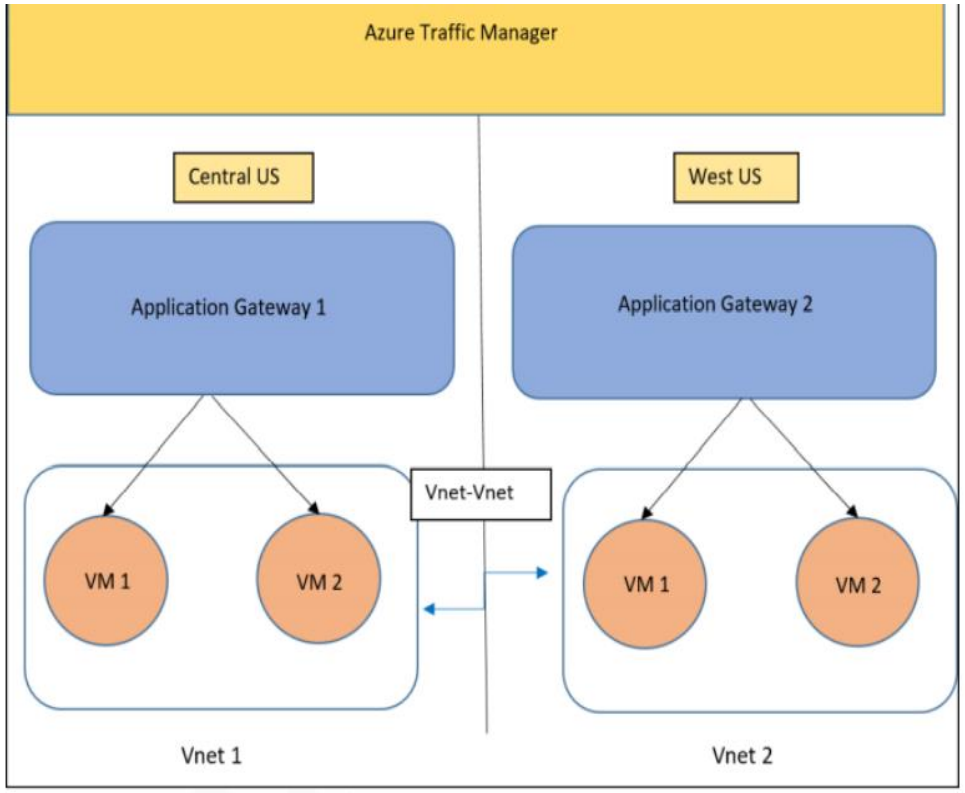
Azure Project



There are three web pages to be deployed:

1. The home page is the default page (VM2)
2. The upload page is where you can upload the files to your Azure Blob Storage (VM1)
3. The error page for 403 and 502 errors

Application Gateway has to be configured in the following manner:

1. Example.com should be pointed to the home page
2. Example.com/upload should be pointed to the upload page
3. Application Gateway's error pages should be pointed to error.html which should be hosted as a static website in Azure Containers. The error.html file is present in the GitHub repository

The term 'Example' here refers to the Traffic Manager's domain name.
The client wants you to deploy them in the Central US and the West US regions such that the traffic is distributed optimally between both regions.

Storage Account has to be configured in the following manner:

1. You need to host your error.html as a static website here, and then point the application gateway's 403 and 502 errors to it.
2. Create a container named upload, this will be used by your code to upload the files.

Technical specifications for the deployments are as follows:

1. Deployments in both regions should have VMs inside VNets.
2. Clone the GitHub repo https://github.com/azcloudberg/azproject to all the VMs.
3. On VM1, please run vm1.sh this will deploy the upload page, on VM2 please run VM2.sh, this will install the home page.
4. For running the scripts, please run the following command inside the GitHub directory from the terminal.

VM1: ./vm1.sh
VM2: ./vm2.sh

5. After running the scripts, please edit the config.py file on VM1, and enter the details related to your storage account where the files will be uploaded.
6. Once done, please run the following command: **sudo python3 app.py**
7. Both regions should be connected to each other using VNet-VNet Peering.
8. Finally, your Traffic Manager should be pointing to the application gateway of both the regions.

Create the RG – Create the VM1.VM2 in same region(US EAST) with ubuntu OS , allow all ports

Home > Virtual machines >

Create a virtual machine ...

Basics | Disks | **Networking** | Management | Monitoring | Advanced | Tags | Review + creat

Define network connectivity for your virtual machine by configuring network interface card (NIC) settings. You can inbound and outbound connectivity with security group rules, or place behind an existing load balancing solution. Learn more

Network interface

When creating a virtual machine, a network interface will be created for you.

Virtual network * : (new) VM1-vnet
Create new

Subnet * : (new) default (10.0.0.0/24)

Public IP : (new) VM1-ip
Create new

NIC network security group : None / Basic / Advanced

Public inbound ports * : None / Allow selected ports

Select inbound ports * : HTTP (80), HTTPS (443), SSH (22)

Review + create | < Previous | Next : Management >

Create virtual network

The Microsoft Azure Virtual Network service enables Azure resources to securely communicate with each other in a virtual network which is a logical isolation of the Azure cloud dedicated to your subscription. You can connect virtual networks to other virtual networks, or your on-premises network. Learn more

Name * : Vnet1

Address space

The virtual network's address space, specified as one or more address prefixes in CIDR notation (e.g. 192.168.1.0/24).

