WebTitan Azure AD Enterprise App

The WebTitan Azure AD Enterprise App is a built-in component of DNS Proxy. It is responsible for synchronizing Azure AD User & Groups to DNS Proxy. It regularly performs scans of the Azure sign-ins to find new sign-ins for Users. It pairs the user with the IP of the Virtual Machine that was signed into so that WebTitan Cloud can apply policies to those users.

Table of Contents

Prerequisites for the WebTitan AzureAD Enterprise App

The WebTitan AzureAD Enterprise App requires access to the (Azure AD) reporting APIs to provide you with User sign-in data.

The WebTitan AzureAD Enterprise App uses OAuth to authorize access to the MS Azure APIs.

To Deploy DNSProxy and access the functionality of the WebTitan AzureAD Enterprise App the following has to be done:

1. License Requirements
2. Deploying DNSProxy
3. Assign roles
4. Register DNSProxy/WebTitan AzureAD Enterprise App as an application
5. Grant API permissions
6. Add Custom Role Assignment
7. Gather configuration settings

License Requirements

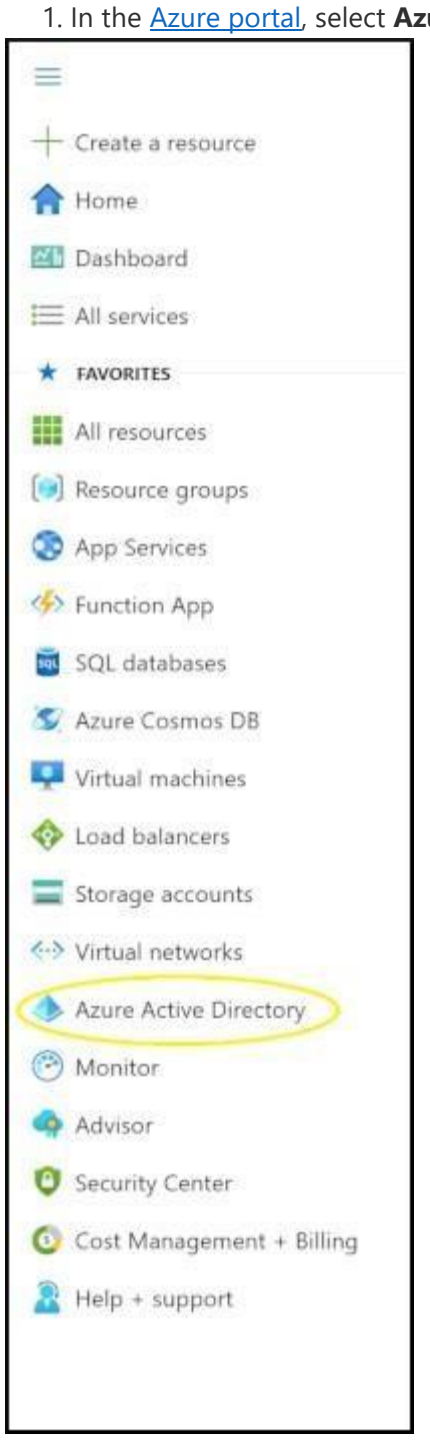
To access the sign-in reports for a tenant it must have an associated Azure AD Premium license. Azure AD Premium P1 (or above) license is required to access sign-in reports for any Azure AD tenant. Alternatively, if the directory type is Azure AD B2C, the sign-in reports are accessible through the API without any additional license requirement.

Deploying DNSProxy

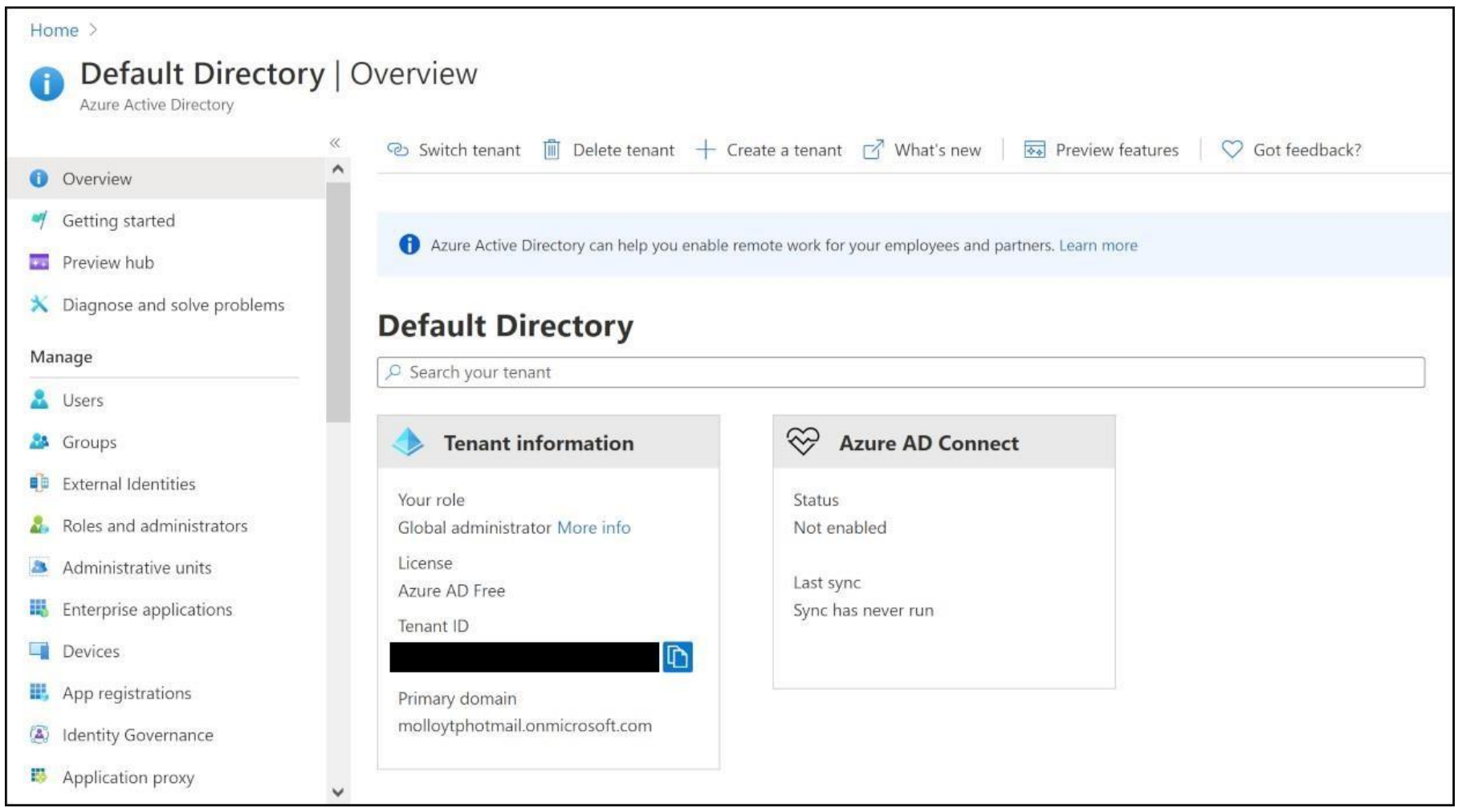
DNSProxy is made available via an Azure App hosted by TitanHQ on its Azure Directory. This app needs to be made available on the target tenant to deploy DNSProxy.

Make DNSProxy-Distribution-Prod App available to External Organisation:

1. In the Azure portal, select **Azure Active Directory** from the left navigation pane.

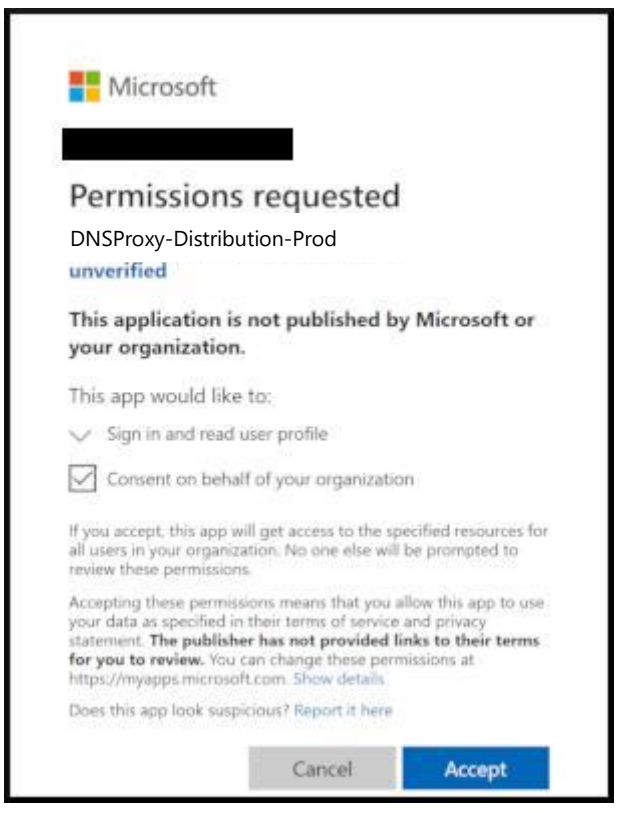


2. Take note of your **Tenant ID** `<Tenant 2 ID>`



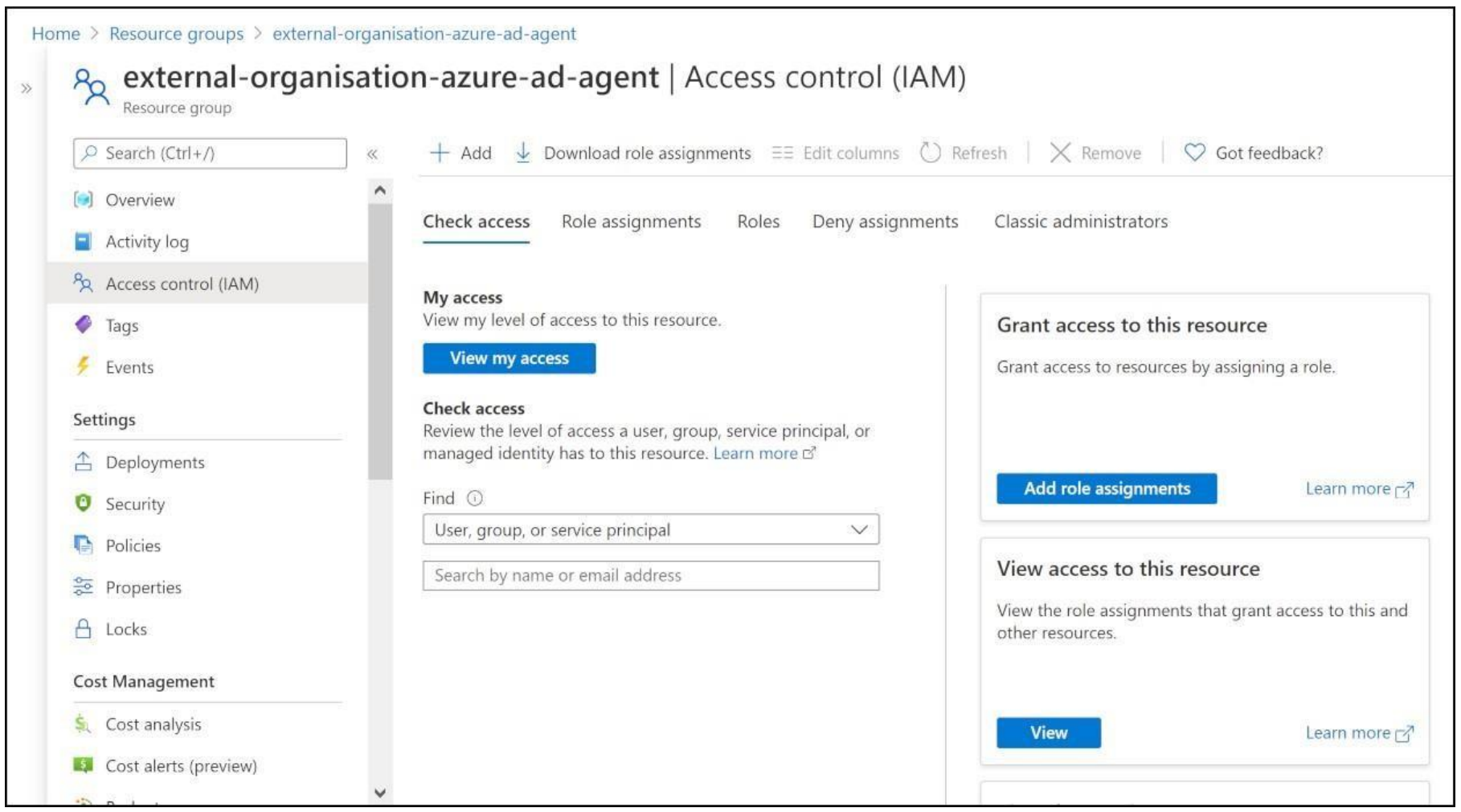
3. Open a **new tab** in your browser and enter the following **URL**:

https://login.microsoftonline.com/**<Tenant Id>**/oauth2/authorize?client_id=a248315f-7d19-41c2-8acb-2619857956c9&response_type=code&redirect_uri=https%3A%2F%2Fwww.microsoft.com%2F

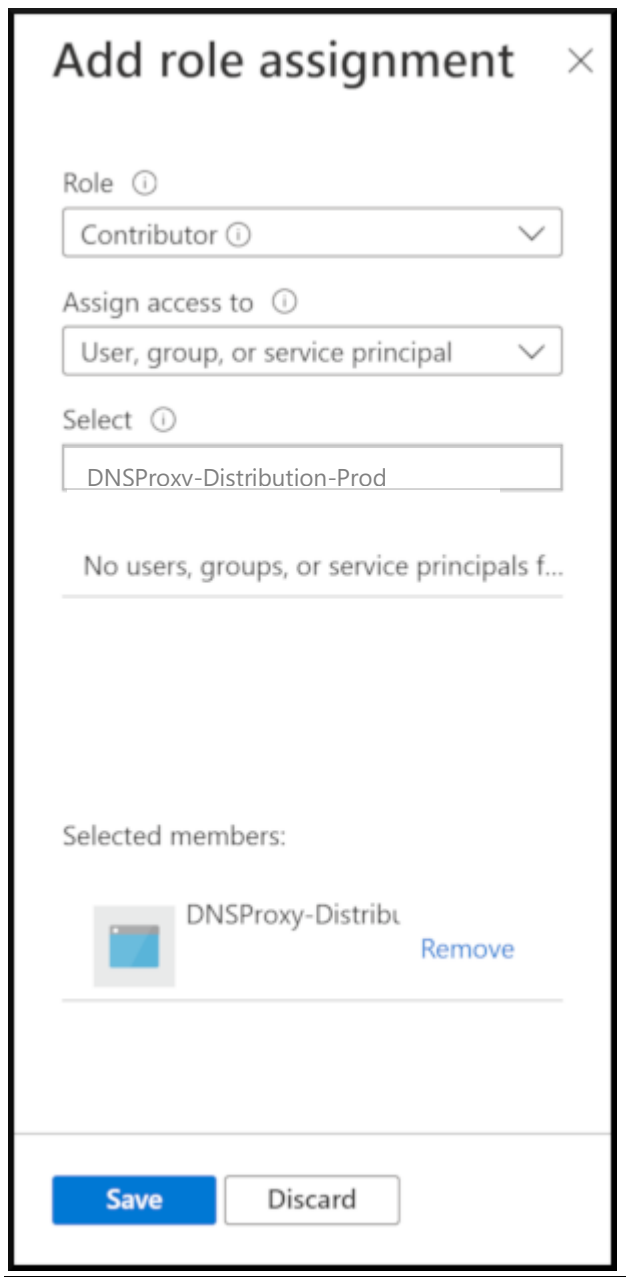


IMPORTANT: This will make the DNSProxy-Distribution-Prod App available to your tenant.

