

Microsoft Xamarin Example App with Azure Backend „WartungsLOG“

- step 1:create Azure B2C tenant:

(<https://docs.microsoft.com/en-us/azure/active-directory-b2c/tutorial-register-applications?tabs=app-reg-ga>)

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

Home > Create a resource

Get started Azure Active Directory B2C Getting Started? Try our Quickstart center

Recently created

Categories

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Analytics

Blockchain

Compute

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Ubuntu Server 20.04 LTS Create | Learn more

Web App

Home > Create a resource > Azure Active Directory B2C > Create new B2C Tenant or Link to existing Tenant

Create new B2C Tenant or Link to existing Tenant

Create a new Azure AD B2C Tenant

Link an existing Azure AD B2C Tenant to my Azure subscription

Home > Create a resource > Azure Active Directory B2C > Create new B2C Tenant or Link to existing Tenant

Create a tenant Azure Active Directory

* Basics * Configuration Review + create

Directory details

Configure your new directory

Organization name * WartungsLOGfordiyersAPP

Initial domain name * WartungsLOG WartungsLOG.onmicrosoft.com

Country/Region Germany

✓ Datacenter location - Europe

Datacenter location is based on the country/region selected above. Azure Active Directory B2C service is available worldwide.

Subscription

Choose the subscription to use for Azure Active Directory (B2C). It's free for 50,000 monthly active users (MAUs). See pricing details

Subscription * Azure subscription 1

Resource group * Create new

A resource group is a container that holds related resources for an Azure solution.

Name * resGroupForWartungsLOG

OK Cancel

Review + create < Previous Next: Review + create >

Home > Create a resource > Azure Active Directory B2C > Create new B2C Tenant or Link to existing Tenant >

Create a tenant

Azure Active Directory

* Basics * Configuration Review + create

Directory details

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Subscription * Azure subscription 1

Resource group * (New) resGroupForWartungsLOG Create new

Resource group location * North Europe

same as CosmosDB region

note Oauth and OpenIDConnect endpoints here under „Endpoint“: e.g. for postman.co to check webAPI:

Home > Azure AD B2C

Azure AD B2C | App registrations

WartungsLOG.onmicrosoft.com

Search (Ctrl+ /)

New registrationEndpointsTroubleshootingRefreshDownload

Overview

Manage

App registrationsApplications (Legacy)Identity providersAPI connectorsCompany brandingUser attributesUsersRoles and administratorsPoliciesUser flowsIdentity Experience FrameworkSecurityAuthentication methods (Preview)Conditional accessRisky usersRisk detectionsActivitiesAudit logs

Welcome to the new and improved App registrations (now Generally Available). See

Starting June 30th, 2020 we will no longer add any new features to Azure Active Directory. We will no longer provide feature updates. Applications will need to be upgraded to Microsoft Entra ID.

All applicationsOwned applicationsDeleted applicationsApplications

Start typing a name or Application ID to filter these results

1 applications found

Display name ↑

wl_xamarin_client

Endpoints

You can use Azure AD B2C endpoints to authenticate users using user flows to your customer-facing apps and APIs. You can also use Azure AD endpoints for DevOps scenarios like authenticating an application to programmatically manage users using Microsoft Graph. Learn more about using endpoints in Azure AD B2C.

Azure AD B2C endpoints are specific to the user flow ("policy") that an application wishes to use to authenticate users. Replace the user flow (policy) name as <policy-name> where indicated below to access that user flow/policy's endpoint. Learn more about user flows and policies.

Azure AD B2C OAuth 2.0 token endpoint (v2)
https://WartungsLOG.b2clogin.com/WartungsLOG.onmicrosoft.com/<policy-name>/oauth2/v2.0/token

Azure AD B2C OAuth 2.0 authorization endpoint (v2)
https://WartungsLOG.b2clogin.com/WartungsLOG.onmicrosoft.com/<policy-name>/oauth2/v2.0/authorize

Azure AD B2C OAuth 2.0 logout endpoint (v2)
https://WartungsLOG.b2clogin.com/WartungsLOG.onmicrosoft.com/<policy-name>/oauth2/v2.0/logout

Azure AD B2C OpenID Connect metadata document
https://WartungsLOG.b2clogin.com/WartungsLOG.onmicrosoft.com/<policy-name>/v2.0/.well-known/openid-configuration

Azure AD B2C SAML metadata endpoint
https://WartungsLOG.b2clogin.com/WartungsLOG.onmicrosoft.com/<policy-name>/Samlp/metadata

Azure AD OAuth 2.0 authorization endpoint (v2)
https://login.microsoftonline.com/2b6cb998-ab96-4bd7-a361-369db2e9b489/oauth2/v2.0/authorize

Azure AD OAuth 2.0 token endpoint (v2)
https://login.microsoftonline.com/2b6cb998-ab96-4bd7-a361-369db2e9b489/oauth2/v2.0/token

Azure AD OpenID Connect metadata document
https://login.microsoftonline.com/2b6cb998-ab96-4bd7-a361-369db2e9b489/v2.0/.well-known/openid-configuration

Microsoft Graph API endpoint
https://graph.microsoft.com

OAuth + OpenID Connect

Policy-names are user-flows

- step 2: in B2C tenant create: App Registrations → New Registrations :

Home > Azure AD B2C >

Register an application

* Name

The display name for this application (this can be changed later).

wl_xamarin_client

Supported account types

Who can use this application or access this API?

