

Week-5 : Assignment

Create three subnets : 1. Web tier 2. App tier 3. DB tier DB Tier should not access any tier(Web & App tier) App tier should access the DB tier and Web tier as well, Web tier should access only App tier. Only Web tier is allowed to connect to the internet. Deploy two VM's in each tier(One VM should be Linux & another should be Windows). Configure Apache Server on Linux VM's And IIS Server on Windows.

Creating a VNet

Microsoft Azure

Upgrade

Search resources, services, and docs (G+J)

Home > Virtual networks >

Create virtual network

BasicsSecurityIP addressesTagsReview + create

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription *

Azure for Students

Resource group *

My_RG

Create new

Instance details

Virtual network name *

Vnet-tier

Region *

(US) West US 3

Deploy to an Azure Extended Zone

Previous

Next

Review + create

Give feedback



Microsoft Azure

Upgrade

Search resources, services, and docs (G+J)

Home >

Vnet-tier-1718169198419 | Overview

Deployment

Search

DeleteCancelRedeployDownloadRefresh

Overview

Inputs

Outputs

Template

✓ Your deployment is complete

Deployment name : Vnet-tier-1718169198419

Subscription : Azure for Students

Resource group : My_RG

Start time : 6/12/2024, 10:43:30 AM

Correlation ID : e3e5d824-ba33-492b-843c-38662d9a989d

Deployment details

Next steps

Go to resource

Give feedback

Tell us about your experience with deployment

Cost management

Get notified to stay within your budget and prevent unexpected charges on your bill.

Set up cost alerts >

Microsoft Defender for Cloud

Secure your apps and infrastructure

Go to Microsoft Defender for Cloud >

Free Microsoft tutorials

Start learning today >

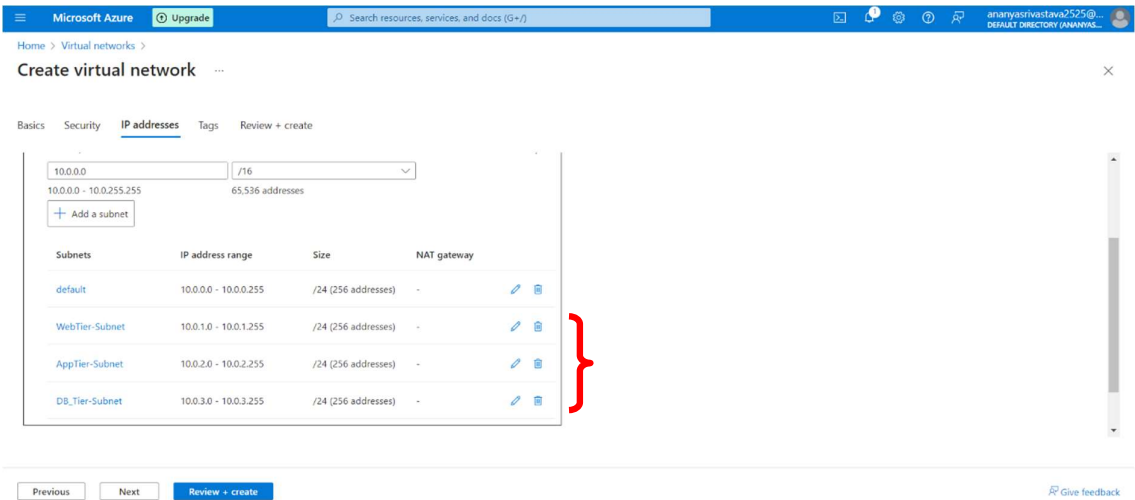
Work with an expert

Azure experts are service provider partners who can help manage your assets on Azure and be your first line of support.

Find an Azure expert >

Create three subnets:

- 1. Web tier
- 2. App tier
- 3. DB tier



Deploy Vnet with 3 subnets.

