

Hosting Blazor Boilerplate on Microsoft Azure

Contents

Preamble	3
Create Resource Group	4
Create App Service Plan	6
Create App Service	10
Import the Publish Profile to Visual Studio	14
Create SQL Server	17
Create SQL Database	20
Create Key Vault	26
Use Key Vault in appsettings.json	35
Publish	36
Troubleshooting	37
Using Kudu	37
Using Visual Studio	37

Preamble

Please be aware that hosting on Microsoft Azure will cost money.

This tutorial assumes that you do already have a working azure subscription.

In this example, Blazor Boilerplate is being hosted using App Services and a managed SQL database.

The certificate for Identity Server has been stored in Azure Key Vault.

Please ensure that for all resources created in this tutorial, you choose the same subscription, region and resource group!

All URIs, resources, user names and passwords shown have been deleted prior to publishing.

Create Resource Group

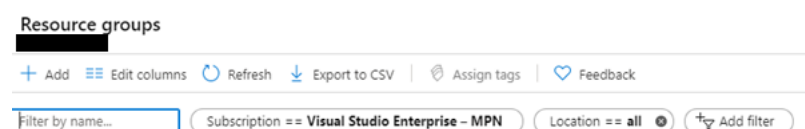
Open up Microsoft Azure.

If you do not already have a resource group, create a new one.

Search for Resource Group in the search field



Select Resource groups



+ Add

Click Add

[Basics](#) [Tags](#) [Review + create](#)

Resource group - A container that holds related resources for an Azure solution. The resource group can include all the resources for the solution, or only those resources that you want to manage as a group. You decide how you want to allocate resources to resource groups based on what makes the most sense for your organization. [Learn more](#)

Project details

Subscription * ⓘ

Resource group * ⓘ

Resource details

Region * ⓘ

Choose your subscription, a name and a region

Review + create

Click Review + Create

Create

Click Create



Notifications

[More events in the activity log →](#)



Resource group created

Creating resource group 'blazor_boilerplate_demo' in subsc Enterprise – MPN' succeeded.

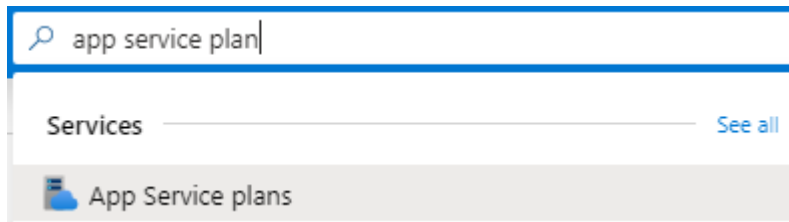
[Go to resource group](#)

[Pin to dashboard](#)

Wait for the deployment to finish

Create App Service Plan

Next, we need an App Service Plan to host our application



The screenshot shows the Azure portal search bar with the text 'app service plan' entered. Below the search bar, there is a list of results. The first result is 'App Service plans' with a blue icon of a server and a cloud. To the right of the search bar, there is a link that says 'See all'.

Search for “App Service Plans”

Create app service plan

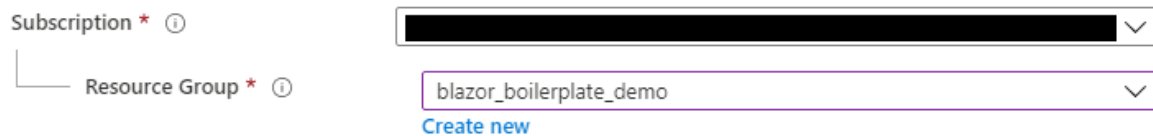
Click “Create app service plan”

Basics Tags Review + create

App Service plans give you the flexibility to allocate specific apps to a given set of resources and further optimize your Azure resource utilization. This way, if you want to save money on your testing environment you can share a plan across multiple apps. [Learn more](#)

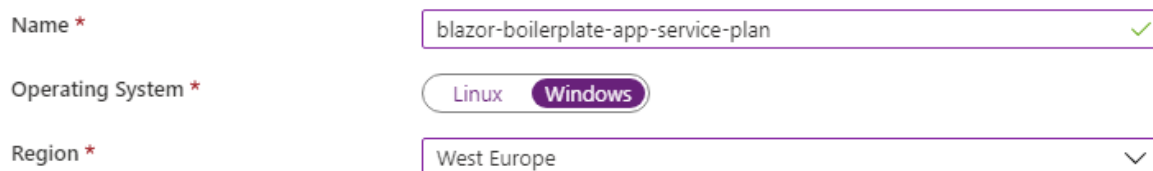
Project Details

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



The screenshot shows the 'Project Details' section. It has two main fields: 'Subscription' and 'Resource Group'. The 'Subscription' field is a dropdown menu with a black bar and a downward arrow. The 'Resource Group' field is a dropdown menu with the text 'blazor_boilerplate_demo' and a downward arrow. Below the 'Resource Group' field, there is a link that says 'Create new'.

App Service Plan details




The screenshot shows the 'App Service Plan details' section. It has three main fields: 'Name', 'Operating System', and 'Region'. The 'Name' field is a text input with the text 'blazor-boilerplate-app-service-plan' and a green checkmark. The 'Operating System' field is a radio button group with 'Linux' and 'Windows' options, where 'Windows' is selected. The 'Region' field is a dropdown menu with the text 'West Europe' and a downward arrow.

Choose your subscription, resource group, a name for the plan and a region to host it.