Accounts in this organizational directory only (WartungsLOGfordiyersAPP only - Single tenant)

Accounts in any organizational directory (Any Azure AD directory – Multitenant)

Accounts in any identity provider or organizational directory (for authenticating users with user flows)

Help me choose...

Redirect URI (recommended)

We'll return the authentication response to this URI after successfully authenticating the user. Providing this now is optional and it can be changed later, but a value is required for most authentication scenarios.

Public client/native (mobil... e.g. myapp://auth

Permissions

Azure AD B2C requires this app to be consented for openid and offline_access permissions. You must be an app administrator to grant ac

Grant admin consent to openid and offline_access permissions

Register an app you're working on here. Integrate gallery apps and other apps from outside your organization by adding from Enterprise

By proceeding, you agree to the Microsoft Platform Policies

Register

- click on new app registration „wl_xamarin_client“ → Authentication → Add Platform → mobile and desktop applications:

Home > Azure AD B2C > wl_xamarin_client

wl_xamarin_client | Authentication

Search (Ctrl+ /)

Got feedback?

Overview

Integration assistant

Manage

Branding

Authentication

Certificates & secrets

API permissions

Expose an API

Owners

Manifest

Support + Troubleshooting

Troubleshooting

Platform configurations

The web or mobile and desktop applications that can receive authentication responses (tokens) after successfully authenticating users. Depending the targeted platform or device, additional configuration may be required such as redirect URIs, specific authentication settings, or platform specific fields.

+ Add a platform

Supported account types

Who can use this application or access this API?

Accounts in any identity provider or organizational directory (for authenticating users with user flows)

This is the most common option for apps that are exposed to your customers. You must select this option to authenticate users with Azure AD B2C user flows. This option enables you to target local accounts and the widest set of user identities from Microsoft, Facebook, Google, Twitter, or any OpenID Connect provider.

To change the supported accounts for an existing registration, use the manifest editor. Take care, as certain properties may cause errors for personal accounts. [Learn more about these restrictions.](#)

Advanced settings

Allow public client flows

Enable the following mobile and desktop flows:

Yes

No

Configure Desktop + devices

All platforms

Quickstart

Docs

Redirect URIs

The URIs we will accept as destinations when returning authentication responses (tokens) after successfully authenticating users. Also referred to as reply URLs. [Learn more about Redirect URIs and their restrictions](#)

https://WartungsLOG.b2clogin.com/oauth2/nativeclient

msal04809bbd-20ab-43b4-acd8-c7c3df586222://auth (MSAL only)

Custom redirect URIs

https://contoso.com

APP registration for Server WebAPI: in Azure AD B2C -> App registrations → new registration

Home > Azure AD B2C >

Register an application

* Name

The display name for this application (this can be changed later).

wl_server_webAPI

Supported account types

Who can use this application or access this API?

Accounts in this organizational directory only (WartungsLOGfordiyersAPP only - Single tenant)

Accounts in any organizational directory (Any Azure AD directory – Multitenant)

Accounts in any identity provider or organizational directory (for authenticating users with user flows)

Help me choose...

Redirect URI (recommended)

We'll return the authentication response to this URI after successfully authenticating the user. Providing this now is optional and it can be changed later, but a value is required for most authentication scenarios.

Web

e.g. https://example.com/auth

Permissions

Azure AD B2C requires this app to be consented for openid and offline_access permissions. You must be an app administrator to grant admin co