Address range *	Addresses	Overlap
10.0.0.0/16	10.0.0.0 - 10.0.255.255 (65536 addresses)	None
	(0 Addresses)	None

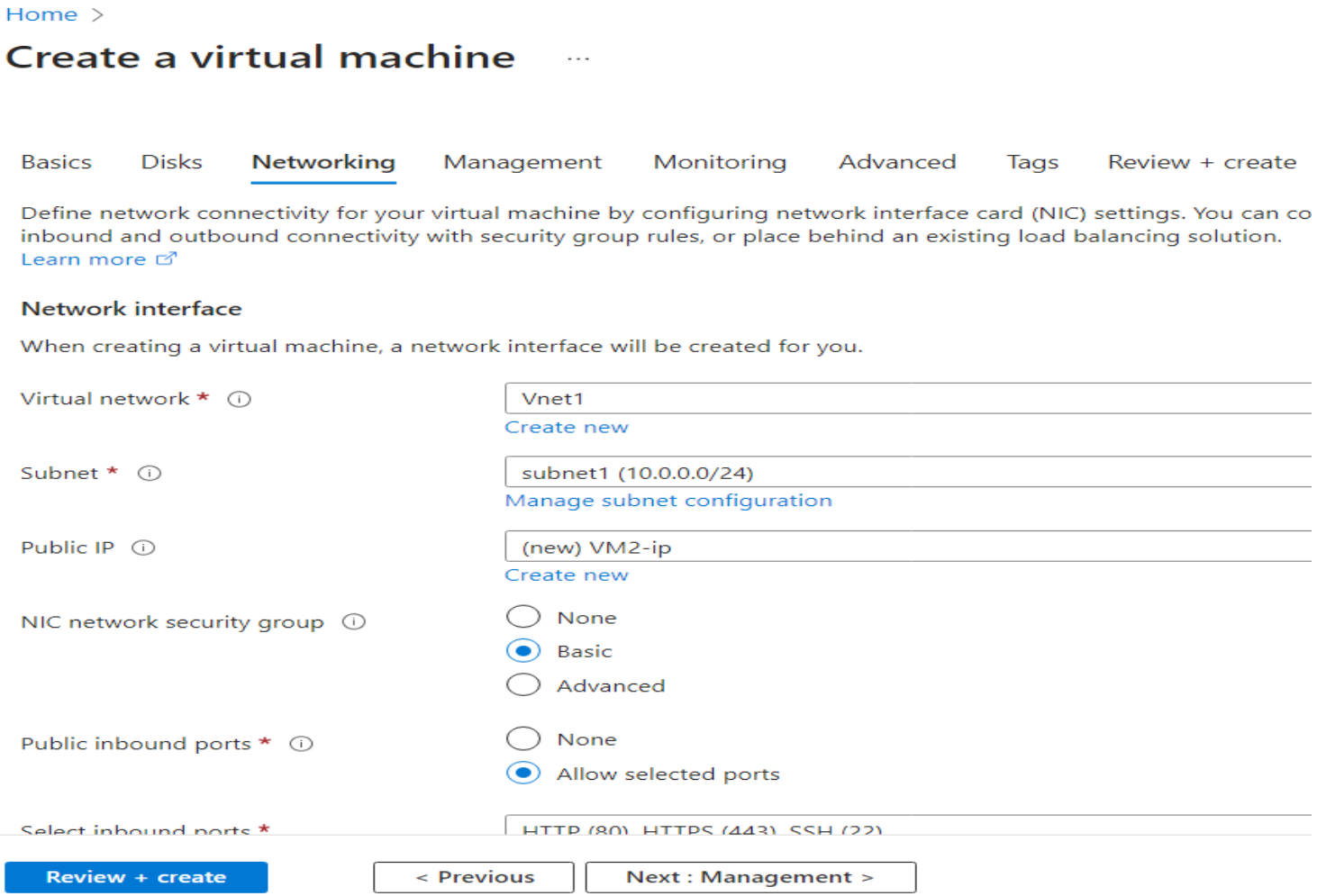
Subnets

The subnet's address range in CIDR notation. It must be contained by the address space of the virtual network.

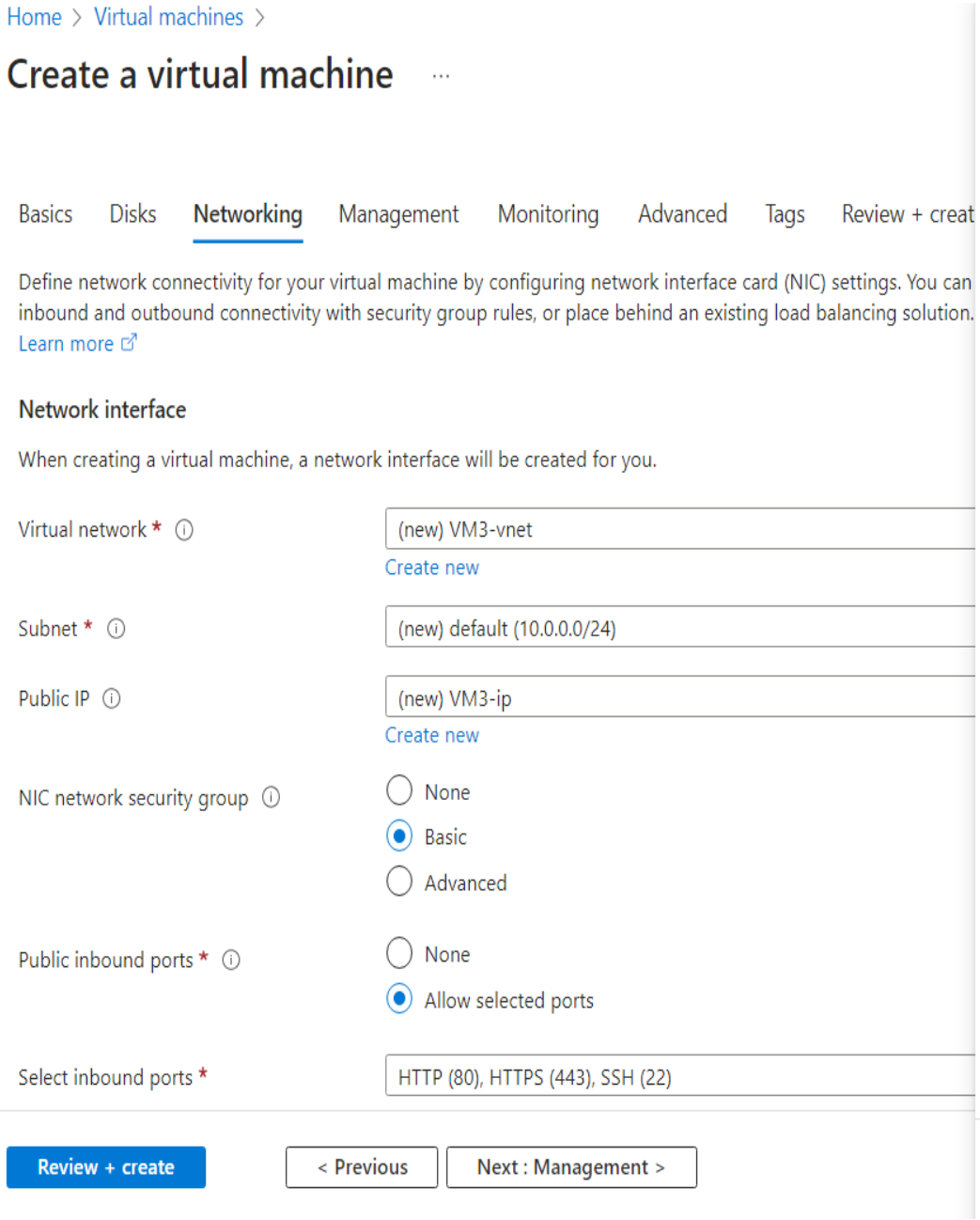
Subnet name	Address range	Addresses
subnet1	10.0.0.0/24	10.0.0.0 - 10.0.0.255 (256 addresses)
subnetfor_APG1	10.0.1.0/24	10.0.1.0 - 10.0.1.255 (256 addresses)
		(0 Addresses)