4. Navigate to the **resource group** you are going to **launch DNSProxy into**.



5. On the **Add role assignment** pane, add:



a. In the **Role** dropdown, select `Contributor`.

b. In the **Assign access to** dropdown, select `User, group, or service principal`.

c. Select **DNSProxy-Distribution-Prod**.

d. Click **Save**.

Deploy DNSProxy into Resource Group of an External Organisations Tenant

> IMPORTANT: You must launch DNSProxy into an existing ResourceGroup with an existing VNet & NetworkSecurityGroup.
> The Subnet you launch DNSProxy into must have an NSG associated with it.
> To access the UI HTTPS or HTTP ports must be open on the VNet.
> As a part Port 7780 will be open on the NSG, this port is required for DNSProxy to communicate with other DNSProxies in your Azure estate.

NB: You must have the Azure CLI installed on the computer you run the DNSProxy Installer on. If you need to add the azure cli module to your powershell or bash shell please see Microsofts instructions which are available at Azure CLI

NB: You must have a default ssh key in your ~/.ssh folder (C:\Users<username>.ssh). If you do not have one you can generate one in powershell with the following command: "ssh-keygen -m PEM -t rsa -b 4096".

The Azure DNSProxy Installer is available for download at DNSProxy Azure Installer

When you run the Installer, it will launch a CLI where you will be asked for the following information:

a. Your Tenant Id.
b. The suffix for TitanHQ-DnsProxy- VM e.g. if 1 the VM name will be TitanHQ-DnsProxy-1.
c. Name of the existing Resource Group DNSProxy will be launched into.
d. Name of the existing VNet DNSProxy will be launched into.
e. Name of the existing Subnet DNSProxy will be launched into.

> IMPORTANT: This will launch DNSProxy into your resource group.

Assign roles

To get access to the reporting data through the API, you need to have one of the following roles assigned:

- Security Reader
- Security Administrator
- Global Administrator

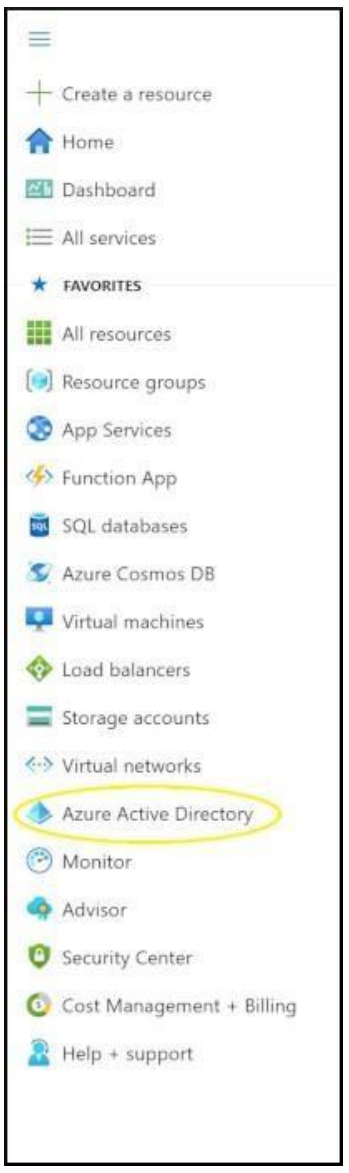
Register DNSProxy/WebTitan AzureAD Enterprise App as an application

Registration is to access the reporting & management APIs. The registration gives you an **Application ID**, which is required for the authorization calls and enables the WebTitan AzureAD Enterprise App to receive tokens.

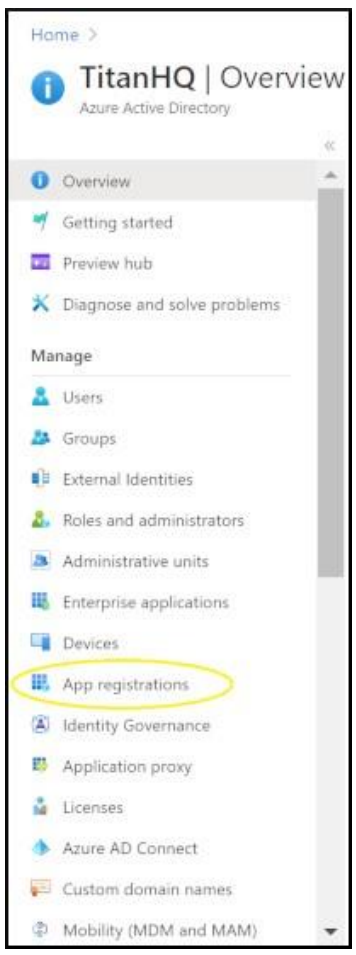
To configure your directory to access the Azure AD reporting API, you must sign in to the Azure portal with an Azure administrator account that is also a member of the **Global Administrator** directory role in your Azure AD tenant.

To register an Azure AD application:

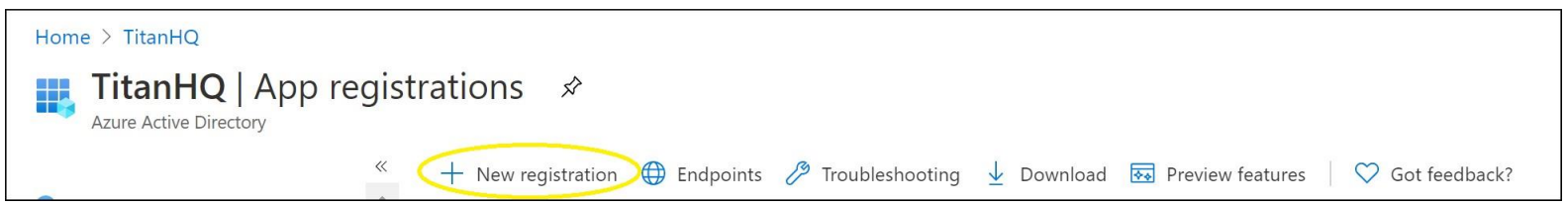
1. In the Azure portal, select **Azure Active Directory** from the left navigation pane.



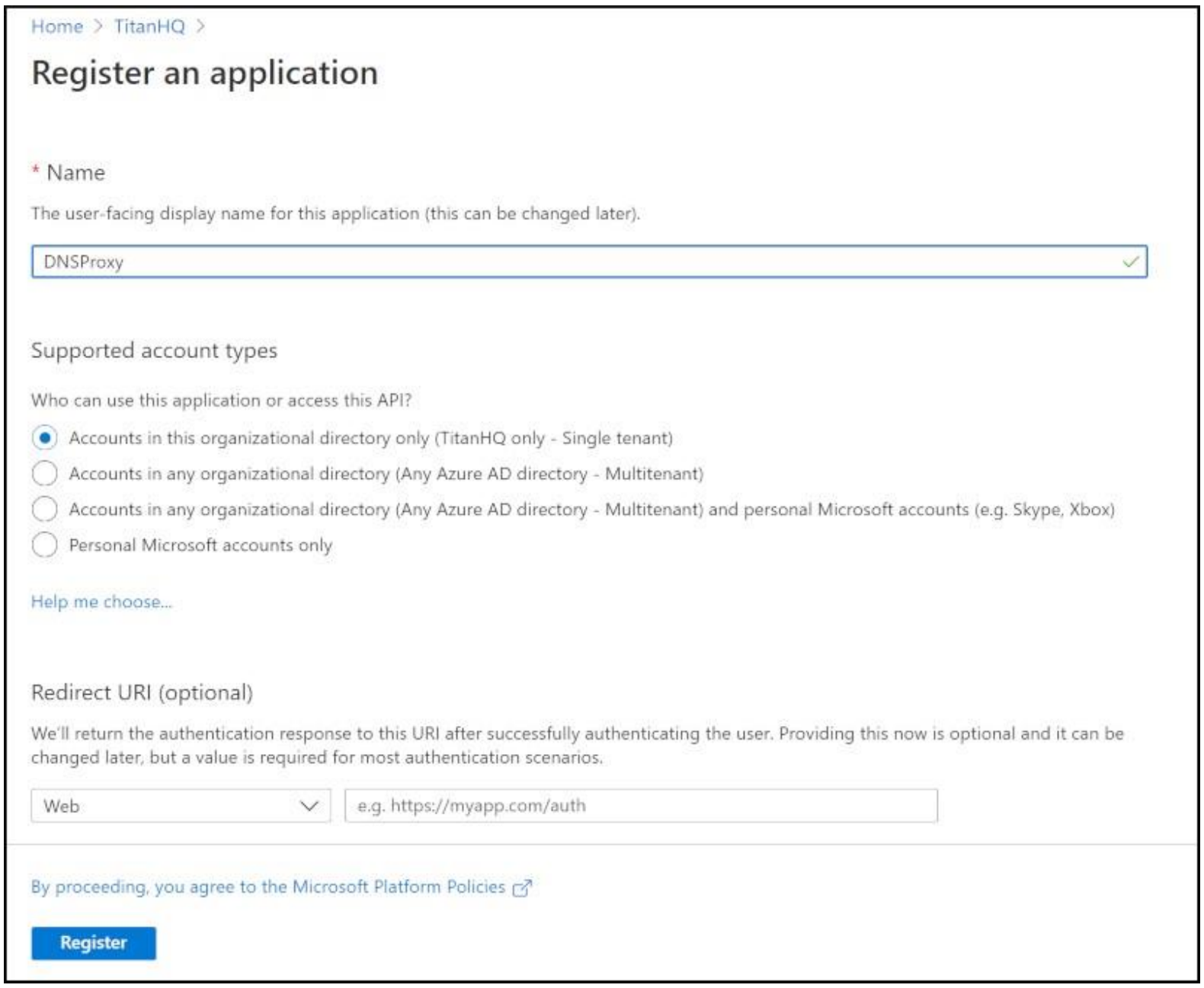
2. In the **Azure Active Directory** page, select **App registrations**.



3. From the **App registrations** page, select **New registration**.



4. The **Register an Application** page:



a. In the **Name** textbox, type `DNSProxy`.

b. For **Supported accounts type**, select **Accounts in this organizational directory only**.

c. In the **Redirect URL** leave it blank.

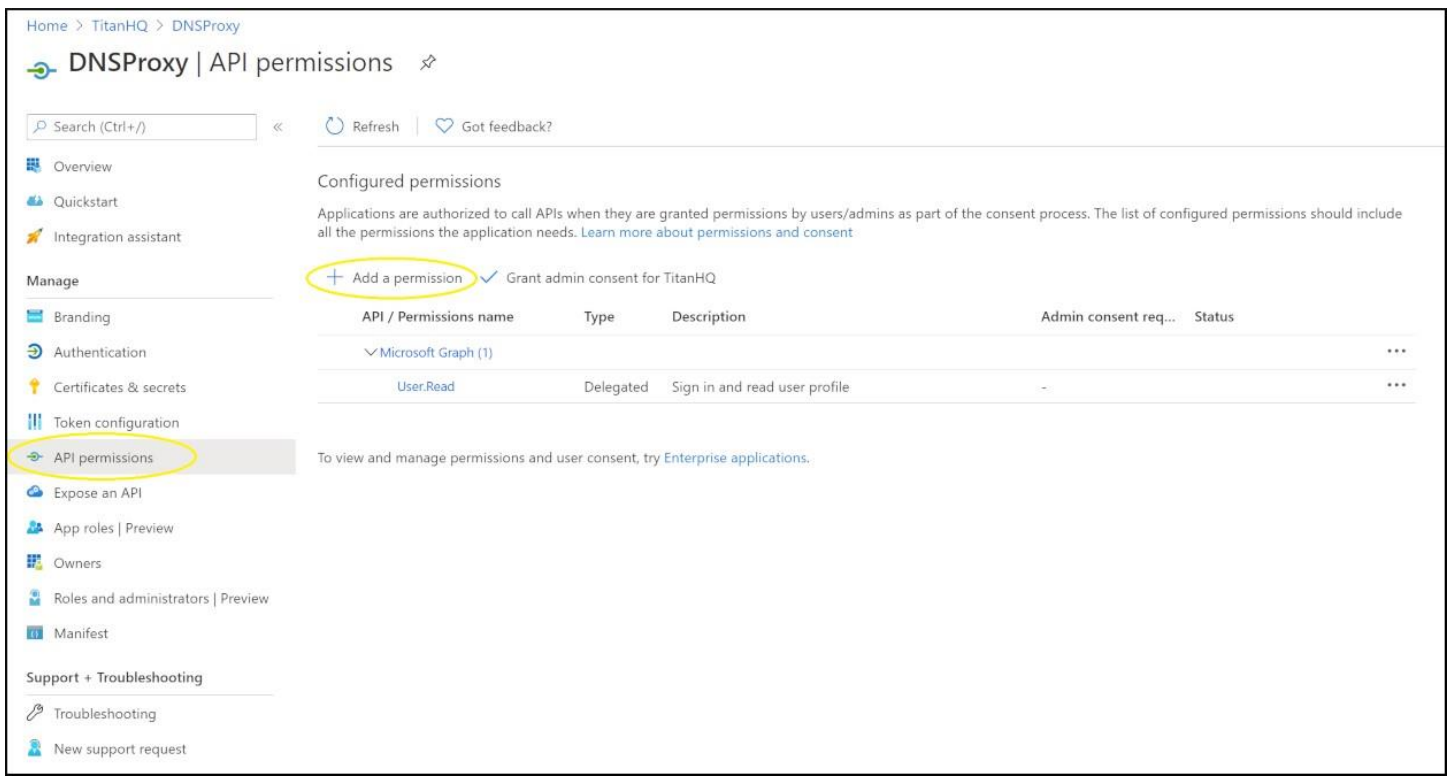
d. Select **Register**.