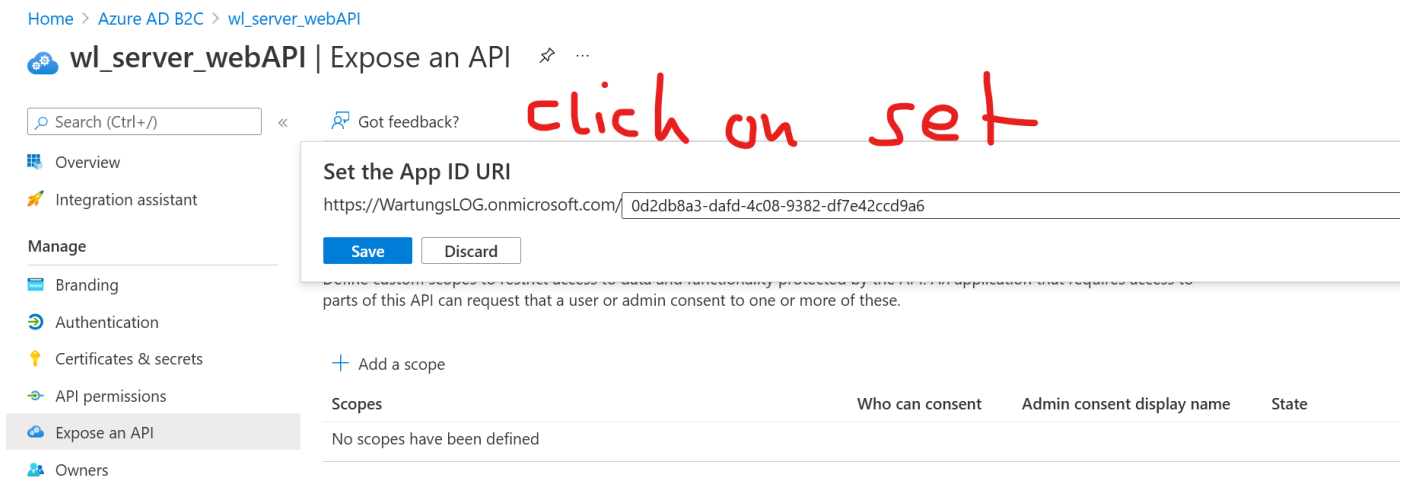
Grant admin consent to openid and offline_access permissions

Register an app you're working on here. Integrate gallery apps and other apps from outside your organization by adding from [Enterprise applica](#)

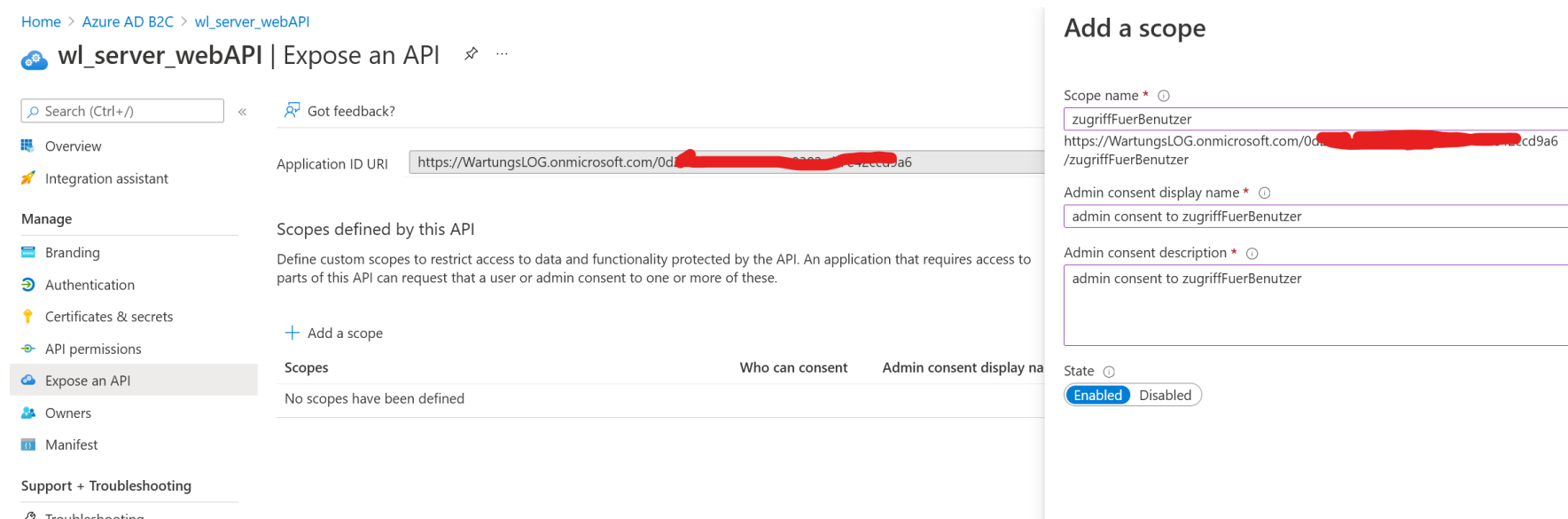
By proceeding, you agree to the [Microsoft Platform Policies](#)