Create an NSG for the **Web Tier** and Add Inbound & Outbound Security Rules

Microsoft Azure

Upgrade

Search resources, services, and docs (G+I)

Home > WebTier-NSG

WebTier-NSG | Inbound security rules

Network security group

Search

+ Add

Hide default rules

Refresh

Delete

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Properties

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Automation

Help

Network security group security rules are evaluated by priority using the combination of source, source port, destination priority and direction as an existing rule. You can't delete default security rules, but you can override them with rules

Filter by name

Port == all

Protocol == all

Source == all

Priority	Name	Port	Protocol
65000	AllowVnetInBound	Any	Any
65001	AllowAzureLoadBalancerInBound	Any	Any
65500	DenyAllInBound	Any	Any

Add inbound security rule

WebTier-NSG

Source

Any

Source port ranges

*

Destination

Any

Service

Custom

Destination port ranges

80

Protocol

☐ Any

☒ TCP

☐ UDP

☐ ICMP

Action

☒ Allow

☐ Deny

Add

Cancel

Give feedback

Microsoft Azure

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Priority	Name	Port	Protocol
65000	AllowVnetInBound	Any	Any
65001	AllowAzureLoadBalancerInBound	Any	Any
65500	DenyAllInBound	Any	Any

Add inbound security rule

WebTier-NSG

80

Protocol

☐ Any

☒ TCP

☐ UDP

☐ ICMP

Action

☒ Allow

☐ Deny

Priority

100

Name

Allow-HTTP

Description

Add

Cancel

Give feedback

Create an NSG for the **App Tier** and Add Inbound & Outbound Security Rules

Microsoft Azure

Upgrade

Search resources, services, and docs (G+I)

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Home > Microsoft.NetworkSecurityGroup-20240612111536 | Overview > AppTier-NSG

AppTier-NSG | Inbound security rules

Network security group

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Filter by name

Port == all

Protocol == all

Source == all

Destination == all

Action == all

Priority	Name	Port	Protocol	Source	Destination	Action
100	Allow-WebTier	Any	Any	10.0.1.0/24	Any	Allow
101	Allow-DBTier	Any	Any	10.0.3.0/24	Any	Allow
300	Deny-All-Inbound	Any	Any	Any	Any	Deny
65000	AllowVnetInBound	Any	Any	VirtualNetwork	VirtualNetwork	Allow
65001	AllowAzureLoadBalancerIn	Any	Any	AzureLoadBalancer	Any	Allow
65500	DenyAllInBound	Any	Any	Any	Any	Deny

<https://go.microsoft.com/fwlink/?linkid=2174617>

Microsoft Azure

Upgrade

Search resources, services, and docs (G+I)

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Home > Microsoft.NetworkSecurityGroup-20240612111536 | Overview >

AppTier-NSG

Network security group

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Essentials

JSON View

Resource group (move): My_RG

Location: West US 3

Subscription (move): Azure for Students

Subscription ID: 2d2cdeb67-7017-4999-b1f1-b4aa20476c72

Tags (edit): Add tags

Custom security rules: 3 inbound, 3 outbound

Associated with: 0 subnets, 0 network interfaces

Filter by name

Port == all

Protocol == all

Source == all

Destination == all

Action == all

Priority	Name	Port	Protocol	Source	Destination	Action
100	Allow-WebTier	Any	Any	10.0.1.0/24	Any	Allow
101	Allow-DBTier	Any	Any	10.0.3.0/24	Any	Allow
300	Deny-All-Inbound	Any	Any	Any	Any	Deny
65000	AllowVnetInBound	Any	Any	VirtualNetwork	VirtualNetwork	Allow
65001	AllowAzureLoadBalancerIn	Any	Any	AzureLoadBalancer	Any	Allow
65500	DenyAllInBound	Any	Any	Any	Any	Deny

Inbound Security Rules

Outbound Security Rules

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Home > Microsoft.NetworkSecurityGroup-20240612111536 | Overview > AppTier-NSG

AppTier-NSG | Outbound security rules

Network security group

Search Filter by name Add Hide default rules Refresh Delete Give feedback

Network security group security rules are evaluated by priority using the combination of source, source port, destination, destination port, and protocol to allow or deny the traffic. A security rule can't have the same priority and direction as an existing rule. You can't delete default security rules, but you can override them with rules that have a higher priority. [Learn more](#)

