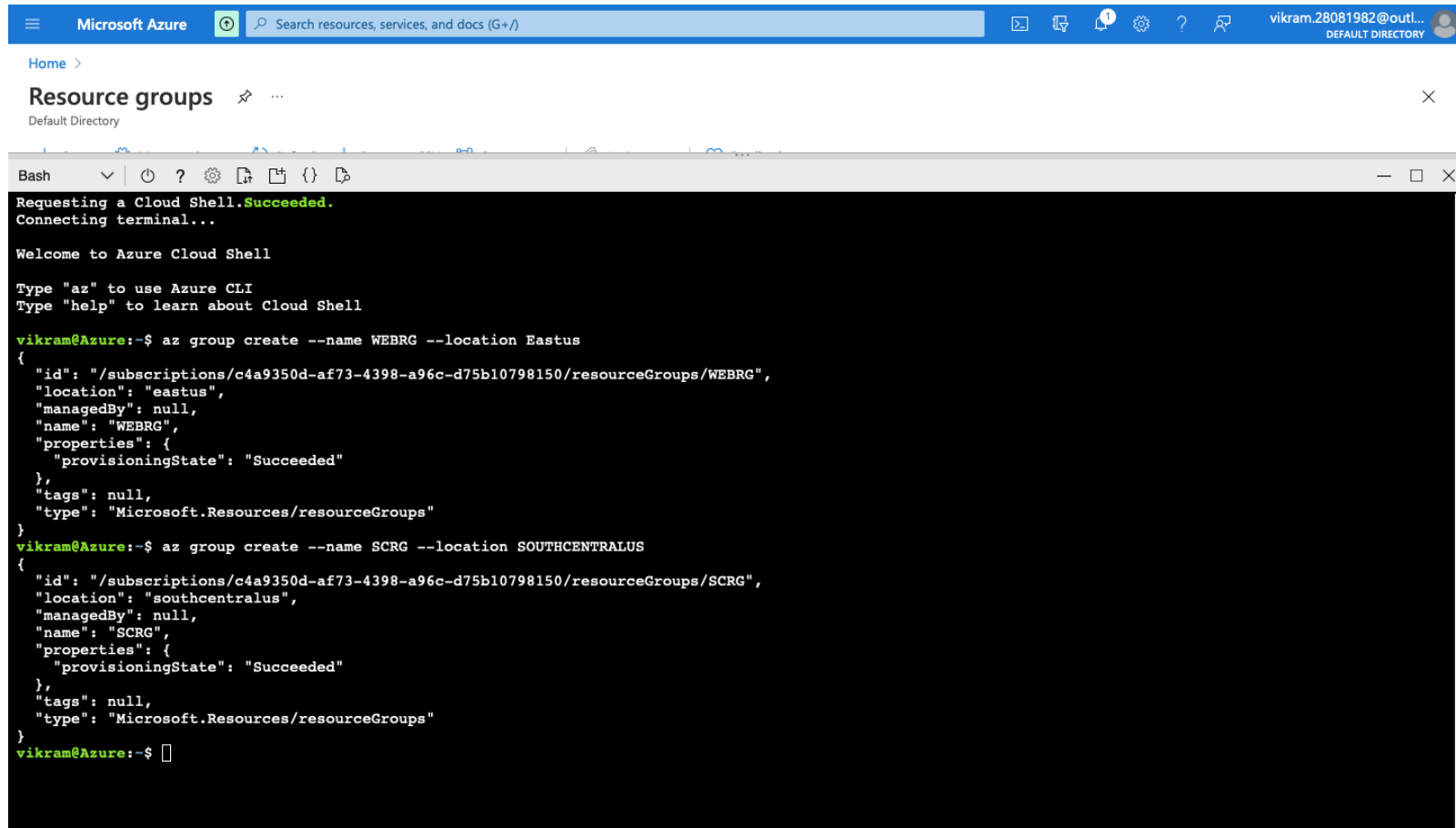


Azure Case study by Vikram

Step by steps tasks performed:

Task-1 : CREATE TWO rg"s using azure portal

Solution: az group create --name WEBRG. --location Eastus
Snippet



The screenshot shows the Azure portal interface. At the top, there's a navigation bar with the Microsoft Azure logo, a search bar, and user information (vikram.28081982@outl...). Below the navigation bar, the 'Resource groups' page is displayed. A terminal window is open, showing the execution of two 'az group create' commands. The first command creates a resource group named 'WEBRG' in the 'Eastus' location, and the second command creates a resource group named 'SCRG' in the 'SOUTHCENTRALUS' location. Both commands succeed, and the terminal displays the JSON response for each.

```
Bash
Requesting a Cloud Shell.Succeeded.
Connecting terminal...

Welcome to Azure Cloud Shell

Type "az" to use Azure CLI
Type "help" to learn about Cloud Shell

vikram@Azure:~$ az group create --name WEBRG --location Eastus
{
  "id": "/subscriptions/c4a9350d-af73-4398-a96c-d75b10798150/resourceGroups/WEBRG",
  "location": "eastus",
  "managedBy": null,
  "name": "WEBRG",
  "properties": {
    "provisioningState": "Succeeded"
  },
  "tags": null,
  "type": "Microsoft.Resources/resourceGroups"
}
vikram@Azure:~$ az group create --name SCRG --location SOUTHCENTRALUS
{
  "id": "/subscriptions/c4a9350d-af73-4398-a96c-d75b10798150/resourceGroups/SCRG",
  "location": "southcentralus",
  "managedBy": null,
  "name": "SCRG",
  "properties": {
    "provisioningState": "Succeeded"
  },
  "tags": null,
  "type": "Microsoft.Resources/resourceGroups"
}
vikram@Azure:~$
```

Task-2: Creating two Virtual networks “WEBVNET & SCVNET” networks using Azure CLI

Solution: created two virtual networks webvnet and scvnet using portal

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes the Microsoft Azure logo, a search bar, and user information for 'vikram.28081982@outl...'. The breadcrumb trail indicates the path: Home > Microsoft.VirtualNetwork-20210818224633 > WEBVNET. The main content area is titled 'WEBVNET Virtual network'. On the left, a sidebar lists various settings and tools, including Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Address space, Connected devices, Subnets, DDoS protection, Firewall, Security, DNS servers, Peerings, Service endpoints, and Private endpoints. The 'Overview' section is expanded, showing 'Essentials' with details: Resource group (change) : WEBRG, Address space : 10.1.0.0/16, Location : East US, DNS servers : Azure provided DNS service, Subscription (change) : Free Trial, Subscription ID : c4a9350d-af73-4398-a96c-d75b10798150, and Tags (change) : Click here to add tags. Below this, the 'Connected devices' section is shown with a search bar and a table with columns: Device ↑↓, Type ↑↓, IP Address ↑↓, and Subnet ↑↓. The table contains the text 'No results.' At the bottom of the screen, a black banner displays the message: 'Cloud Shell timed out. Cloud Shell has been idle for 20 minutes or you have manually exited. Would you like to reconnect?'

Microsoft Azure

Search resources, services, and docs (G+)

3

vikram.28081982@outl...
DEFAULT DIRECTORY

Home > Microsoft.VirtualNetwork-20210818225253 >

SCVNET
Virtual network

✦ ...

✕

Search (Cmd+ /)

<<

Refresh

→ Move

✕ Delete

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Address space

Connected devices

Subnets

DDoS protection

Firewall

Security

DNS servers

Peerings

Service endpoints

Private endpoints

Properties

Locks

Essentials

JSON View

Resource group (change) : SCRG

Address space : 10.2.0.0/16

Location : South Central US

DNS servers : Azure provided DNS service

Subscription (change) : Free Trial

Subscription ID : c4a9350d-af73-4398-a96c-d75b10798150

Tags (change) : Click here to add tags

Connected devices

Search connected devices

Device ↑↓	Type ↑↓	IP Address ↑↓	Subnet ↑↓
No results.			