Grant API permissions

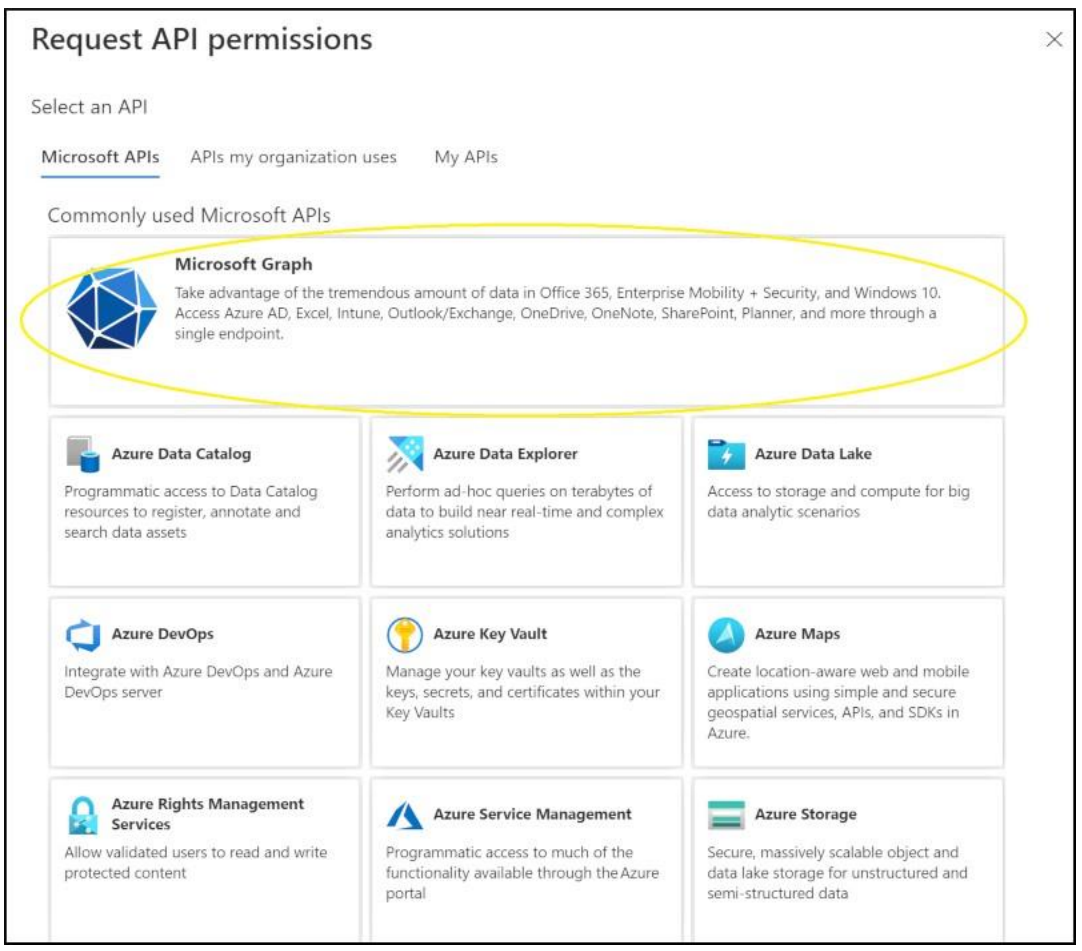
You need to grant your app the following permissions:

API	**Permission**
Microsoft Graph	User.Read.All
Microsoft Graph	Group.Read.All
Microsoft Graph	AuditLog.Read.All
Azure Service Management	user_impersonate

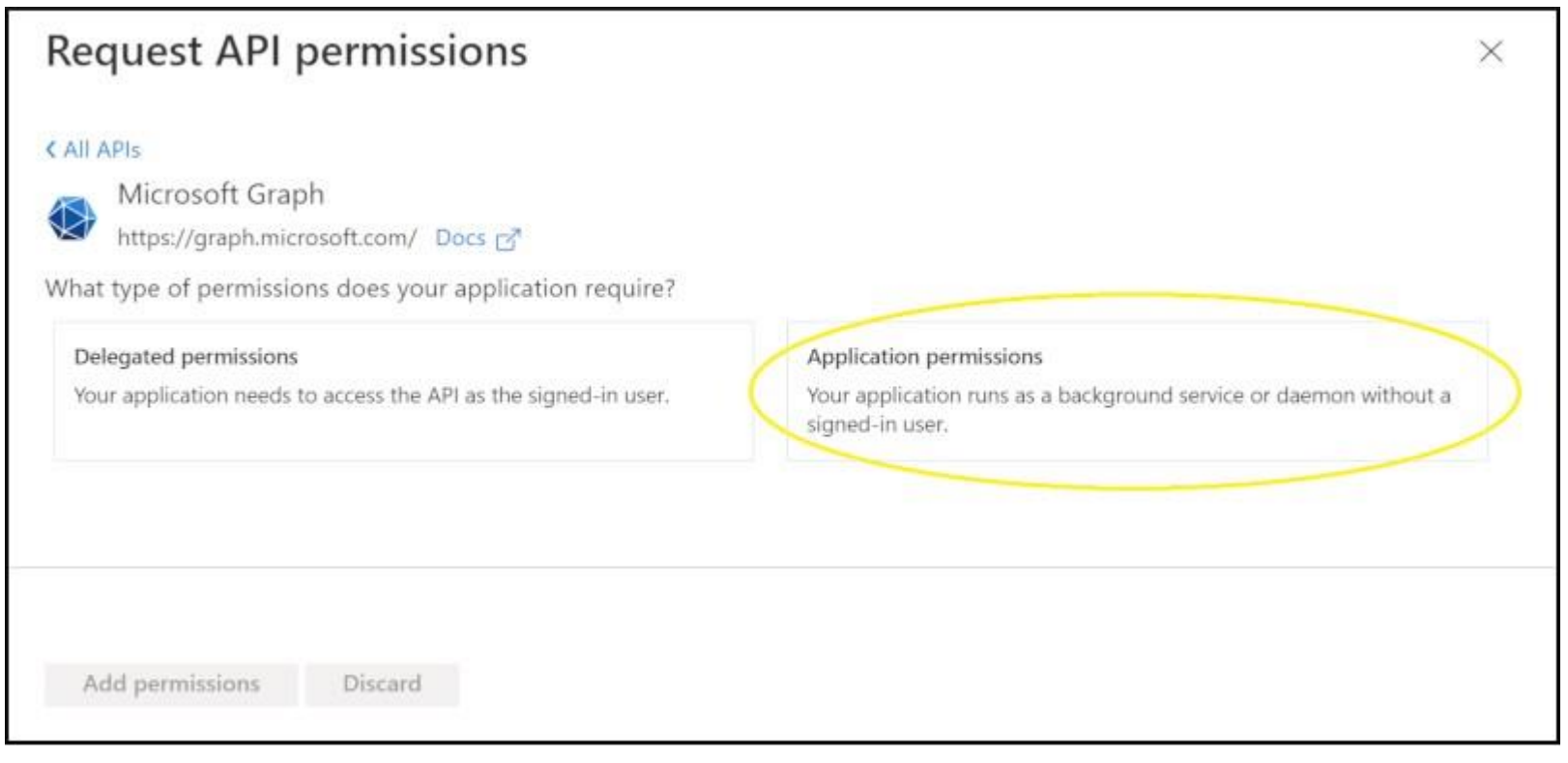
1. Select **API permissions** then **Add a permission**.



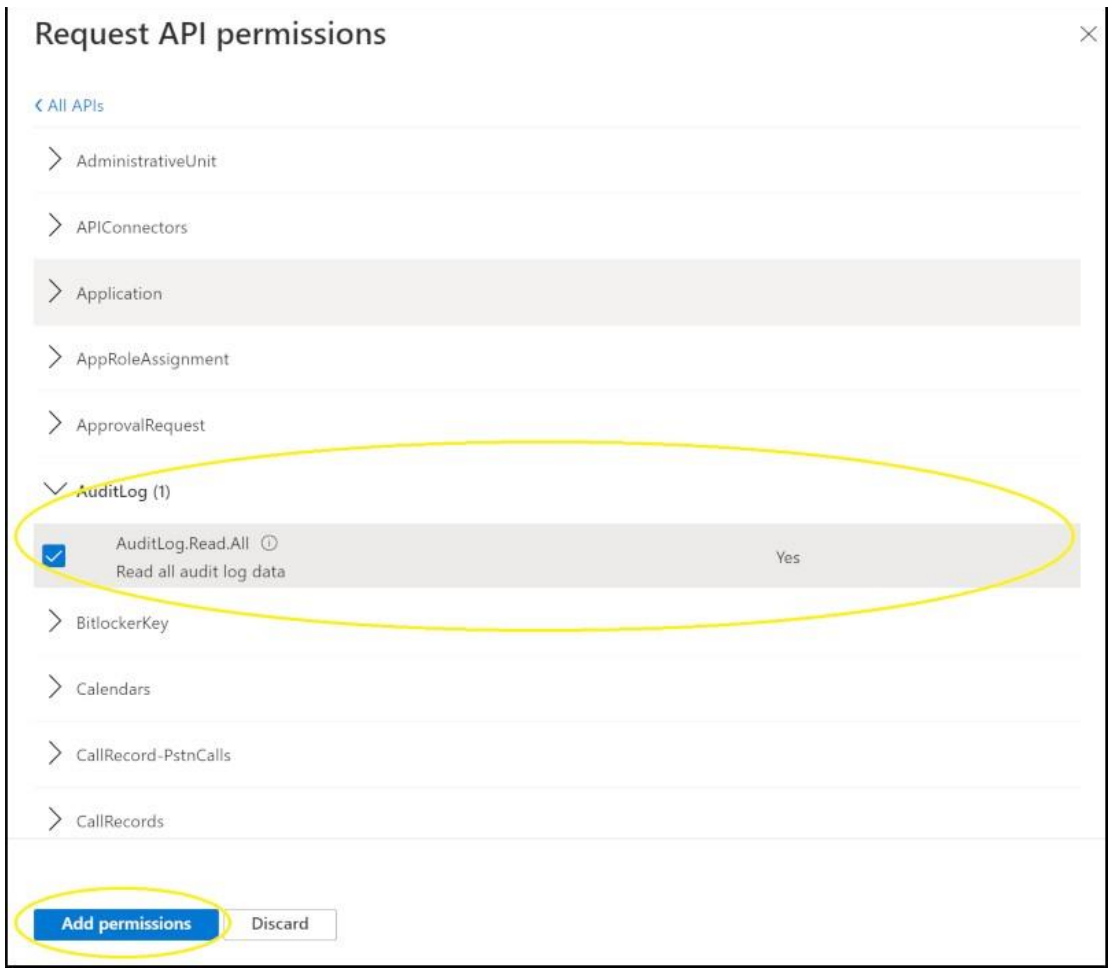
2. On the **Request API permissions page**, locate **Microsoft Graph**.



3. On the **Required permissions** page, select **Application Permissions**.



4. Expand **AuditLog** checkbox **AuditLog.ReadAll**.

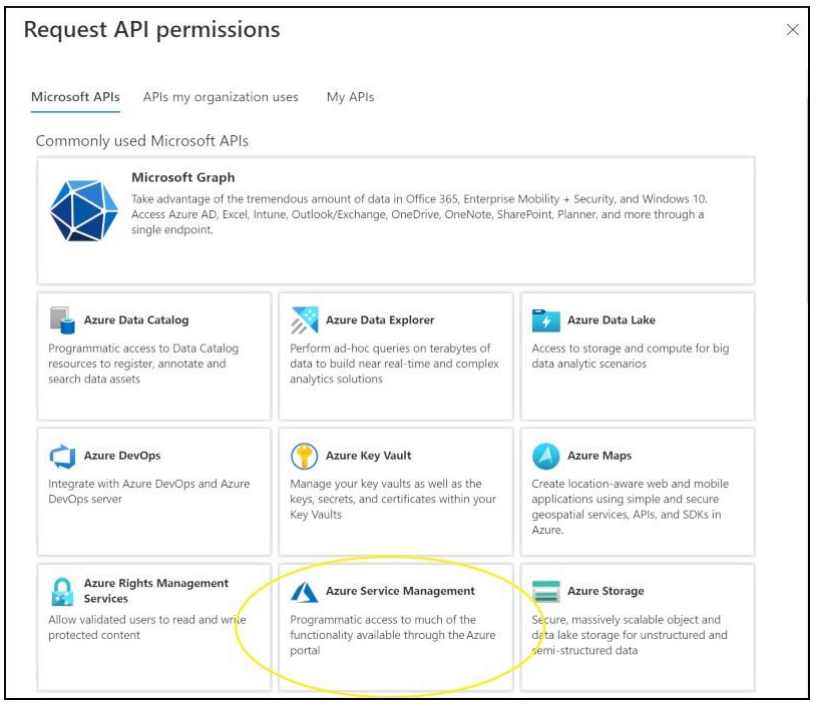


a. Expand **User** checkbox **User.Read.All**

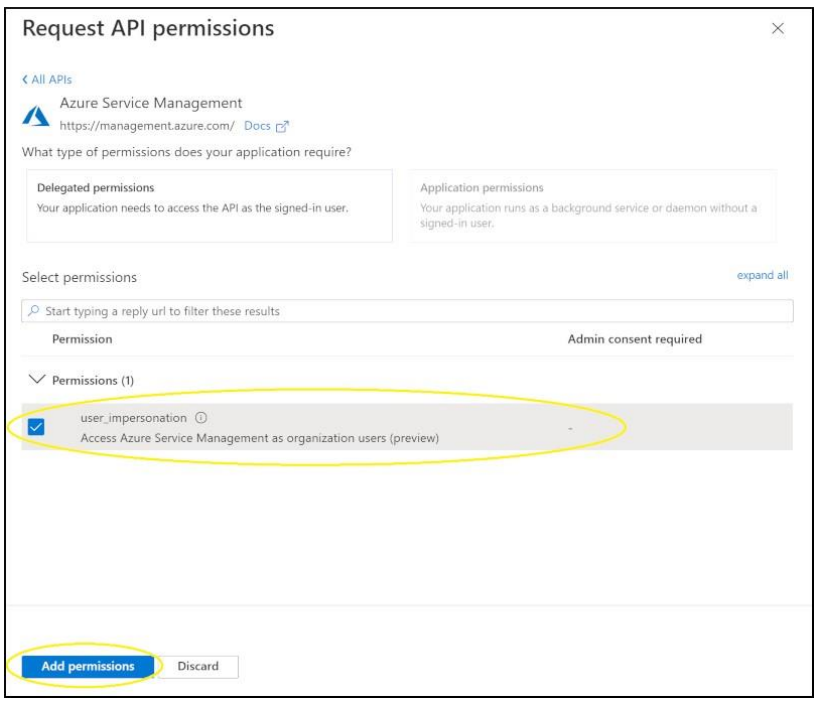
b. Expand **Group** checkbox **Group.Read.All**

c. Select **Add permissions**.