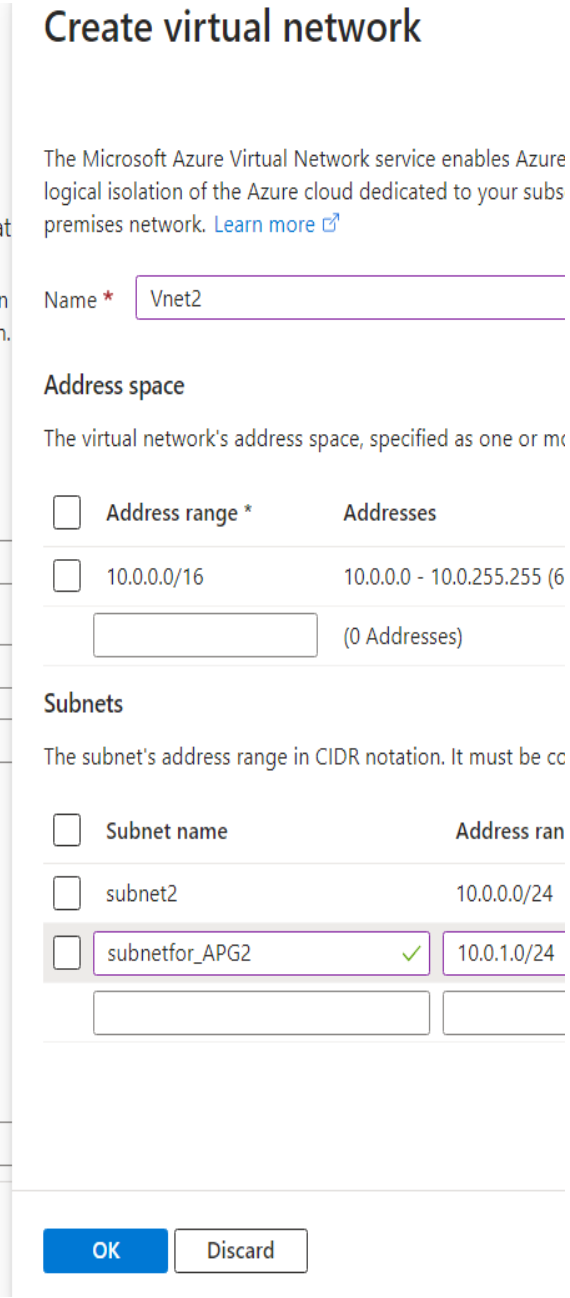
OK | Discard

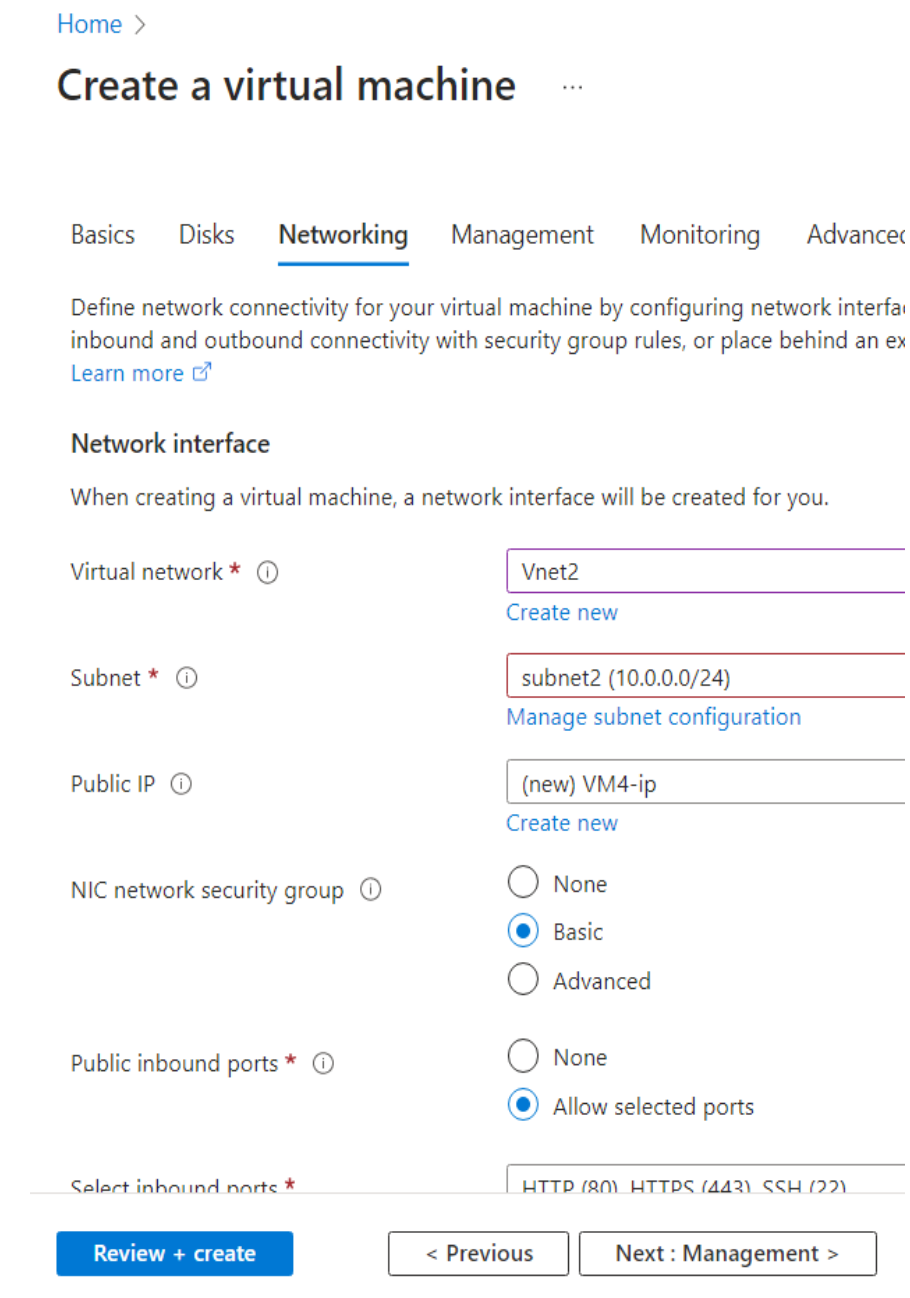
The another VM should be in same VNET and subnet- if VNET is not visible then refresh the page.



