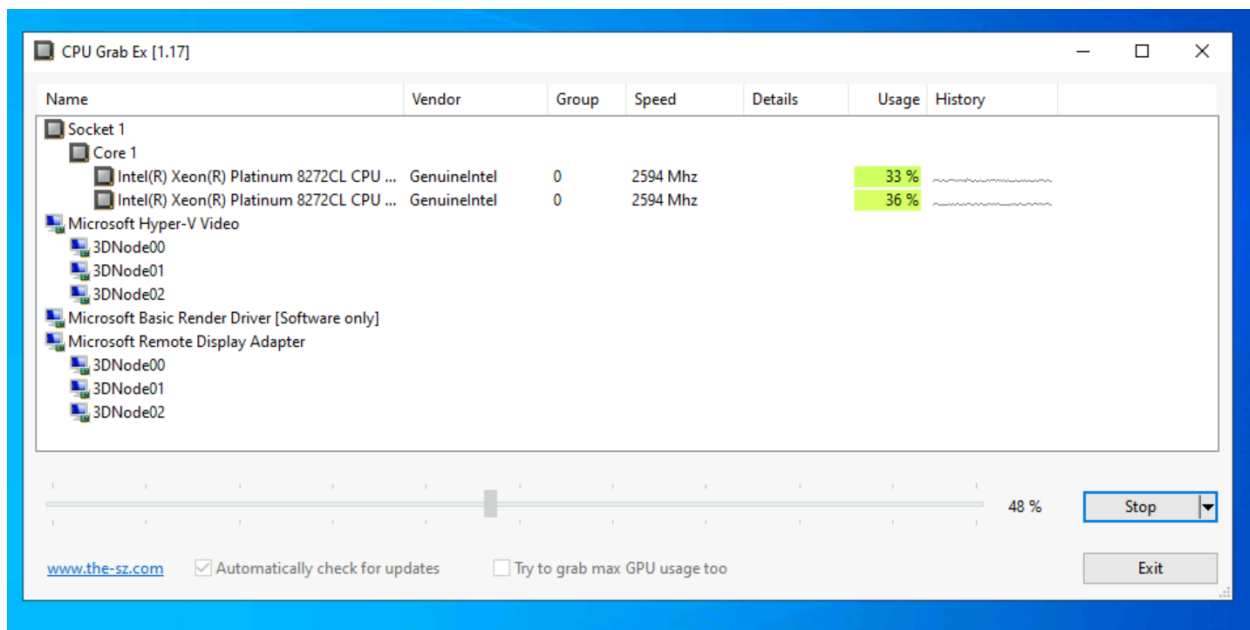
Name	Computer name	Status	Type	Provisioning state
nithinvmss_a2873651	nithinvm86DW33	Running	VM	Succeeded
nithinvmss_497a73ca		Creating	VM	Creating

iv)creation of new instance is completed.

The screenshot shows the Azure portal interface with a table of VM instances. The table has columns: Name, Computer name, Status, Type, and Provisioning state. Two instances are listed: 'nithinvmss_a2873651' with status 'Running' and 'nithinvmss_497a73ca' with status 'Running'.

Name	Computer name	Status	Type	Provisioning state
nithinvmss_a2873651	nithinvm86DW33	Running	VM	Succeeded
nithinvmss_497a73ca	nithinvm22Z4MU	Running	VM	Succeeded

v)we reduce the load of the CPU to less than 50%, for checking the lower loads



vi)It is creating the new instance for the reduced load.

The screenshot shows the AWS Management Console 'Instances' page for the account 'nithinvmss'. The page displays a table of virtual machine instances. The table has columns: Name, Computer name, Status, Type, and Provisioning state. Two instances are listed: 'nithinvmss_a2873651' with status 'Running' and 'nithinvmss_f2f22da4' with status 'Creating'.

