

Celebal Assignment -5

Step 1: Create a Virtual Network (VNet)

1. Sign in to Azure Portal: Go to Azure Portal.
2. Create a Virtual Network:
 1. In the search bar, type "Virtual Networks" and select it.
 2. Click "Create" to start a new VNet.
 3. Basics:
 1. Subscription: Select your subscription.
 2. Resource group: Create a new resource group or select an existing one.
 3. Name: Enter a name for your VNet, e.g., MyVNet.
 4. Region: Select the region closest to you or where your resources will reside.
 4. IP Addresses:
 1. IPv4 address space: Enter 10.0.0.0/16.
 5. Subnets:
 1. Click "Add subnet".
 2. Name: WebTierSubnet
 3. Subnet address range: 10.0.1.0/24
 4. Click "Add".
 5. Repeat to add two more subnets:
 1. Name: AppTierSubnet
 2. Subnet address range: 10.0.2.0/24
 3. Name: DBTierSubnet
 4. Subnet address range: 10.0.3.0/24
 6. Review + Create: Review your settings and click "Create".

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Basics Security IP addresses Tags Review + create

Subnets	IP address range	Size	NAT gateway
default	10.0.0.0 - 10.0.0.255	/24 (256 addresses)	-
WebTierSubnet	10.0.1.0 - 10.0.1.255	/24 (256 addresses)	-
AppTierSubnet	10.0.2.0 - 10.0.2.255	/24 (256 addresses)	-
DBTierSubnet	10.0.3.0 - 10.0.3.255	/24 (256 addresses)	-

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Create virtual network

BasicsSecurityIP addressesTagsReview + create

IP addresses

Address space	10.0.0.0/16 (65,536 addresses)
Subnet	default (10.0.0.0/24) (256 addresses)
Subnet	WebTierSubnet (10.0.1.0/24) (256 addresses)
Subnet	AppTierSubnet (10.0.2.0/24) (256 addresses)
Subnet	DBTierSubnet (10.0.3.0/24) (256 addresses)

Tags

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AR-1-1720155345015

Deployment

Overview

Search

DeleteCancelRedeployDownloadRefresh

Overview

Inputs

Outputs

Template

✓ Your deployment is complete

↔

Deployment name : AR-1-1720155345015

Subscription : Azure for Students

Resource group : arma1723_ct

Start time : 7/5/2024, 10:25:55 AM

Correlation ID : ddb544c1-3f9e-4485-b170-535...

> Deployment details

✓ Next steps

Go to resource

Give feedback

Tell us about your experience with deployment

Step 2: Create Network Security Groups (NSGs)

Create NSG for Web Tier:

1. In the search bar, type "Network Security Groups" and select it.
2. Click "Create".
3. Basics:
 1. Subscription: Select your subscription.

2. Resource group: Select the same resource group as your VNet.
3. Name: Enter WebTierNSG.
4. Region: Select the same region as your VNet.
4. Click "Review + create" and then "Create".

Create NSG for App Tier:

1. Follow the same steps as above.
2. Name: Enter AppTierNSG.

Create NSG for DB Tier:

1. Follow the same steps as above.
2. Name: Enter DBTierNSG.

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Create network security group

Validation passed

Basics Tags Review + create

Basics

Subscription	Azure for Students
Resource group	arma1723_ct
Region	Switzerland North
Name	WebTierNSG

Tags

None

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Microsoft Azure Search resources, services, and docs (G+)

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Microsoft.NetworkSecurityGroup-20240705102822 | Overview

Deployment

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Overview

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Template

✓ Your deployment is complete

Deployment name : Microsoft.NetworkSecurityGro... Start time : 7/5/2024, 10:50:09 AM

Subscription : Azure for Students Correlation ID : 9990f2f5-e9e1-419e-8fea-ddc1...

Resource group : arma1723_ct

> Deployment details

✓ Next steps

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Give feedback

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Create network security group ...

Validation passed

BasicsTagsReview + create

Basics

Subscription	Azure for Students
Resource group	arma1723_ct
Region	Switzerland North
name	AppTierNSG

Tags

None

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Microsoft.NetworkSecurityGroup-20240705105253 | Overview

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Your deployment is complete

Deployment name : Microsoft.NetworkSecurityGro... Start time : 7/5/2024, 10:54:33 AM
Subscription : Azure for Students Correlation ID : 13d1c3ea-2498-4b04-8fcb-e57...
Resource group : arma1723_ct

> Deployment details

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Create network security group

Validation passed

BasicsTagsReview + create

Basics

Subscription

Azure for Students

Resource group

arma1723_ct

Region

Switzerland North

name

DBTierNSG

Tags

None

Microsoft Azure

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Microsoft.NetworkSecurityGroup-20240705105735 | Overview

Deployment

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Overview

Inputs

Outputs

Template

✔ Your deployment is complete

Deployment name : Microsoft.NetworkSecurityGro...

Start time : 7/5/2024, 10:58:32 AM

Subscription : Azure for Students

Correlation ID : 30b0a3d7-d01a-47cc-b5f7-679...