Create VM3 and VM4 in CENTRAL INDIA region with same steps.







Home >

Virtual machines

Default Directory

Create | Switch to classic | Reservations | Manage view | Refresh | Export to CSV | Open query | Assign tags | Start | Restart | Stop | Delete | Services | Maintenance

Filter for any field... | Subscription equals **all** | Type equals **all** | Resource group equals **all** | Location equals **all** | Add filter

Showing 1 to 4 of 4 records.

No grouping | List view

Name	Type	Subscription	Resource group	Location	Status	Operating system	Size	Public IP address	Disks
VM1	Virtual machine	Free Trial	project-rg	East US	Running	Linux	Standard_B1s	172.191.14.119	1
VM2	Virtual machine	Free Trial	project-rg	East US	Running	Linux	Standard_B1s	172.190.43.120	1
VM3	Virtual machine	Free Trial	project-rg	Central India	Running	Linux	Standard_B1s	4.213.89.235	1
VM4	Virtual machine	Free Trial	project-rg	Central India	Running	Linux	Standard_B1s	4.213.93.84	1

Home > Storage accounts >

Create a storage account

Basics | Advanced | Networking | Data protection | Encryption | Tags | Review

Subscription * : Free Trial

Resource group * : project-rg

Create new

Instance details

Storage account name * : sgazureproject

Region * : (US) East US

Deploy to an edge zone

Performance * :

- **Standard:** Recommended for most scenarios (general-purpose v2 account)
- **Premium:** Recommended for scenarios that require low latency.

Redundancy * : Geo-redundant storage (GRS)

Make read access to data available in the event of regional unavailability.

Review | < Previous | Next : Advanced >

Home > sgazureproject_1706865085773 | Overview > sgazureproject

sgazureproject | Static website

Storage account

statc

Overview

Data management

Static website

Settings

Save | Discard | Give feedback

Enabling static websites on the blob service allows you to host static co
from primary to secondary regions, files at the secondary endpoint may

Static website: Disabled | Enabled

An Azure Storage container has been created to host your static websit
$web

Click on the web link – upload the error.html file then copy the endpoint and search. The error.html file is copied from git hub repo which were given into the project.

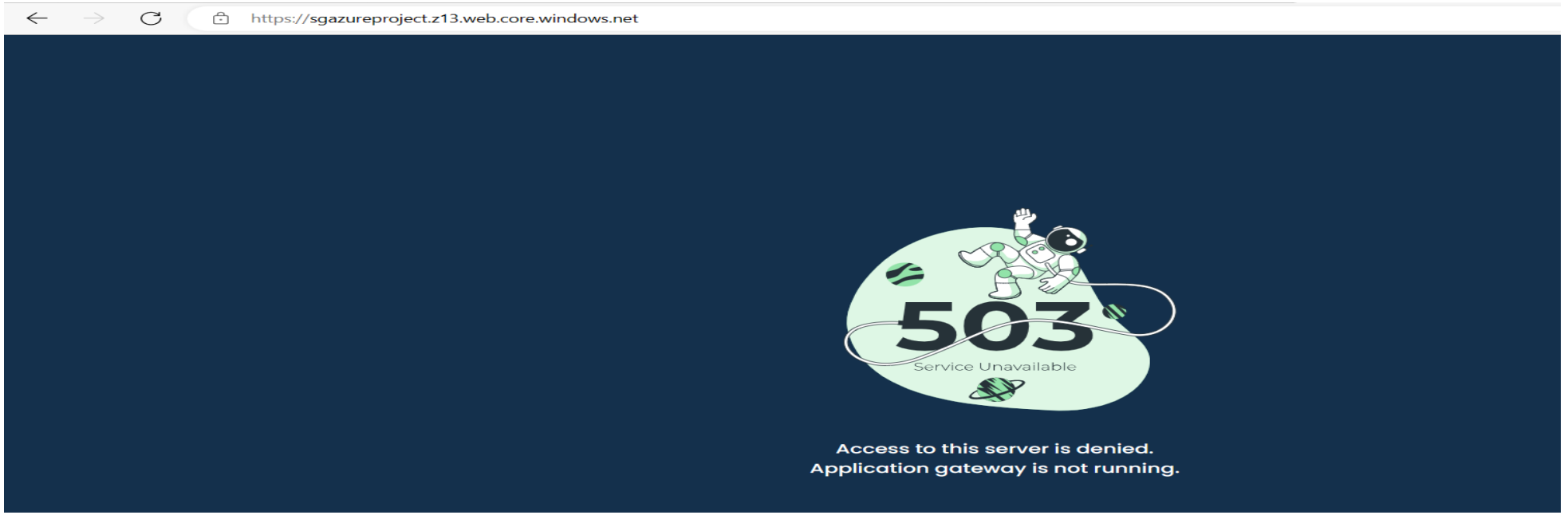
Improve the page load time of your static website by using the cachir

Create new storage account – create a static website –enter the document and save.