Port == all Protocol == all Source == all Destination == all Action == all

Priority	Name	Port	Protocol	Source	Destination	Action
200	Allow-WebTier-Outbound	Any	Any	10.0.1.0/24	Any	Allow
201	Allow-DBTier-Outbound	Any	Any	10.0.3.0/24	Any	Allow
300	Deny-All-Outbound	Any	Any	Any	Any	Deny
65000	AllowVnetOutbound	Any	Any	VirtualNetwork	VirtualNetwork	Allow
65001	AllowInternetOutbound	Any	Any	Any	Internet	Allow
65500	DenyAllOutbound	Any	Any	Any	Any	Deny

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Associate NSG with the App Tier Subnet

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Home > AppTier-NSG

AppTier-NSG | Subnets

Network security group

Search Associate

Search subnets

Name	Address range	Virtual network
AppTier-Subnet	10.0.2.0/24	Vnet-tier

Saving subnet
Successfully saved network security group for subnet 'AppTier-Subnet'.

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Create an NSG for the **DB Tier** and Add Inbound & Outbound Security Rules

Microsoft Azure

Overview

Search resources, services, and docs (G+)

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Home

Microsoft.NetworkSecurityGroup-20240612114326 | Overview

DBTier-NSG

Network security group

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Resource group (move)

Location

Subscription (move)

Subscription ID

Tags (edit)

My RG

West US 3

Azure for Students

2d2cdb67-7017-4999-b1f1-b4aa20476c72

Add tags

Custom security rules : 2 inbound, 2 outbound

Associated with : 0 subnets, 0 network interfaces

JSON View

Filter by name

Port == all

Protocol == all

Source == all

Destination == all

Action == all

Priority	Name	Port	Protocol	Source	Destination	Action
Inbound Security Rules						
100	Allow-AppTier-Inbound	Any	Any	10.0.2.0/24	Any	Allow
300	Deny-All-Inbound	Any	Any	Any	Any	Deny
65000	AllowVnetInbound	Any	Any	VirtualNetwork	VirtualNetwork	Allow
65001	AllowAzureLoadBalancerInbound	Any	Any	AzureLoadBalancer	Any	Allow
65500	DenyAllInBound	Any	Any	Any	Any	Deny
Outbound Security Rules						
100	Allow-AppTier-Outbound	Any	Any	10.0.2.0/24	Any	Allow

Microsoft Azure

Search resources, services, and docs (G+)

DBTier-NSG | Inbound security rules

Network security group

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Home > Microsoft.NetworkSecurityGroup-20240612114326 | Overview > DBTier-NSG

DBTier-NSG | Inbound security rules

Network security group

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Network security group security rules are evaluated by priority using the combination of source, source port, destination, destination port, and protocol to allow or deny the traffic. A security rule can't have the same priority and direction as an existing rule. You can't delete default security rules, but you can override them with rules that have a higher priority. [Learn more](#)

Filter by name

Port == all

Protocol == all

Source == all

Destination == all

Action == all

Priority	Name	Port	Protocol	Source	Destination	Action
100	Allow-AppTier-Inbound	Any	Any	10.0.2.0/24	Any	Allow
300	Deny-All-Inbound	Any	Any	Any	Any	Deny
65000	AllowVnetInBound	Any	Any	VirtualNetwork	VirtualNetwork	Allow
65001	AllowAzureLoadBalancerInBound	Any	Any	AzureLoadBalancer	Any	Allow
65500	DenyAllInBound	Any	Any	Any	Any	Deny

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

Home > Microsoft.NetworkSecurityGroup-20240612114326 | Overview > DBTier-NSG

DBTier-NSG | Outbound security rules

Network security group

Search Filter by name Port == all Protocol == all Source == all Destination == all Action == all

Network security group security rules are evaluated by priority using the combination of source, source port, destination, destination port, and protocol to allow or deny the traffic. A security rule can't have the same priority and direction as an existing rule. You can't delete default security rules, but you can override them with rules that have a higher priority. [Learn more](#)

