

# **Secure Hosting of IIS Websites on Azure using Application Gateway, WAF, and Azure SQL Database**

## **1. Introduction**

This Proof of Concept (POC) demonstrates how to securely host multiple IIS websites on a Windows Server Virtual Machine in Microsoft Azure. One website functions as a data entry application that stores user-submitted data in an Azure SQL Database, while the second website is a normal informational IIS website. All incoming traffic is managed through Azure Application Gateway with Web Application Firewall (WAF) enabled, and access is restricted exclusively to the office network.

## **2. Objective**

The main objectives of this POC are:

- To host two IIS websites on a single Windows Server VM
- To securely store application data in Azure SQL Database
- To manage and secure traffic using Azure Application Gateway with WAF
- To enable HTTPS (SSL) for both websites
- To restrict application access to the office network only

## **3. Scope of the POC**

### **Included:**

- Windows Server VM with IIS
- Two IIS websites with different domains
- Azure SQL Database integration
- Azure Application Gateway (WAF v2)
- HTTPS configuration
- Office network access restriction

### **Excluded:**

- Advanced CI/CD pipelines
- Auto-scaling and high availability across multiple VMs

- Identity-based authentication (Azure AD)

## 4. High-Level Architecture

### Traffic Flow:

Office Network / Internet

→ Azure Application Gateway (WAF Enabled)

→ Windows Server VM (IIS)

→ Azure SQL Database

All web traffic is routed through the Application Gateway, while database traffic is restricted to the VM only.

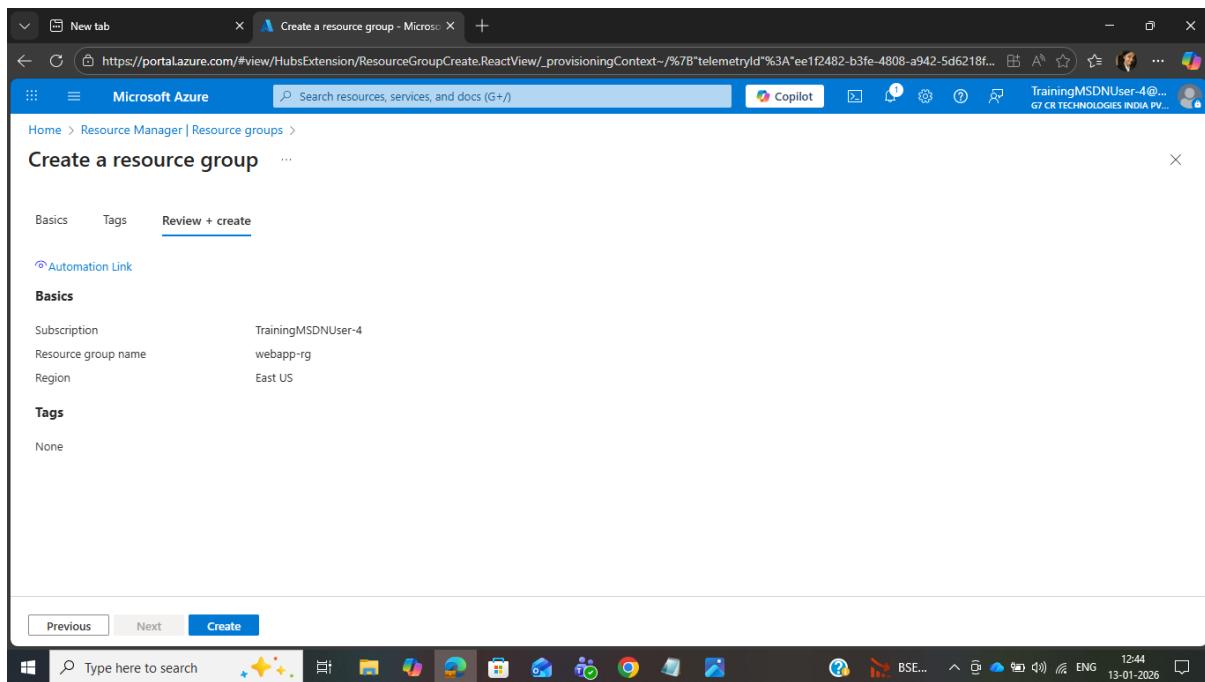
## 5. Azure Resources Used

Resource Type	Purpose
Resource Group	Logical grouping of all resources
Virtual Network (VNet)	Network isolation
Subnets	Separation for App Gateway and VM
Windows Server VM	Hosts IIS websites
IIS	Web server
Azure SQL Database	Data storage
Application Gateway (WAF v2)	Traffic management and security
Public IP	Frontend access via App Gateway
DNS Records	Domain resolution

## 6. Implementation Steps Summary

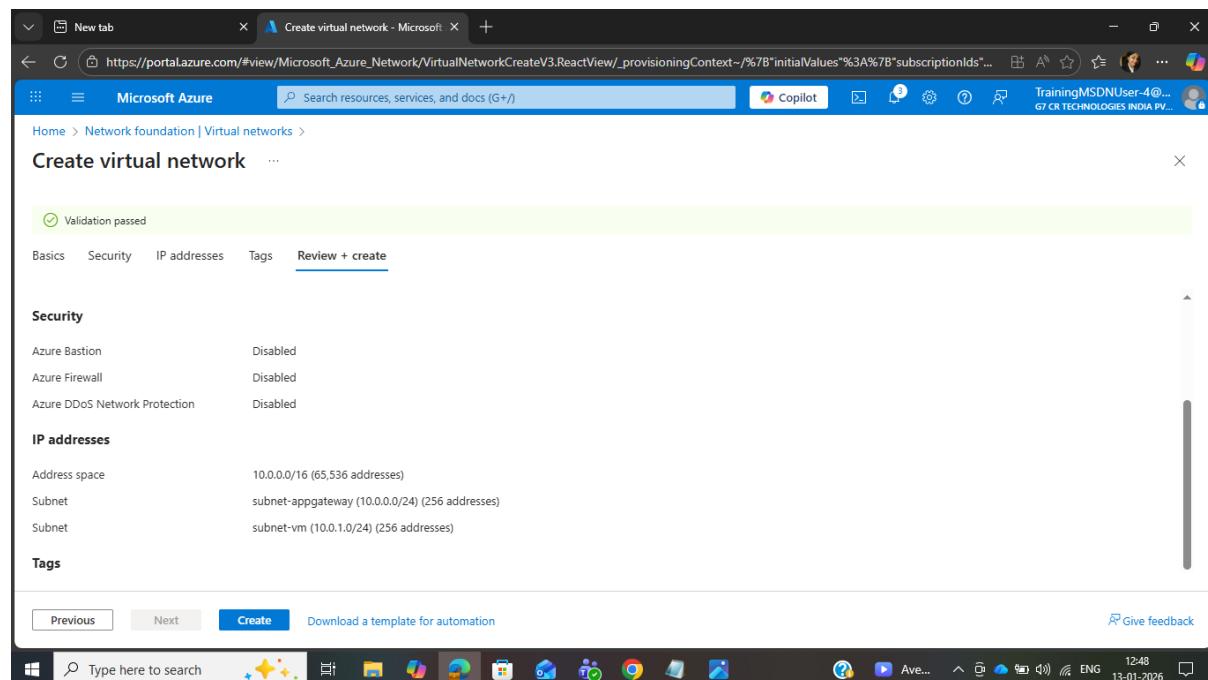
### Step 1: Resource Group Creation

- Created a dedicated resource group to manage and organize all Azure resources.



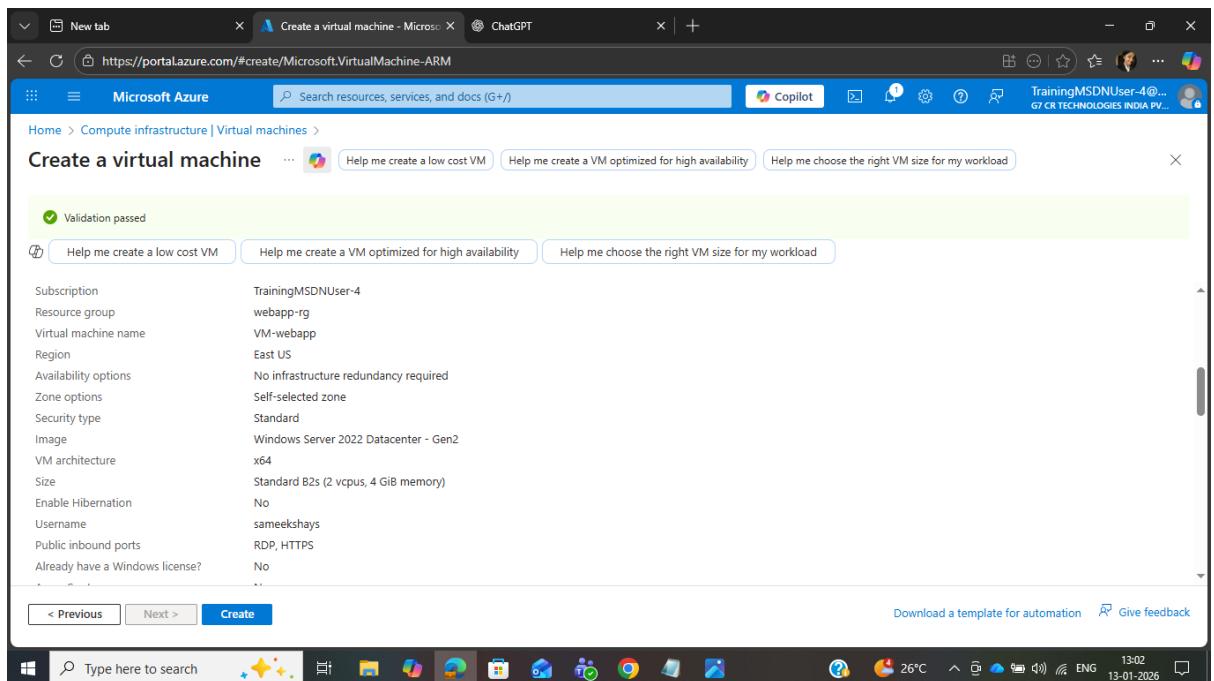
## Step 2: Virtual Network and Subnets

- Created a VNet with two subnets:
  - Application Gateway subnet
  - Web VM subnet