Primary endpoint: https://sgazureproject.z13.web.core.windows.net/

Secondary endpoint: https://sgazureproject-secondary.z13.web.core.windows.net/

Index document name: error.html



Create another container- allow blob anonymous access.

Data management

- Redundancy
- Data protection
- Object replication
- Blob inventory
- Static website
- Lifecycle management
- Azure AI Search

Settings

- Configuration

This setting cannot be changed after the

Secure transfer required
Disabled Enabled

Allow Blob anonymous access
Disabled Enabled

Some blobs may become anonymously re

Allow storage account key access
Disabled Enabled

Allow recommended upper limit for shared a
Disabled Enabled

Default to Microsoft Entra authorization in th

New container

Name *
upload

Anonymous access level
Container (anonymous read access for containers and blobs)

All container and blob data can be read by anonymous request. Clients can enumerate blobs within the container by anonymous request, but cannot enumerate containers within the storage account.

Advanced

Home > Load balancing | Application Gateway >

Create application gateway ...

Instance details

Application gateway name * APG1

Region * East US

Tier ⓘ Standard V2

Enable autoscaling (•) Yes ( ) No

Minimum instance count * ⓘ 0

Maximum instance count 10

Availability zone ⓘ None

HTTP2 ⓘ ( ) Disabled (•) Enabled

Configure virtual network

Virtual network * ⓘ Vnet1

Create new

Subnet * ⓘ subnetfor_APG1 (10.0.1.0/24)

Manage subnet configuration

Previous | Next : Frontends >

---

2 Frontends | 3 Backends | 4 Configuration | 5 Tags | 6 Review + cre

the application gateway via its frontend IP address(es). An application gateway can use a pul
dress, or one of each type.

ddress type ⓘ (•) Public ( ) Private ( ) Both

ress * Choose public IP address

Add new

Add a public IP

Name * pubipAPG1

SKU ( ) Basic (•) Standard

Assignment ( ) Dynamic (•) Static

Availability zone None

OK | Cancel

Add a backend pool.

A backend pool is a collection of resources to which your application gateway can send traffic. A backend pool can contain virtual machines, virtual machines scale sets, IP addresses, domain names, or an App Service.

Name * pool1

Add backend pool without targets Yes / No

Backend targets

1 item

Target type	Target
Virtual machine	vm167 (10.0.0.4)
IP address or FQDN	

Add a backend pool.

A backend pool is a collection of resources to which your application gateway can send traffic. A backend pool can contain virtual machines, virtual machines scale sets, IP addresses, domain names, or an App Service.

Name * pool2

Add backend pool without targets Yes / No

Backend targets

1 item

Target type	Target
Virtual machine	vm2995 (10.0.0.5)
IP address or FQDN	

Add a routing rule

Configure a routing rule to send traffic from a given frontend IP address to one or more backend targets. A rou
listener and at least one backend target.

Rule name * rule1

Priority * 1

*Listener *Backend targets

A listener "listens" on a specified port and IP address for traffic that uses a specified protocol. If the listener cri
application gateway will apply this routing rule.

Listener name * name1

Frontend IP * Public

Protocol HTTP HTTPS

Port * 80

Listener type Basic Multi site

Custom error pages

Show customized error pages for different response codes generated by Application Gateway. This section let
specific error pages. Learn more

Bad Gateway - 502 https://sgazureproject.z13.web.core.windows.net/error.html

Forbidden - 403 https://sgazureproject.z13.web.core.windows.net/error.html

Show more status codes

Endpoint of static website/error.html

Add Cancel

Add Backend setting

← Discard changes and go back to routing rules

Backend settings name * default

Backend protocol HTTP HTTPS

Backend port * 80

Additional settings

Cookie-based affinity Enable Disable

Connection draining Enable Disable

Request time-out (seconds) * 20

Override backend path

Host name

By default, the Application Gateway sends the same HTTP host header to the bac
application/service requires a specific host value, you can override it using this se

Override with new host name Yes No

Create custom probes Yes No

Choose pool2 in Backend target

Add Cancel

Add a path

← Discard changes and go back to routing rules

Target type: Backend pool / Redirection

Path *: /upload

Target name *: upload

Backend settings *: default — Add new

Backend target *: pool1 — Add new

Home > Load balancing | Application Gateway >

Create application gateway

Instance details

Application gateway name *: APG2

Region *: Central India

Tier: Standard V2

Enable autoscaling: Yes / No

Minimum instance count *: 0

Maximum instance count: 10

Availability zone: None

HTTP2: Disabled / Enabled

Configure virtual network

Virtual network *: Vnet2 — Create new

Subnet *: subnetfor_APG2 (10.0.1.0/24) — Manage subnet configuration

Previous | Next : Frontends >

2 Frontends | 3 Backends | 4 Configuration | 5 Tags | 6 Review

the application gateway via its frontend IP address(es). An application gateway can use a
dress, or one of each type.

ddress type: Public / Private / Both

ress *: Choose public IP address — Add new

Add a public IP

Name *: pubipAPG2

SKU: Basic / Standard

Assignment: Dynamic / Static

Availability zone: None

OK | Cancel

✓ Basics | ✓ Frontends | 3 Backends | 4 Configuration | 5 Tags

A backend pool is a collection of resources to which your application gateway can se
virtual machines, virtual machine scale sets, app services, IP addresses, or fully qualifie

Add a backend pool

Backend pool	Targets
pool3	1 target
	vm3550
pool4	1 target
	vm4332

Add a routing rule

Configure a routing rule to send traffic from a given frontend IP address to one or more backend targets. A rou
listener and at least one backend target.

Rule name * rule2

Priority * 1

*Listener *Backend targets

A listener "listens" on a specified port and IP address for traffic that uses a specified protocol. If the listener cr
application gateway will apply this routing rule.