Register

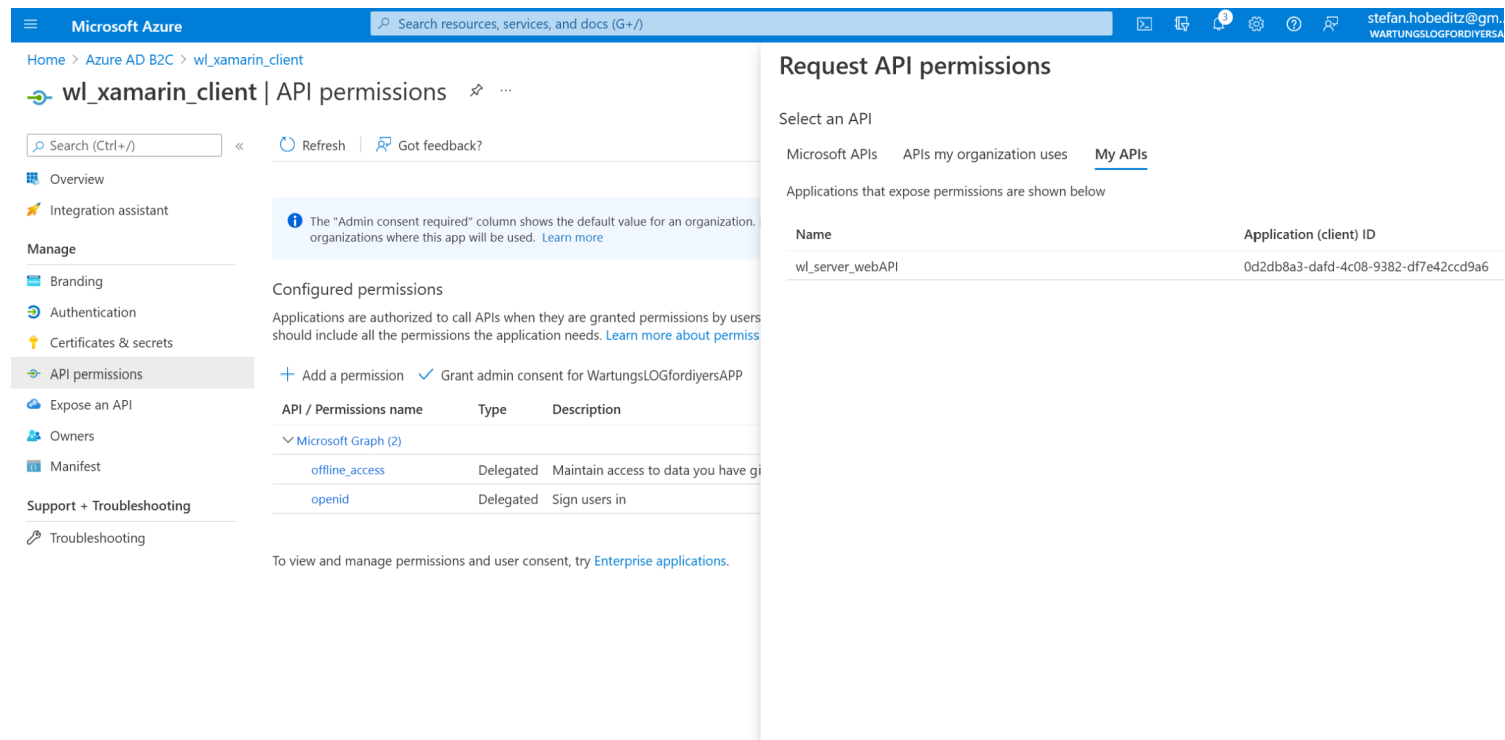
- in App Registration for Server : click Expose an API → Application ID URI : click on „Set“



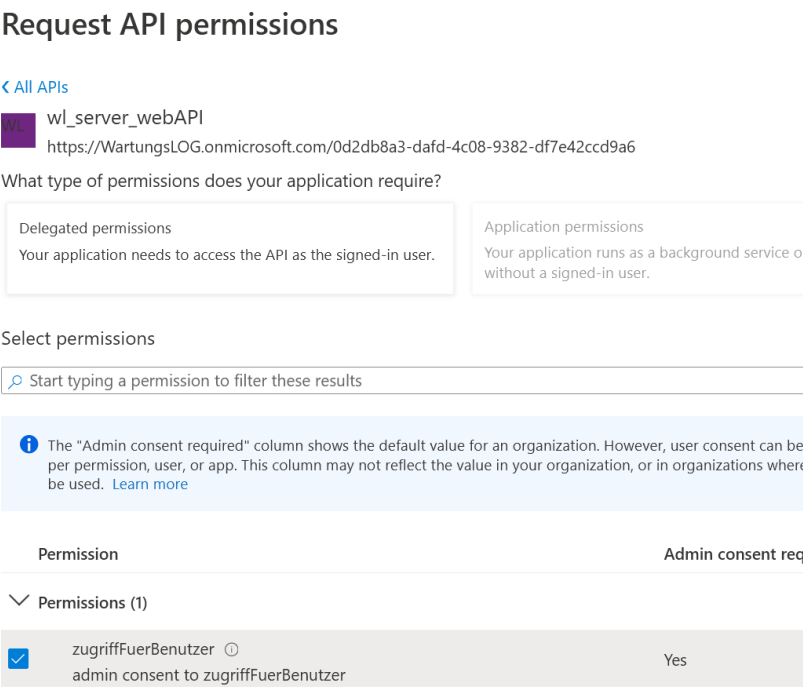
- give the scope a name here: “zugriffFuerBenutzer”



- back in the app registration for the client add the api permission to this scope



- add the zugriffFuerBenutzer permission



- grant admin consent for „zugriffFuerBenutzer”

Home > Azure AD B2C > wl_xamarin_client

wl_xamarin_client | API permissions

Search (Ctrl+ /)

RefreshGot feedback?