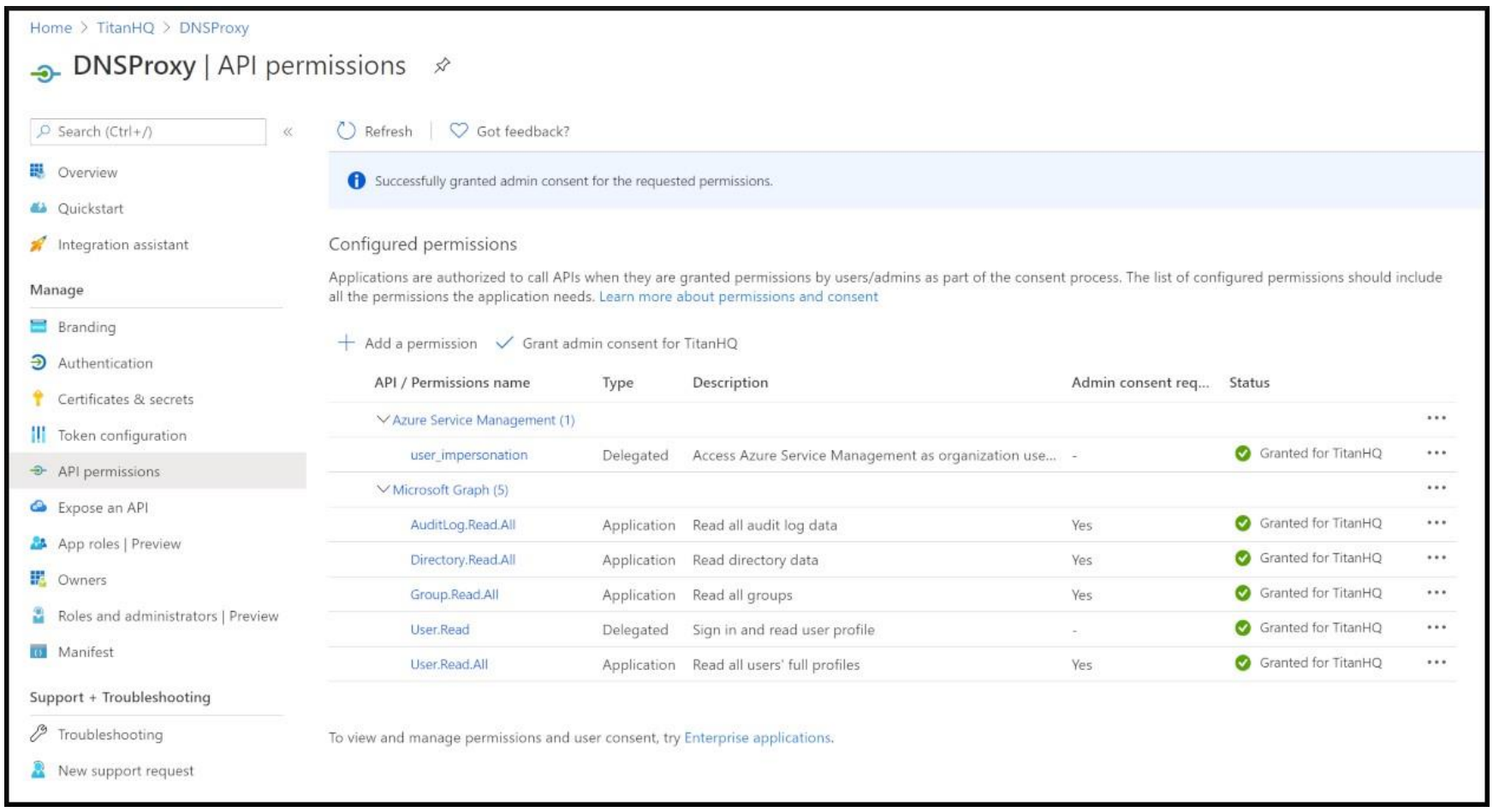
5. On the **Request API permissions page**, locate **Azure Service Management**.



6. Expand **Permissions** checkbox **user_impersonate** and Select **Add permissions**.



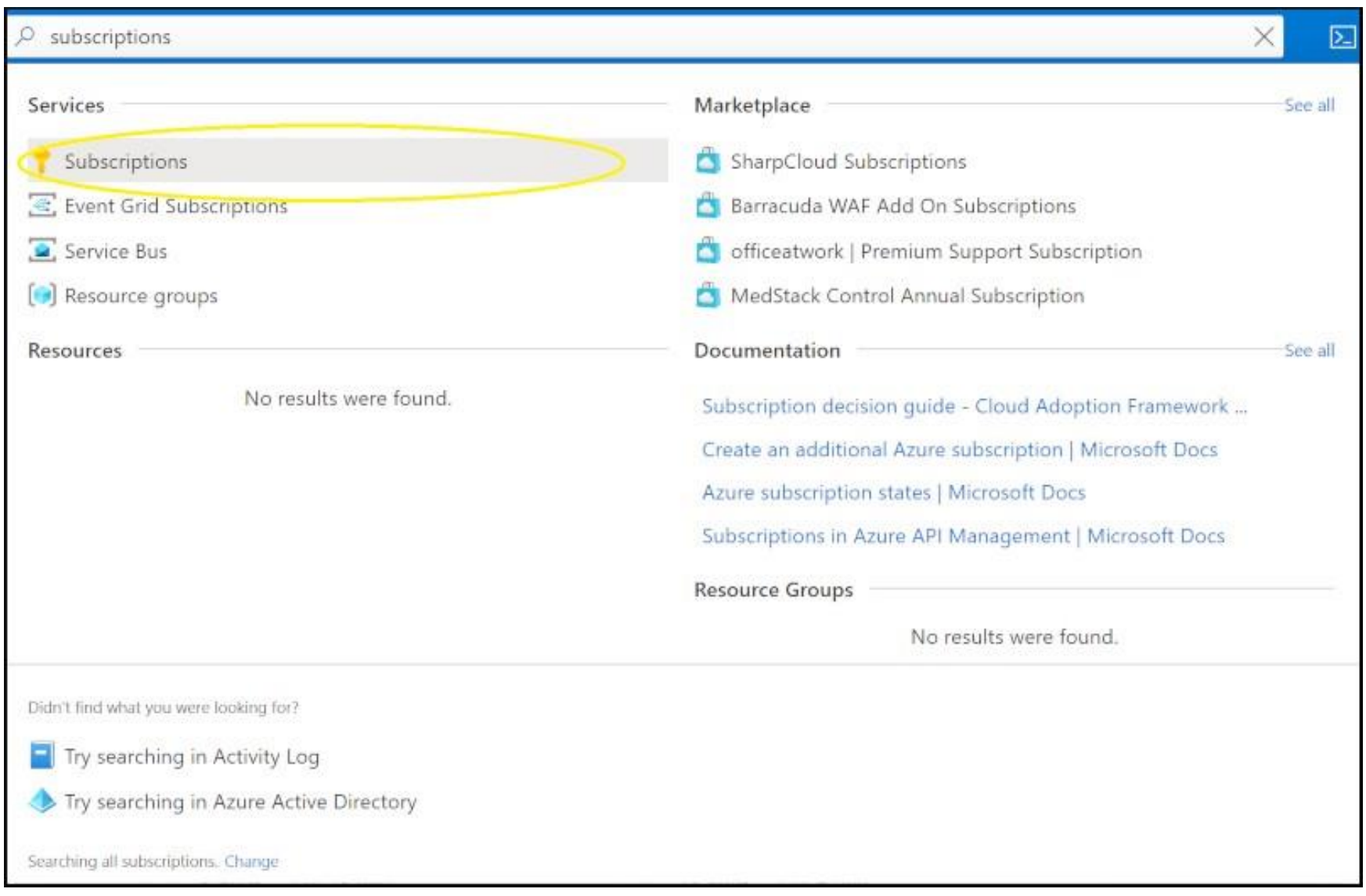
7. On the **DNSProxy Application - API Permissions** page, select **Grant admin consent**.



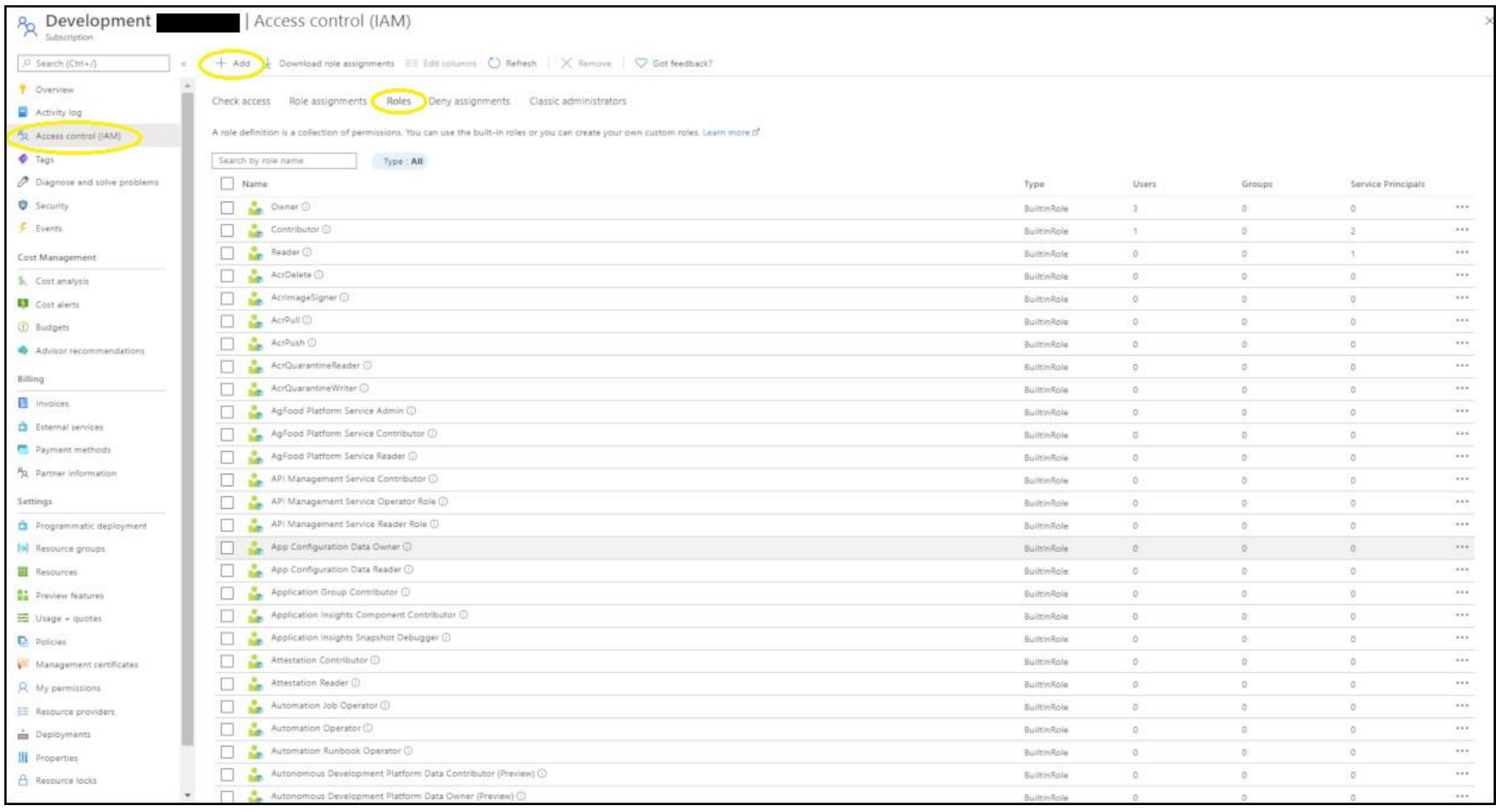
Add Custom Role Assignment

Custom roles are used to harden access of the DNSProxy application rather than using the Azure built-in permission which are currently more liberal with access rights.

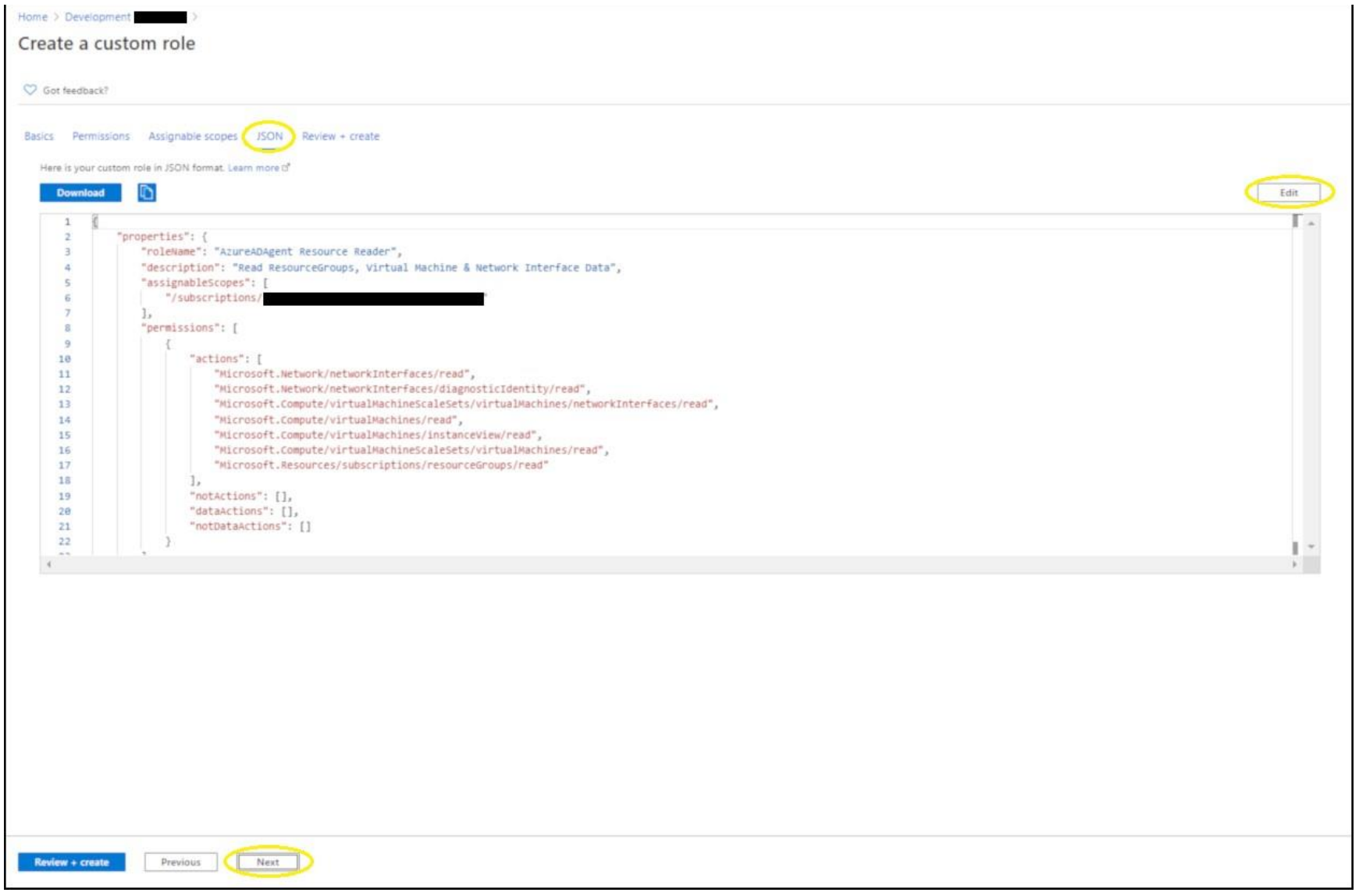
1. In the **Search Bar** type **subscriptions**, Select **subscriptions** from the results.