Cloud Shell has been idle for 20 minutes or you have manually exited.

Would you like to reconnect?

TASK-3 : creating AVAILAIBILTY SET :

SOLUTION: Using PORTAL created availibity set

The screenshot displays the Microsoft Azure portal interface. At the top, the navigation bar includes the Microsoft Azure logo, a search bar, and user information for 'vikram.28081982@outl...'. The breadcrumb trail indicates the current location: Home > Microsoft.AvailabilitySet-20210818225902 > availabilityset. The left-hand navigation pane lists various options: Overview (selected), Activity log, Access control (IAM), Tags, Settings, Configuration, Virtual machines, Properties, Locks, Automation, Tasks (preview), Export template, Support + troubleshooting, and New Support Request. The main content area is titled 'availabilityset' and shows the 'Essentials' tab. It lists the following details: Resource group (change) : WEBRG, Location : East US, Subscription (change) : Free Trial, and Subscription ID : c4a9350d-af73-4398-a96c-d75b10798150. On the right side of the Essentials section, it shows: Fault domains : 2, Update domains : 5, Virtual machines : 0, Managed : Yes, and Colocation status : N/A. Below this, there is a search bar for virtual machines and a table with columns: Name, Status, Colocation status, Fault Domain, and Update Domain. The table currently shows 'No results.' At the bottom of the screen, a message states: 'Cloud Shell has been idle for 20 minutes or you have manually exited. Would you like to reconnect?'.

Microsoft Azure

Search resources, services, and docs (G+)

Home > Microsoft.AvailabilitySet-20210818225902 > availabilityset

Availability set

Search (Cmd+)

Delete Refresh

Overview

Activity log

Access control (IAM)

Tags

Settings

Configuration

Virtual machines

Properties

Locks

Automation

Tasks (preview)