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Troubleshooting

You are editing permission(s) to your application, users will have to consent even if they've already done so previously.

The "Admin consent required" column shows the default value for an organization. However, user consent can be customized per permission, user, or app. This column may not reflect the value in your organization where this app will be used. [Learn more](#)

Configured permissions

Applications are authorized to call APIs when they are granted permissions by users/admins as part of the consent process. The list of configured permissions should include all the permissions the application needs. [Learn more about permissions and consent](#)

+ Add a permission

Grant admin consent for WartungsLOGfordiyersAPP

API / Permissions name	Type	Description	Admin consent re...	Status
Microsoft Graph (2)				
offline_access	Delegated	Maintain access to data you have given it access to	No	Granted for Wartungs...
openid	Delegated	Sign users in	No	Granted for Wartungs...
wl_server_webAPI (1)				
zugriffFuerBenutzer	Delegated	admin consent to zugriffFuerBenutzer	Yes	Not granted for Wart...

To view and manage permissions and user consent, try [Enterprise applications](#).

Click here to change that

- for client app user sign Up and sing In : create user

Home > Azure AD B2C >

Create a user flow

User flows are predefined, configured policies that you can use to set up authentication experiences for your end users. Select a user flow type to get started. [Learn more](#).

Select a user flow type

Sign up and sign in

Enables a user to create an account or sign in to their account.

Profile editing

Enables a user to configure their user attributes.

Password reset

Enables a user to choose a new password after verifying their email.

Sign up

Enables a user to create a new account.

Sign in

Enables a user to sign in to their account.

Sign in using resource owner password credentials (ROPC)

Enables a user with a local account to sign in directly in native applications

Version

Recommended

This is the generally available, next-generation user flow with latest features.

Standard (Legacy)

This is the legacy user flow. Unless you have a specific business need, we don't recommend using this version.

Create

- create „B2C_1_signupandin“ flow

Create

Sign up and sign in (Recommended)

[← Select a different type of user flow](#)

Get started with your user flow with a few basic selections. Don't worry about getting everything right here, you can modify your user flow after you've created it.

1. Name

The unique string used to identify this user flow in requests to Azure AD B2C. This cannot be changed after a user flow has been created.

B2C_1 *

2. Identity providers *

Identity providers are the different types of accounts your users can use to log into your application. You need to select at least one for a valid user flow and you can add more providers.

Please select at least one identity provider

Local accounts

☒ Email signup

3. Multifactor authentication

Enabling multifactor authentication (MFA) requires your users to verify their identity with a second factor before allowing them into your application. [Learn more about multifactor authentication](#)

Type of method

- ☒ Email
☐ SMS or phone call
☐ SMS only
☐ Phone call only

MFA enforcement

- ☒ Off
☐ Always on
☐ Conditional

4. Conditional access

Conditional access policies evaluate signals in real time and enforce grants like MFA only when required. [Learn more about conditional access](#).

Enforce conditional access policies ☐

Create

Create

5. User attributes and token claims

User attributes are values collected on sign up. Claims are values about the user returned to the application in the token. You can create custom attributes for use in your directory.

	Collect attribute	Return claim
City	<input type="checkbox"/>	<input type="checkbox"/>
Country	<input type="checkbox"/>	<input type="checkbox"/>
Display Name	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Email Address	<input type="checkbox"/>	<input type="checkbox"/>
Email Addresses	<input type="checkbox"/>	<input type="checkbox"/>
Given Name	<input type="checkbox"/>	<input type="checkbox"/>
Identity Provider	<input type="checkbox"/>	<input type="checkbox"/>
Identity Provider Access Token	<input type="checkbox"/>	<input type="checkbox"/>
Job Title	<input type="checkbox"/>	<input type="checkbox"/>
Legal Age Group Classification	<input type="checkbox"/>	<input type="checkbox"/>
Postal Code	<input type="checkbox"/>	<input type="checkbox"/>
State/Province	<input type="checkbox"/>	<input type="checkbox"/>
Street Address	<input type="checkbox"/>	<input type="checkbox"/>
Surname	<input type="checkbox"/>	<input type="checkbox"/>
User is new	<input type="checkbox"/>	<input type="checkbox"/>
User's Object ID	<input type="checkbox"/>	<input type="checkbox"/>

Ok

- add new claim returned to the app: EmailAddresses (to show the email address...)