2. On the **Subscriptions page**, locate **Access control (IAM)**, Select **Roles**, Click on **+ Add**, and Select **Add custom role**.



3. On the **Custom Role page**, Select **JSON**, and Click on **Edit**.

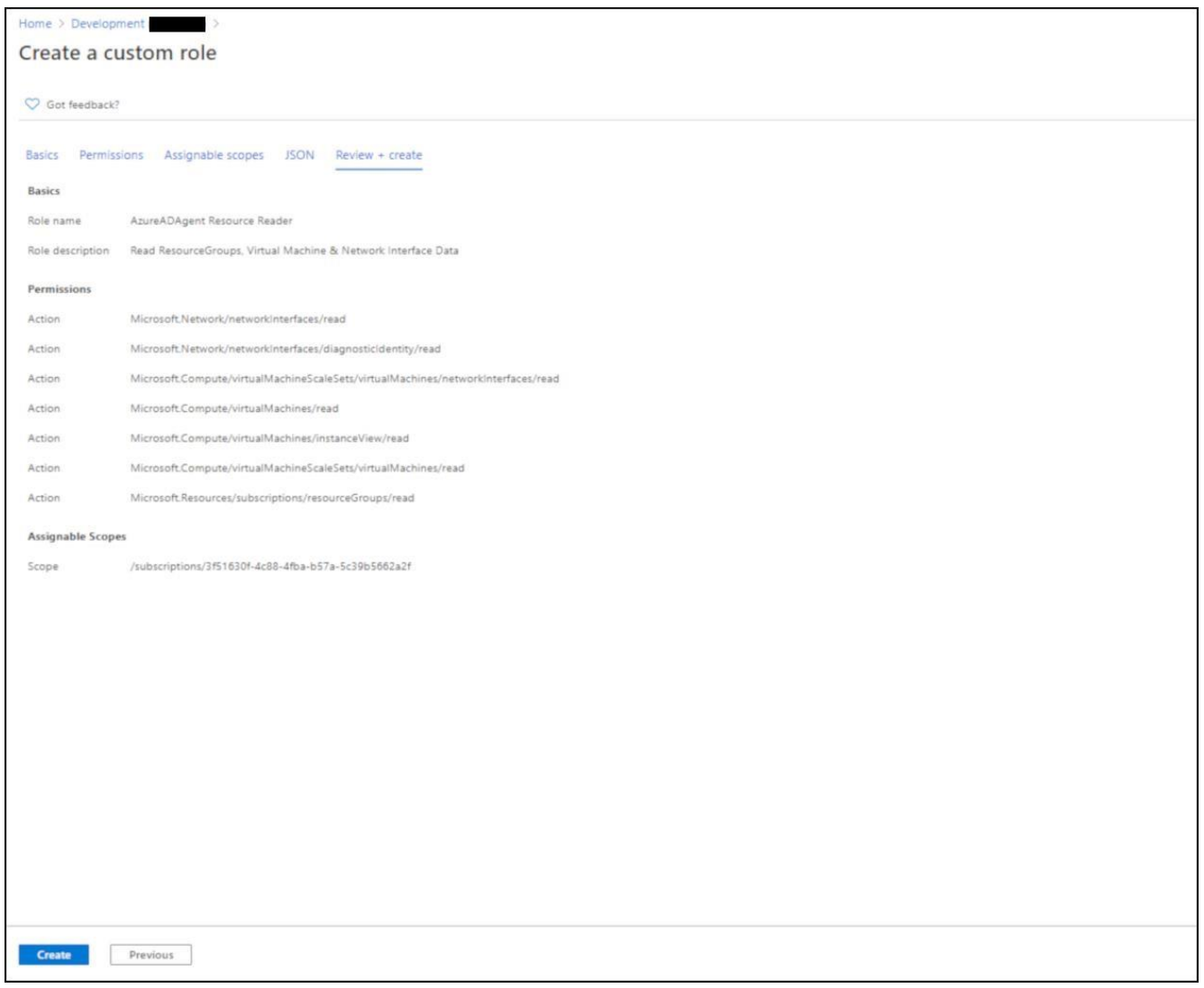


a. Copy & paste the following JSON into the text box. b. Click on **Next**

```
{
    "properties": {
        "roleName": "AzureADAgent  Resource Reader",
        "description": "Read ResourceGroups, Virtual Machine & Network Interface Data",
        "assignableScopes": [
            "/subscriptions/3f51630f -4c88-4fba-b57a-5c39b5662a2f"
        ],
        "permissions": [
            {
                "actions": [
                    "Microsoft.Network/virtualNetworks/read",
                    "Microsoft.Network/networkInterfaces/read",
                    "Microsoft.Network/networkInterfaces/diagnosticIdentity/read",
                    "Microsoft.Compute/virtualMachineScaleSets/virtualMachines/networkInterfaces/read",
```

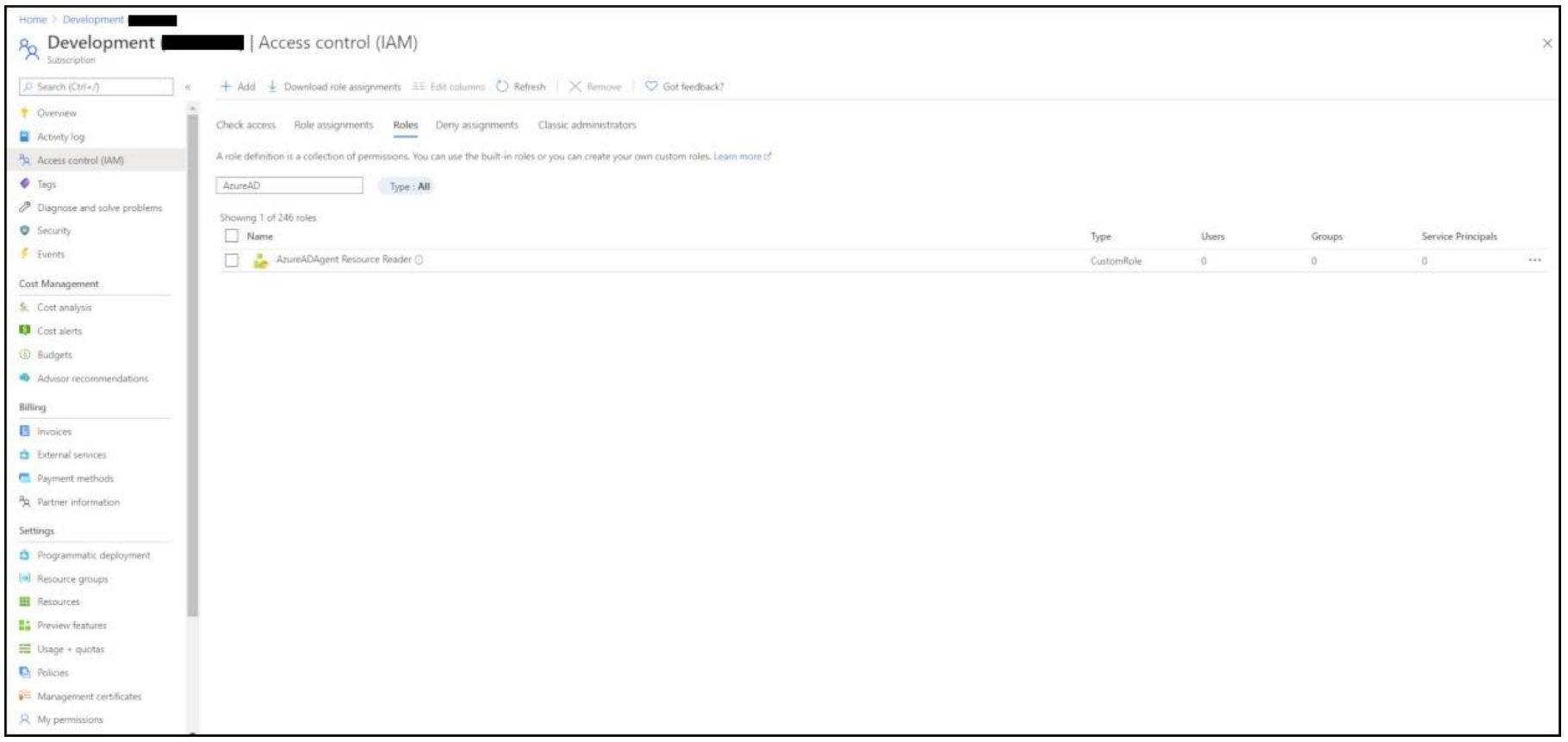
```
                    "Microsoft.Compute/virtualMachines/read",
                    "Microsoft.Compute/virtualMachines/instanceVi   ew/read",
                    "Microsoft.Compute/virtualMachineScaleSets/virtualMachines/read",
                    "Microsoft.Resources/subscriptions/resourceGroups/read"
                ],
                "notActions": [],
                "dataActions": [],
                "notDataActions": []
            }
        ]
    }
}
```

4. Select **Create**.

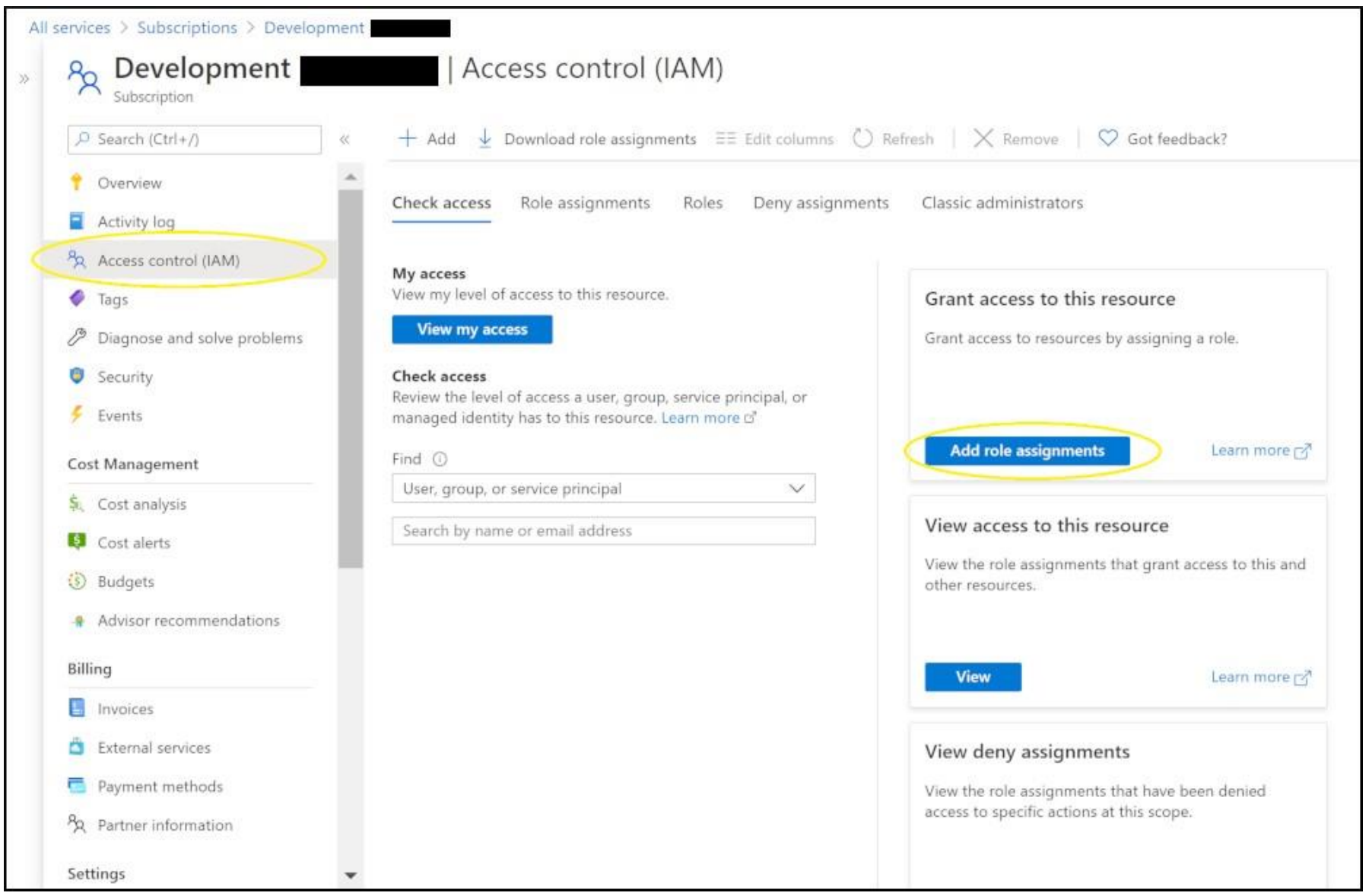


On the **Subscriptions page**, locate **Access control (IAM)**, Select **Roles**, In the roles search bar type **AzureADAgent Resource Reader**.

> IMPORTANT: It may take a few minutes for the custom role to propagate everywhere in the tenant.



5. On the **Subscriptions page**, locate **Access control (IAM)** and Select **Add Role Assignment**.



6. On the **Add role assignment** pane, add:

a. In the **Role** dropdown, select `AzureADAgent Resource Reader`.

b. In the **Assign access to** dropdown, select `User, group, or service principal`.

c. Select **DNSProxy**.

d. Click **Save**.