Export template

Support + troubleshooting

New Support Request

Essentials

Resource group (change) : WEBRG

Location : East US

Subscription (change) : Free Trial

Subscription ID : c4a9350d-af73-4398-a96c-d75b10798150

Fault domains : 2

Update domains : 5

Virtual machines : 0

Managed : Yes

Colocation status : N/A

Search virtual machines

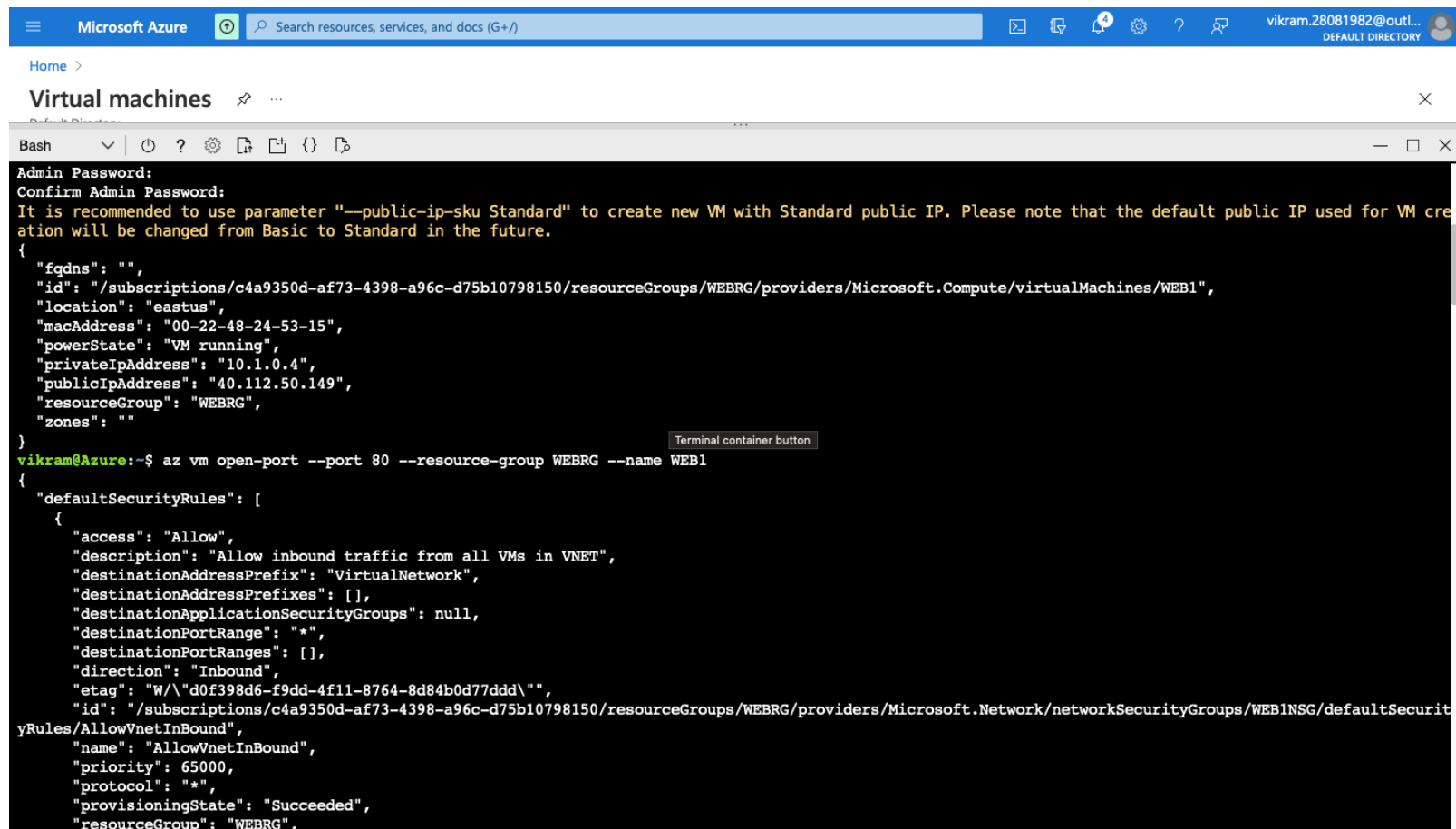
Name	Status	Colocation status	Fault Domain	Update Domain
No results.				

Cloud Shell has been idle for 20 minutes or you have manually exited.
Would you like to reconnect?

Task-4: Create two windows web servers in webrg using azure cli .

solution: az vm create --resource-group WEBRG --name WEB1 --image win2016datacenter --admin-username WEBUSSER1
az vm create --resource-group WEBRG --name WEB2 --image win2016datacenter --admin-username WEBUSER2

To open port : az vm open-port --port 80 --resource-group WEBRG --name WEB2



```
Bash
Admin Password:
Confirm Admin Password:
It is recommended to use parameter "--public-ip-sku Standard" to create new VM with Standard public IP. Please note that the default public IP used for VM creation will be changed from Basic to Standard in the future.
{
  "fqdns": "",
  "id": "/subscriptions/c4a9350d-af73-4398-a96c-d75b10798150/resourceGroups/WEBRG/providers/Microsoft.Compute/virtualMachines/WEB1",
  "location": "eastus",
  "macAddress": "00-22-48-24-53-15",
  "powerState": "VM running",
  "privateIpAddress": "10.1.0.4",
  "publicIpAddress": "40.112.50.149",
  "resourceGroup": "WEBRG",
  "zones": ""
}
vikram@Azure:~$ az vm open-port --port 80 --resource-group WEBRG --name WEB1
{
  "defaultSecurityRules": [
    {
      "access": "Allow",
      "description": "Allow inbound traffic from all VMs in VNET",
      "destinationAddressPrefix": "VirtualNetwork",
      "destinationAddressPrefixes": [],
      "destinationApplicationSecurityGroups": null,
      "destinationPortRange": "*",
      "destinationPortRanges": [],
      "direction": "Inbound",
      "etag": "W/\"d0f398d6-f9dd-4f11-8764-8d84b0d77ddd\"",
      "id": "/subscriptions/c4a9350d-af73-4398-a96c-d75b10798150/resourceGroups/WEBRG/providers/Microsoft.Network/networkSecurityGroups/WEB1NSG/defaultSecurityRules/AllowVnetInBound",
      "name": "AllowVnetInBound",
      "priority": 65000,
      "protocol": "*",
      "provisioningState": "Succeeded",
      "resourceGroup": "WEBRG",
```