Priority	Name	Port	Protocol	Source	Destination	Action
100	Allow-AppTier-Outbound	Any	Any	10.0.2.0/24	Any	Allow
300	Deny-All-Outbound	Any	Any	Any	Any	Deny
65000	AllowVnetOutBound	Any	Any	VirtualNetwork	VirtualNetwork	Allow
65001	AllowInternetOutBound	Any	Any	Any	Internet	Allow
65500	DenyAllOutBound	Any	Any	Any	Any	Deny

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Deploy Virtual Machines in the **Web Tier** (One VM should be Linux & another should be Windows)

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

Home > Virtual machines

Default Directory (ananyasrivastava2525@gmail.com:microsoft.com)

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 2 of 2 records. No grouping List view

Name	Type	Subscription	Resource group	Location	Status	Operating system	Size	Public IP address	Disks
WebTierLinuxVM	Virtual machine	Azure for Students	My_RG	West US 3	Running	Linux	Standard_DS2_v2_Pro...	20.14.87.205	1
WebTierWindowsVM	Virtual machine	Azure for Students	My_RG	West US 3	Running	Windows	Standard_DS2_v2_Pro...	20.150.218.31	1

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Deploy Virtual Machines in the **App Tier** (One VM should be Linux & another should be Windows)

Microsoft Azure Upgrade Search resources, services, and docs (G+/I) ananyasrivastava2525@... DEFAULT DIRECTORY

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

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Name	Type	Subscription	Resource group	Location	Status	Operating system	Size	Public IP address	Disks
AppTierLinuxVM	Virtual machine	Azure for Students	My_RG	West US 3	Running	Linux	Standard_DS2_v2_Pro...	-	1
AppTierWinVM	Virtual machine	Azure for Students	My_RG	West US 3	Running	Windows	Standard_DS2_v2_Pro...	-	1

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Deploy Virtual Machines in the **DB Tier** (One VM should be Linux & another should be Windows)

Microsoft Azure Upgrade Search resources, services, and docs (G+/I) ananyasrivastava2525@... DEFAULT DIRECTORY

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

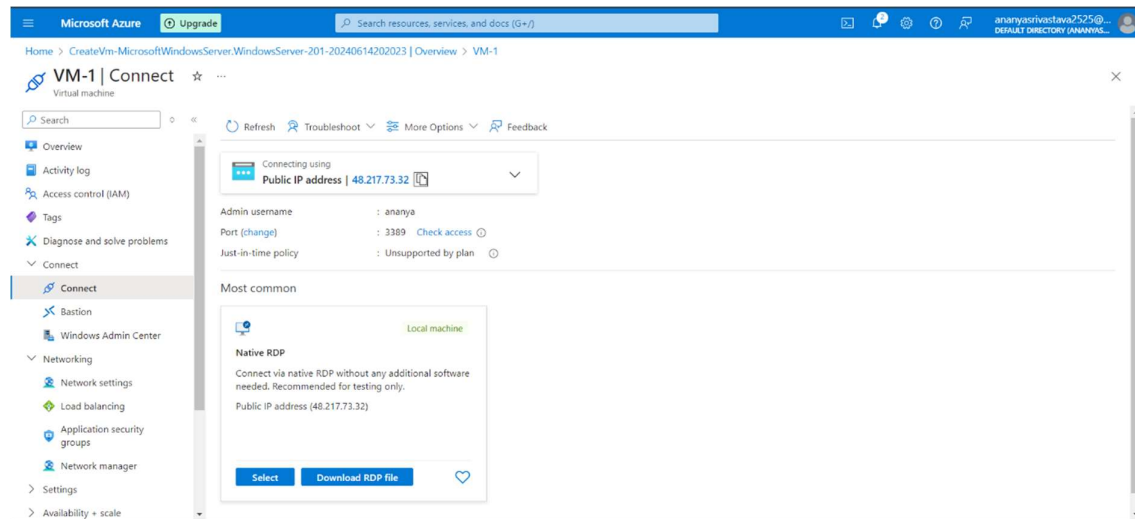
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Showing 1 to 2 of 2 records. No grouping List view

Name	Type	Subscription	Resource group	Location	Status	Operating system	Size	Public IP address	Disks
DBTierLinuxVM	Virtual machine	Azure for Students	My_RG	West US 3	Running	Linux	Standard_DS2_v2_Pro...	-	1
DBTierWinVM	Virtual machine	Azure for Students	My_RG	West US 3	Running	Windows	Standard_DS2_v2_Pro...	-	1

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Configure Apache Server on Linux VM's And IIS Server on Windows.