Resource group : arma1723_ct

> Deployment details

✓ Next steps

Go to resource

Give feedback

Tell us about your experience with deployment

Step 3: Configure NSG Rules

Web Tier NSG Rules

1. Allow inbound HTTP (80) and HTTPS (443) from the Internet.
2. Allow inbound traffic from Web Tier to App Tier.
3. Deny all other inbound traffic (default rule).

App Tier NSG Rules

1. Allow inbound traffic from Web Tier.
2. Allow inbound traffic from App Tier to DB Tier.
3. Deny all other inbound traffic (default rule).

DB Tier NSG Rules

- 1. Allow inbound traffic only from App Tier.**
- 2. Deny all other inbound traffic (default rule).**

Step 4: Associate NSGs with Subnets

1.

Associate Web Tier NSG:

2.

- 1. Go to "Virtual Networks" and select your VNet.**
- 2. Select "Subnets".**
- 3. Select the WebTierSubnet.**
- 4. Under "Network security group", click "None" and select WebTierNSG.**
- 5. Click "Save".**

3.

Associate App Tier NSG:

4.

- 1. Follow the same steps as above.**
- 2. Select the AppTierSubnet.**
- 3. Under "Network security group", select AppTierNSG.**
- 4. Click "Save".**

5.

Associate DB Tier NSG:

6.

- 1. Follow the same steps as above.**
- 2. Select the DBTierSubnet.**
- 3. Under "Network security group", select DBTierNSG.**
- 4. Click "Save".**

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AR-1 | Subnets

Virtual network

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Access control (IAM)

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Diagnose and solve problems

Settings

Address space

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Subnets

Bastion

DDoS protection

Firewall

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Firewall

Edit subnet

Security

Simplify internet access for virtual machines by using a network address translation gateway. Filter subnet traffic using a network security group. [Learn more](#)

NAT gateway

None

A NAT gateway is recommended for outbound internet access from subnets. Edit the subnet to add a NAT gateway. [Learn more](#)

Network security group

WebTierNSG

Route table

None

Service Endpoints

Create service endpoint policies to allow traffic to specific azure resources from your virtual network over service endpoints. [Learn more](#)

Services

None

Save Cancel

Give feedback

Edit subnet

A NAT gateway is recommended for outbound internet access from subnets. Edit the subnet to add a NAT gateway. [Learn more](#)

Network security group

DBTierNSG

Route table

None

Service Endpoints

Create service endpoint policies to allow traffic to specific azure resources from your virtual network over service endpoints. [Learn more](#)

Services

None

Subnet Delegation

Delegate subnet to a service

None

Save Cancel

Give feedback

*** Saving subnet

Saving subnet 'DBTierSubnet'

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AR-1 | Subnets

Virtual network

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Firewall

Edit subnet

NAT gateway

None

A NAT gateway is recommended for outbound internet access from subnets. Edit the subnet to add a NAT gateway. [Learn more](#)

Network security group

AppTierNSG

Route table

None

Service Endpoints

Create service endpoint policies to allow traffic to specific azure resources from your virtual network over service endpoints. [Learn more](#)

Services

None

Subnet Delegation

Save Cancel

Give feedback

The screenshot displays two screenshots from the Azure portal. The top screenshot shows the 'AR-1 | Subnets' page for a virtual network. It lists four subnets: 'default', 'WebTierSubnet', 'DBTierSubnet', and 'AppTierSubnet'. Each subnet has a specific IPv4 address range and is associated with a security group (WebTierNSG, DBTierNSG, and AppTierNSG respectively). The bottom screenshot shows the 'WebTierNSG | Inbound security rules' page. It displays a list of existing rules and an 'Add inbound security rule' dialog box. The dialog box is configured with 'Allow' action, priority 100, and name 'AllowAnyHTTPInbound'.

Name	IPv4	IPv6	Available IPs	Delegated to	Security group	Route table
default	10.0.0.0/24	-	251	-	-	-
WebTierSubnet	10.0.1.0/24	-	251	-	WebTierNSG	-
DBTierSubnet	10.0.3.0/24	-	251	-	DBTierNSG	-
AppTierSubnet	10.0.16.0/24	-	251	-	AppTierNSG	-

Priority	Name	Port
65000	AllowVnetInBound	Any
65001	AllowAzureLoadBalan...	Any
65500	DenyAllInBound	Any

Add inbound security rule

WebTierNSG

☐ ICMPv4

Action

☒ Allow

☐ Deny

Priority * ①

100

Name *

AllowAnyHTTPInbound ✓

Description

Step 5: Deploy Virtual Machines (VMs)

Web Tier Subnet:

Linux VM: Deploy a Linux VM in the WebTierSubnet

```
sudo apt update
sudo apt install apache2 -y
sudo systemctl start apache2
sudo systemctl enable apache2
```

Install-WindowsFeature -name Web-Server -IncludeManagementTools

App Tier Subnet:

Linux VM: Deploy a Linux VM in the AppTierSubnet

```
sudo apt update
sudo apt install apache2 -y
sudo systemctl start apache2
sudo systemctl enable apache2
```

Install-WindowsFeature -name Web-Server -IncludeManagementTools

DB Tier Subnet:

Linux VM: Deploy a Linux VM in the DBTierSubnet.

Windows VM: Deploy a Windows VM in the DBTierSubnet.