Installing IIS:

```
Windows PowerShell
Copyright (C) 2016 Microsoft Corporation. All rights reserved.

PS C:\Users\WEBUSSER1> Install-WindowsFeature -name Web-Server -IncludeManagementTools

Success Restart Needed Exit Code      Feature Result
-----
True      No                Success      {Common HTTP Features, Default Document, D...

PS C:\Users\WEBUSSER1> _
```

Task:5 :Created Backup for WEBServers:
solution: from recovery service vault added servers to backup:

Microsoft Azure

Search resources, services, and docs (G+)

Home > Microsoft.RecoveryServicesV2 > webvault > Backup Goal >

webvault

Configure Backup

Backup policy *

DefaultPolicy

Create a new policy

Policy Details

Full Backup

Backup Frequency
Daily at 3:30 AM UTC

Instant Restore
Retain instant recovery snapshot(s) for 2 day(s)

Retention of daily backup point
Retain backup taken every day at 3:30 AM for 30 Day(s)

Virtual Machines

Name	Resource Group	OS Disk Only
No Virtual machines selected.		

Add

OS Disk only backup

option allows you to backup Azure Virtual Machine with only OS disk and exclude all the data disks. You can use Selective Disk Backup feature through Powershell or CLI to include or exclude specific data disks. Know more about Selective Disk Backup feature, its limitation and pricing- [Learn more](#).

Enable backup

Select virtual machines

Virtual machines in the same region as vault and not protected by another vault are shown. Click to learn more on best practices to configure backup.

Filter items ...

	Virtual machine name	Resource Group
<input checked="" type="checkbox"/>	WEB1	WEBRG
<input checked="" type="checkbox"/>	WEB2	WEBRG

OK

Bash

Task-6: Create LOAD BALANCER for web servers

Solution:

The screenshot displays the Microsoft Azure portal interface for configuring a Load Balancer. The top navigation bar shows the user is logged in as 'vikram.28081982@outl...' with a 'DEFAULT DIRECTORY' label. The breadcrumb trail indicates the path: Home > Load balancing - help me choose (Preview) > webload. The left-hand navigation pane is expanded to show the 'webload' Load balancer, with sub-items including Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Settings, Frontend IP configuration, Backend pools, Health probes, Load balancing rules, Inbound NAT rules, Properties, Locks, Monitoring, Alerts, Insights, Automation, and Tasks (preview). The main content area is titled 'webload' and includes a search bar and action buttons (Move, Delete, Refresh, Give feedback). A banner at the top of the main area encourages upgrading to Standard SKU. Below this, the 'Essentials' section provides key configuration details in a table:

Property	Value
Resource group (change)	WEBRG
Location	East US
Subscription (change)	Free Trial
Subscription ID	c4a9350d-af73-4398-a96c-d75b10798150
SKU	Basic
Tags (change)	Click here to add tags
Backend pool	backend (2 virtual machines)
Load balancing rule	-
Health probe	-
NAT rules	0 inbound
Private IP address	10.1.0.6