Listener name * name2

Frontend IP * Public

Protocol HTTP HTTPS

Port * 80

Listener type Basic Multi site

Custom error pages

Show customized error pages for different response codes generated by Application Gateway. This section le
specific error pages. Learn more

Bad Gateway - 502 https://sgazureproject.z13.web.core.windows.net/error.html

Forbidden - 403 https://sgazureproject.z13.web.core.windows.net/error.html

Show more status codes

Add Cancel

Add Backend setting

← Discard changes and go back to routing rules

Backend settings name * default

Backend protocol HTTP HTTPS

Backend port * 80

Additional settings

Cookie-based affinity Enable Disable

Connection draining Enable Disable

Request time-out (seconds) * 20

Override backend path

Host name

By default, the Application Gateway sends the same HTTP host header to the bac
application/service requires a specific host value, you can override it using this se

Override with new host name Yes No

Create custom probes Yes No

Add a path

← Discard changes and go back to routing rules

Target type Backend pool Redirection

Path * /upload

Target name * upload

default

Backend settings * Add new

pool3

Backend target * Add new

Add a routing rule

Rule name * rule2

Priority * 1

* Listener * Backend targets

Choose a backend pool to which this routing rule will send traffic. You will also need to behavior of the routing rule.

Target type: Backend pool / Redirection

Backend target * pool4

Add new

Backend settings * default

Add new

Path-based routing

You can route traffic from this rule's listener to different backend targets based on the different set of Backend settings based on the URL path.

Path based rules

Path	Target name	Backend setting n
/upload	upload	default

Add multiple targets to create a path-based rule

Add Cancel

Run these commands

Launch all four VM – inside the Readme file git hub repo copy these commands and run in all four VM.

Set the VM up

Steps to set up the VMs for you!

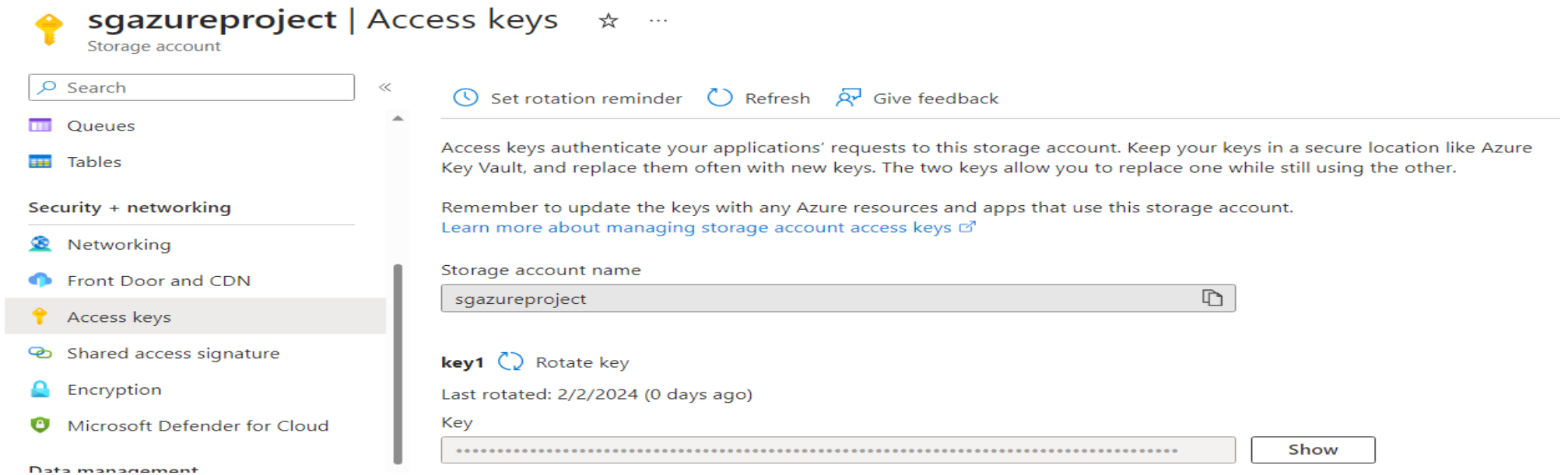
For both the VMs, follow the steps to set them up :

1. Type the command "git clone https://github.com/azcloudberg/azproject.git"
2. "cd azproject"
3. For VM1 : "./vm1.sh" For VM2 : "./vm2.sh"

```
sid@VM2:~/azproject$ ls
README.md  app.py  config.py  error.html  index.html  templates  vm1.sh  vm2.sh
sid@VM2:~/azproject$ history
    1  sudo apt-get update -y
    2  git clone https://github.com/azcloudberg/azproject.git
    3  cd azproject
    4  ls
    5  history
sid@VM2:~/azproject$
```

For VM1,3 : "./vm1.sh" For VM2,4 : "./vm2.sh"

In VM1,3 copy the storage acc name and key – paste inside the file sudo nano config.py- after that run command sudo python3 app.py




```
# Account name
account =sgazureproject
# Azure Storage account access key
key =mbXQfxnVDdOzWTsALctYRljlBpOt904xHSQZ1rqr4/4PAivDvdBgccIwfAh/M241g3NOACj1m9LV+AStisR8Qg==
# Container name
container =upload
```

If while creating the VNET peering subnet overlaps then directly go to Traffic manager creation.

Home > Load balancing | Traffic Manager >

Create Traffic Manager profile

Name *
1trafficmanager

Routing method
Performance

Subscription *
Free Trial

Resource group *
project-rg
Create new

Resource group location
East US

Create | Automation options

APG1
Application gateway

Search

Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems

Settings
Configuration

Delete | Refresh | Feedback

Essentials

Resource group (move)
project-rg

Location
East US

Subscription (move)
Free Trial

Subscription ID
dfe5760d-8ca2-4f3e-af83-62c16886c3b7

Virtual network/subnet
Vnet1/subnetfor_APG1

Frontend public IP address
172.171.195.123 (pubipAPG1)