B2C_1_signupandin | Application claims

Sign up and sign in (Recommended)

< Run user flow Save Discard Manage user attributes Got feedback?

Overview

Settings

Properties

Identity providers

User attributes

Application claims

API connectors

Customize

Page layouts

Languages

User attributes are values collected on sign up. Claims are values about the user returned to the application in the token. You can create custom attributes for use in your directory. [Learn more about user attributes and claims](#).

Name	Data Type	Description	Attribute type
<input type="checkbox"/> City	String	The city in which the user is located.	Built-in
<input type="checkbox"/> Country/Region	String	The country/region in which the user is located.	Built-in
<input checked="" type="checkbox"/> Display Name	String	Display Name of the User.	Built-in
<input checked="" type="checkbox"/> Email Addresses	StringCollection	Email addresses of the user.	Built-in
<input type="checkbox"/> Given Name	String	The user's given name (also known as first name).	Built-in
<input checked="" type="checkbox"/> Identity Provider	String	The social identity provider used by the user to access to your a...	Built-in
<input type="checkbox"/> Identity Provider Access Token	String	The access_token returned by the OAuth identity provider.	Built-in
<input type="checkbox"/> Job Title	String	The user's job title.	Built-in
<input type="checkbox"/> Legal Age Group Classification	String	The legal age group that a user falls into based on their country ...	Built-in
<input type="checkbox"/> Postal Code	String	The postal code of the user's address.	Built-in
<input type="checkbox"/> State/Province	String	The state or province in user's address.	Built-in
<input type="checkbox"/> Street Address	String	The street address where the user is located.	Built-in
<input type="checkbox"/> Surname	String	The user's surname (also known as family name or last name).	Built-in
<input type="checkbox"/> User is new	Boolean	True, if the user has just signed-up for your application.	Built-in
<input type="checkbox"/> User's Object ID	String	Object identifier (ID) of the user object in Azure AD.	Built-in

STEP: CREATING COSMOS DB with CORE SQL API

Microsoft Azure

Search resources, services, and docs (G+)

Home > Azure Cosmos DB > Select API option >

Create Azure Cosmos DB Account - Core (SQL) ...

Basics Global Distribution Networking Backup Policy Encryption Tags Review + create

Azure Cosmos DB is a fully managed NoSQL database service for building scalable, high performance applications. [Try it for free](#), for 30 days with unlimited renewals. Go to production starting at \$24/mo containers included. [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 * Azure subscription 1

Resource Group * [Create new](#)

Instance Details

Account Name * wartungslogcosmosdb

Location * (Europe) North Europe *same as resource group location*

Capacity mode ☒ Provisioned throughput ☐ Serverless [Learn more about capacity mode](#)

With Azure Cosmos DB free tier, you will get the first 1000 RU/s and 25 GB of storage for free in an account. You can enable free tier on up to one account per subscription. Estimated \$64/month discount

Apply Free Tier Discount ☒ Apply ☐ Do Not Apply

Limit total account throughput ☒ Limit the total amount of throughput that can be provisioned on this account

i This limit will prevent unexpected charges related to provisioned throughput. You can update or remove this limit after your account is created.

[Review + create](#) [Previous](#) [Next: Global Distribution](#)

- check throughput limit !! was at 4000 RU/s !!!

wartungslogcosmosdb | Cost Management ...

Azure Cosmos DB account

Search (Ctrl+)

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Cost Management

Quick start

Notifications

Data Explorer

Settings

Features

Cosmos DB's cost is calculated based on storage, throughput and additional settings such as replication. Manage the cost of your Cosmos DB account by configuring your account throughput limit.

Current account throughput

This account has no databases/containers created.

Total throughput limit setting

i The account total throughput limit cannot be lowered below the total throughput currently provisioned across the account.

☒ Limit the account's total provisioned throughput to the amount included in the free tier discount (1000 RU/s), You won't incur any charges for provisioned throughput

☐ Allow the account's total throughput to be provisioned up to a custom amount

☐ No limit, allow the account's total throughput to be provisioned to any amount

- create container and database in CosmosDB

wartungslogcosmosdb | Data Explorer

Azure Cosmos DB account

Search (Ctrl+ /)

New Container

Enable Azure Synapse Link

New Notebook

Connect to GitHub

Open Terminal

Overview

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Tags

Diagnose and solve problems

Cost Management

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Private Endpoint Connections

CORS

Dedicated Gateway

Keys

Advisor Recommendations

Advanced security (preview)

Identity

Locks

Integrations

SQL API

DATA

NOTEBOOKS

Notebooks is currently not available. We are working on it.

Welcome to Azure Cosmos DB

Globally distributed, multi-model database

Start with Sample

Get started with a sample provided by Cosmos DB

Common Tasks

Recents

New Database

New Container

Database id

Create new Use existing

wldb1

Share throughput across containers

Database throughput (autoscale)

Autoscale

Manual

Estimate your required RU/s with capacity calculator.