Select Windows as the operating system

Pricing Tier

App Service plan pricing tier determines the location, features, cost and compute resources associated with your app.
[Learn more](#) 

Sku and size *



Standard S1

100 total ACU, 1.75 GB memory

[Change size](#)

Click on „Change size“ to select the free tier for app service plans

Spec Picker

**Dev / Test**
For less demanding workloads

Recommended pricing tiers

F1
Shared infrastructure
1 GB memory
60 minutes/day compute
Free

D

Click „Dev / Test“ and select “Share infrastructure”



Click „Apply“

App Service plans give you the flexibility to allocate specific apps to a given set of resources and further optimize your Azure resource utilization. This way, if you want to save money on your testing environment you can share a plan across multiple apps. [Learn more](#)

Project Details

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

Subscription * ⓘ

Resource Group * ⓘ [Create new](#)

App Service Plan details

Name * ✓

Operating System * ☐ Linux ☒ Windows

Region * ▼

Pricing Tier

App Service plan pricing tier determines the location, features, cost and compute resources associated with your app. [Learn more](#)

Sku and size * **Free F1**
Shared infrastructure, 1 GB memory
[Change size](#)







Review your choices.

[Review + create](#)

Click „Review + create“


[Create](#)

Click „Create“



Notifications

[More events in the activity log →](#) [Dismiss all](#)

 **Deployment succeeded**

Deployment '[Microsoft.Web-ASP-Portal-1106c103-9caa](#)' to resource group '[blazor_boilerplate_demo](#)' was successful.

[Go to resource](#) [Pin to dashboard](#)

Wait for the deployment to finish

Create App Service

Search for “App Services”




Choose „App Services”

Create app service

Click „Create app service”

Web App

[Basics](#) [Monitoring](#) [Tags](#) [Review + create](#)

App Service Web Apps lets you quickly build, deploy, and scale enterprise-grade web, mobile, and API apps running on any platform. Meet rigorous performance, scalability, security and compliance requirements while using a fully managed platform to perform infrastructure maintenance. [Learn more](#) 

Project Details

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

Subscription * 



Resource Group * 

[Create new](#)

Instance Details

Name *

 
azurewebsites.net

Publish *



☒ Code ☐ Docker Container

Runtime stack *


Operating System *

☐ Linux ☒ Windows

Region *

 
 Not finding your App Service Plan? Try a different region.

App Service Plan

App Service plan pricing tier determines the location, features, cost and compute resources associated with your app. [Learn more](#) 

Windows Plan (West Europe) * 

[Create new](#)

Sku and size *

Free F1
Shared infrastructure, 1 GB memory

Choose your subscription, resource group, a name for the app, publish code, .Net Core Runtime, Windows and region.



Please note: Although Blazor Boilerplate currently targets .Net 3.1, .Net Core 3.0 has been selected as choosing 3.1 will switch the OS from Windows to Linux. For debugging purposes, Windows is being preferred. The app will still work.

[Review + create](#)

Click "Review + Create"

Create


Click "Create"

 **Deployment succeeded** 4:43 PM 

Deployment 'Microsoft.Web-WebApp-Portal-858f1e2a-afa7' to resource group 'blazor_boilerplate_demo' was successful.

[Go to resource](#) [Pin to dashboard](#)

After the deployment has finished, select "Go to resource"

 **blazor-boierplate-app-service**
App Service

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Security

Deployment

Quickstart

Deployment slots

Deployment Center


Settings

Configuration


Authentication / Authorizati...

Application Insights

Identity



Re:
Sta
Lo
Sul
Sul
Tag



H

Select "Identity" on the left hand side.

Home > blazor-boierplate-app-service - Identity

blazor-boierplate-app-service - Identity

App Service

Search (Ctrl+ /)

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Security

Deployment

System assigned

User assigned

A system assigned managed identity enables , have one system assigned managed identity. l

Save Discard Refresh

Status ⓘ
Off On

Note that “Status” for System assigned identities is switched to “Off” by default. Enable it and click on “Save”

Enable system assigned managed identity

'blazor-boierplate-app-service' will be registered with Azure Active Directory. Once it is registered, 'blazor-boierplate-app-service' can be granted permissions to access resources protected by Azure AD. Do you want to enable the system assigned managed identity for 'blazor-boierplate-app-service'?

☒ Yes ☐ No

Accept to restart the app.

Home > blazor-boierplate-app-service

blazor-boierplate-app-service

App Service

Search (Ctrl+ /)