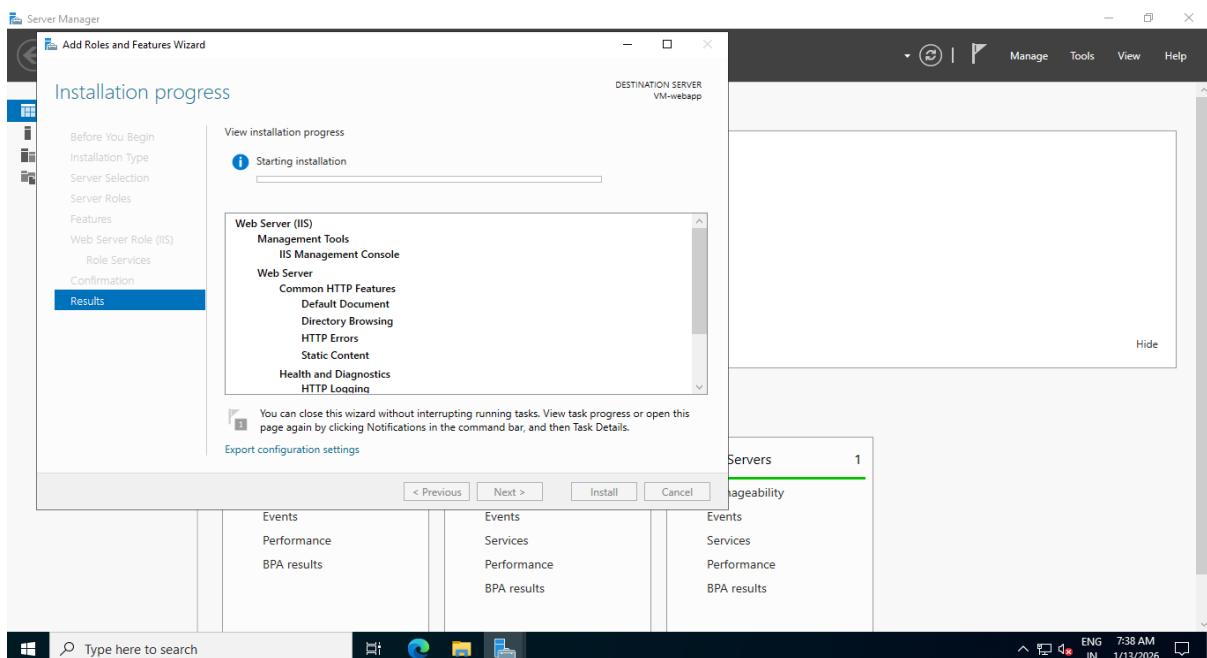
## Step 3: Windows Server VM Creation

- Deployed a Windows Server 2022 VM
- RDP access restricted to office IP
- Public IP used temporarily



## Step 4: IIS Installation

- Installed IIS role on the VM
- Enabled required features for ASP.NET



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

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\sameekshays> iisreset

Attempting stop...
Internet services successfully stopped
Attempting start...
Internet services successfully restarted
PS C:\Users\sameekshays>
```

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

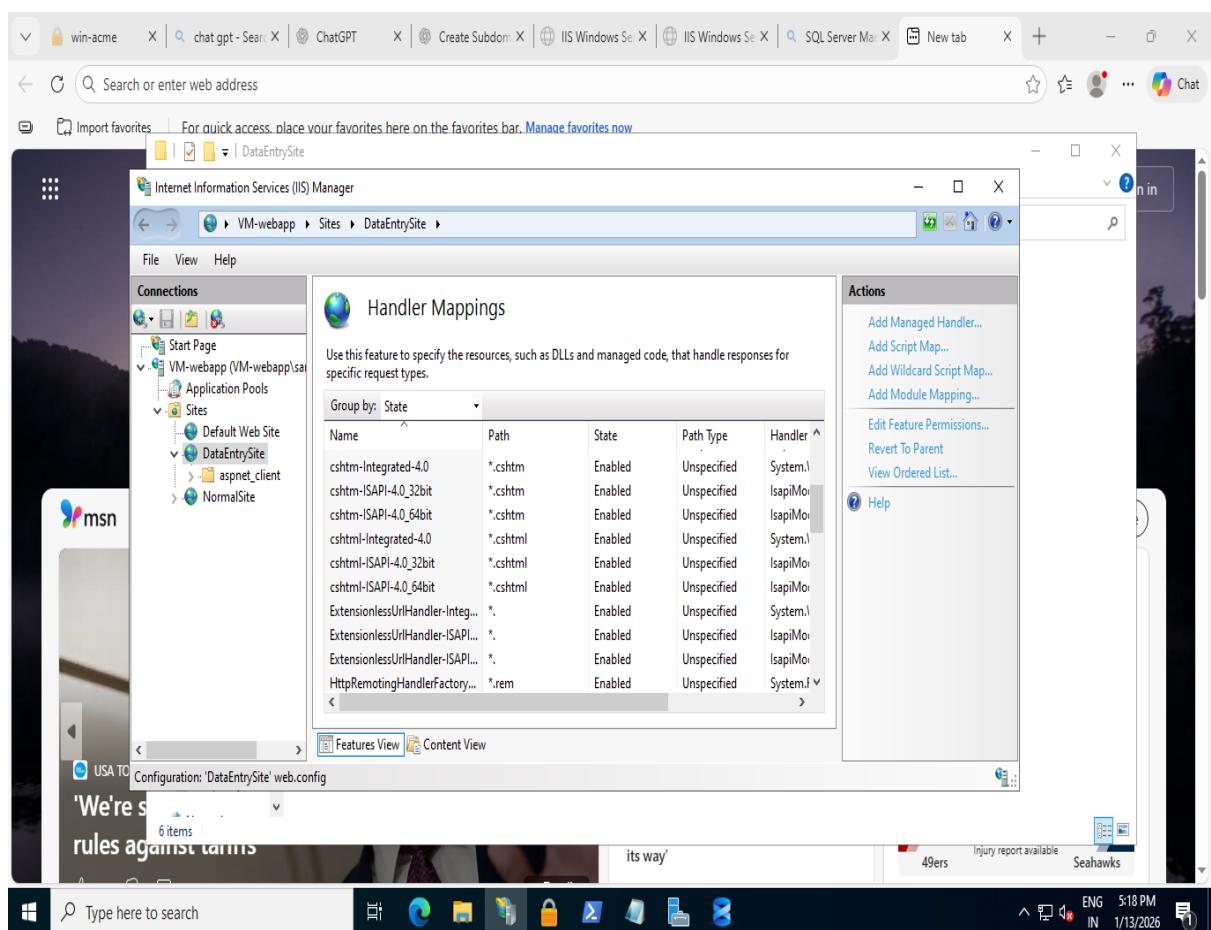
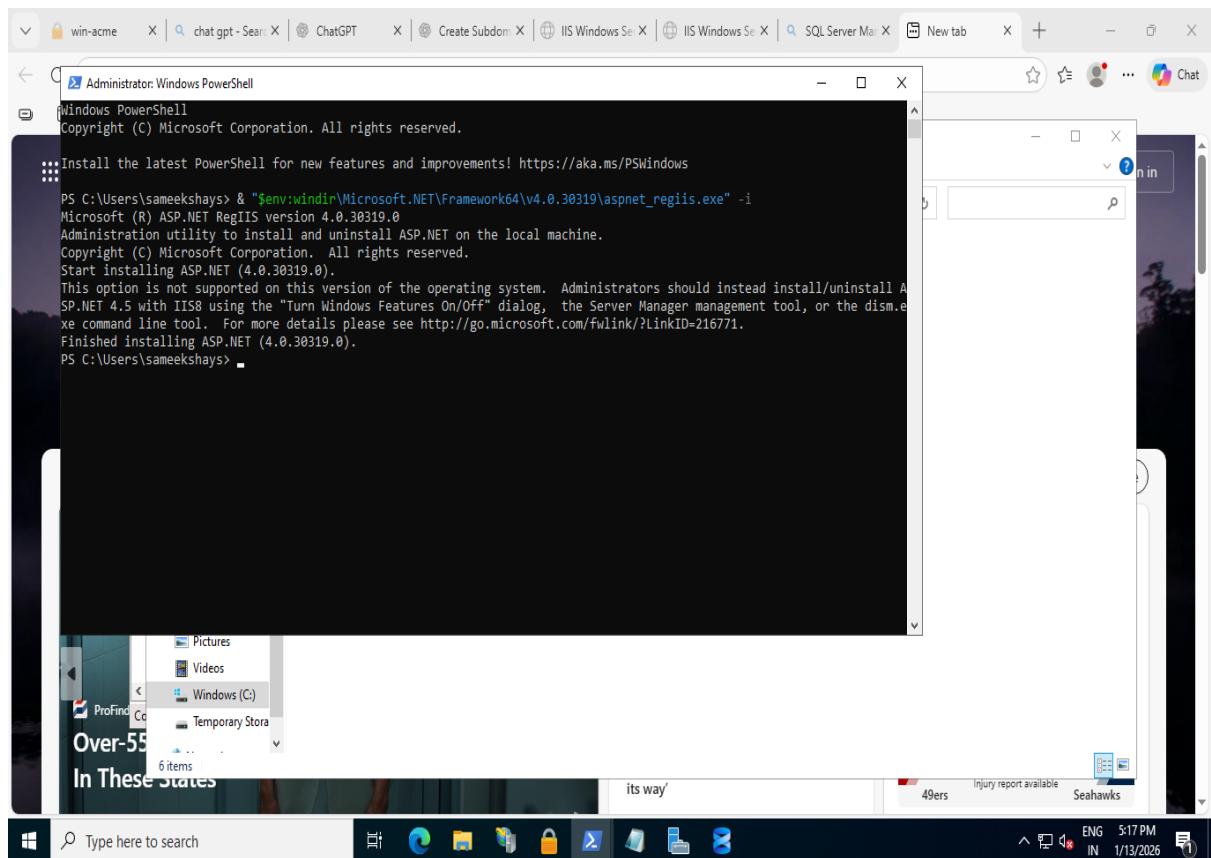
Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\sameekshays> Install-WindowsFeature -Name Web-Server, Web-Asp-Net45, Web-ISAPI-Ext, Web-ISAPI-Filter, Web-Mgmt-Console -IncludeManagementTools

Success Restart Needed Exit Code    Feature Result
----- ----- ----- -----
True   No      Success          {ASP.NET 4.8, Application Development, ASP...}

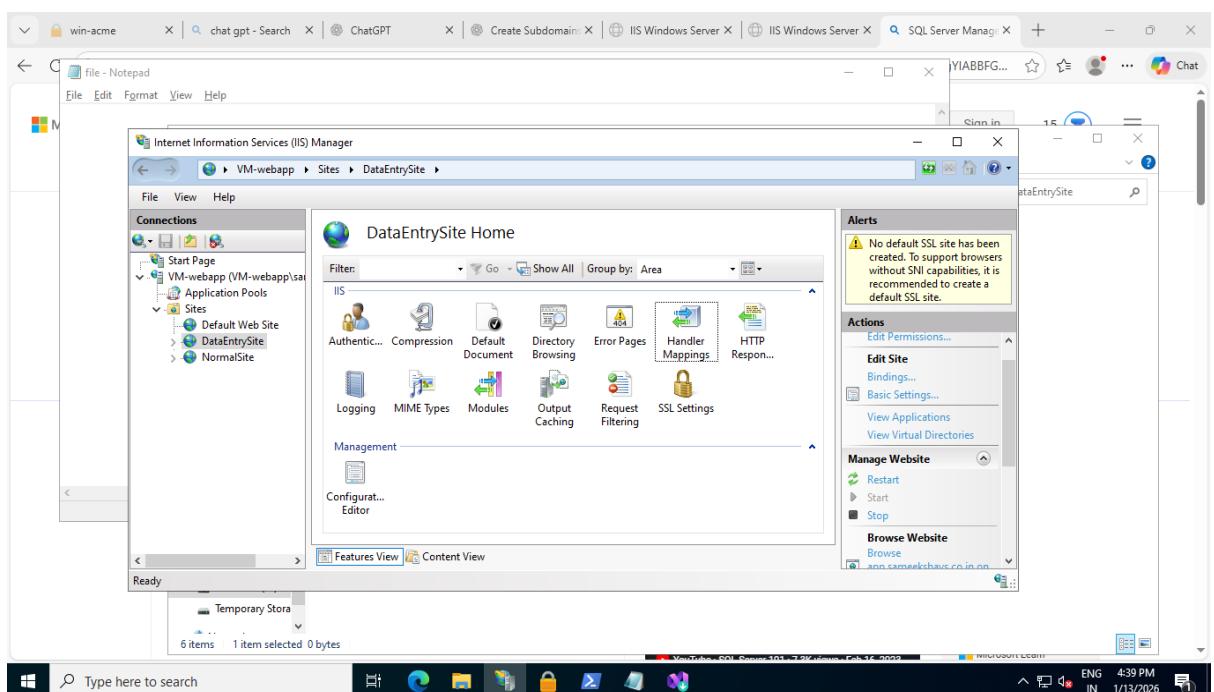
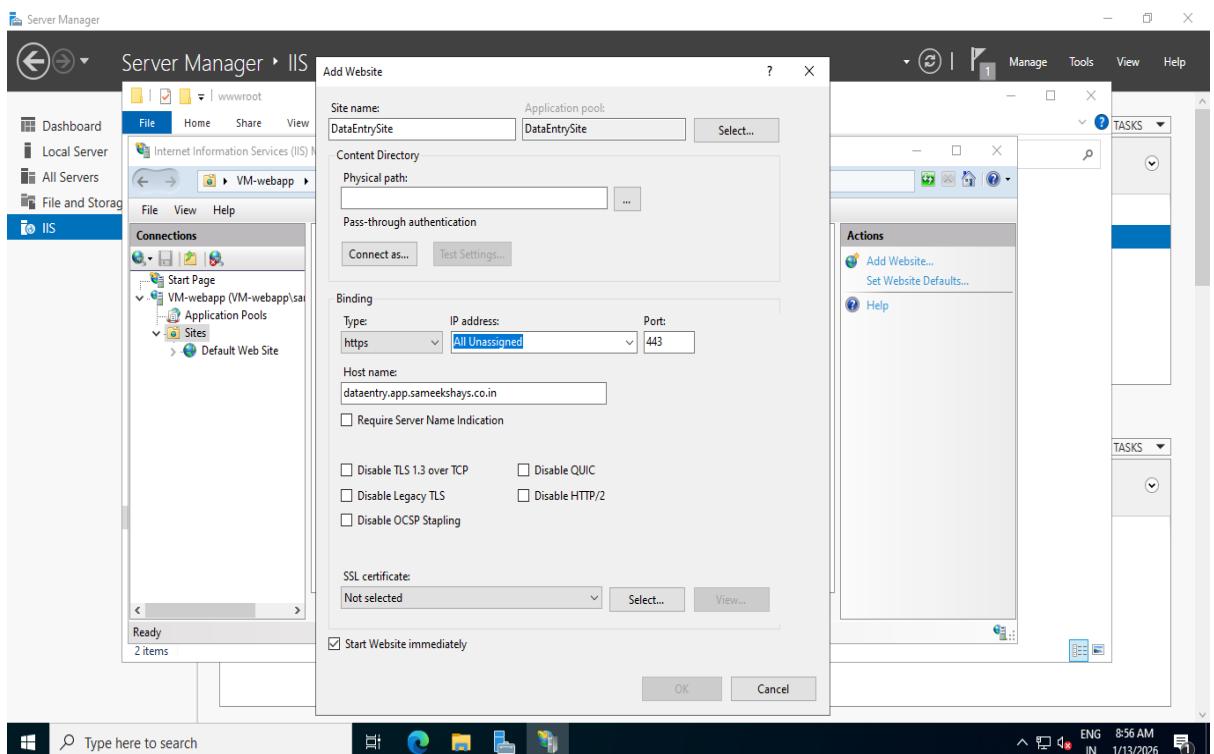
PS C:\Users\sameekshays> Get-WindowsFeature *Web* | Where-Object Installed
```