Database Max RU/s

1000

Your database throughput will automatically scale from 100 RU/s (10% of max RU/s) - 1000 RU/s based on usage.

Estimated monthly cost (USD): \$8.76 - \$87.60 (1 region, 100 - 1000 RU/s, \$0.00012/RU)

Container id

wlcontainer1

Indexing

Automatic Off

All properties in your documents will be indexed by default for flexible and efficient queries. Learn more

Partition key

For small workloads, the item ID is a suitable choice for the partition key.

/oid

Unique keys

Add unique key

Analytical store

On Off

oid will be the owner id
= user object id from ADB2C

STEP Configure Web API in „WL WebAPI.sln“ solution

- file startup.cs find and change

```
options.MetadataAddress = "https://WartungsLOG.b2clogin.com/WartungsLOG.onmicrosoft.com/B2C_1_signupandin/v2.0/.well-known/openid-configuration";
```

(from azure ad b2c app registrations → „Endpoints“)

in „appsettings.json“

```
"AzureAdB2C": {  
  "Instance": "https://login.microsoftonline.com/",  
  "ClientId": "0d2db8a3-dafd-4c08-9382-df7e42ccd9a6", // app registration id for web api service: „wl_server_webAPI“  
  "Domain": "wartungslog.onmicrosoft.com",  
  "TenantId": "common",  
  // "SignedOutCallbackPath": "/B2C_1_signupandin/oauth2/v2.0/logout",  
  "SignUpSignInPolicyId": "B2C_1_signupandin" // user flow name for sign in and sign up  
},
```

- publish WL_WebAPI (right click project in solution)

create new → select Azure → Azure App Service →

Publish

Select existing or create a new Azure App Service

Microsoft account
stefan.hobeditz@gmail.com

Target: Subscription name
Azure subscription 1

Specific target: View
Resource group

App Service instances

Run from package file

Back Next Finish Cancel

App Service (Windows)

Create new

Microsoft account
stefan.hobeditz@gmail.com

Name: wartungslogwebapi

Subscription name: Azure subscription 1

Resource group: resGroupForWartungsLOG (North Europe) New...

Hosting Plan: wartungslogwebapiPlan* (North Europe, F1) New...

Export... Create Cancel

Hosting Plan

Create new

Hosting Plan: wartungslogwebapiPlan

Location: North Europe

Size: Free

Publish

Enable API consumption for teams, customers, and Logic and Pow...

Microsoft account
stefan.hobeditz@gmail.com

Target

Subscription name

Azure subscription 1

Specific target

View

Resource group

App Service

Search

API Management

API Management APIs

(No resources found)

select

☒ Skip this step

Back

Next

Finish

Cancel

- in App Services add keys for cosmos DB:

Microsoft Azure

Search resources, services, and docs (G+)

stefan.hobeditz@gm...
DEFAULT DIRECTORY

Home > App Services > wartungslogwebapiPlan > wartungslogwebapi

wartungslogwebapi | Configuration

App Service

Search (Ctrl+)

Refresh Save Discard Leave Feedback

Click here to upgrade to a higher SKU and enable additional features.

Application settings * General settings Default documents Path mappings

Application settings

Application settings are encrypted at rest and transmitted over an encrypted channel. You can choose to display them in plain text in your browser by using the controls below. Application Settings are exposed as environment variables for access by your application at runtime. [Learn more](#)

+ New application setting Show values Advanced edit

Filter application settings

Name	Value	Source	Deployment slot setting	Delete	Edit
codb:account	https://wartungslogcosmosdb.docun	App Service Config			
codb:container	wlcontainer1	App Service Config			
codb:database	wldb1	App Service Config			
codb:key	Hidden value. Click to show value	App Service Config			
WEBSITE_NODE_DEFAULT_VERSION	6.9.1	App Service Config			