Overview

Browse Stop Swap Restart Delete Get publish profile

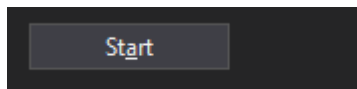
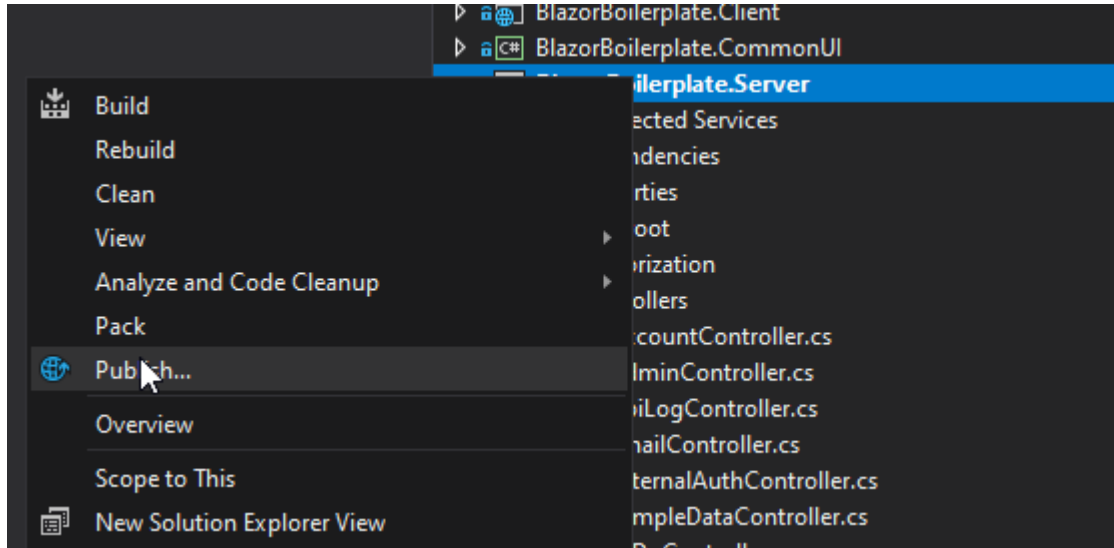
App Service has installed a patch that changes cross-site and iframe cookie handling due to

Click on “Get publish profile” to download the publish profile.

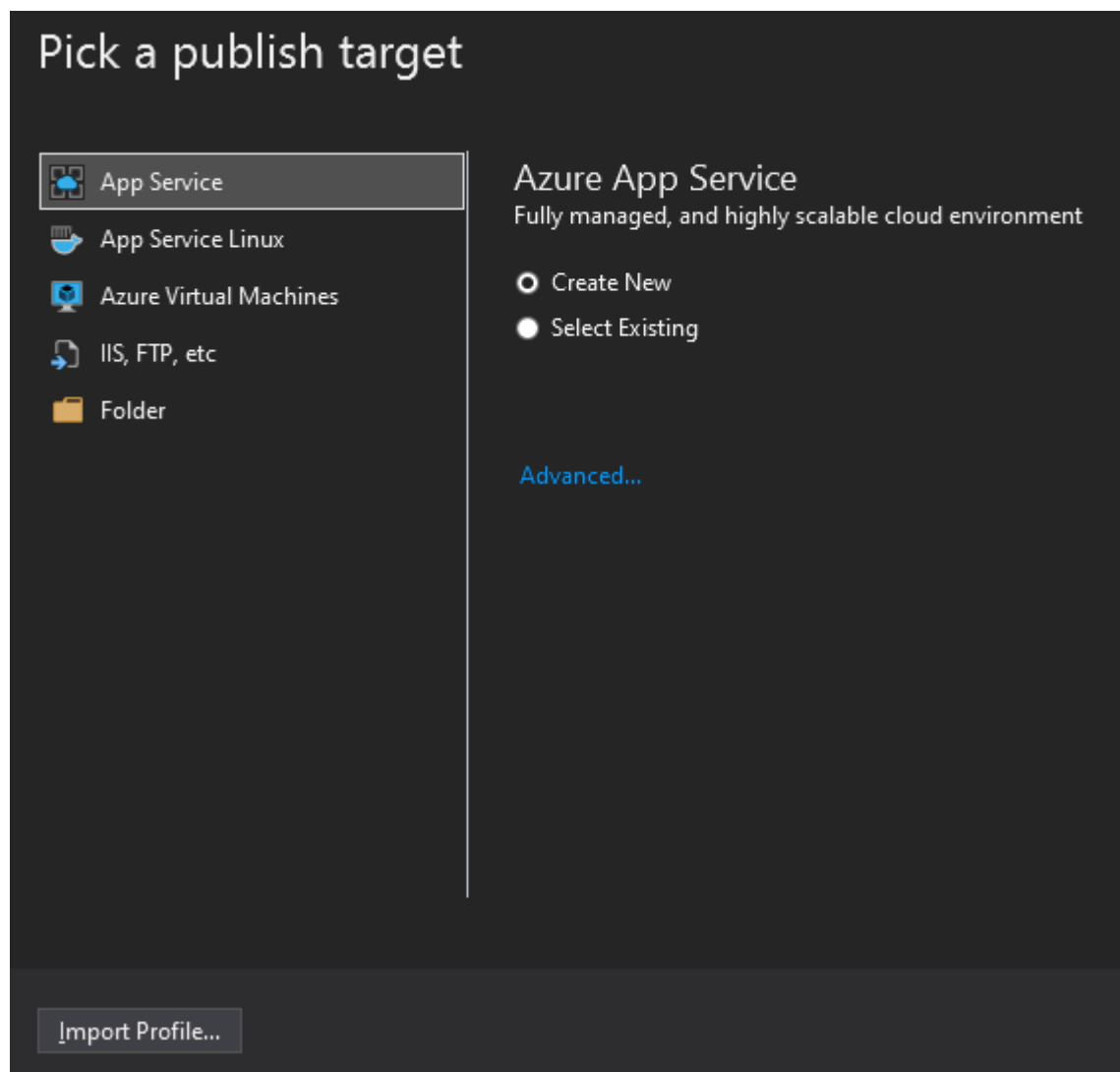
Import the Publish Profile to Visual Studio

In Visual Studio, open the Blazor Boilerplate Solution.