Frontend private IP address
-

Tier
Standard V2

Availability zone
-

Home > Load balancing | Application Gateway > APG1 > pubipAPG1

pubipAPG1 | Configuration
Public IP address

Search

Overview
Activity log
Access control (IAM)
Tags

Settings
Configuration
Properties
Locks

Save | Discard | Refresh

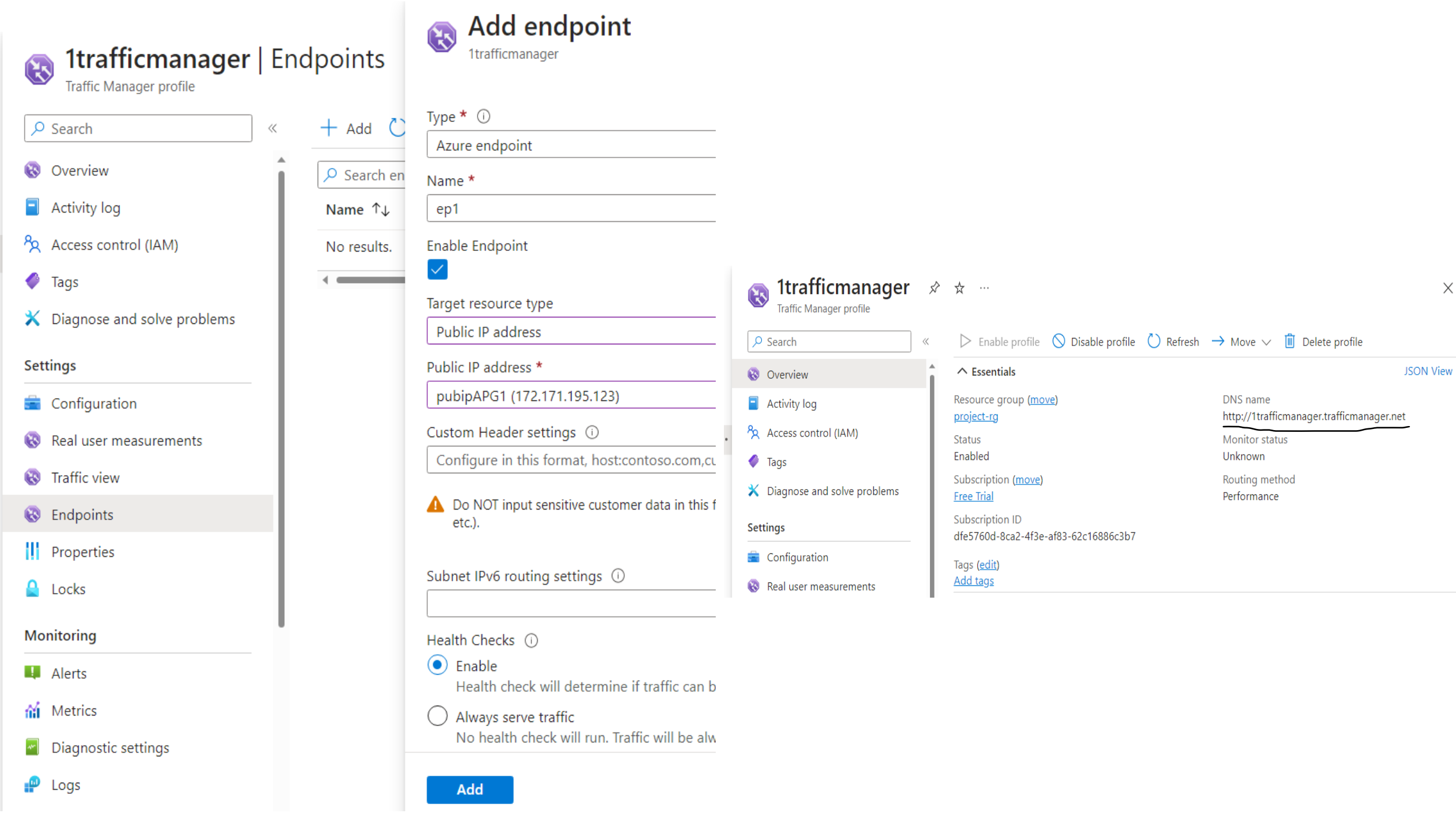
IP address assignment
Static

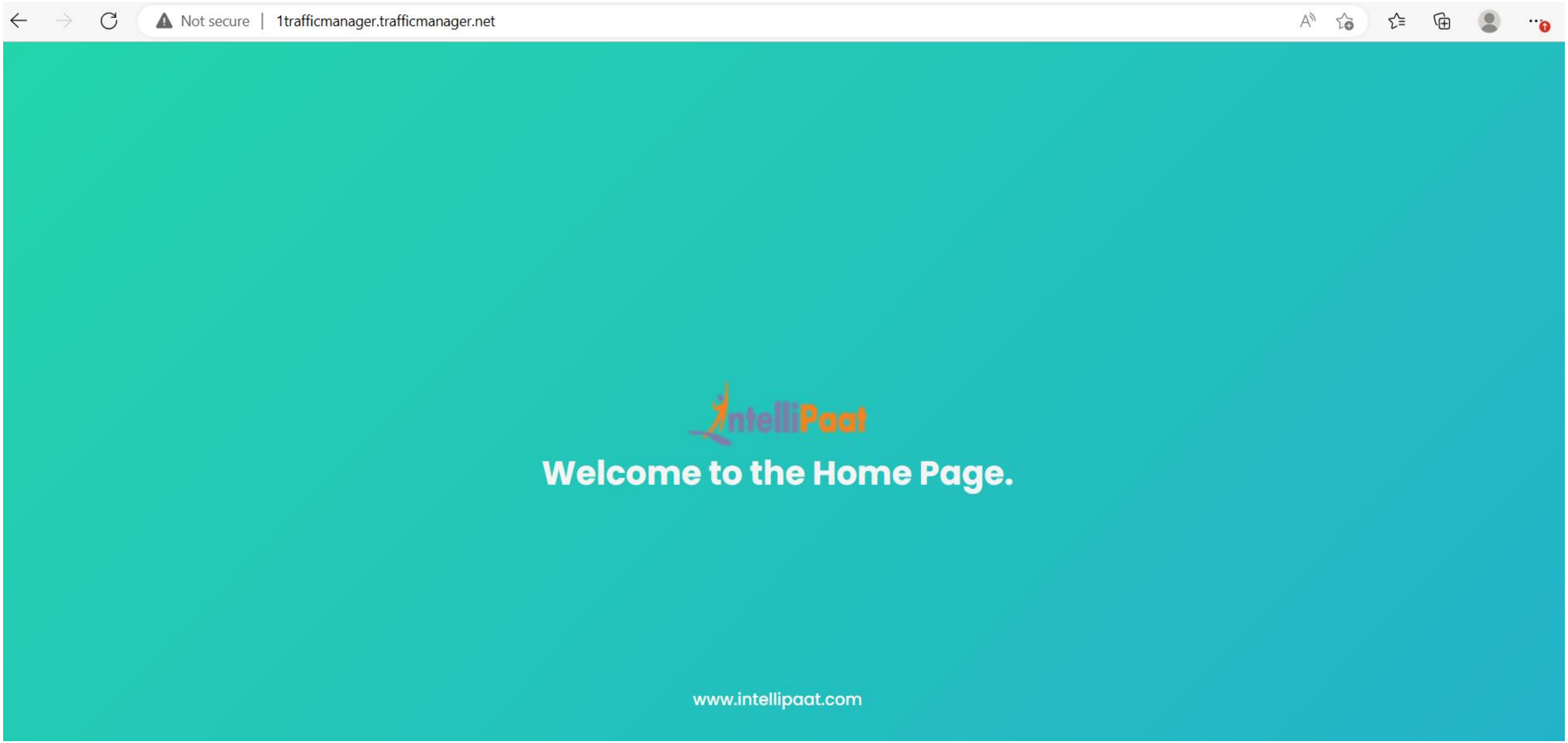
IP address
172.171.195.123

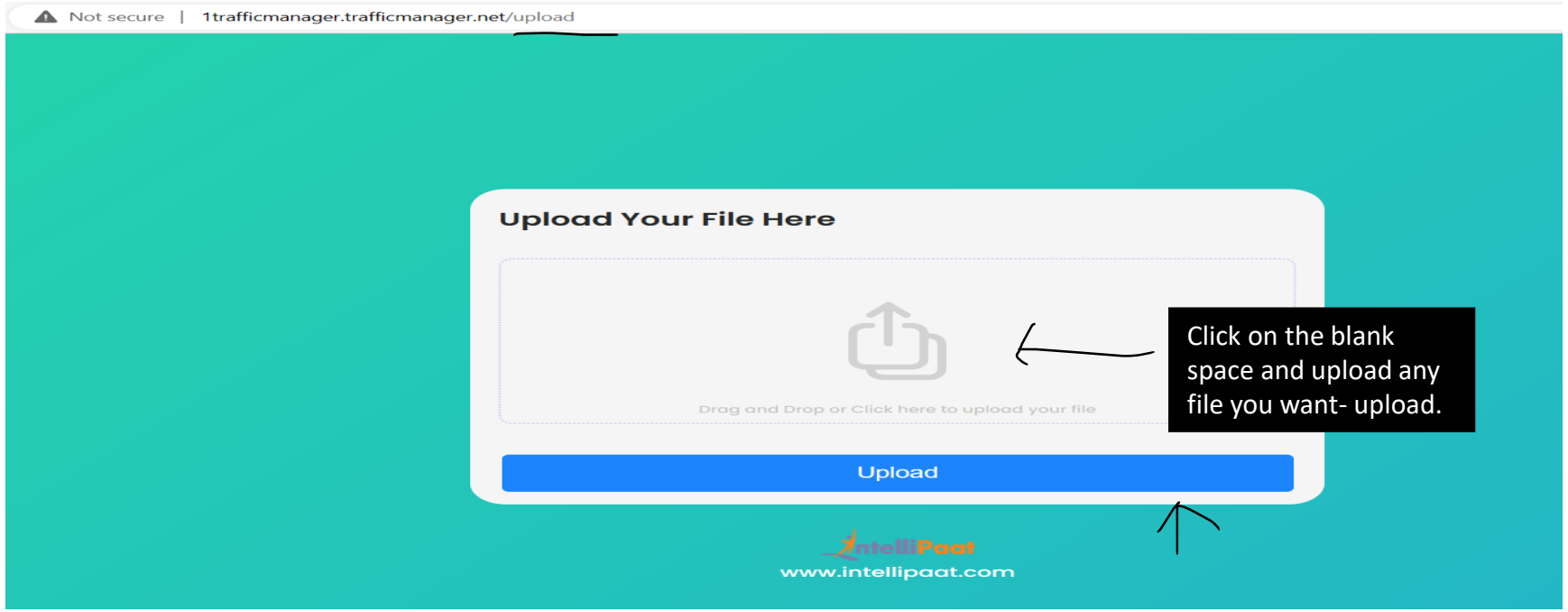
Idle timeout (minutes)

DNS name label (optional)
dn1ag1

Do in both App gateway


1trafficmanager | Endpoints
Traffic Manager profile
Search
Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Settings
Configuration
Real user measurements
Traffic view
Endpoints
Properties
Locks
Monitoring
Alerts
Metrics
Diagnostic settings
Logs
Add
Search en
Name
No results.
Add endpoint
1trafficmanager
Type *
Azure endpoint
Name *
ep1
Enable Endpoint
Target resource type
Public IP address
Public IP address *
pubipAPG1 (172.171.195.123)
Custom Header settings
Configure in this format, host:contoso.com,cu
Do NOT input sensitive customer data in this f
etc.).
Subnet IPv6 routing settings
Health Checks
Enable
Health check will determine if traffic can b
Always serve traffic
No health check will run. Traffic will be alw
Add
1trafficmanager