URI from Cosmos DB -> settings -> keys

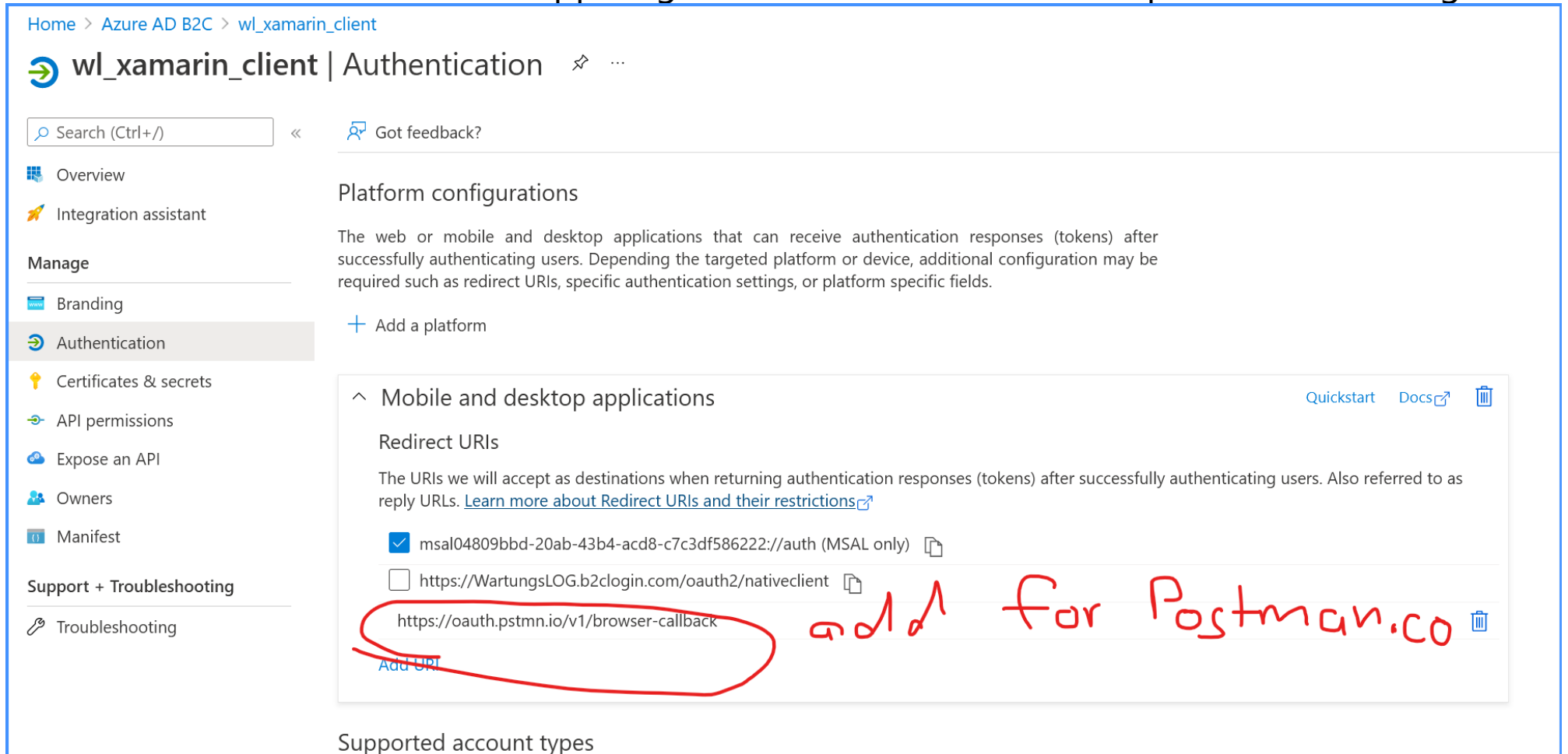
Connection strings

Connection strings are encrypted at rest and transmitted over an encrypted channel.

+ New connection string Show values Advanced edit

Filter connection strings

- in azure ad b2c → wl_xamarin_clinet app resgistration add callback uri for postman.co testing:



(for postman add auth/access url from b2c endpoints, clientID for xamarin clientID, scope)

Step: Xamarin App general settings:

- in RealDataService: add the AppService public endpoint:

```
private readonly string ApiBaseAddress = "https://wartungslogwebapi.azurewebsites.net/";
```

- in LogOn\B2CConstants.cs:

```
public static string Tenant = "wartungslog.onmicrosoft.com";  
public static string AzureADB2CHostname = "wartungslog.b2clogin.com";  
public const string ClientID = "04809bbd-20ab-43b4-acd8-c7c3df586222"; // app registration id for xamarin client app  
  
public static string PolicySignUpSignIn = "B2C_1_signupandin";  
public static string PolicyEditProfile = "B2C_1_profileEditingFlow";  
public static string PolicyResetPassword = "b2c_1_reset";  
  
public static string ID_WebAPI_APP_Registration = "0d2db8a3-dafd-4c08-9382-df7e42ccd9a6"; // app registration for server webAPI  
  
public static string[] Scopes = { "offline_access", $"https://{Tenant}/{ID_WebAPI_APP_Registration}/zugriffFuerBenutzer" }; // scopename
```

- in xamarin.android project:

in MsalActivity.cs

```
:  
DataScheme = "msal04809bbd-20ab-43b4-acd8-c7c3df586222"] // the callback url with msal<clientID>://auth uri
```

- in xamarin.iOS: info.plist

```
<key>CFBundleURLTypes</key>  
<array>  
  <dict>  
    <key>CFBundleURLName</key>  
    <string>WartungsLOG</string>  
    <key>CFBundleURLSchemes</key>  
    <array>  
      <string>msal04809bbd-20ab-43b4-acd8-c7c3df586222</string>  
    </array>  
    <key>CFBundleTypeRole</key>  
    <string>None</string>  
  </dict>  
</array>  
</dict>
```