Display Name	Name	Install State
[X] Web Server (IIS)	Web-Server	Installed
[X] Web Server	Web-WebServer	Installed
[X] Common HTTP Features	Web-Common-Http	Installed
[X] Default Document	Web-Default-Doc	Installed
[X] Directory Browsing	Web-Dir-Browsing	Installed
[X] HTTP Errors	Web-Http-Errors	Installed
[X] Static Content	Web-Static-Content	Installed
[X] Health and Diagnostics	Web-Health	Installed
[X] HTTP Logging	Web-Http-Logging	Installed
[X] Performance	Web-Performance	Installed
[X] Static Content Compression	Web-Stat-Compression	Installed
[X] Security	Web-Security	Installed
[X] Request Filtering	Web-Filtering	Installed
[X] Application Development	Web-App-Dev	Installed



## Step 5: IIS Website Configuration

- Created two websites:
- Data Entry Website (app domain)
- Normal Website (blog domain)
- Configured host headers for domain-based routing



## Step 6: Azure SQL Database Setup

- Created Azure SQL Server and Database
- Disabled public access
- Configured firewall to allow VM outbound IP

Microsoft Azure

Create SQL Database Server

Server details

Enter required settings for this server, including providing a name and location. This server will be created in the same subscription and resource group as your database.

Server name \*

sqlserverweb123

.database.windows.net

Location \*

(US) East US

Your subscription does not have access to create a server in the selected region. For the latest information about region availability for your subscription, go to aka.ms/sqlcapacity. Please try another region or create a support ticket to request access.

Authentication

Azure Active Directory (Azure AD) is now Microsoft Entra ID. [Learn more](#)

OK

Feedback

db-dataentry (sqlserverweb123/db-dataentry)

SQL database

Search

Copy Restore Export Set server firewall Delete Connect with... Feedback

Overview

Activity log Tags Diagnose and solve problems Query editor (preview) Mirror database in Fabric (preview) Resource visualizer Settings Data management Integrations Power Platform Security Intelligent performance Monitoring Properties Notifications (0) Integrations Tutorials

Join us at **SQLCON Atlanta** from March 16-20 2026, for the ultimate SQL community learning event. Save \$200 with SQLAZP200. [Register now](#)

Resource group (...): webapp-rg

Status: Online

Location: Central US

Subscription (move): TrainingMSDNUser-4

Subscription ID: 94a3e059-5e41-48a4-b7e7-2abfabb0b2a

Tags (edit): Add tags

Server name: sqlserverweb123.database.windows.net

Connection strings: Show database connection strings

Pricing tier: General Purpose - Serverless: Gen5, 1 vCore

Auto-pause delay: 1 hour

Earliest restore point: No restore point available

Start working with your database

Connect to your database and start working with data with a few simple steps. [Learn more](#)

Add or remove favorites by pressing **Ctrl+Shift+F**

The screenshot shows the Microsoft Azure portal interface. The left sidebar is for a SQL database named 'db-dataentry'. The main area is titled 'Query editor (preview)' and contains a code editor with the following SQL script:

```
1 CREATE TABLE Entries (
2     ID INT IDENTITY(1,1) PRIMARY KEY,
3     Name NVARCHAR(100),
4     Email NVARCHAR(100)
5 );
6
```

The status bar at the bottom right indicates 'Query succeeded | 3s'.

The screenshot shows the Microsoft Azure portal interface. The left sidebar is for a SQL server named 'sqlserverweb123'. The main area is titled 'Networking' and displays networking rules. A new rule is being added with the following details:

Rule name	Start IPv4 address	End IPv4 address
Clientip-2026-1-13_15-8-35	14.143.179.194	14.143.179.194

The status bar at the bottom right indicates '26°C' and the date '13-01-2026'.

The screenshot shows the Microsoft Azure portal interface for managing network settings. The main title is "sqlserverweb123 | Networking". On the left sidebar, under the "Networking" section, the "Firewall rules" tab is selected. It displays two entries:

Rule name	Start IPv4 address	End IPv4 address
Allow-WebVM	40.114.45.101	40.114.45.101
Clientip-2026-1-13_15-8-35	14.143.179.194	14.143.179.194

Below the table, there is a section titled "Exceptions" which is currently empty. At the bottom of the page are "Save" and "Discard" buttons.

The screenshot shows the Microsoft Azure portal interface for managing network settings for the database "db-dataentry". The main title is "sqlserverweb123 | Networking". On the left sidebar, under the "Networking" section, the "Public access" tab is selected. It displays the following configuration:

- Public network access:** The "Selected networks" option is selected.
- Virtual networks:** A note states that virtual networks can connect to the resource using service endpoints.

At the bottom of the page are "Save" and "Discard" buttons.

The screenshot shows the Microsoft Azure portal interface. The URL in the address bar is [https://portal.azure.com/#view/Microsoft\\_Azure\\_Network/CreatePrivateEndpointBlade/resourceId%2Fsubscriptions%2F94a3e059-5e41-48a4-b7e7-2abfabbd0b2a/resourceType%2FMicrosoft.Sql/servers/resourceName%2Fsqlserverweb123](https://portal.azure.com/#view/Microsoft_Azure_Network/CreatePrivateEndpointBlade/resourceId%2Fsubscriptions%2F94a3e059-5e41-48a4-b7e7-2abfabbd0b2a/resourceType%2FMicrosoft.Sql/servers/resourceName%2Fsqlserverweb123). The page title is "Create a private endpoint". The top navigation bar includes "Copilot", "Review + create", and other standard Azure icons.

The main content area displays the "Create a private endpoint" wizard. The "Review + create" step is selected. A progress bar at the top indicates "Running final validation...". Below the progress bar, there are two tabs: "Basics" and "Resource".

