Instructions to implement DsK.AuthServer in a new or existing Blazor WebAssembly/Web API project

Contents

[Introduction 2](#_Toc158724891)

[Configure App in the DsK.AuthServer GUI 2](#_Toc158724892)

[New Projects 5](#_Toc158724893)

[Create Blazor WebAssembly Standalone App Project 5](#_Toc158724894)

[Create ASP.NET Core Web API Project 7](#_Toc158724895)

[Create Class Library Project 9](#_Toc158724896)

[Install Required Nuget Packages 11](#_Toc158724897)

[WebAssembly Project 11](#_Toc158724898)

[ASP.NET Core Web API Project 11](#_Toc158724899)

[Create supporting classes 11](#_Toc158724900)

[Shared class project 11](#_Toc158724901)

[ASP.NET Core Web API Project 12](#_Toc158724902)

[WebAssembly Project 14](#_Toc158724903)

[Create pages 18](#_Toc158724904)

[Implementation 19](#_Toc158724905)

[Per page 19](#_Toc158724906)

# Introduction

DsK.AuthServer is an authentication and authorization server that can be easily integrated into new or already existing Blazor WebAssembly / Web API projects.

It has the built-in capacity to have local users mixed with Active Directory. With some modifications, other Authentication Providers can be added.

The following structure needs to be in place to implement DsK.AuthServer in Blazor WebAssembly and Web API projects.

# Configure App in the DsK.AuthServer GUI

Go to Applications and click the CREATE APPLICATION button.

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Enter the application name and Callback URL.

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The Callback URL can be found in the launchSettings.json of the Blazor WebAssembly project.

A screen shot of a computer code

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Enable the Admin User.

A close up of a message

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Create the Application Permissions.

A search box with words

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For this example, we are creating a permission that is going to be used in the Counter.page of the Template Blazor WebAssembly project.

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Every application is created with a disabled Local Authentication Provider. Edit the Local Authentication Provider and enable it.

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# New Projects

If DsK.AuthServer is going to be implemented in a new project, these are the templates that were used for this test.

## Create Blazor WebAssembly Standalone App Project

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## Create ASP.NET Core Web API Project

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## Create Class Library Project

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# Install Required Nuget Packages

These packages need to be installed for configuration to work.

## WebAssembly Project

* Blazored.LocalStorage --version 4.4.0
* Microsoft.AspNetCore.Components.Authorization --version 8.0.1

## ASP.NET Core Web API Project

* Microsoft.AspNetCore.Authentication.JwtBearer --version 8.0.1

# Create supporting classes

## Shared class project

Create the following classes in its own file.

public class TokenModel

{

public string Token { get; set; }

public string RefreshToken { get; set; }

public TokenModel(string token, string refreshToken)

{

Token = token;

RefreshToken = refreshToken;

}

}

public class TokenSettingsModel

{

public string? Issuer { get; set; }

public string? Audience { get; set; }

public string? Key { get; set; }

}

public class ValidateLoginTokenDto

{

public string LoginToken { get; set; } = string.Empty;

public string TokenKey { get; set; } = string.Empty;

}

public static class Access

{

public const string Admin = "Admin";

[DisplayName("Counter")]

[Description("Counter Permissions")]

public static class CounterPage

{

public const string CounterFunction = "TestApp2.Counter";

}

/// <summary>

/// Returns a list of Permissions.

/// </summary>

/// <returns></returns>

public static List<string> GetRegisteredPermissions()

{

var permissions = new List<string>();

foreach (var prop in typeof(Access).GetNestedTypes().SelectMany(c => c.GetFields(BindingFlags.Public | BindingFlags.Static | BindingFlags.FlattenHierarchy)))

{

var propertyValue = prop.GetValue(null);

if (propertyValue is not null)

permissions.Add(propertyValue.ToString());

}

return permissions;

}

}

## ASP.NET Core Web API Project

Create folder called HttpClients

Create class AuthorizarionServerAPIHttpClient

public class AuthorizarionServerAPIHttpClient{

public AuthorizarionServerAPIHttpClient(HttpClient client)

{

Client = client;

}

public HttpClient Client { get; }

}

Create SecurityController in Controller folder

[ApiController]

[Route("[controller]")]

public class SecurityController : ControllerBase

{

HttpClient \_Http;

private readonly TokenSettingsModel \_tokenSettings;

public SecurityController(AuthorizarionServerAPIHttpClient authorizarionServerAPIHttpClient, IOptions<TokenSettingsModel> tokenSettings)

{

\_Http = authorizarionServerAPIHttpClient.Client;

\_tokenSettings = tokenSettings.Value;

}

[HttpPost]

[Route("ValidateLoginToken")]

public async Task<IActionResult> ValidateLoginToken(ValidateLoginTokenDto model)

{

//todo : fix this line

model.TokenKey = \_tokenSettings.Key;

var response = await \_Http.PostAsJsonAsync($"https://localhost:7045/api/authentication/ValidateLoginToken", model);

if (!response.IsSuccessStatusCode) return NotFound();

var result = await response.Content.ReadFromJsonAsync<TokenModel>();

if (result == null) return NotFound();

return Ok(result);

}

}

In the SecurityController class, add reference and *using* statement to Shared Class Project. Also add using statement to Server.HttpClients.