Steps

1. Update the package repository: `sudo apt-get update`
2. Install Apache: `sudo apt-get install apache2`

```
Ananya@Demo-VM2: ~$ ssh ananya@74.235.200.254
C:\Users\Hp>ssh ananya@74.235.200.254
The authenticity of host '74.235.200.254 (74.235.200.254)' can't be established.
ED25519 key fingerprint is SHA256:rux9XmBaz20nXmkQLS7G7JqU4Wk0EgBHA/*WweqIb7c.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '74.235.200.254' (ED25519) to the list of known hosts.
Ananya@74.235.200.254's password:
Permission denied, please try again.
Ananya@74.235.200.254's password:
Connection closed by 74.235.200.254 port 22

C:\Users\Hp>ssh ananya@74.235.200.254
Ananya@74.235.200.254's password:
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1064-azure x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Sat Jun 15 04:08:58 UTC 2024

System load:  0.0          Processes:    125
Usage of /:   5.1% of 28.89GB   Users logged in:  0
Memory usage: 2%           IPv4 address for eth0: 10.0.0.5
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

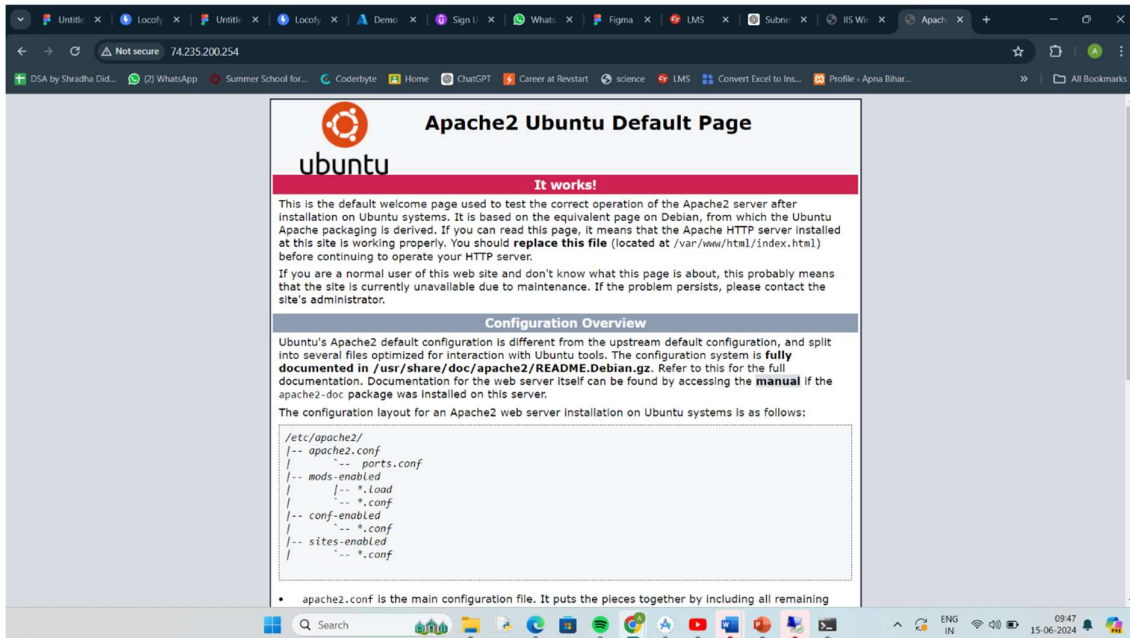
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.
```

```
Ananya@Demo-VM2:~$ sudo apt-get update
Hit:1 http://azure.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://azure.archive.ubuntu.com/ubuntu focal-updates InRelease [128 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu focal-backports InRelease [128 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu focal-security InRelease [128 kB]
Get:5 http://azure.archive.ubuntu.com/ubuntu focal/universe amd64 Packages [8628 kB]
Get:6 http://azure.archive.ubuntu.com/ubuntu focal/universe Translation-en [5124 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu focal/universe amd64 c-n-f Metadata [265 kB]
Get:8 http://azure.archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [1444 kB]
Get:9 http://azure.archive.ubuntu.com/ubuntu focal/multiverse Translation-en [104 kB]
Get:10 http://azure.archive.ubuntu.com/ubuntu focal/multiverse amd64 c-n-f Metadata [9136 B]
Get:11 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [3359 kB]
Get:12 http://azure.archive.ubuntu.com/ubuntu focal-updates/main Translation-en [528 kB]
Get:13 http://azure.archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [2979 kB]
Get:14 http://azure.archive.ubuntu.com/ubuntu focal-updates/restricted Translation-en [417 kB]