**Basics**

Subscription	TrainingMSDNUser-4
Resource group	webapp-rg
Region	East US
Name	private-endpoint-vm
Network Interface Name	private-endpoint-vm-nic

**Resource**

Subscription ID	94a3e059-5e41-48a4-b7e7-2abfabbd0b2a (TrainingMSDNUser-4)
Link type	Microsoft.Sql/servers
Resource group	webapp-rg
Resource	sqlserverweb123

At the bottom of the wizard, there are buttons for "Create", "Previous", "Next >", and "Download a template for automation".

The screenshot shows the Microsoft Azure portal interface. The URL in the address bar is <https://portal.azure.com/#browse/Microsoft.Network%2FprivateDnsZones>. The page title is "Private DNS zones". The top navigation bar includes "Copilot", "Group by none", and other standard Azure icons.

The main content area displays the "Private DNS zones" blade. It shows a table of existing private DNS zones. The table has columns: Name, Number of record sets, Max number of rec..., Number of virtual n..., Number of virtual n..., Resource Group, and Subscription.

Name	Number of record sets	Max number of rec...	Number of virtual n...	Number of virtual n...	Resource Group	Subscription
privatelink.database.windows.net	2	25,000	1 / 1000	0 / 100	webapp-rg	TrainingMSDNUser-4

At the bottom of the blade, it says "Showing 1 - 1 of 1. Display count: 200".

The screenshot shows a web browser window titled "Data Entry Site". The URL bar indicates "Not secure https://app.sameekshays.co.in". The page content is a "Data Entry Form" with two input fields: "Name:" containing "sam" and "Email:" containing "sameekshays@g7cr.com". A "Submit" button is present below the fields.

The screenshot shows the SQL Server Management Studio (SSMS) interface. The Object Explorer on the left shows the database structure for "db-dataentry", including tables like "Entries", "Columns", "Keys", "Constraints", "Triggers", "Indexes", and "Statistics". The central pane displays a query results grid for the "Entries" table, showing two rows of data:

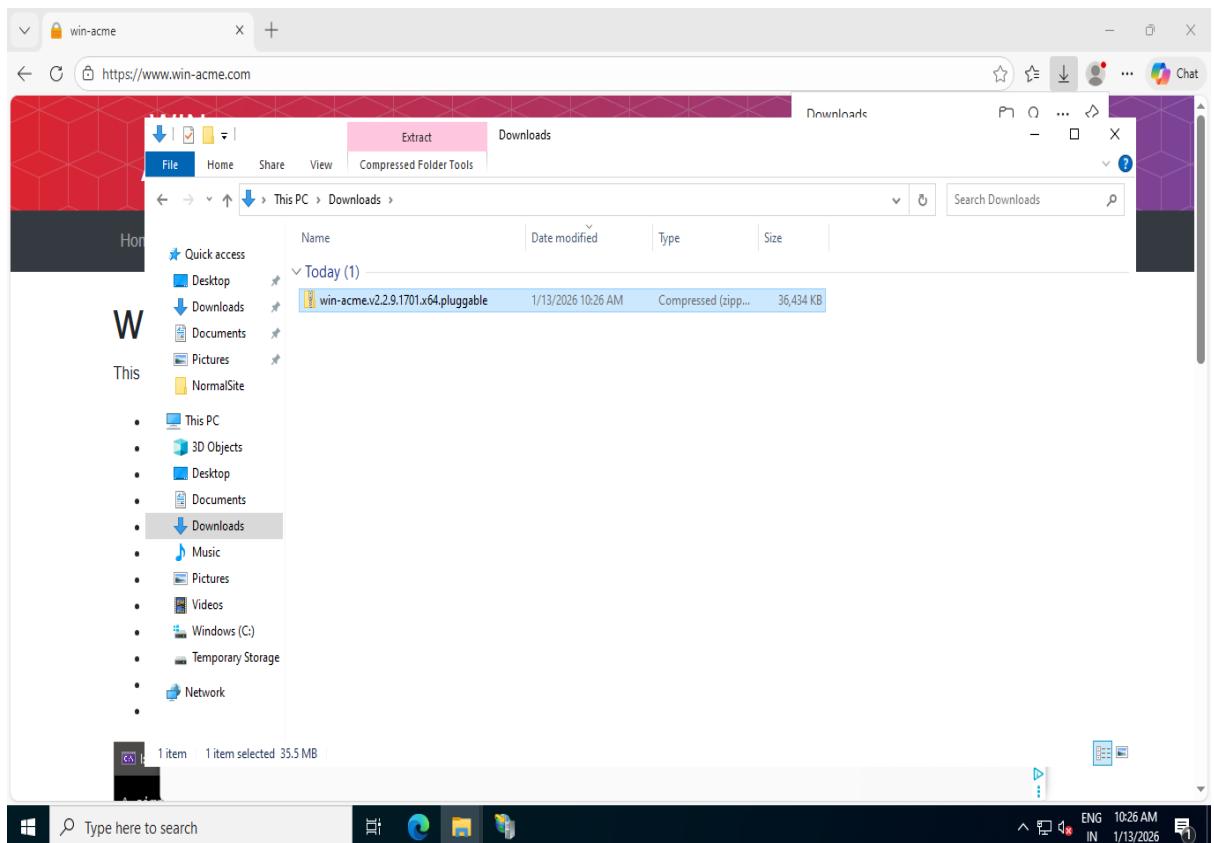
ID	Name	Email
1	sameekshays	sameekshays@gmail.com
2	sam	sameekshays@g7cr.com

The status bar at the bottom of the SSMS window shows "Query executed successfully." and other session details.

## Step 7: Data Entry Application Integration

- Created SQL table for data storage

- Implemented ASP.NET backend logic
- Stored connection string securely in web.config
- Verified data insertion and retrieval



The screenshot shows a Microsoft Edge browser window with the URL <https://learn.microsoft.com/en-us/ssms/install/install>. The page title is 'Install SQL Server Management Studio'. The left sidebar has a 'Find by title' search bar and links for Overview, Components and features, Installation and support, Release notes, Known issues, Product roadmap, System requirements, and Installation (which is highlighted). The main content area starts with 'Install SQL Server Management Studio' and 'Applies to: SQL Server, Azure SQL Database, Azure SQL Managed Instance, Azure Synapse Analytics, Analytics Platform System (PDW), SQL analytics endpoint in Microsoft Fabric, Warehouse in Microsoft Fabric, SQL database in Microsoft Fabric'. It then describes SSMS as an integrated environment for managing SQL infrastructure and provides a 'Download SQL Server Management Studio 22 installer' button. A 'In this article' sidebar on the right lists 'Installation overview', 'Installation highlights', 'Installation walkthrough', 'Support and troubleshooting', and 'Related content'. At the bottom, there's a 'Was this page helpful?' section with 'Yes' and 'No' buttons.

Screenshot of a Microsoft Edge browser window showing the SSMS installation page. A download progress dialog for 'vs\_SSMS.exe' is overlaid on the page.

**Studio**

Applies to: SQL Server, Azure SQL Database, Azure SQL Managed Instance, Azure Synapse Analytics, Analytics Platform System (PDW), SQL Server endpoint in Microsoft Fabric, Warehouse in Microsoft Fabric, SQL Data Warehouse in Microsoft Fabric

SQL Server Management Studio (SSMS) is an integrated environment for managing Microsoft SQL Server databases.

Was this page helpful?

Yes No

**Installation overview**

**Key information**

Key information	Action required
SSMS 22 is installed with the Visual Studio Installer	The SSMS 22 installer link downloads a stub installer (vs_SSMS.exe) that opens Visual Studio Installer to install SSMS. There's no standalone MSI.
How to install SSMS	Download the SSMS 22 installer, run vs_SSMS.exe, pick any

Visual Studio Installer

Preparing: C:\Users\SAMEEK~1\AppData\Local\Temp\1\b...\\vs\_setup\_bootstrapper.json

Cancel

Screenshot of a Microsoft Edge browser window showing the dbForge Studio for SQL Server landing page.

**dbForge Studio for SQL Server | 30 days free trial**

Sponsored Popular IDE for SQL Server Management, Administration, Development, Reporting, and Analysis. Unique Features Included. Improve your progress and achieve your goals!