Name	Computer name	Status	Type	Provisioning state
nithinvmss_a2873651	nithinvmss86DW33	Running	VM	Succeeded
nithinvmss_f2f22da4	nithinvmss3ME4WS	Creating	VM	Creating

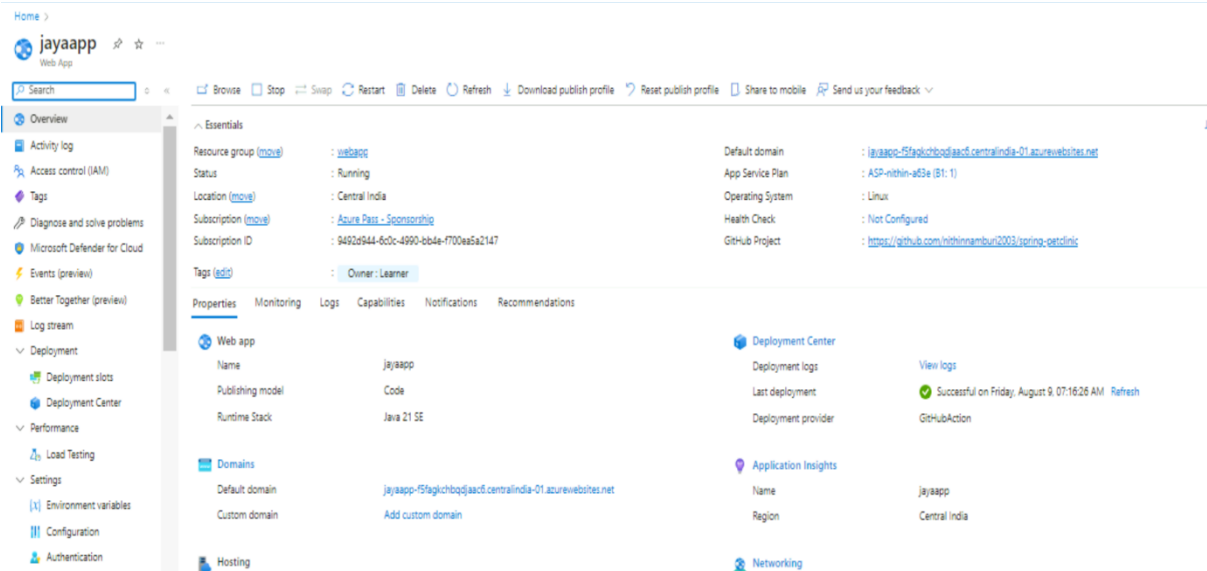
vii)New Instance was created for the decreased load of CPU.

The screenshot shows the AWS Management Console 'Instances' page for the account 'nithinvmss'. The page displays a table of virtual machine instances. The table has columns: Name, Computer name, and Status. Two instances are listed: 'nithinvmss_a2873651' with status 'Running' and 'nithinvmss_f2f22da4' with status 'Running'.

Name	Computer name	Status
nithinvmss_a2873651	nithinvmss86DW33	Running
nithinvmss_f2f22da4	nithinvmss3ME4WS	Running

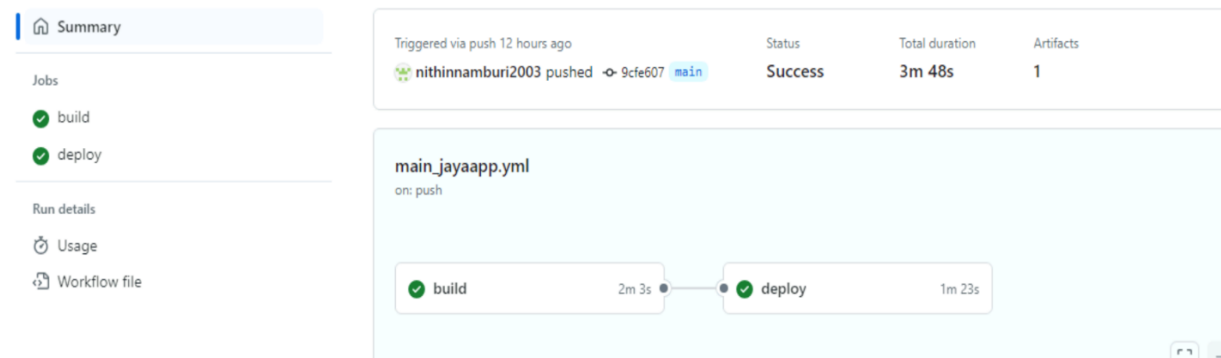
5) Deploy the spring pet clinic on azure app services.

i)Deploying the web app for the spring pet clinic with the name called Jayaapp.



ii)first we have to fork the respective spring pet clinic repository to our github repository and while deploying the web app we have to link our repository in web app deployment part.

iii)After that, we have to deploy the web app services and after the completion of deployment we have to check the actions in github to check whether the service is successfully deployed or not.



iv) Click the browse option available in the Azure app services to check the web app launched successfully or not.