Modify the line <https://localhost:7045/api/authentication/ValidateLoginToken> to the correct hostname or IP where the DsK.AuthServer is located.

Add the following lines of code in the Program.cs

var builder = WebApplication.CreateBuilder(args);

// Add services to the container.

builder.Services.AddScoped<AuthorizarionServerAPIHttpClient>();

builder.Services.AddHttpClient<AuthorizarionServerAPIHttpClient>("AuthorizarionServerAPI", c =>

{

c.BaseAddress = new System.Uri("https://localhost:7045");

});

builder.Services.Configure<TokenSettingsModel>(builder.Configuration.GetSection("TokenSettings"));

var IssuerSigningKey = builder.Configuration.GetSection("TokenSettings").GetValue<string>("Key") ?? "";

if (IssuerSigningKey == "")

{

return; //Exit app if IssuerSigningKey is not found

}

builder.Services.AddAuthentication(JwtBearerDefaults.AuthenticationScheme)

.AddJwtBearer(options =>

{

options.TokenValidationParameters = new TokenValidationParameters

{

ValidIssuer = builder.Configuration.GetSection("TokenSettings").GetValue<string>("Issuer"),

ValidateIssuer = true,

ValidAudience = builder.Configuration.GetSection("TokenSettings").GetValue<string>("Audience"),

ValidateAudience = true,

IssuerSigningKey = new SymmetricSecurityKey(Encoding.UTF8.GetBytes(IssuerSigningKey)),

ValidateIssuerSigningKey = true,

ValidateLifetime = true,

};

});

Add using statement to Server.HttpClients.

Add using statement to Shared Project.

Add using statement “using Microsoft.AspNetCore.Authentication.JwtBearer;”

Add using statement “using Microsoft.IdentityModel.Tokens; ”

Add using statement “using System.Text; ”

Modify the line https://localhost:7045/ to the correct hostname or IP where the DsK.AuthServer is located.

## WebAssembly Project

Add reference to Shared Class Project.

Create a folder called Services

Create Class TokenHelpers

public static class TokenHelpers

{

public static bool IsTokenExpired(string token)

{

List<Claim> claims = ParseClaimsFromJwt(token).ToList();

if (claims?.Count == 0)

return true;

string expirationSeconds = claims.Where(\_ => \_.Type.ToLower() == "exp").Select(\_ => \_.Value).FirstOrDefault();

if (string.IsNullOrEmpty(expirationSeconds))

return true;

var expirationDate = DateTimeOffset.FromUnixTimeSeconds(Convert.ToInt64(expirationSeconds));

if (expirationDate < DateTime.UtcNow)

return true;

return false;

}

public static IEnumerable<Claim> ParseClaimsFromJwt(string jwt)

{

var claims = new List<Claim>();

var payload = jwt.Split('.')[1];

var jsonBytes = ParseBase64WithoutPadding(payload);

var keyValuePairs = JsonSerializer.Deserialize<Dictionary<string, object>>(jsonBytes);

if (keyValuePairs != null)

{

claims.AddRange(keyValuePairs.Select(kvp => new Claim(kvp.Key, kvp.Value.ToString() ?? "")));

}

return claims;

}

private static byte[] ParseBase64WithoutPadding(string base64)

{

switch (base64.Length % 4)

{

case 2: base64 += "=="; break;

case 3: base64 += "="; break;

}

return Convert.FromBase64String(base64);

}

}

Create Class SecurityServiceClient

Create Class CustomAuthenticationStateProvider

public class CustomAuthenticationStateProvider : AuthenticationStateProvider

{

private readonly ILocalStorageService \_localStorageService;

public CustomAuthenticationStateProvider(ILocalStorageService localStorageService,

HttpClient httpClient)

{

\_localStorageService = localStorageService;

}

public override async Task<AuthenticationState> GetAuthenticationStateAsync()

{

string token = await \_localStorageService.GetItemAsync<string>("token");

if (string.IsNullOrEmpty(token) || TokenHelpers.IsTokenExpired(token))