Deep dive into SQL Server management

download ssms

sql management studio download

sql management studio downloads

what is ssms

Next >

SQL Server Management Studio

Microsoft 22

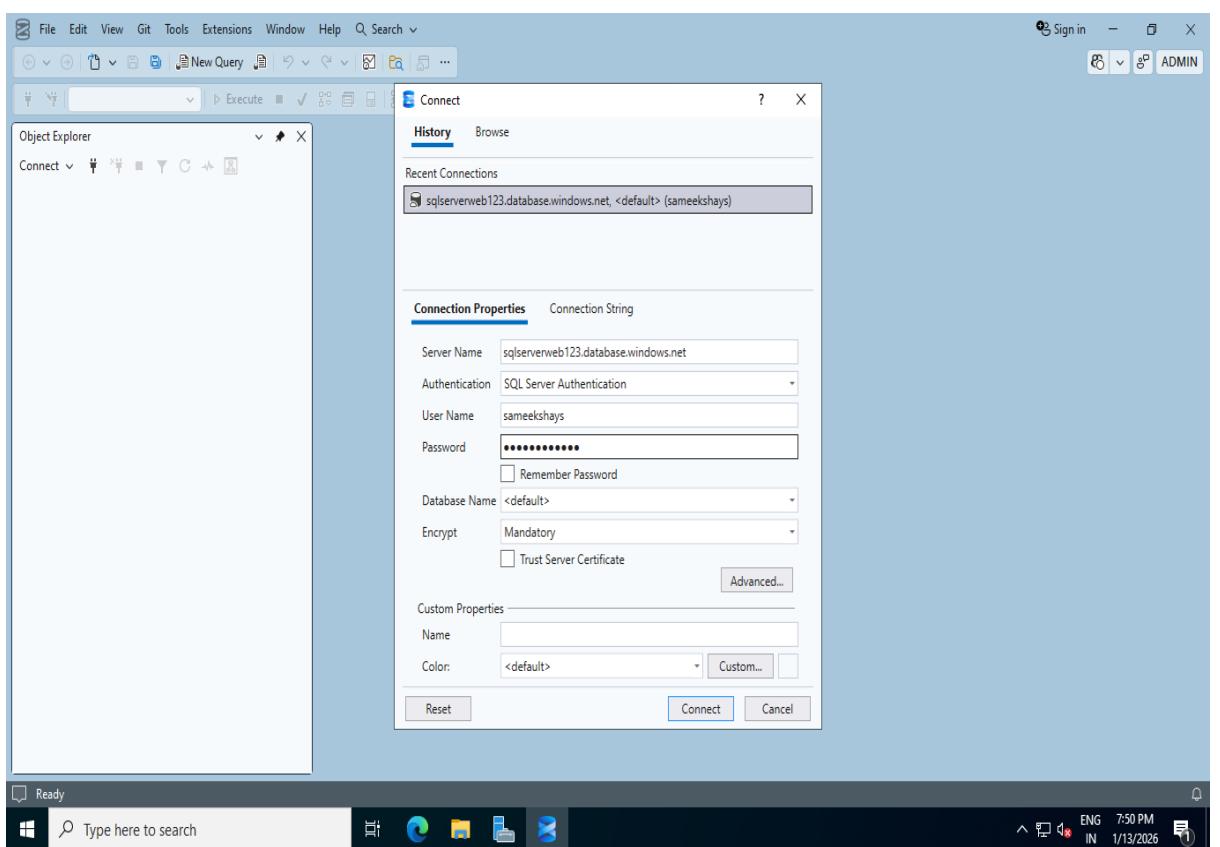
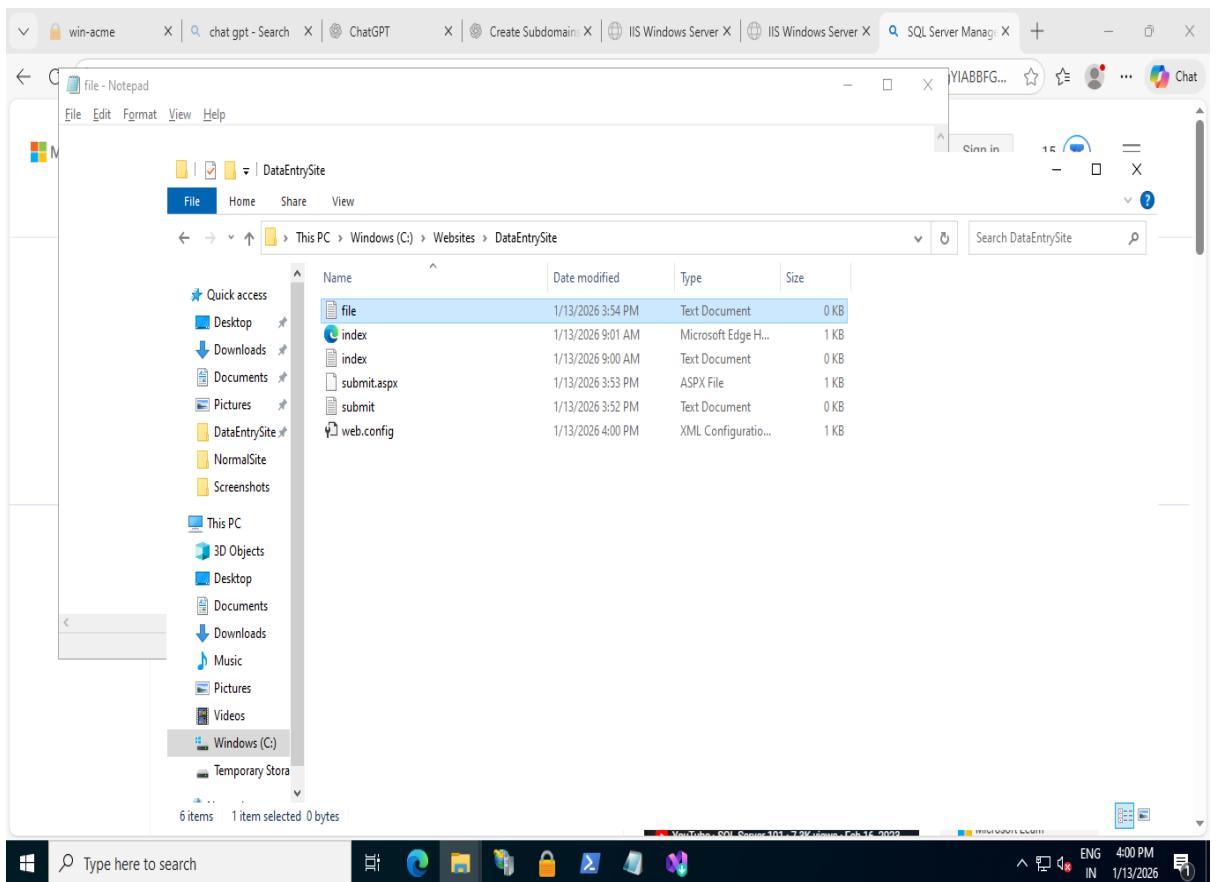
Ask a follow-up

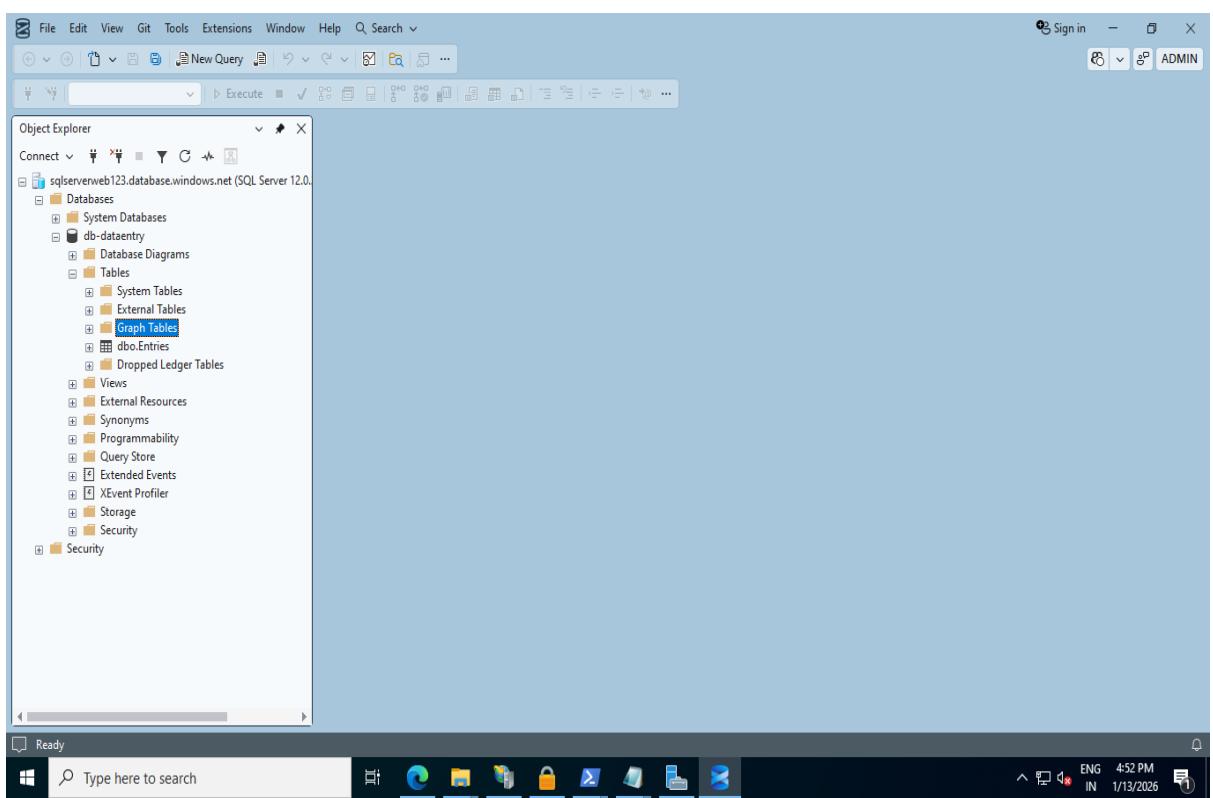
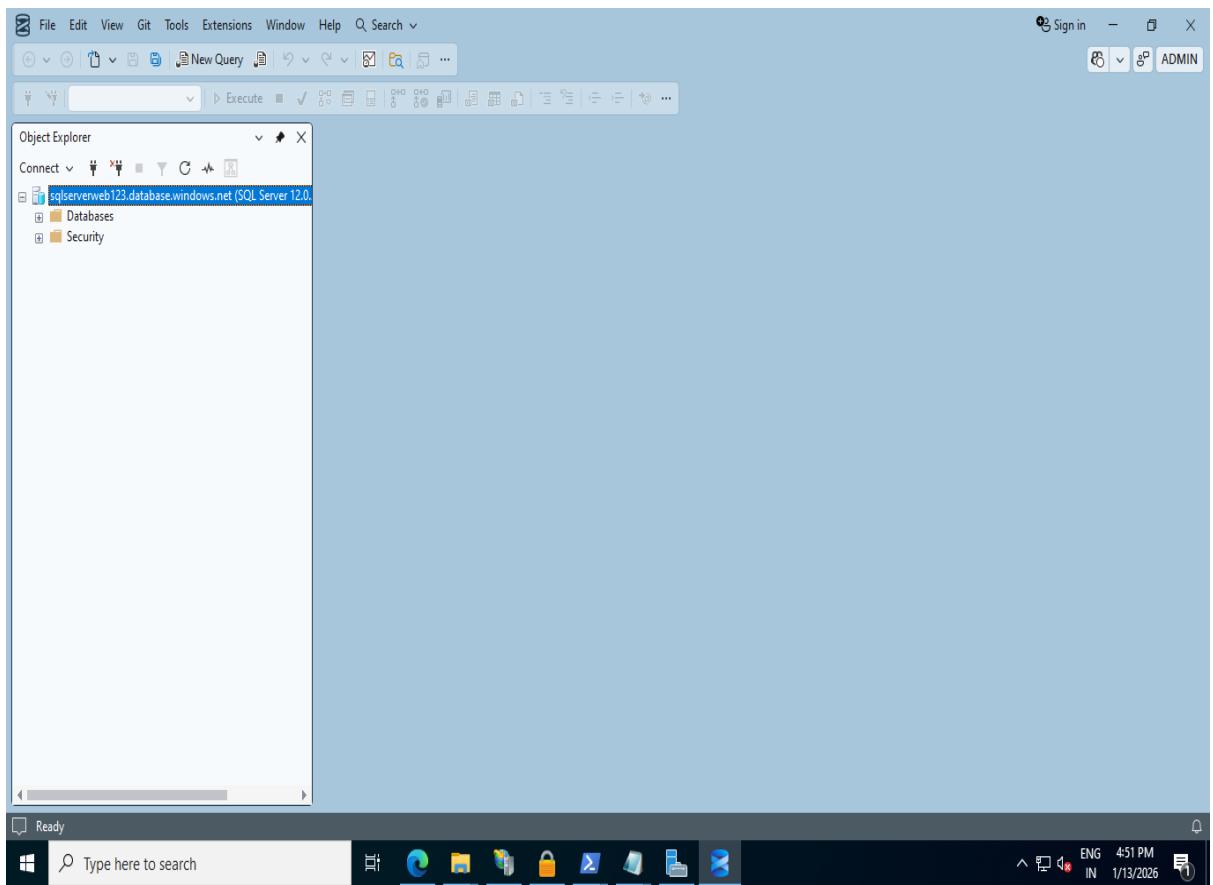
SSMS 21 New Features

SSMS Installation Tips

SSMS Keyboard Shortcuts

Terms Privacy





## Step 8: Application Gateway with WAF

- Deployed Application Gateway (WAF v2)
- Configured backend pool with VM private IP
- Created listeners for multiple domain

## Step 9: HTTPS Configuration

- Uploaded SSL certificates to Application Gateway
- Enabled HTTPS listeners on port 443

The screenshot shows the Microsoft Azure portal with the URL <https://portal.azure.com/#create/Microsoft.ApplicationGateway-ARM>. The user is creating a new Application Gateway named "app-gateway" in the "webapp-rg" resource group, located in the "East US" region with "WAF V2" tier. The configuration includes 1 minimum instance count and 10 maximum instance count, using IPv4 only. The portal interface includes a search bar, Copilot button, and various status indicators at the top.