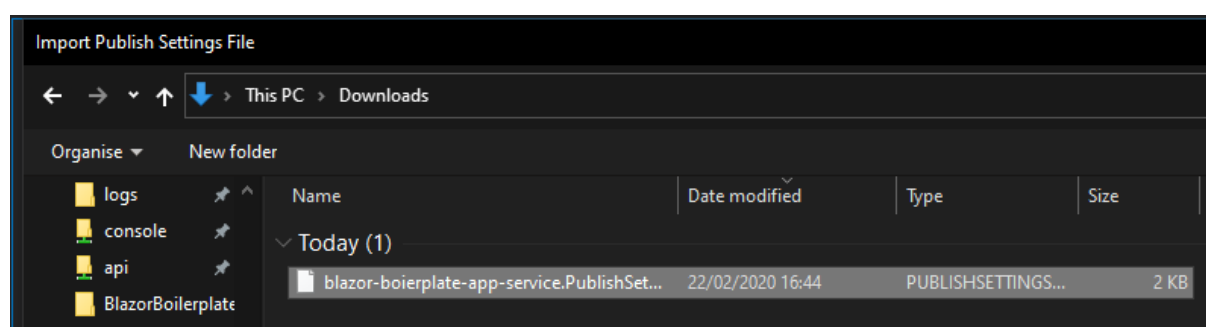
Right-Click on BlazorBoilerplate.Server and select “Publish...”



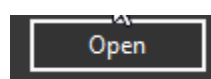
Click on “Start”



Choose “Import Profile...”



Select the downloaded profile.



Click “Open”

BlazorBoilerplate.Server

Overview

Connected Services

Service References

Publish

Publish

Deploy your app to a folder, IIS, Azure, or another destination. [More info](#)

blazor-boierplate-app-service - Web Deploy

New Edit Rename Delete

Summary

Site URL	http://blazor-boierplate-app-service.azurewebsites.net	
Configuration	Debug_SSB	
Target Framework	netcoreapp3.1	
Deployment Mode	Framework-Dependent	

Actions

[Preview changes](#)

[Open troubleshooting guide](#)

Dependencies

[+ Add](#)

No dependencies currently configured, please click 'Add' to connect to additional services.

Your application is making use of SignalR. For environments that need to scale we strongly recommend adding a dependency on Azure SignalR Service. [More info](#)

Continuous Delivery

Automatically publish your application to Azure with continuous delivery.

[Configure](#)

Three profiles will be imported. We will use the “Web Deploy” profile in this tutorial.

Publish

Deploy your app to a folder, IIS, Azure, or another destination. [More info](#)

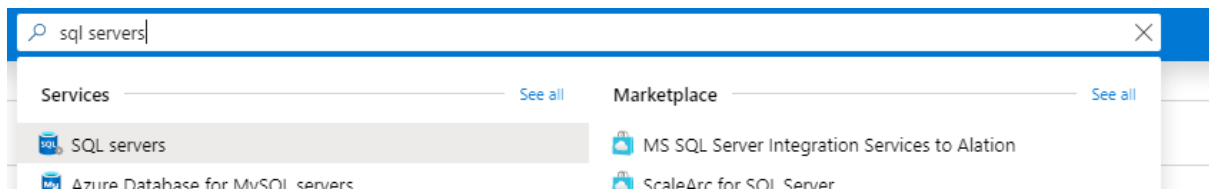
blazor-boierplate-app-service - Web Deploy

New Edit Rename Delete

Publish

Create SQL Server

Back in Azure, search for “SQL servers”



Choose “SQL servers”

+ Add

Click “Add”

Create SQL Database Server

Microsoft

[Basics](#) [Networking](#) [Additional settings](#) [Tags](#) [Review + create](#)

SQL database server is a logical container for managing databases and elastic pools. Complete the Basic tab, then go to Review + Create to provision with smart defaults, or visit each tab to customize. [Learn more](#)

Project details

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

Subscription * ⓘ

Resource group * ⓘ

blazor_boilerplate_demo

[Create new](#)

Server details

Enter required settings for this server, including providing a name and location.

Server name *

blazor-boilerplate-demo

.database.windows.net

Location *

(Europe) West Europe

Administrator account

Server admin login *

bbhostinggjhjghGJHJHG

Password *

.....

Confirm password *

.....

Choose your Subscription, Resource group, Server name, Location, Server admin login and Password. Also, confirm the password.



Click Create

Your deployment is complete



Deployment name: Microsoft.SQLServer.createServer_4c

Subscription: [REDACTED]

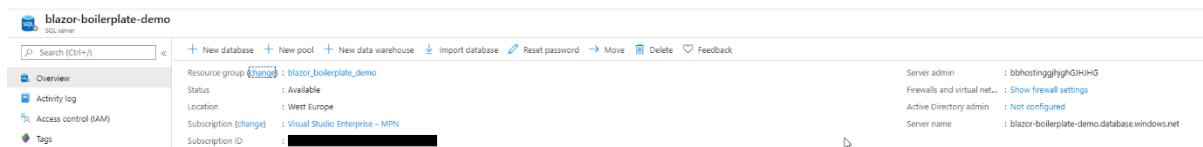
Resource group: [blazor_boilerplate_demo](#)

✓ Deployment details [\(Download\)](#)

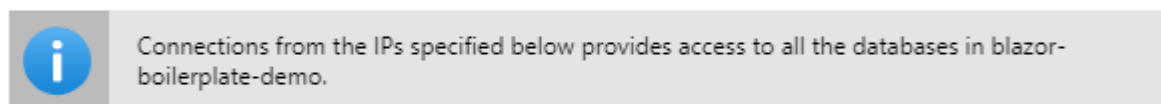
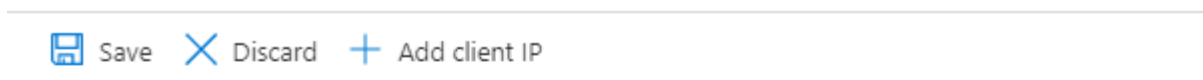
^ Next steps

[Go to resource](#)

Once the deployment is finished, select “Go to resource”



Click on “Show firewall settings” on the right hand side.