Gather configuration settings

This section shows you how to get the following settings for your tenant:

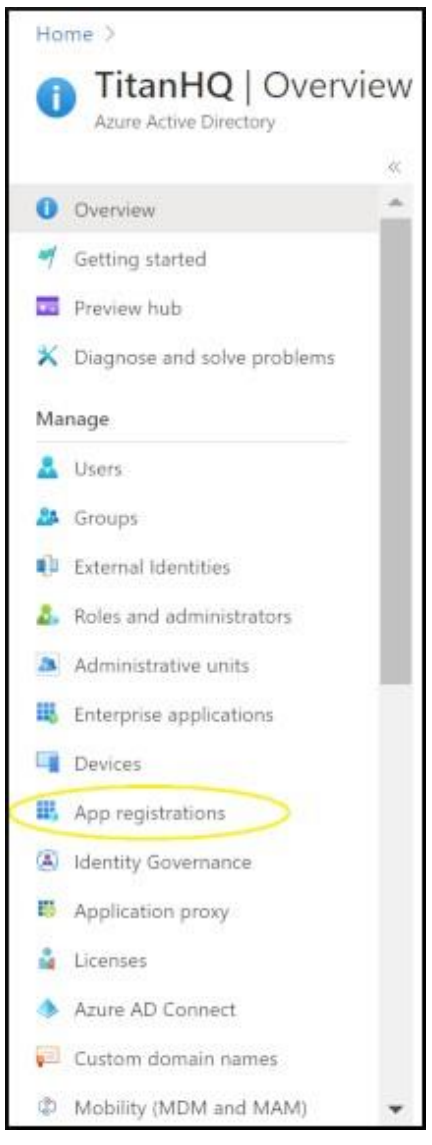
- Client ID
- Client secret

Get your application's client ID

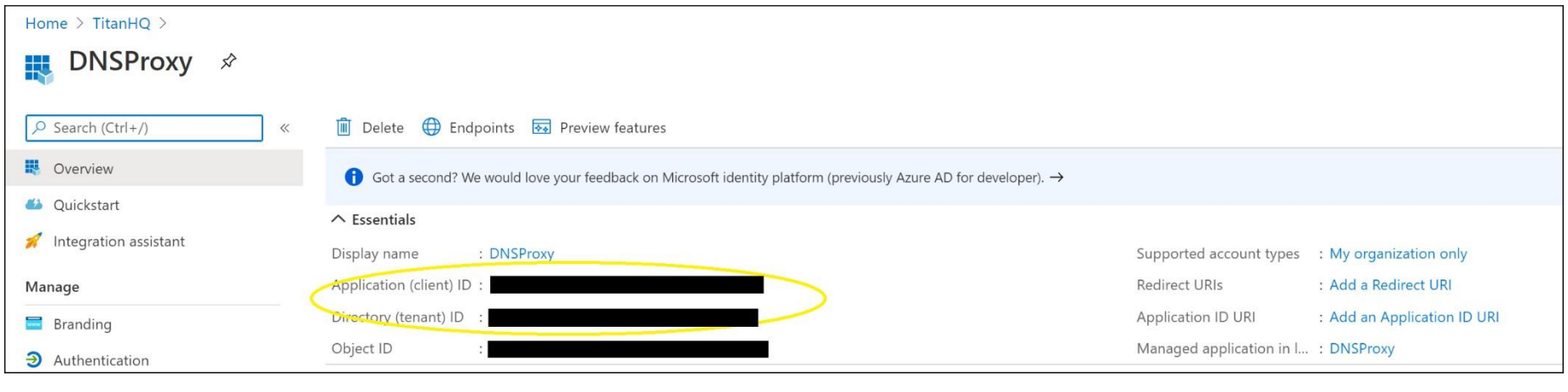
To get your application's client ID:

1. In the Azure portal, on the left navigation pane, click **Azure Active Directory**.

2. Select your application from the **App Registrations** page.



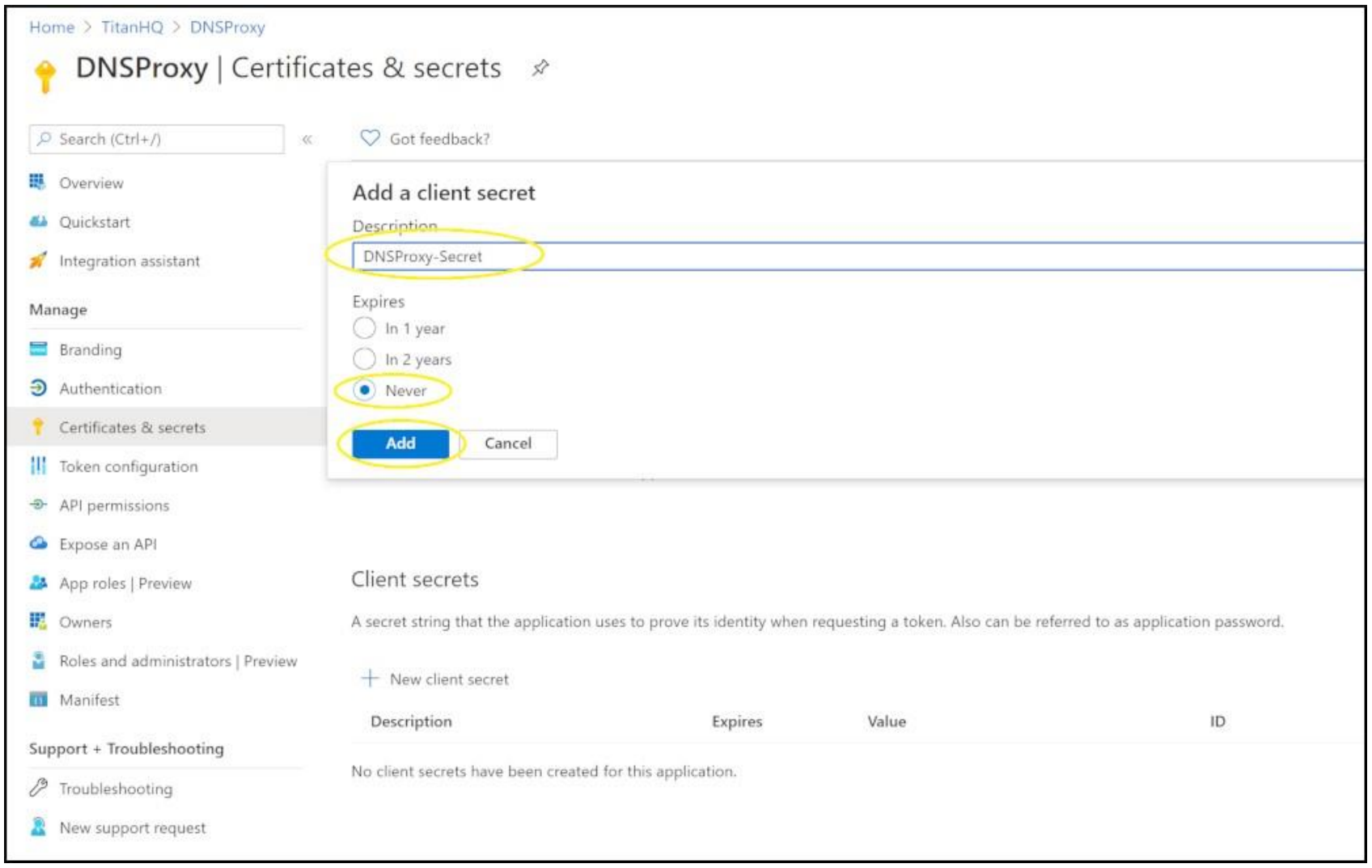
3. Take note of your **Client ID**.



Get your application's client secret

To get your application's client secret:

1. Select **Certificates and Secrets** on the **API Application** page, in the **Client Secrets** section, click **+ New Client Secret**.



2. On the **Add a client secret** page, add:

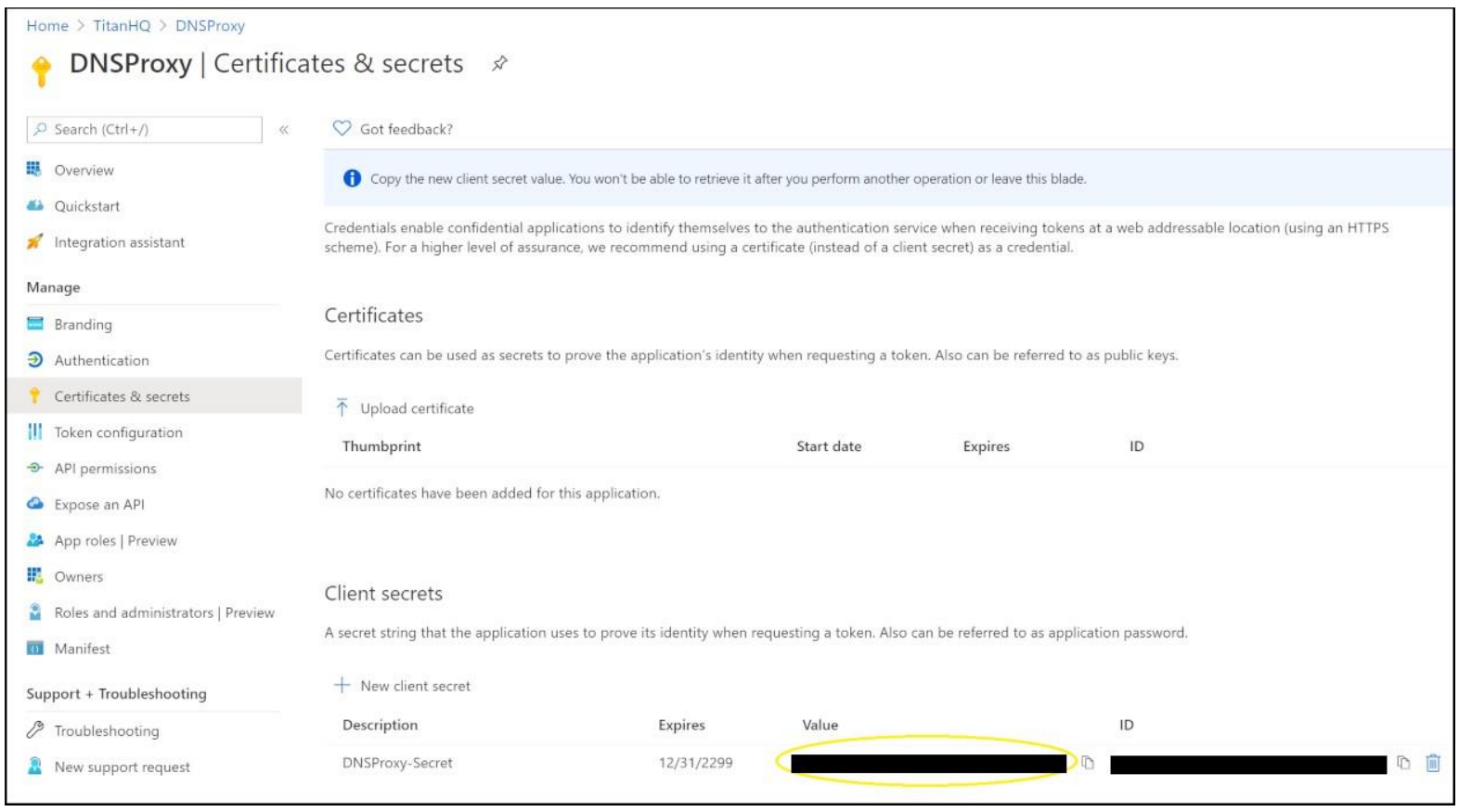
a. In the **Description** textbox, type `DNSProxy Secret`.

b. As **Expires**, select **Never**.

c. Click **Save**.

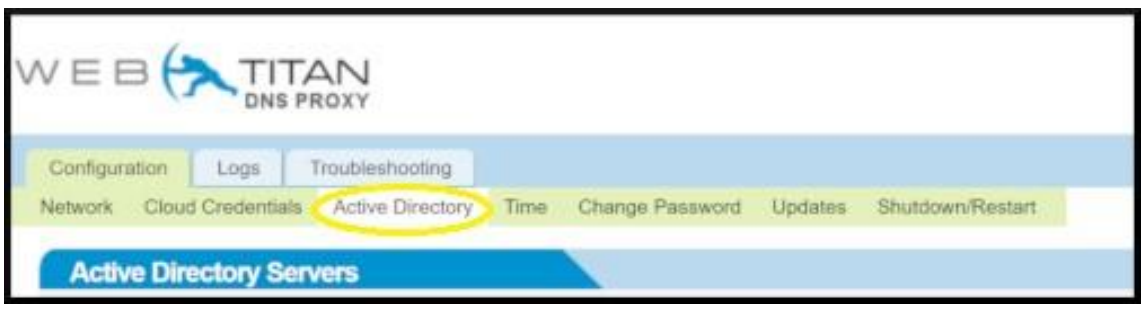
d. Copy the key value.

3. Take note of your **client secret**.

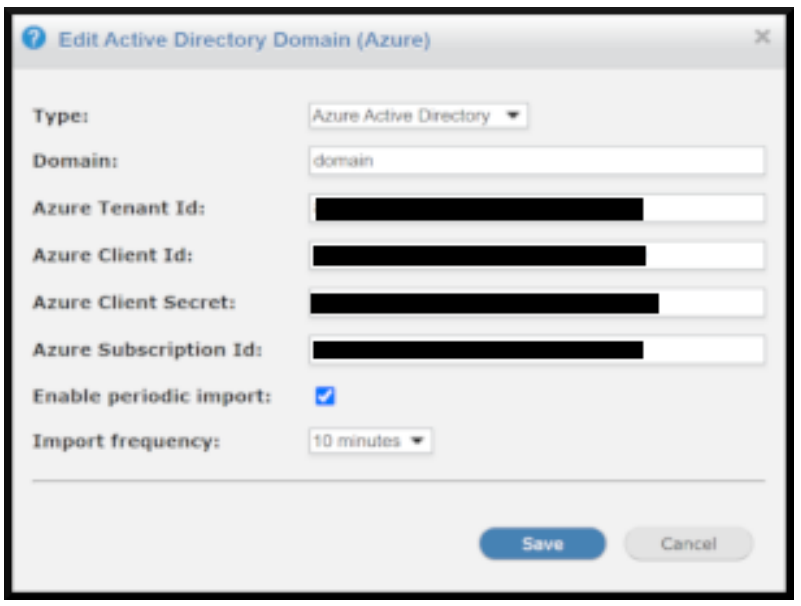


Configure WebTitan Azure AD Enterprise App on DNS Proxy

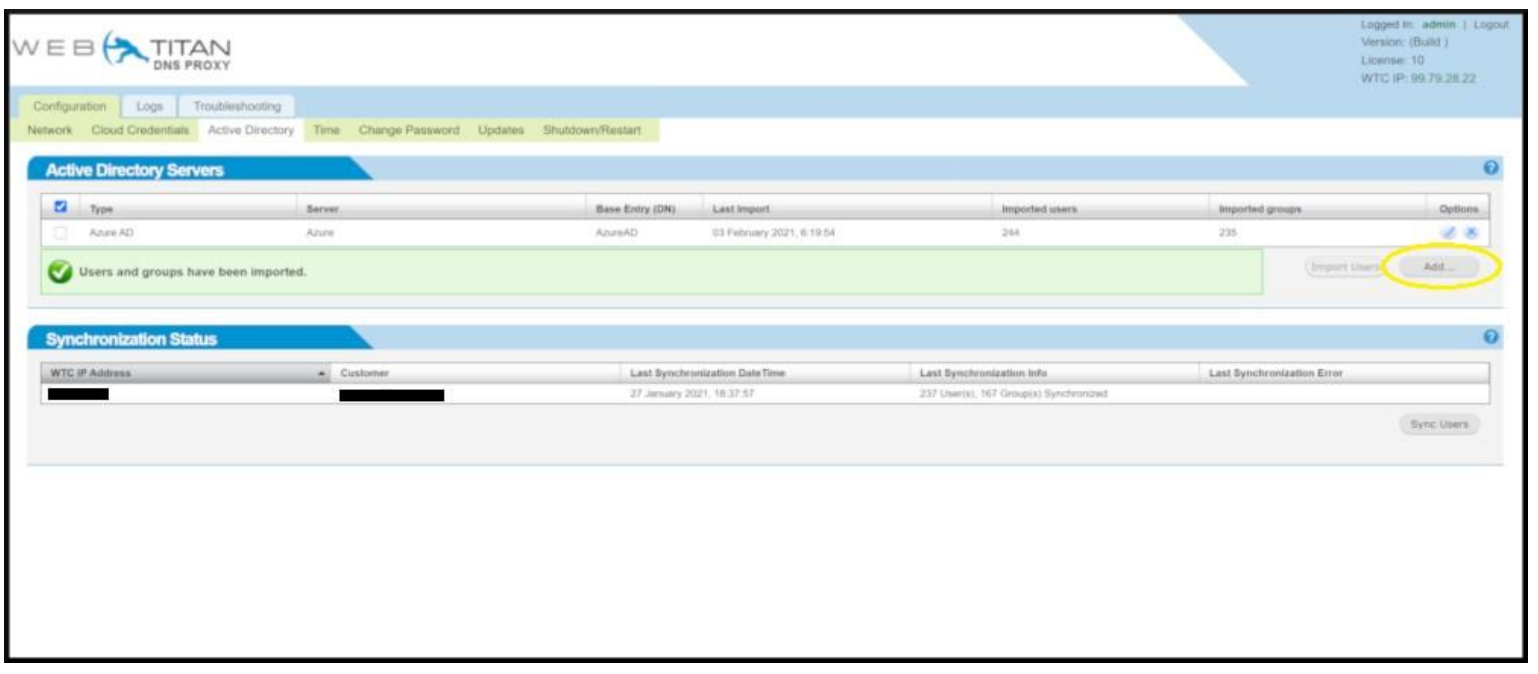
1. On your DNSProxy locate **Active Directory** and Click on **Add**.