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

TrainingMSDNUser-4@...  
G7 CR TECHNOLOGIES INDIA PVT. LTD.

Home > Load balancing and content delivery | Application gateways >

## Create application gateway

**⚠ Changes you make on this tab may affect any configuration you've done on other tabs. Review all options prior to creating the application gateway.**

IP address type  IPv4 only  Dual stack (IPv4 & IPv6)

HTTP2  Disabled  Enabled

FIPS (Federal Information Processing Standard) mode 140-2  Disabled  Enabled

WAF Policy \*

Configure virtual network

Virtual network \*

Subnet \*

Previous Next : Frontends >

The screenshot shows the Microsoft Azure portal with the URL <https://portal.azure.com/#create/Microsoft.ApplicationGateway-ARM>. The top navigation bar includes tabs for New tab, Session exp..., ChatGPT, New tab, sqlserverwel, Add Backend, VM-webapp, NETGEAR W..., and 10.0.1.4. On the far right, there's a user profile for 'TrainingMSDNUser-4@...' and 'G7 CR TECHNOLOGIES INDIA P...'.

The main content area is titled 'Create application gateway' under 'Load balancing and content delivery | Application gateways >'. A progress bar indicates 'Basics', 'Frontends', 'Backends', and 'Configuration' (which is selected). Below the progress bar, a note says 'Create routing rules that link your frontend(s) and backend(s). You can also add mo...'. To the left, there's a 'Frontends' section with a plus icon to add a front-end IP.

The central part of the screen is titled 'Add Backend setting' with a sub-note 'Display changes and go back to routing rules'. It shows a configuration for 'bhs-http-80':

- Backend settings name:** bhs-http-80
- Backend protocol:** HTTP (radio button selected)
- Backend port:** 80
- Additional backend settings:**
  - Cookie-based affinity:** Disable (radio button selected)
  - Connection draining:** Disable (radio button selected)
  - Dedicated backend connection:** Disable (radio button selected)
  - Request time-out (seconds):** 20
  - Override backend path:** (empty input field)
- Override hostname:** A note states: 'By default, the Application Gateway sends the same HTTP host header to the backend as it receives from the client. If your backend application/service requires a specific host value, you can override it using this setting.' With 'Yes' and 'No' buttons.
- Override with new host name:** (empty input field) with 'Yes' and 'No' buttons.
- Create custom probes:** (empty input field) with 'Yes' and 'No' buttons.

At the bottom, there are 'Previous' and 'Next : Tags >' buttons, and 'Add' and 'Cancel' buttons.

Screenshot of the Microsoft Azure portal showing the "Add a routing rule" configuration page for an Application Gateway.

**Priority:** 100

**Listener:** \* Backend targets

**Listener name:** listener-app

**Frontend IP:** Public IPv4

**Protocol:** HTTPS

**Port:** 443

**Https Settings:**

- Choose a certificate: Upload a certificate (selected)
- Cert name: sameekshays-wildcard
- PFX certificate file: "sameekshays-wildcard.pfx"
- Password: [REDACTED]
- Listener type: Multi site (selected)

**Add** | **Cancel**

**Frontends:** Public: (new) app-publicip

**Basics** | **Frontends** | **Backends** | **Configuration** | **Tag**

**Create application gateway**

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

**TrainingMSDNUser-4@...**  
GT CR TECHNOLOGIES INDIA PVT...

16:46 13-01-2026

Screenshot of the Microsoft Azure portal showing the "Add a routing rule" configuration page for an Application Gateway.

**Priority:** 200

**Listener:** \* Backend targets

**Listener name:** listener-blog

**Frontend IP:** Public IPv4

**Protocol:** HTTPS

**Port:** 443

**Https Settings:**

- Choose a certificate: Upload a certificate (selected)
- Cert name: sameekshays-wildcard
- Certificate name must be unique**
- PFX certificate file: Select a file
- Password: [REDACTED]
- Listener type: Basic (selected)

**Add** | **Cancel**

**Frontends:** Public: (new) app-publicip

**Basics** | **Frontends** | **Backends** | **Configuration** | **Tag**

**Create application gateway**

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

**TrainingMSDNUser-4@...**  
GT CR TECHNOLOGIES INDIA PVT...

16:51 13-01-2026

https://portal.azure.com/#create/Microsoft.ApplicationGateway-ARM

## Add a routing rule

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

Rule name \* rule-blog

Priority \* 200

\* Listener \* Backend targets

Choose a backend pool to which this routing rule will send traffic. You will also need to specify a set of Backend settings that define the behavior of the routing rule.

Target type Backend pool Redirection

backendpool-webVM

Backend target \* bhs-http-80-blog2

Backend settings \* Add new

Path-based routing

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

Previous Next : Tags > Add Cancel

https://portal.azure.com/#create/Microsoft.ApplicationGateway-ARM

## Create application gateway

Basics Frontends Backends Configuration Tags Review + create

Create routing rules that link your frontend(s) and backend(s). You can also add more backend pools, add a second frontend IP configuration if you haven't already, or edit previous configurations.