Below the Essentials section, a heading 'Configure high availability and scalability for your applications' is followed by a paragraph explaining that Azure Load Balancer supports TCP/UDP-based protocols and protocols for real-time voice and video messaging. Three cards are displayed below, each with a 'View' button:

- Balance IPv4 and IPv6 addresses**: Native dual-stack endpoints help meet regulatory requirements and address the fast-growing number of devices in mobile and IoT. [Learn more](#)
- Build highly reliable applications**: Load Balancer improves application uptime by routing traffic to healthy nodes. [Learn more](#)
- Secure your networks**: Control network traffic and protect private networks using built-in network address translation (NAT). [Learn more](#)

The bottom of the screen shows a 'Bash' terminal window with standard icons for help, settings, and file management.

Backend Pools:

Microsoft Azure

Search resources, services, and docs (G+)

Home > Load balancing - help me choose (Preview) > webload

webload | Backend pools

Load balancer

Search (Cmd+ /)

+ Add Refresh Give feedback

Filter by name...

Backend pool == all Resource Name == all Resource Status == all IP address == all Network interface == all Availability zone == all

Group by Backend pool

Backend pool	Resource Name	Resource Status	IP Address	Network interface	Availability zone	Rules count
backend	WEB1	Running	10.1.0.4	WEB1VMNic		0
backend	WEB2	Running	10.1.0.5	WEB2VMNic		0

Bash

Task-7: VNet peering to connect between two regions:

Solution:

The screenshot displays the Microsoft Azure portal interface. The top navigation bar includes the Microsoft Azure logo, a search bar, and user information for 'vikram.28081982@outl...'. The main content area is titled 'Virtual networks' and shows a list of virtual networks: 'SCVNET' and 'WEBVNET'. The 'SCVNET' virtual network is selected, and the 'Peering' tab is active. The 'Peering status' is set to 'all'. A table lists the peering connections:

Name	Peering status	Peer	Gateway transit
webvnet	Connected	WEBVNET	Disabled

The bottom of the screen shows a terminal window with the 'Bash' prompt and various icons for file management and settings.

Task:8: Creating storage account

Solution:

The screenshot displays the Microsoft Azure portal interface. The top navigation bar includes the Microsoft Azure logo, a search bar, and user information for 'vikram.28081982@outl...'. The breadcrumb trail shows 'Home > Storage accounts > neilvembustorage'. The left sidebar contains a navigation menu with categories like 'Overview', 'Data storage', and 'Security + networking'. The main content area shows the 'neilvembustorage' storage account details. A notification banner at the top of the main area advises upgrading to the new alerts platform. Below this, the 'Essentials' section lists key properties: Resource group (NetworkWatcherRG), Location (East US), Subscription (Free Trial), Subscription ID (c4a9350d-af73-4398-a96c-d75b10798150), Disk state (Available), Performance/Access tier (Standard/Hot), Replication (Zone-redundant storage (ZRS)), Account kind (StorageV2 (general purpose v2)), Provisioning state (Succeeded), and Created (19/08/2021, 00:00:54). The 'Tags' section is empty. Below the Essentials section, there are tabs for 'Properties', 'Monitoring', 'Capabilities (7)', 'Recommendations', 'Tutorials', and 'Developer Tools'. The 'Properties' tab is active, showing two sections: 'Blob service' and 'Security'. The 'Blob service' section lists various features and their states: Hierarchical namespace (Disabled), Default access tier (Hot), Blob public access (Enabled), Blob soft delete (Enabled (7 days)), Container soft delete (Enabled (7 days)), Versioning (Disabled), Change feed (Disabled), and NFS v3 (Disabled). The 'Security' section lists: Require secure transfer for REST API operations (Enabled), Storage account key access (Enabled), Minimum TLS version (Version 1.2), and Infrastructure encryption (Disabled). At the bottom of the 'Properties' tab, there is a 'Networking' section with: Allow access from (All networks), Number of private endpoint connections (0), and Network routing (Microsoft network).