Allow Azure services and resources to access this server



Switch this setting to on.

Click Save.

Success!

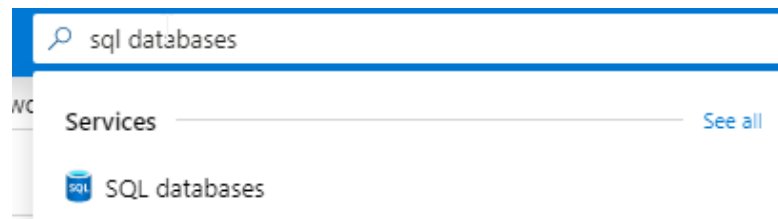
Successfully updated server firewall rules

OK

Click okay.

Create SQL Database

In Azure, search for “SQL databases”



Select “SQL databases”

Create SQL database

Click “Create SQL database”

[Basics](#) [Networking](#) [Additional settings](#) [Tags](#) [Review + create](#)

Create a SQL database with your preferred configurations. Complete the Basics tab then go to Review + Create to provision with smart defaults, or visit each tab to customize. [Learn more](#)

Project details

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

Subscription * ⓘ

Resource group * ⓘ [Create new](#)

Database details

Enter required settings for this database, including picking a logical server and configuring the compute and storage resources

Database name * ✓

Server ⓘ [Create new](#)

Want to use SQL elastic pool? * ⓘ ☐ Yes ☒ No

Compute + storage * ⓘ

General Purpose
Gen5, 2 vCores, 32 GB storage
[Configure database](#)

Choose your Subscription, Resource group, Database name and Server. No Elastic pool is needed.
Click “Configure Database”

Configure

[Feedback](#)

Basic
For less demanding workloads

Standard
For workloads with typical performance requirements

DTUs [What is a DTU?](#)

10 20 50 100


Data max size

100 MB 2 GB

Choose a database size that suites you. For this tutorial, we use Basic with 10 DTUs and a max size of 2GB


Apply


Click Apply


Create a SQL database with your preferred configurations. Complete the Basics tab then go to Review + Create to provision with smart defaults, or visit each tab to customize. [Learn more](#) 

Project details


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

Subscription * 



Resource group * 

blazor_boilerplate_demo




[Create new](#)


Database details

Enter required settings for this database, including picking a logical server and configuring the compute and storage resources


Database name *

blazor-boilerplate-demo





Server 

blazor-boilerplate-demo (West Europe)



[Create new](#)

Want to use SQL elastic pool? *  ☐ Yes ☒ No

Compute + storage * 

Standard S0

10 DTUs, 2 GB storage

[Configure database](#)

[Review + create](#)

Click "Review + create"

[Create](#)

Click "Create"

✓ Your deployment is complete



Deployment name: Microsoft.SQLDatabase.newDatabase
Subscription: [REDACTED]
Resource group: [blazor_boilerplate_demo](#)

✓ Deployment details [\(Download\)](#)

^ Next steps

[Go to resource](#)

Wait for the deployment to complete and select “Go to resource”.

Select “Show database connection strings” on the right hand side

Copy the connection string.


Back in Visual Studio, edit the publish profile

Select the profile and click “Edit”

Publish

?

×

 Publish

Connection

Settings

blazor-boilerplate-app-service - Web Deploy

Configuration: Debug_SSB - Any CPU

Target Framework: netcoreapp3.1

Deployment Mode: Framework-Dependent

[Learn about deployment modes](#)

Target Runtime: Portable

File Publish Options

Databases

DefaultConnection

☒ Use this connection string at runtime

stingghjghGJHJHG;Password={your_password};MultipleActiveResultSets=False;En

Entity Framework Migrations

Site Extensions Options

< Prev

Next >

Save

Cancel

Paste the Connection String into Settings -> Databases -> "DefaultConnection". Insert your password.

Make sure that at the beginning of the connection string, you replace "Server=tcp:" with "Data Source="


The final connection string should be something like this:

```
Data Source=blazor-boilerplate-demo.database.windows.net,1433;Initial
Catalog=blazor_boilerplate;Persist Security Info=False;User
ID=bbhostingghjghGJHJHG;Password=dshkuifsdhkhj/()/&/565zt;MultipleActiveResultSets=False;E
ncrypt=True;TrustServerCertificate=False;Connection Timeout=30;
```


Publish

?