**Frontends**

+ Add a frontend IP

Public: (new) app-publicip

**Routing rules**

+ Add a routing rule

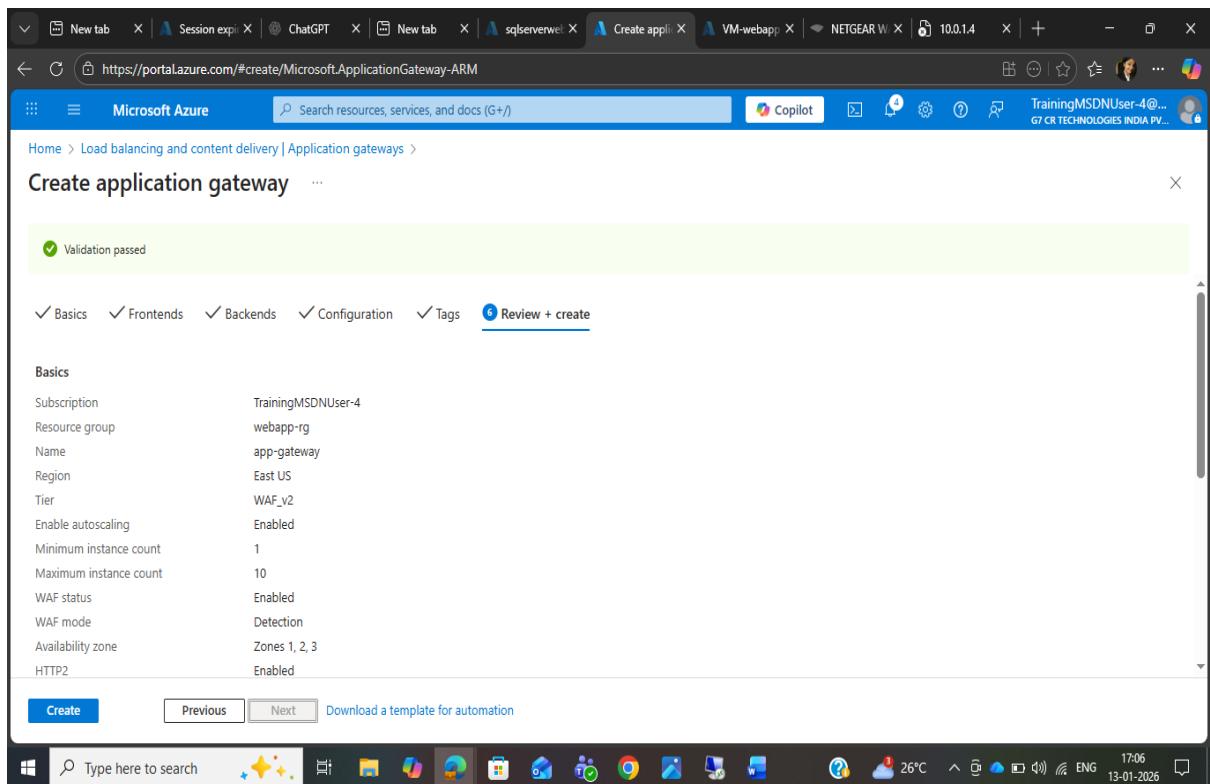
rule-web  
rule-blog

**Backend pools**

+ Add a backend pool

backendpool-webvm  
backendpool-webVM2

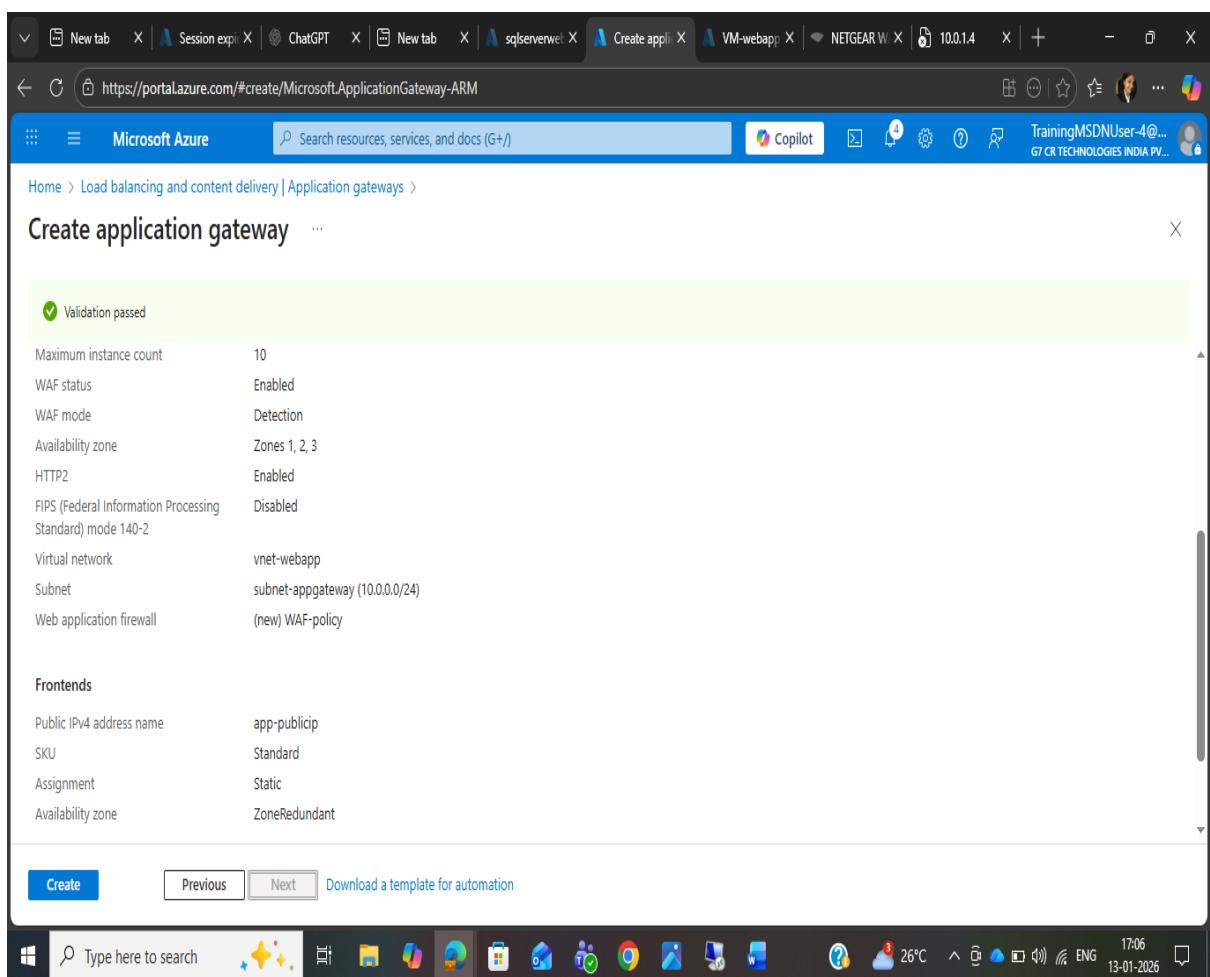
Previous Next : Tags >



The screenshot shows the Microsoft Azure portal interface for creating an Application Gateway. The current step is 'Basics'. The validation status is 'Validation passed'. The configuration includes:

Setting	Value
Subscription	TrainingMSDNUser-4
Resource group	webapp-rg
Name	app-gateway
Region	East US
Tier	WAF_v2
Enable autoscaling	Enabled
Minimum instance count	1
Maximum instance count	10
WAF status	Enabled
WAF mode	Detection
Availability zone	Zones 1, 2, 3
HTTP2	Enabled

Buttons at the bottom include 'Create' (highlighted), 'Previous', 'Next', and 'Download a template for automation'.



The screenshot shows the Microsoft Azure portal interface for creating an Application Gateway. The current step is 'Frontends'. The validation status is 'Validation passed'. The configuration includes:

Setting	Value
Maximum instance count	10
WAF status	Enabled
WAF mode	Detection
Availability zone	Zones 1, 2, 3
HTTP2	Enabled
FIPS (Federal Information Processing Standard) mode 140-2	Disabled
Virtual network	vnet-webapp
Subnet	subnet-appgateway (10.0.0.0/24)
Web application firewall	(new) WAF-policy

Below this, the 'Frontends' section is expanded, showing:

Setting	Value
Public IPv4 address name	app-publicip
SKU	Standard
Assignment	Static
Availability zone	ZoneRedundant

Buttons at the bottom include 'Create' (highlighted), 'Previous', 'Next', and 'Download a template for automation'.

<https://portal.azure.com/#@g7cr.com/resource/subscriptions/94a3e059-5e41-48a4-b7e7-2abfabbd0b2a/resourceGroups/webapp-rg/providers/Microsoft.Network/applicationGateways/app-gateway>

## Add health probe

app-gateway

Name \*  ✓

Protocol \*  HTTP  HTTPS  TCP  TLS

Pick host name from backend settings  Yes  No

Host \*  ✓

Pick port from backend settings  Yes  No

Path \*  ✓

Interval (seconds) \*

Timeout (seconds) \*

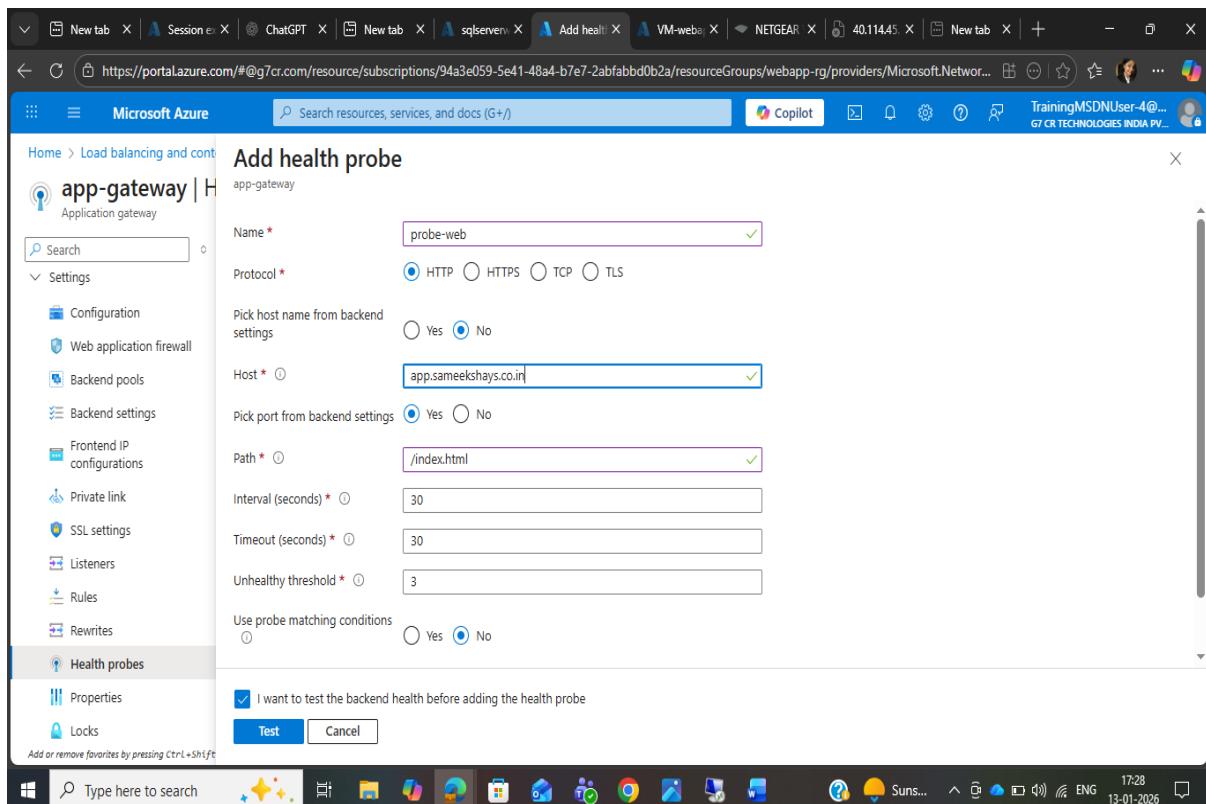
Unhealthy threshold \*

Use probe matching conditions  Yes  No

I want to test the backend health before adding the health probe

**Test** **Cancel**

Add or remove favorites by pressing **Ctrl+Shift+F**



<https://portal.azure.com/#@g7cr.com/resource/subscriptions/94a3e059-5e41-48a4-b7e7-2abfabbd0b2a/resourceGroups/webapp-rg/providers/Microsoft.Network/applicationGateways/app-gateway>