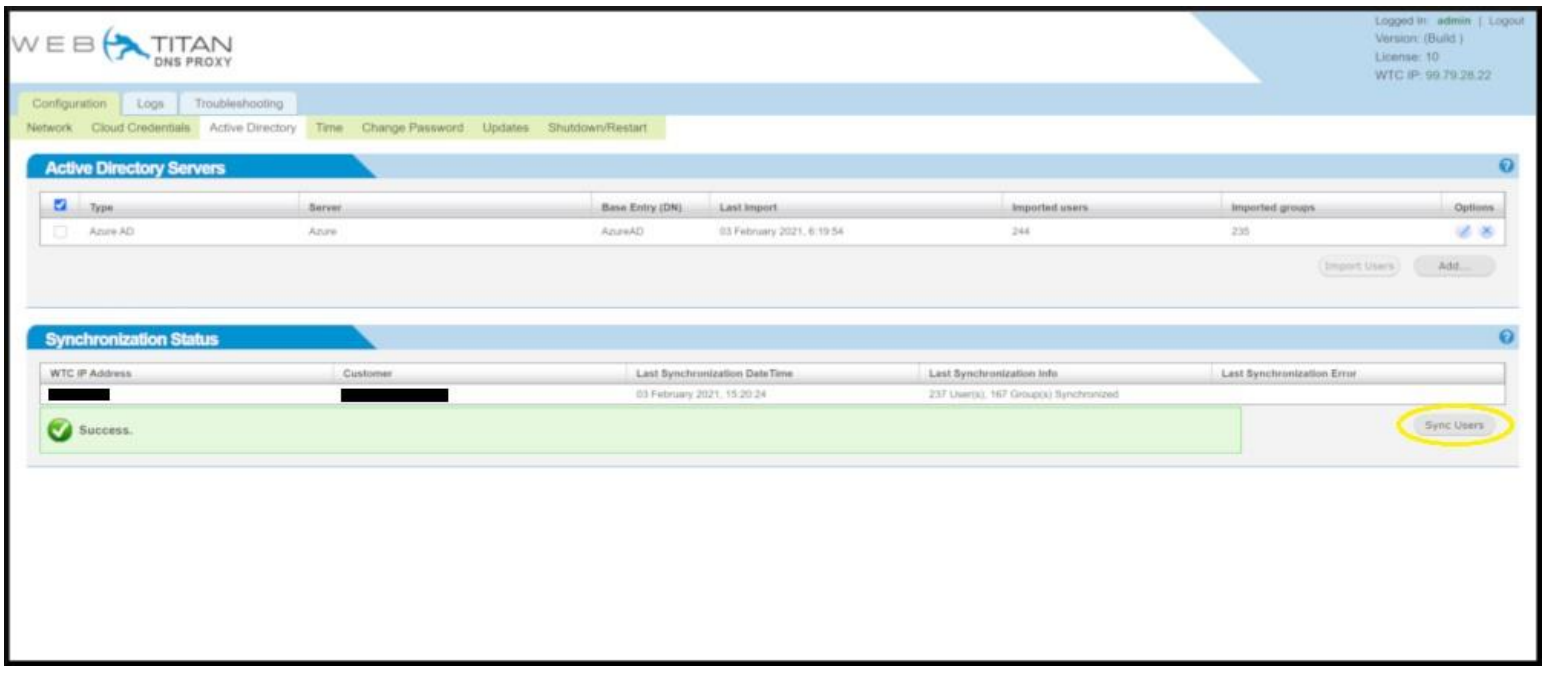
2. On the **Add Active Directory** modal Select **Azure Active Directory** from the dropdown menu.



3. On the **Active Directory Servers table** Select Azure AD tickbox and Click on **Import Users**.



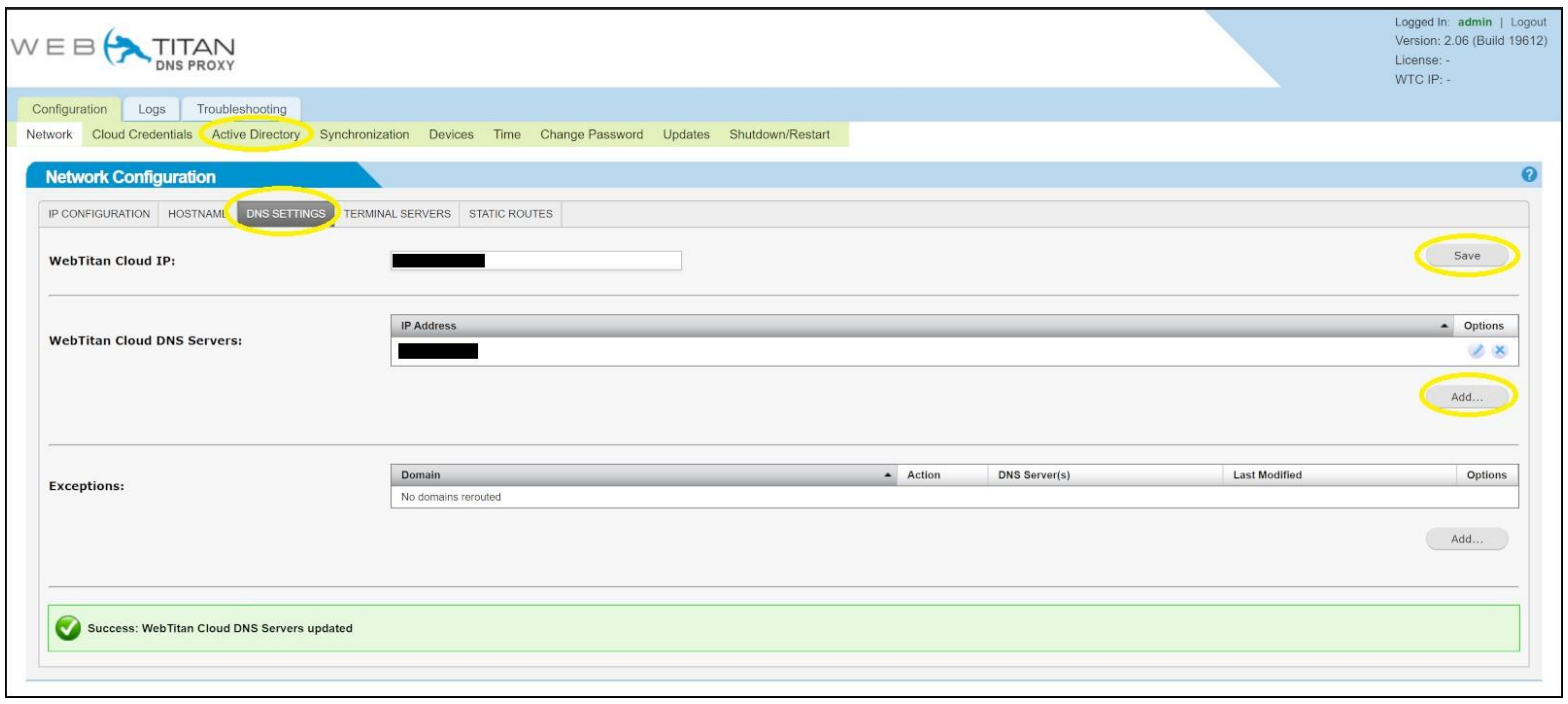
4. On the **Synchronization Status table** Click on **Import Users**.



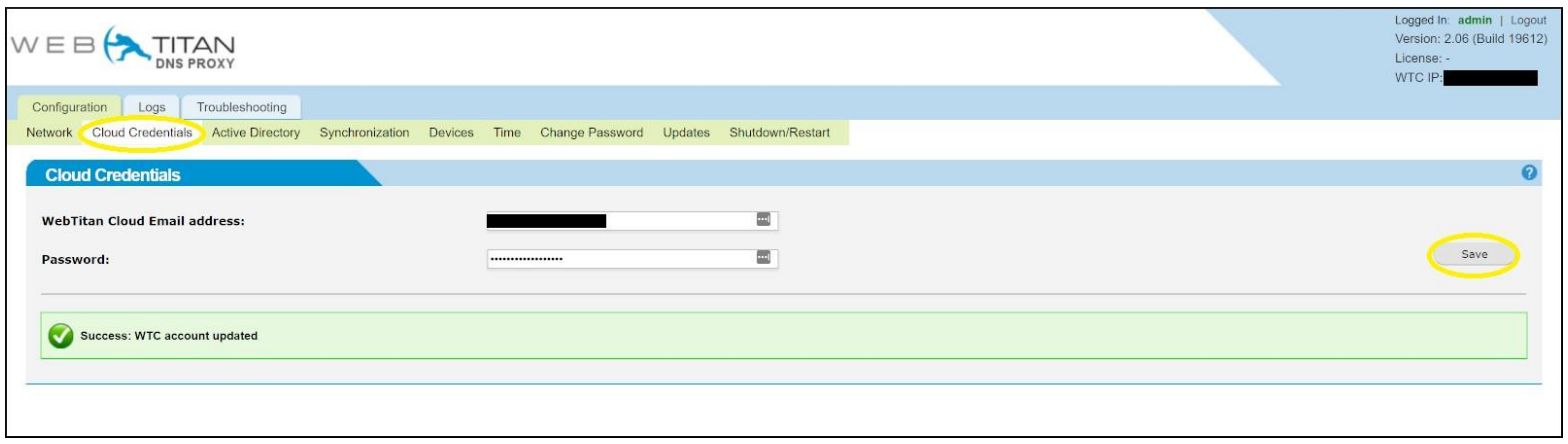
Configure Multiple DNSProxies with WebTitan AzureAD Enterprise App

Primary DNSProxy Basic Setup

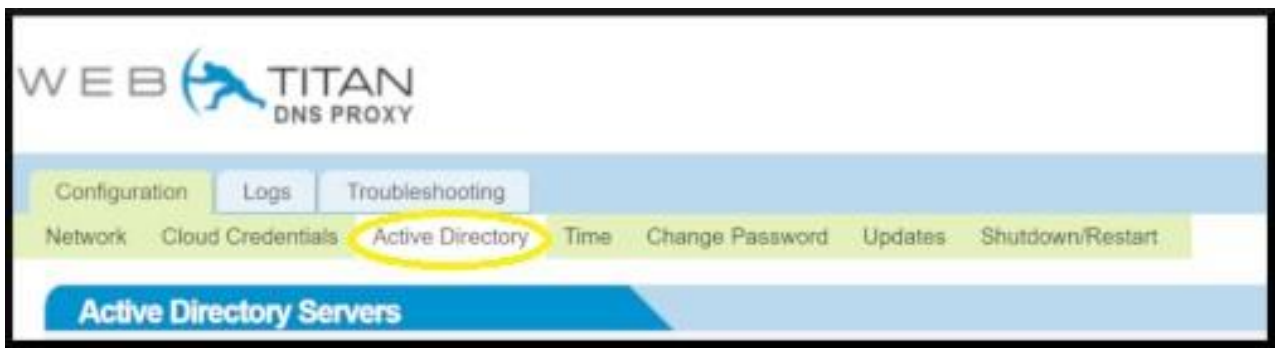
1. On your DNSProxy locate **Network->DNS Settings** a. Enter your **WebTitan Cloud IP** in the text area and Click **Add** b. Click **Add** in the **WebTitan Cloud DNS Servers** section and Enter your WTC IP into the modal box.