{

var anonymous = new AuthenticationState(new ClaimsPrincipal(new ClaimsIdentity() { }));

return anonymous;

}

var userClaimPrincipal = new ClaimsPrincipal(new ClaimsIdentity(TokenHelpers.ParseClaimsFromJwt(token), "jwt"));

var loginUser = new AuthenticationState(userClaimPrincipal);

return loginUser;

}

public void Notify()

{

NotifyAuthenticationStateChanged(GetAuthenticationStateAsync());

}

}

Add using statement “using Microsoft.AspNetCore.Components.Authorization;”

Add using statement “using Blazored.LocalStorage;”

Add using statement “using System.Security.Claims;”

Add this code to the Program.cs

//Add Authorization Core - To be able to use [CascadingAuthenticationState, AuthorizeRouteView, Authorizing], [AuthorizeView, NotAuthorized, Authorized], @attribute [Authorize]

builder.Services.AddAuthorizationCore();

//The CustomAuthenticationStateProvider is to be able to use tokens as the mode of authentication.

builder.Services.AddScoped<AuthenticationStateProvider, CustomAuthenticationStateProvider>();

builder.Services.AddScoped<SecurityServiceClient>();

/\* ---Manages saving to local storage--- \*/

builder.Services.AddBlazoredLocalStorage();

await builder.Build().RunAsync();

Add using statement “using Microsoft.AspNetCore.Components.Authorization;”

Add using statement “using Blazored.LocalStorage;”

Add using statement Client.Services

Edit \_Imports.razor and add:

@using TestApp2.Client.Services;

@using TestApp2.SharedNew;

@using Blazored.LocalStorage;

@using Microsoft.AspNetCore.Components.Authorization;

@using Microsoft.AspNetCore.Authorization;

@inject NavigationManager \_navigationManager

@inject HttpClient Http;

@inject ILocalStorageService \_localStorageService;

@inject AuthenticationStateProvider \_authenticationStateProvider;

Edit App.Razor and Encapsulate all with the tag <**CascadingAuthenticationState**> and change the RouteView tag to **AuthorizeRouteView**.

# Create pages

## Login.razor

@page "/login"

<**PageTitle**>Login</**PageTitle**>

<h1>Login</h1>

<button @onclick="LoginLocal">Click here to login locally</button>

@code {

public async Task LoginLocal()

{

string loginurl = "https://localhost:7190/login/9EBA0CCD-FF5B-42AB-B6FB-861D18BD68D3";

\_navigationManager.NavigateTo(loginurl);

}

}

Change the URL to the correct one and change the Application ID to the one shown for your application in DsK.AuthServer.

A screenshot of a application

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## Callback.razor

@page "/callback/{LoginToken}"

<**PageTitle**>Validating Login</**PageTitle**>

<h1>Validating Login</h1>

@code {

[Parameter] public string LoginToken { get; set; }

protected override async Task OnInitializedAsync()

{

if (LoginToken != null)

{

var model = new ValidateLoginTokenDto() { LoginToken = LoginToken };

var response = await Http.PostAsJsonAsync("https://localhost:7298/Security/ValidateLoginToken", model);

if (!response.IsSuccessStatusCode)

\_navigationManager.NavigateTo("/noaccess");

var result = await response.Content.ReadFromJsonAsync<TokenModel>();

if (result == null)

\_navigationManager.NavigateTo("/noaccess");

await \_localStorageService.SetItemAsync("token", result.Token);

await \_localStorageService.SetItemAsync("refreshToken", result.RefreshToken);

(\_authenticationStateProvider as CustomAuthenticationStateProvider).Notify();

\_navigationManager.NavigateTo("/");

}

}

}

# Implementation

## Per page

Add @attribute [Authorize] after @page.

Add the following to the Blazor Page

@if (!\_Access)

{

<h1>You dont have access to this page.</h1>

}

else

{

<h1>Counter</h1>

<p role="status">Current count: @currentCount</p>

<button class="btn btn-primary" @onclick="IncrementCount">Click me</button>

}

Add the following code to the Code Section.

[CascadingParameter] protected Task<AuthenticationState> AuthStat { get; set; }

private bool \_Access;

protected async override Task OnInitializedAsync()

{

base.OnInitialized();

var user = (await AuthStat).User;

if (!user.Identity.IsAuthenticated)

{

NavigationManager.NavigateTo($"login?returnUrl={Uri.EscapeDataString(NavigationManager.Uri)}");

}

else

{

\_Access = securityService.HasPermission(user, Access.CounterPage.CounterFunction);

}

}

In this example we are verifying if the user has the Counter Permission and mapping the result to the \_Access variable. The we can use this variable to restrict page functionality.