## Add health probe

app-gateway

Protocol \*  HTTP  HTTPS  TCP  TLS

Pick host name from backend settings  Yes  No

Host \*  ✓

Pick port from backend settings  Yes  No

Path \*  ✓

Interval (seconds) \*

Timeout (seconds) \*

Unhealthy threshold \*

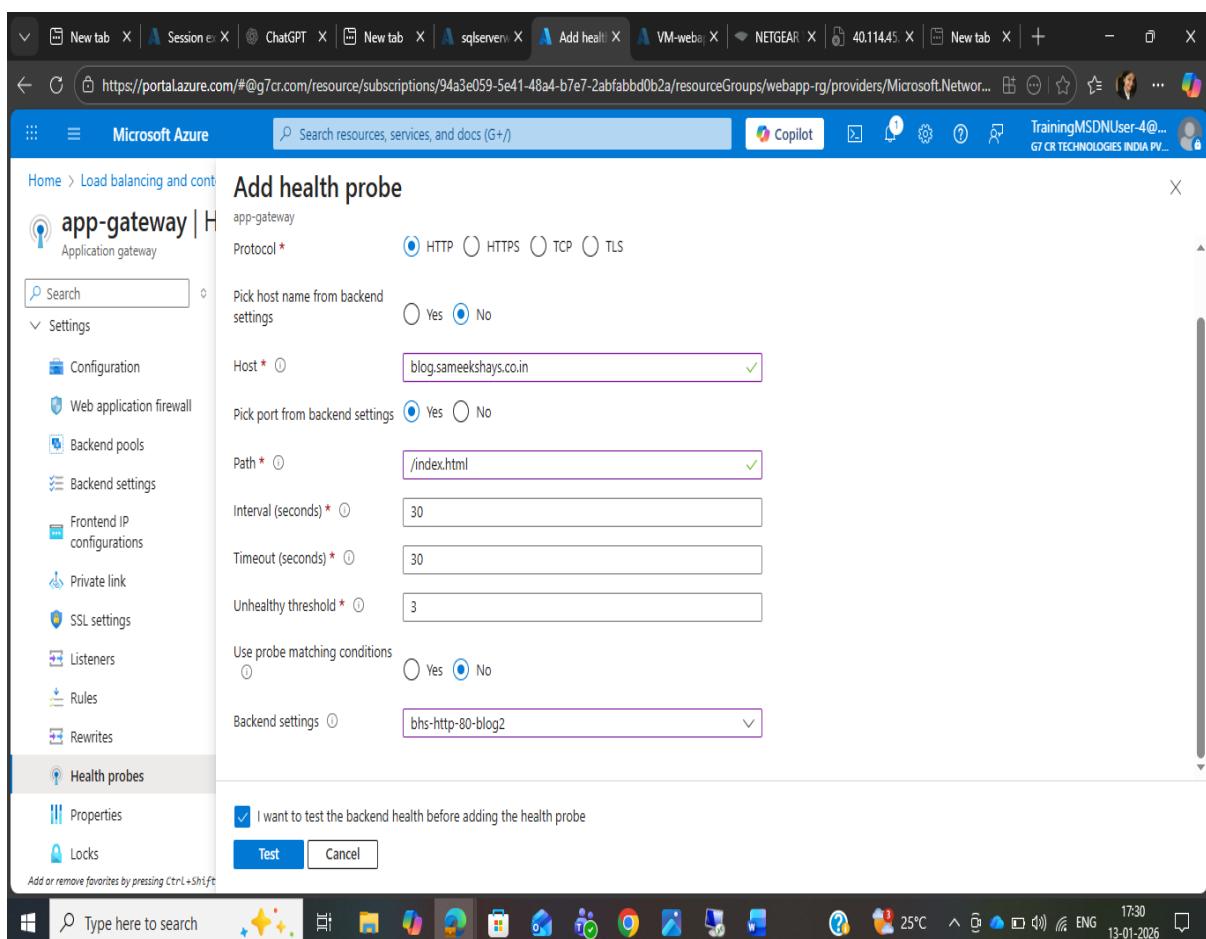
Use probe matching conditions  Yes  No

Backend settings  ✓

I want to test the backend health before adding the health probe

**Test** **Cancel**

Add or remove favorites by pressing **Ctrl+Shift+F**



The screenshot shows the Microsoft Azure portal interface. The URL in the address bar is <https://portal.azure.com/#@g7cr.com/resource/subscriptions/94a3e059-5e41-48a4-b7e7-2abfabbd0b2a/resourceGroups/webapp-rg/providers/Microsoft.Network/applicationGateways/app-gateway>. The page title is "app-gateway | Backend pools". The left sidebar navigation includes "Backend pools" under "Application gateway". The main content area displays a table of backend pools:

Name	Rules associated	Targets
backendpoolp-webvm	1	1
backendpoolp-webVM2	1	1

The screenshot shows the Microsoft Azure portal interface. The URL in the address bar is [https://portal.azure.com/#view/Microsoft\\_Azure\\_HybridNetworking/ApplicationGatewayBackendHealthGridBladeV2/id/%2fsubscriptions%2F94a3e059-5e41-48a4-b7e7-2abfabbd0b2a/resourceGroups/webapp-rg/providers/Microsoft.Network/applicationGateways/app-gateway/backendHealth](https://portal.azure.com/#view/Microsoft_Azure_HybridNetworking/ApplicationGatewayBackendHealthGridBladeV2/id/%2fsubscriptions%2F94a3e059-5e41-48a4-b7e7-2abfabbd0b2a/resourceGroups/webapp-rg/providers/Microsoft.Network/applicationGateways/app-gateway/backendHealth). The page title is "Backend health". The left sidebar navigation includes "Backend health" under "Application gateway". The main content area displays the following information:

**Backend health**  
By default, Azure Application Gateway probes backend servers to check their health and whether they're ready to serve requests. You can also create custom [Health Probes](#) to mention a specific hostname and path to be probed or a response code to be accepted as Healthy.

The Backend health report is updated based on the respective probe's refresh interval and doesn't depend on the page refresh.

All	Healthy
Heartbeat icon 2 out of 2	Green checkmark icon 2 out of 2

Search backend health

Server (backend pool)	Status	Port (Backend setting)	Protocol	Details	Action
10.0.1.4 (backendpoolp-webVM2)	Healthy	80 (bhs-http-80-blog2)	Http	Success. Received 200 status code	
10.0.1.4 (backendpoolp-webvm)	Healthy	80 (bhs-http-80)	Http	Success. Received 200 status code	

## Step 10: Office Network Access Restriction

- Configured WAF custom rules
- Allowed traffic only from office public IP
- Blocked all other source

The screenshot shows the Microsoft Azure portal with the URL <https://portal.azure.com/#@g7cr.com/resource/subscriptions/94a3e059-5e41-48a4-b7e7-2abfabb0b2a/resourceGroups/webapp-rg/providers/Microsoft.Network/wafPolicies/WAF-policy>. The page title is "WAF-policy | Policy settings". The left sidebar shows "Policy settings" selected under "Settings". The main content area displays policy settings for a Web Application Firewall (WAF) policy. It includes sections for "Enforce request body inspection" (maximum request body inspection limit set to 128 KB), "Enforce maximum request body limit" (maximum request body size set to 128 KB), and "Enforce maximum file upload limit" (maximum file upload size set to 100 MB). A note indicates that "403 is the default status code" for blocked responses. A progress bar at the top right says "Updating the WAF policy" and "Updating the WAF policy 'WAF-policy'". Buttons for "Save" and "Discard" are at the bottom.

The screenshot shows the Microsoft Azure portal with the URL <https://portal.azure.com/#@g7cr.com/resource/subscriptions/94a3e059-5e41-48a4-b7e7-2abfabb0b2a/resourceGroups/webapp-rg/providers/Microsoft.Network/wafPolicies/WAF-policy>. The page title is "WAF-policy | Custom rules". The left sidebar shows "Custom rules" selected under "Settings". The main content area shows a table of custom rules. One rule is selected: "denyip" with priority 100, which is a MatchRule. The "Edit custom rule" dialog is open on the right, showing the condition "Match type: IP address" and "Match variable: RemoteAddr". The operation "Does contain" is selected, and the value "0.0.0.0/1" is entered in the "IP address or range" field. Buttons for "OK" and "Cancel" are at the bottom of the dialog.

Microsoft Azure | Network security | Web Application Firewalls | WAF-policy

## WAF-policy | Custom rules

Application Gateway WAF policy

Search

Overview

Activity log

Access control (IAM)

Tags

Resource visualizer

Settings

- Policy settings
- Managed rules
- Custom rules**
- Associations
- Sensitive data
- Properties
- Locks

Monitoring

Add or remove favorites by pressing **Ctrl+Shift+F**

Priority Name Rule type

2	denyip	MatchRule
90	allowip	MatchRule

Save Discard

There are pending changes, click 'Save' to apply.

+ Add custom rule Refresh | Enable rules Disable rules

Edit custom rule

Enable rule

Rule type  Match  Rate limit

Priority \*

Conditions

If

Match type  IP address  RemoteAddr

Operation  Does contain  Does not contain

IP address or range

OK Cancel Give feedback

09:52 14-01-2026

Microsoft Azure | Network security | Web Application Firewalls | WAF-policy

## WAF-policy | Custom rules

Application Gateway WAF policy

Search

Overview

Activity log

Access control (IAM)

Tags

Resource visualizer

Settings

- Policy settings
- Managed rules
- Custom rules**
- Associations
- Sensitive data
- Properties
- Locks

Monitoring

Add or remove favorites by pressing **Ctrl+Shift+F**

Priority Name Rule type

1	allowip	MatchRule
2	denyip	MatchRule

Save Discard

There are pending changes, click 'Save' to apply.

+ Add custom rule Refresh | Enable rules Disable rules

Add custom rule

If

Match type  IP address  RemoteAddr

Operation  Does contain  Does not contain

IP address or range

IPv4 address or ranges

Then Deny traffic

Add Cancel Give feedback

09:53 14-01-2026

## Step 11: DNS Configuration

- Mapped both domains to Application Gateway public IP

## 7. Security Controls Implemented

- Web Application Firewall (OWASP rules)
- HTTPS encryption
- No direct public access to VM or SQL Database
- Network-level access restriction
- SQL firewall rules

## 8. Testing and Validation

Test Case	Expected Result	Status
Access from office network	Website accessible	Passed
Access from external IP	Access denied	Passed
SQL data insertion	Data stored successfully	Passed
HTTPS validation	Secure connection	Passed

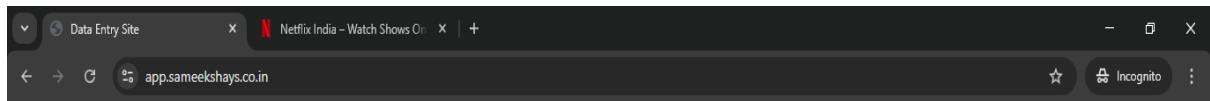
WAF attack simulation

Request blocked

Passed

## 9. Final Outcome

- Successfully hosted two IIS websites on Azure
- Implemented secure, production-style architecture
- Ensured data security and controlled access
- Met all task and security requirements

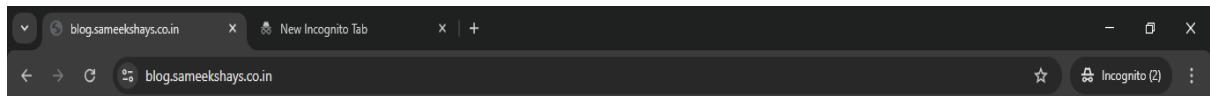


### Data Entry Form

Name:

Email:





normal site



Additional information to stop the application gateway I given the commands bellow

```
VERBOSE: Authenticating to Azure ...
WARNING: You're using Az version 14.6.0. The latest version of Az is 15.2.0. Upgrade your Az modules using the following commands:
  Update-PSResource Az -WhatIf    -- Simulate updating your Az modules.
  Update-PSResource Az            -- Update your Az modules.
There will be breaking changes from 14.6.0 to 15.2.0. Open https://go.microsoft.com/fwlink/?linkid=2241373 and check the details.
VERBOSE: Building your Azure drive ...
PS /home/trainingmsdnuser-4> Connect-AzAccount
WARNING: Interactive authentication is not supported in this session, please run cmdlet 'Connect-AzAccount -UseDeviceAuthentication'.
PS /home/trainingmsdnuser-4> $appGw = Get-AzApplicationGateway `
>>   -Name "app-gateway" `
>>   -ResourceGroupName "webapp-rg"
PS /home/trainingmsdnuser-4> Stop-AzApplicationGateway -ApplicationGateway $appGw
```

## **10. Conclusion**

This POC validates that Azure Application Gateway with WAF can be effectively used to securely host IIS-based applications while enforcing strict access control and protecting backend resources. The architecture follows best practices suitable for enterprise and production environments.

## **11. Future Enhancements**

- Implement Azure Bastion for RDP access
- Use Private Endpoint for Azure SQL
- Enable autoscaling for Application Gateway
- Introduce Azure Monitor and Log Analytics

NOTE: to create a certificate I created one more document refer to that .

**THANK YOU**