Microsoft Azure

Search resources, services, and docs (G+)

Home > Storage accounts > neilvembustorage

Storage account

Search (Cmd+ /)

Open in Explorer Delete Move Refresh Feedback

Microsoft recommends upgrading to the new alerts platform to ensure no interruptions in your alerts. Classic alerts will be retired starting in 2021. Upgrade to the new alerts platform. [Learn more](#)

Essentials

JSON View

Resource group (change) : NetworkWatcherRG

Location : East US

Subscription (change) : Free Trial

Subscription ID : c4a9350d-af73-4398-a96c-d75b10798150

Disk state : Available

Performance/Access tier : Standard/Hot

Replication : Zone-redundant storage (ZRS)

Account kind : StorageV2 (general purpose v2)

Provisioning state : Succeeded

Created : 19/08/2021, 00:00:54

Tags (change) :

Properties Monitoring Capabilities (7) Recommendations Tutorials Developer Tools

Blob service

Hierarchical namespace : Disabled

Default access tier : Hot

Blob public access : Enabled

Blob soft delete : Enabled (7 days)

Container soft delete : Enabled (7 days)

Versioning : Disabled

Change feed : Disabled

NFS v3 : Disabled

Security

Require secure transfer for REST API operations : Enabled

Storage account key access : Enabled

Minimum TLS version : Version 1.2

Infrastructure encryption : Disabled

Networking

Allow access from : All networks

Number of private endpoint connections : 0

Network routing : Microsoft network

Bash

TASK-9: Create Users Backup_Admin and Vmadmin

solution:

Created. Users in AD and roles at subscription level for VM admin and RG level for backup admin to meet the condition

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes the Microsoft Azure logo, a search bar, and the user profile 'vikram.28081982@outl...'. The breadcrumb trail indicates the current location: Home > Resource groups > WEBRG.

The main content area is titled 'WEBRG | Access control (IAM)'. It features a left-hand sidebar with navigation options: Overview, Activity log, Access control (IAM) (selected), Tags, Resource visualizer, Events, Settings (Deployments, Security, Policies, Properties, Locks), Cost Management (Cost analysis, Cost alerts (preview), Budgets, Advisor recommendations), and Monitoring.

The 'Access control (IAM)' page has a sub-header 'Role assignments' and a search bar. Below the search bar, there are filters for 'Type: All', 'Role: All', 'Scope: All scopes', and 'Group by: Role'. A table titled '1 items (1 Users)' displays the role assignments:

Name	Type	Role	Scope	Condition
<input type="checkbox"/> VM vmadmin vmadmin@vikram28081...	User	Virtual Machine Contributor	This resource	None

At the bottom of the screen, there is a 'Bash' terminal window with standard icons for navigation and execution.

Task-10: Storage should be available to all applications using URL with secure access.

Solution:

The screenshot displays the Azure portal interface for the storage account 'neilvembustorage'. The breadcrumb navigation at the top shows 'Home > Storage accounts > neilvembustorage'. The left-hand navigation pane is expanded to 'Access keys' under the 'Security + networking' category. The main content area features a title bar with 'neilvembustorage | Access keys' and a search bar. Below the title bar, there are three action buttons: 'Show keys' (eye icon), 'Set rotation reminder' (clock icon), and 'Refresh' (circular arrow icon). A descriptive paragraph explains that access keys authenticate requests and should be kept secure, with a 'Learn more' link. Below this, a note advises updating keys for any Azure resources using the account. The 'Storage account name' is displayed as 'neilvembustorage'. Two keys are listed: 'key1' and 'key2'. For each key, the 'Last rotated' date is '19/08/2021 (0 days ago)', and there is a 'Rotate key' button. The 'Key' and 'Connection string' for each key are shown in masked text boxes.