×

 Publish

Connection

Settings

File Publish Options

Databases

DefaultConnection

☒ Use this connection string at runtime

Data Source=blazor-boilerplate-demo.database.windows.net,1433;Initial Catalc

Entity Framework Migrations

ApplicationDbContext

☒ Apply this migration on publish

Data Source=blazor-boilerplate-demo.database.windows.net,1433;Initial Catal

ConfigurationDbContext

☒ Apply this migration on publish

Data Source=blazor-boilerplate-demo.database.windows.net,1433;Initial Catal

PersistedGrantDbContext

☒ Apply this migration on publish

Data Source=blazor-boilerplate-demo.database.windows.net,1433;Initial Catal

Site Extensions Options

< Prev

Next >

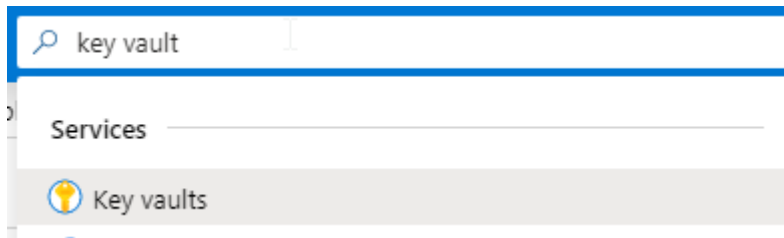
Save

Cancel

Copy and paste your resulting connection string into Settings -> Entity Framework Migrations for all connection strings

Create Key Vault

Switch to Azure. Search for “Key vaults”



Choose „Key vaults“

Create key vault

Click „Create key vault“

Create key vault

[Basics](#) [Access policy](#) [Networking](#) [Tags](#) [Review + create](#)

Azure Key Vault is a cloud service used to manage keys, secrets, and certificates. Key Vault eliminates the need for developers to store security information in their code. It allows you to centralize the storage of your application secrets which greatly reduces the chances that secrets may be leaked. Key Vault also allows you to securely store secrets and keys backed by Hardware Security Modules or HSMs. The HSMs used are Federal Information Processing Standards (FIPS) 140-2 Level 2 validated. In addition, key vault provides logs of all access and usage attempts of your secrets so you have a complete audit trail for compliance. [Learn more](#)

Project details

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

Subscription *	<div><div></div><div></div></div>
Resource group *	<div><div>blazor_boilerplate_demo</div><div></div></div> <div>Create new</div>
Instance details	
Key vault name * ⓘ	<div><div>blazor-boilerplate-vault</div><div></div></div>
Region *	<div><div>West Europe</div><div></div></div>
Pricing tier * ⓘ	<div><div>Standard</div><div></div></div>
Soft delete ⓘ	<div><div>Enable</div><div>Disable</div></div>
Retention period (days) * ⓘ	<div><div>90</div></div>
Purge protection ⓘ	<div><div>Enable</div><div>Disable</div></div>

Select your subscription and Resource group. Choose a name, Region and Pricing tier.

[Review + create](#)

Click "Review + create"

[Create](#)

Click "Create"

✓ Your deployment is complete



Deployment name: blazor-boilerplate-vault

Subscription: [REDACTED]

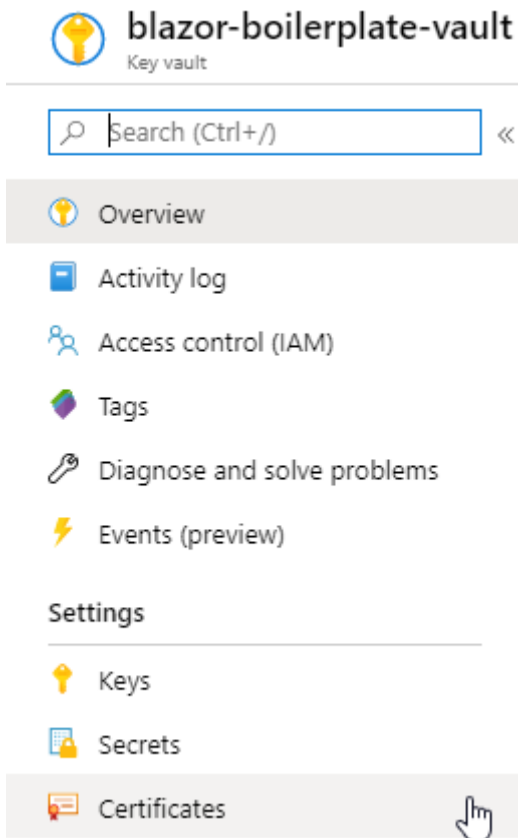
Resource group: [blazor_boilerplate_demo](#)

✓ Deployment details [\(Download\)](#)

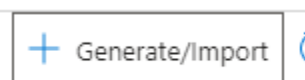
^ Next steps

[Go to resource](#)

After the deployment finished, select “Go to resource”.