Traffic Manager profile
Search
Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Settings
Configuration
Real user measurements
Enable profile
Disable profile
Refresh
Move
Delete profile
Essentials
JSON View
Resource group (move)
project-rg
DNS name
http://1trafficmanager.trafficmanager.net
Status
Enabled
Monitor status
Unknown
Subscription (move)
Free Trial
Routing method
Performance
Subscription ID
dfe5760d-8ca2-4f3e-af83-62c16886c3b7
Tags (edit)
Add tags


Not secure | 1trafficmanager.trafficmanager.net
IntelliPaat
Welcome to the Home Page.
www.intellipaat.com



Home > Storage accounts > sgazureproject | Containers >

upload

Container

Search

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

Shared access tokens

Access policy

Properties

Upload | Change access level | Refresh | Delete | Change tier | Acquire lease | Break lease | View snapshots | Create snapshot | Give feedback

Authentication method: Access key (Switch to Microsoft Entra user account)
Location: upload

Search blobs by prefix (case-sensitive)

Show deleted blobs

Add filter

Name	Modified	Access tier	Archive status	Blob type	Size	Lease state
suzume-no-tojimari-5642x4252-11464.jpg	2/2/2024, 5:38:55 PM	Hot (Inferred)		Block blob	7.56 MiB	Available

Now if we stop one of the VM we can get an error page.