Get:15 http://azure.archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [1194 kB]
Get:16 http://azure.archive.ubuntu.com/ubuntu focal-updates/universe Translation-en [287 kB]
Get:17 http://azure.archive.ubuntu.com/ubuntu focal-updates/universe amd64 c-n-f Metadata [25.7 kB]
Get:18 http://azure.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 Packages [26.2 kB]
Get:19 http://azure.archive.ubuntu.com/ubuntu focal-updates/multiverse Translation-en [7888 B]
Get:20 http://azure.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 c-n-f Metadata [620 B]
Get:21 http://azure.archive.ubuntu.com/ubuntu focal-backports/main amd64 Packages [45.7 kB]
Get:22 http://azure.archive.ubuntu.com/ubuntu focal-backports/main Translation-en [16.3 kB]
Get:23 http://azure.archive.ubuntu.com/ubuntu focal-backports/main amd64 c-n-f Metadata [1420 B]
Get:24 http://azure.archive.ubuntu.com/ubuntu focal-backports/restricted amd64 c-n-f Metadata [116 B]
Get:25 http://azure.archive.ubuntu.com/ubuntu focal-backports/universe amd64 Packages [25.0 kB]
Get:26 http://azure.archive.ubuntu.com/ubuntu focal-backports/universe Translation-en [16.3 kB]
Get:27 http://azure.archive.ubuntu.com/ubuntu focal-backports/universe amd64 c-n-f Metadata [880 B]
Get:28 http://azure.archive.ubuntu.com/ubuntu focal-backports/multiverse amd64 c-n-f Metadata [116 B]
Get:29 http://azure.archive.ubuntu.com/ubuntu focal-security/main amd64 Packages [2984 kB]
Get:30 http://azure.archive.ubuntu.com/ubuntu focal-security/main Translation-en [447 kB]
Get:31 http://azure.archive.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [2863 kB]
Get:32 http://azure.archive.ubuntu.com/ubuntu focal-security/restricted Translation-en [401 kB]
Get:33 http://azure.archive.ubuntu.com/ubuntu focal-security/universe amd64 Packages [966 kB]
Get:34 http://azure.archive.ubuntu.com/ubuntu focal-security/universe Translation-en [204 kB]
Get:35 http://azure.archive.ubuntu.com/ubuntu focal-security/universe amd64 c-n-f Metadata [19.2 kB]
Get:36 http://azure.archive.ubuntu.com/ubuntu focal-security/multiverse amd64 Packages [24.0 kB]
Get:37 http://azure.archive.ubuntu.com/ubuntu focal-security/multiverse Translation-en [5904 B]
Get:38 http://azure.archive.ubuntu.com/ubuntu focal-security/multiverse amd64 c-n-f Metadata [548 B]
Fetched 31.5 MB in 5s (6088 kB/s)
```

Verify the installation



IIS Server on Window VM in Azure