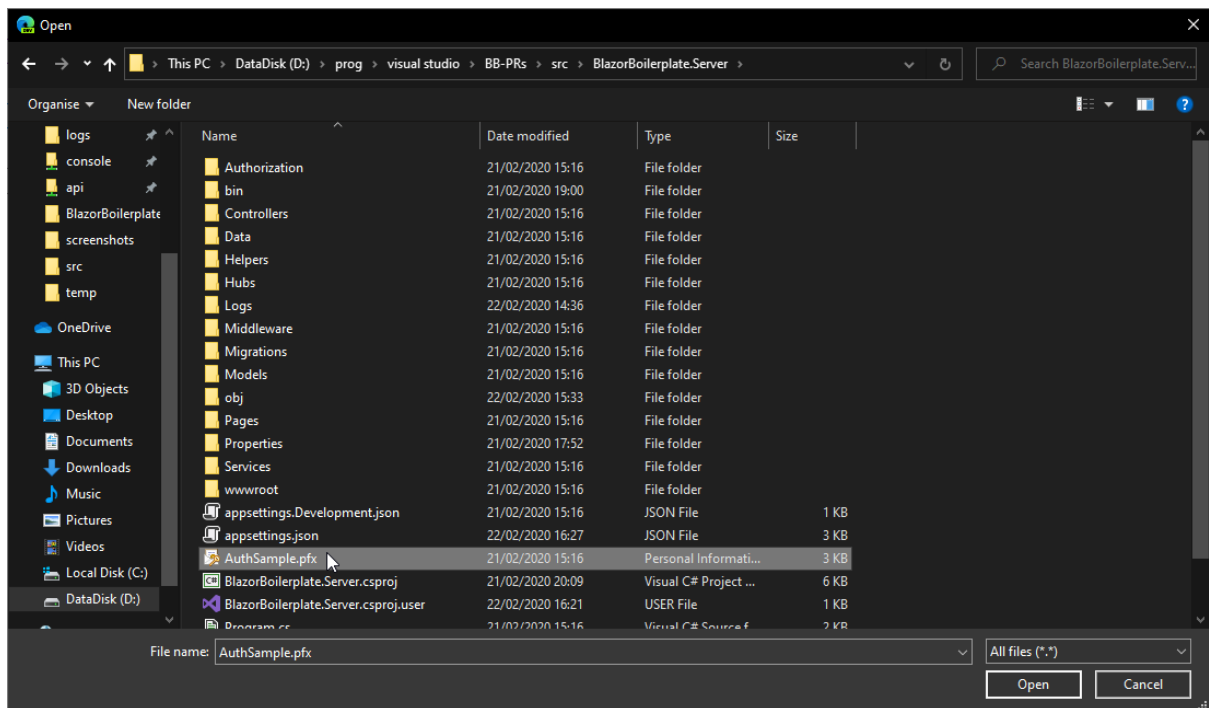


In the Key vault, select “Certificates”



Click „Generate/Import“.

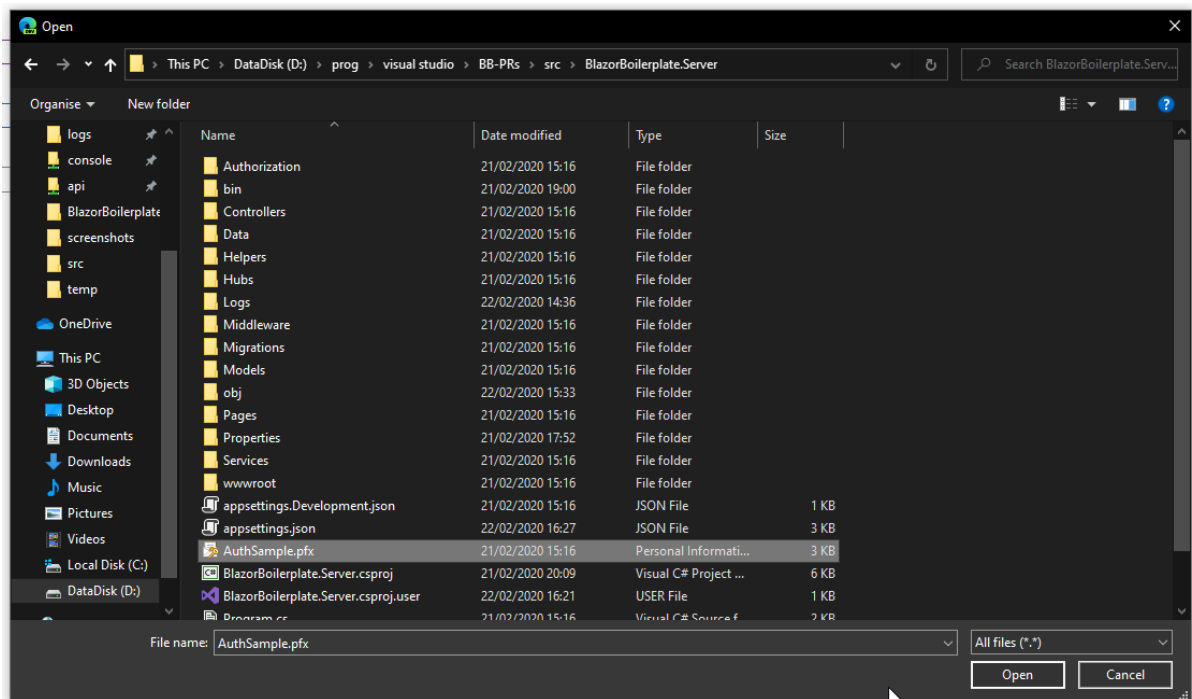
Choose to Import a certificate.



Select your Certificate for Identity Server to use.

You can use the default “AuthSample.pfx”.

The certificate needs to have a private key marked as exportable.



Select your certificate and click “Open”.

Create a certificate

Method of Certificate Creation

Import

Certificate Name * ⓘ

AuthSample

Upload Certificate File *

"AuthSample.pfx"

Password

Choose a name for the certificate and enter the password. For AuthSample.pfx, it is "Admin123".

Create

Click „Create“

+ Generate/Import ↻ Refresh ↶ Restore Backup ✉ Certificate Contacts ⚙ Certificate Authorities			
i The certificate 'AuthSample' has been successfully imported.			
Name	Thumbprint	Status	Expiration Date
Completed			
AuthSample	C9E028655086DFEF900CFE2E3BA0BF00CCB9A4BF	✓ Enabled	1/1/2040

Verify that the certificate has been imported correctly.

Click on the certificate in the list.



AuthSample
Versions

+ New Version ↻ Refresh 🗑 Delete ↓ Download Backup ⚙ Issuance Policy

Click "Issuance Policy"

Advanced Policy Configuration
Not configured

Click "Advanced Policy Configuration"

Advanced Policy Configuration

Issuance Policy

Extended Key Usages (EKUs) ⓘ

X.509 Key Usage Flags

0 selected

Reuse Key on Renewal?

Yes

No

Exportable Private Key?

Yes

No

Key Type

RSA

Key Size

2048

3072

4096

Enable Certificate Transparency? ⓘ

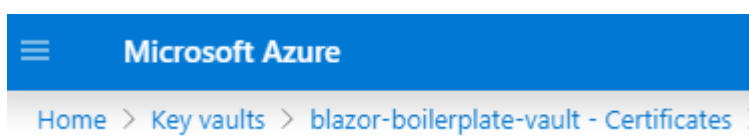
Yes

No

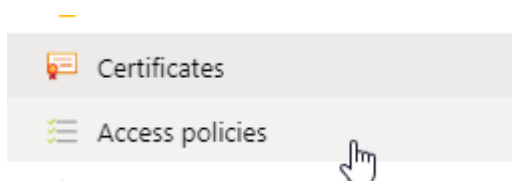
Certificate Type

For example: "OV-SSL".

Verify that the private key is marked as exportable.



Click on your key vault on the top left.



On the menu at the left hand side, choose “Access policies”

[+ Add Access Policy](#)

Click „Add Access Policy“

Add access policy

Add access policy

Configure from template (optional)	<input type="text"/>
Key permissions	0 selected
Secret permissions	Get
Certificate permissions	0 selected
Select principal	<div><div>*</div><div>None selected</div><div>></div></div>
Authorized application ⓘ	<div>None selected</div> <div>🔒</div>

Select the „Get“ permission on “Secret permissions”. As Identity Server needs access to the private key, we will import the certificate as a secret – not as a certificate.

Click on “Select principal”

Principal

Select a principal

Select ⓘ

blazor-boilerplate-app-service

Search for your app service by entering it's name.

Click on the App Service.


Principal

Select a principal

Select ⓘ


blaz

✓



blazor-boierplate-app-service

Selected member:



blazor-boierplate-a...

Remove

Select

It will now appear on the bottom list.

Click “Select”.

Add access policy

Add access policy

Configure from template (optional)

▼

Key permissions

0 selected

▼

Secret permissions

Get

▼

Certificate permissions

0 selected

▼

Select principal

*

blazor-boierplate-app-service

>

Authorized application ⓘ

None selected


🔒

Add

Verify that your app service now appears in “Select principal”.

Click “Add”.

 Save  Discard  Refresh


 Please click the 'Save' button to commit your changes.

Enable Access to:

- ☐ Azure Virtual Machines for deployment ⓘ
- ☐ Azure Resource Manager for template deployment ⓘ
- ☐ Azure Disk Encryption for volume encryption ⓘ

[+ Add Access Policy](#)

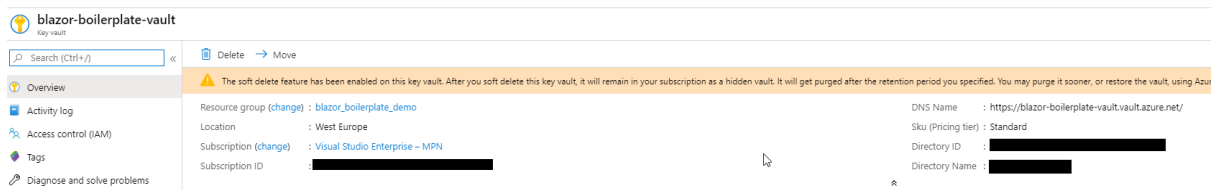
Current Access Policies

Name		Email
APPLICATION		
 blazor-boierplate-app-service		
USED		

Click „Save“.

Use Key Vault in appsettings.json

In the key vault, copy the DNS Name displayed on the right hand side.



```
"HostingOnAzure": {
  "RunsOnAzure": true,
  "RunningAsAppService": true,
  "RunningAsDocker": false, // not implementet yet
  "AzureKeyVault": {
    "UsingKeyVault": true,
    "UseManagedAppIdentity": true, // not implementet yet: assigning a managed identity
    "AppKey": "", // not implementet yet: adding AppKey and AppSecret to appsettings.json
    "AppSecret": "",
    "VaultURI": "https://blazor-boilerplate-vault.vault.azure.net/",
    "CertificateName": "AuthSample"
  }
},

"ExternalAuthProviders": {
  "Google": {
    "Enabled": false,
    "ClientId": "qwerty123.apps.googleusercontent.com",
    "ClientSecret": "qwerty123"
  }
},

"BlazorBoilerplate": {
  "ApplicationUrl": "https://bbhostingtest.azurewebsites.net",
  "RequireConfirmedEmail": false,
  "APILogging": {
    "Enabled": true,
    "IgnorePaths": [ "/api/userprofile" ]
  },
  "UseSqlServer": true,
  "UseSqlLite": false,
  "UsePostgresServer": false,
  "IS4ApplicationUrl": "https://bbhostingtest.azurewebsites.net",
  "UseLocalCertStore": "false",
```

Back in Visual Studio, open appsettings.json, change “RunsOnAzure” to true and paste the Vault URL at “Vault URI”. Also fill in your Certificate name. Change “UseLocalCertStore” to false.

Publish

Now publish your application. Once publishing is complete, it should automatically be launched inside a browser.

Troubleshooting

Using Kudu

For troubleshooting you can use an Azure Service called Kudu, to access your application's log files.

Using Visual Studio

You can also access log files through Visual Studio integrated tools.