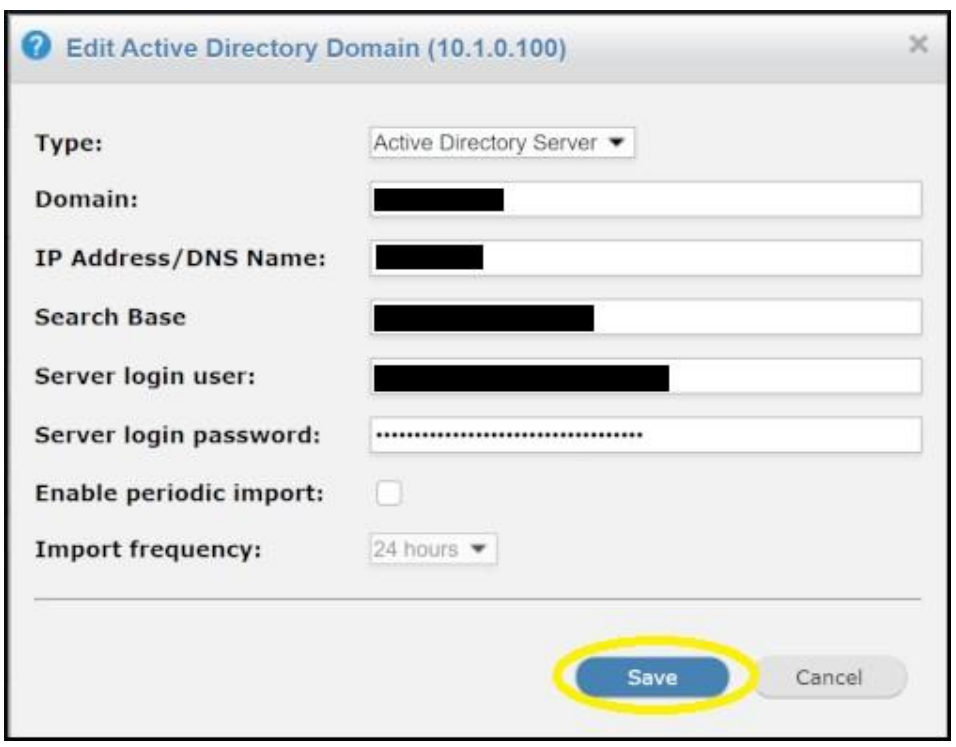
2. Locate the **Cloud Credentials** tab, enter the credentials of **Customer Account from your WTC** & Click **Save**



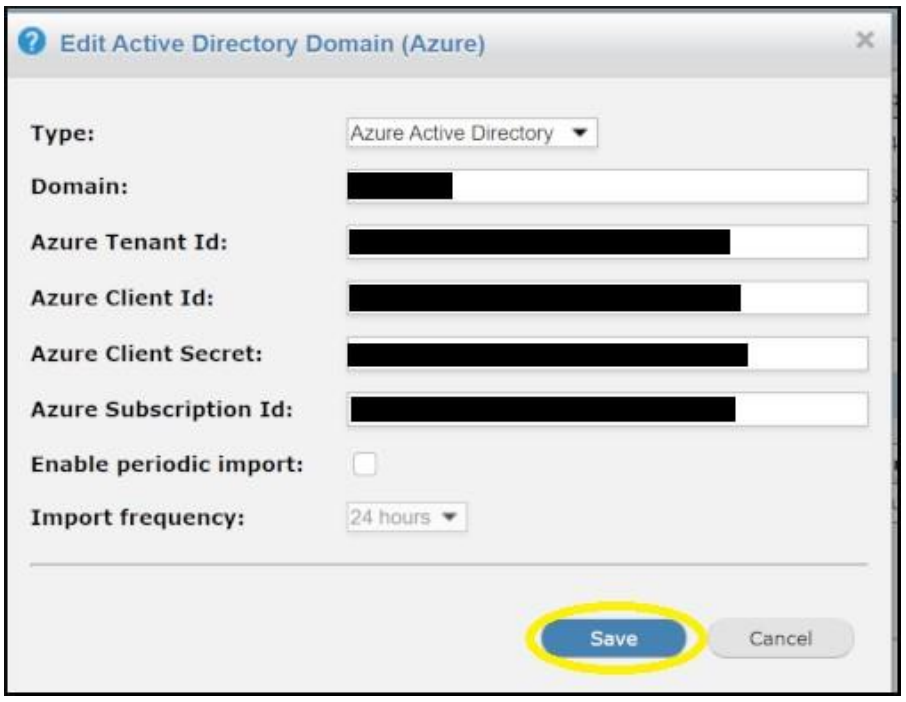
3. On your DNSProxy locate **Active Directory** and Click on **Add**.



4. On the **Add Active Directory** modal Select **Active Directory** from the dropdown menu.

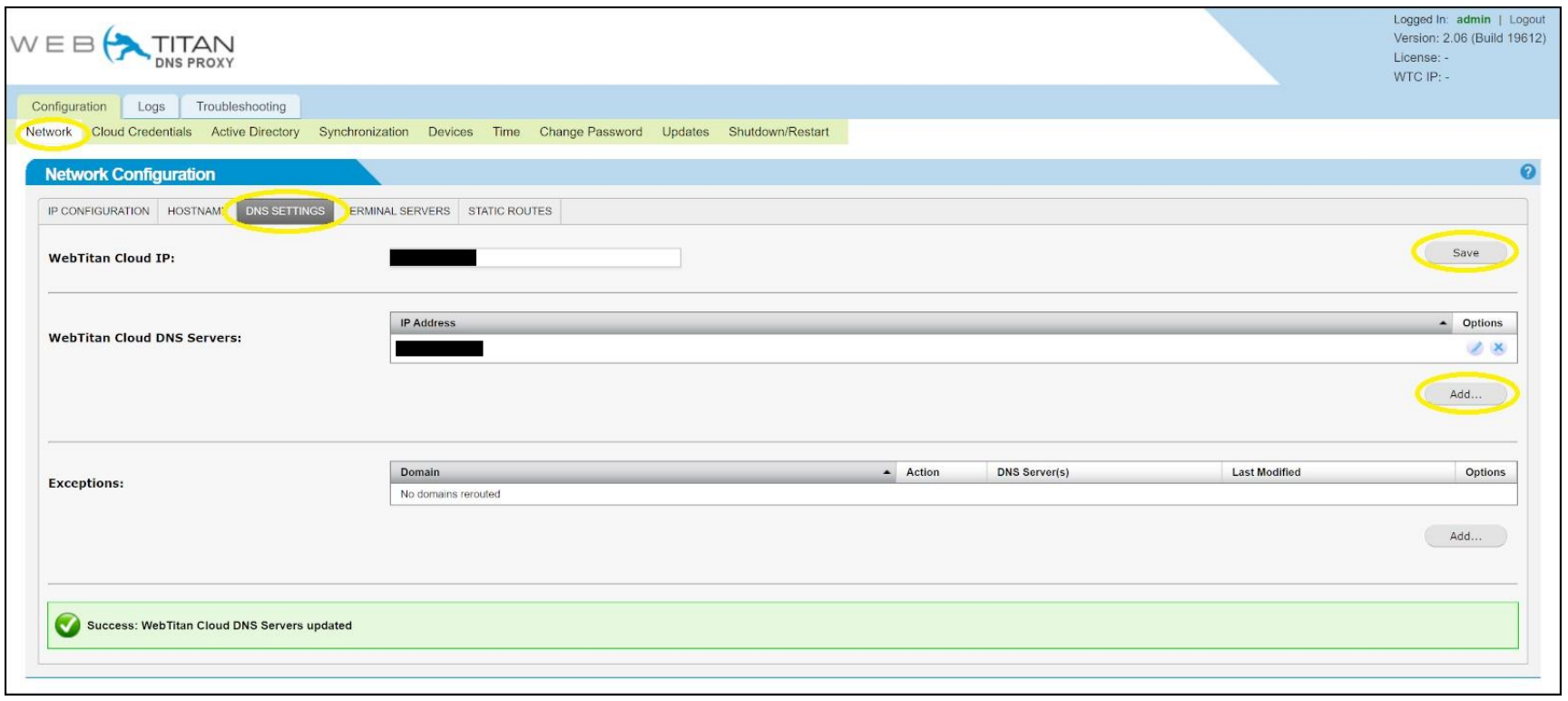


5. On the **Add Active Directory** modal Select **Azure Active Directory** from the dropdown menu.

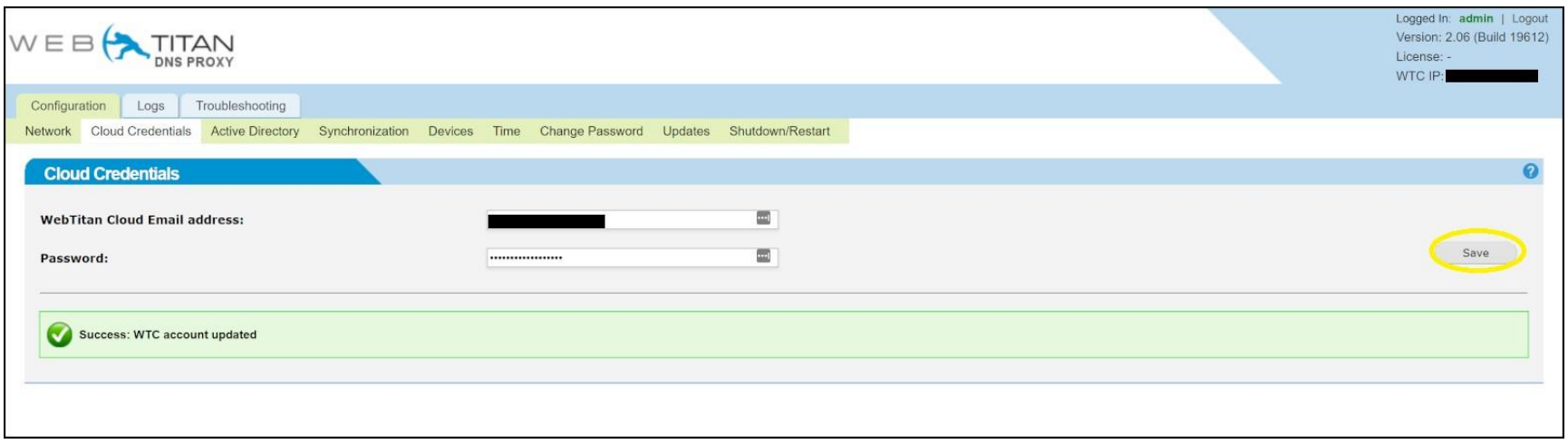


Secondary DNSProxy Basic Setup

1. On your DNSProxy locate **Network->DNS Settings** a. Enter your **WebTitan Cloud IP** in the text area and Click **Add** b. Click **Add** in the **WebTitan Cloud DNS Servers** section and Enter your WTC IP into the modal box.

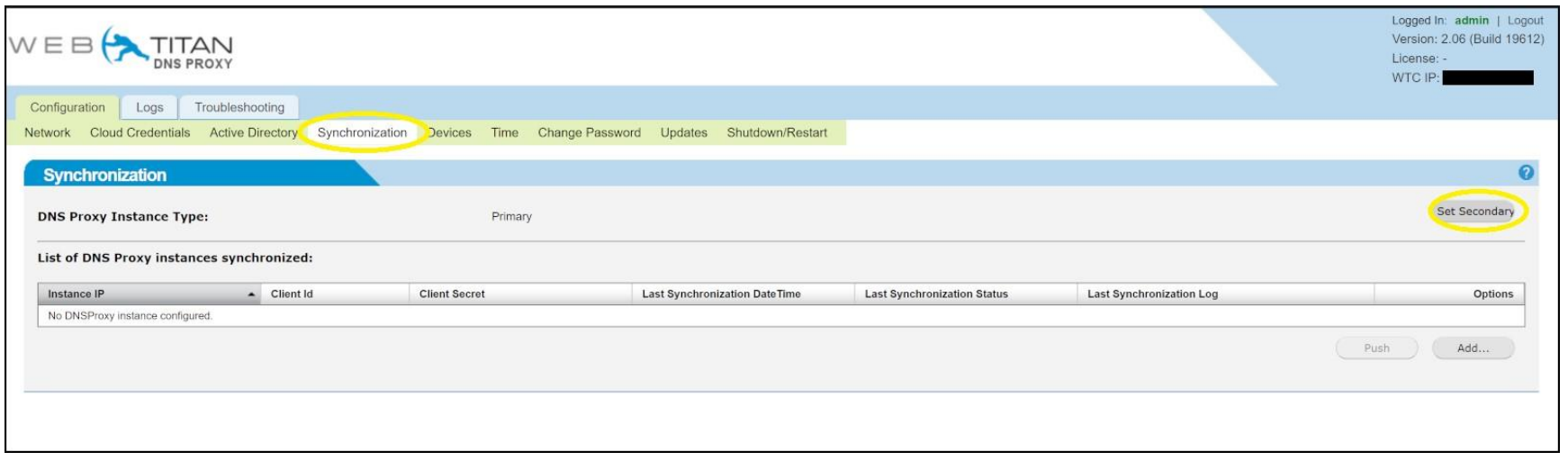


2. Locate the **Cloud Credentials** tab, enter the credentials of **Customer Account from your WTC** & Click **Save**



Secondary DNSProxy Synchronization Setup

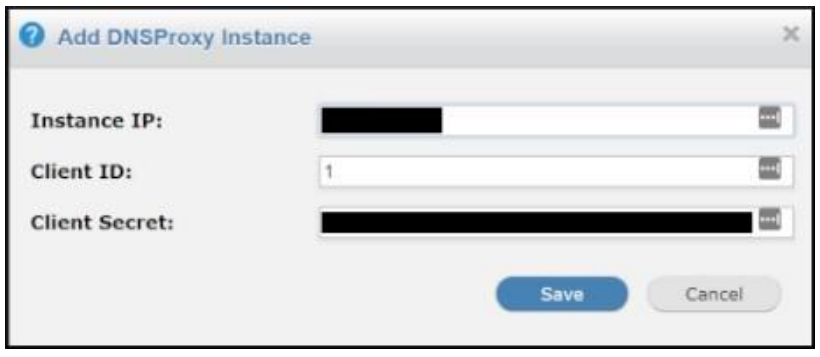
1. On your DNSProxy locate **Synchronization** and Click on **Set Secondary**.

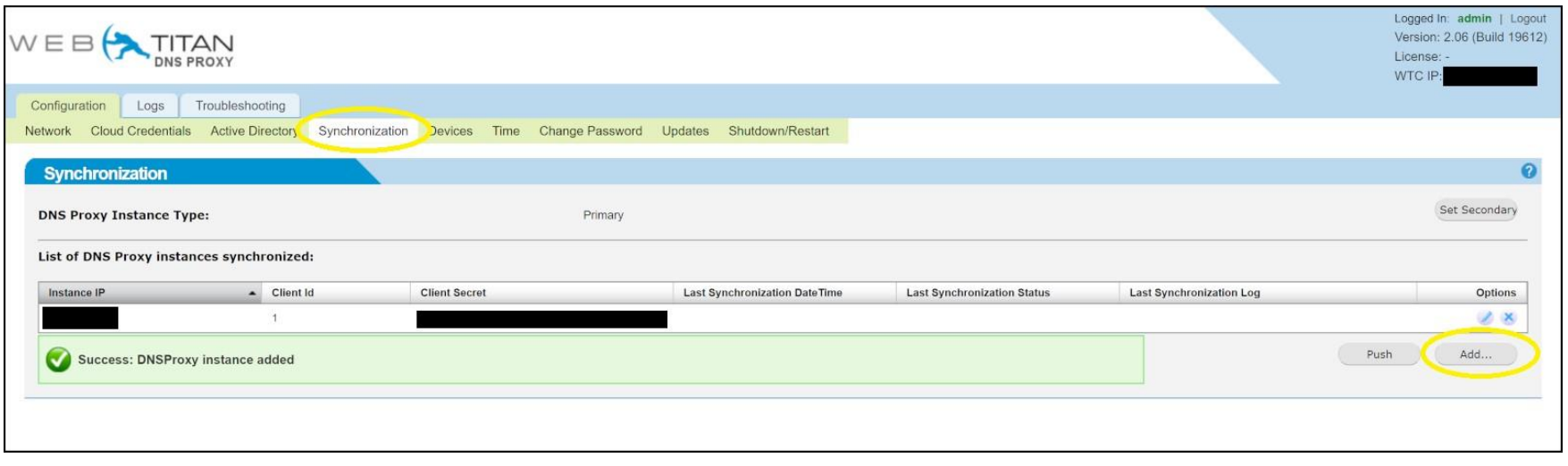


2. Take Note of the Credentials Displayed for entry onto the Primary DNSProxy

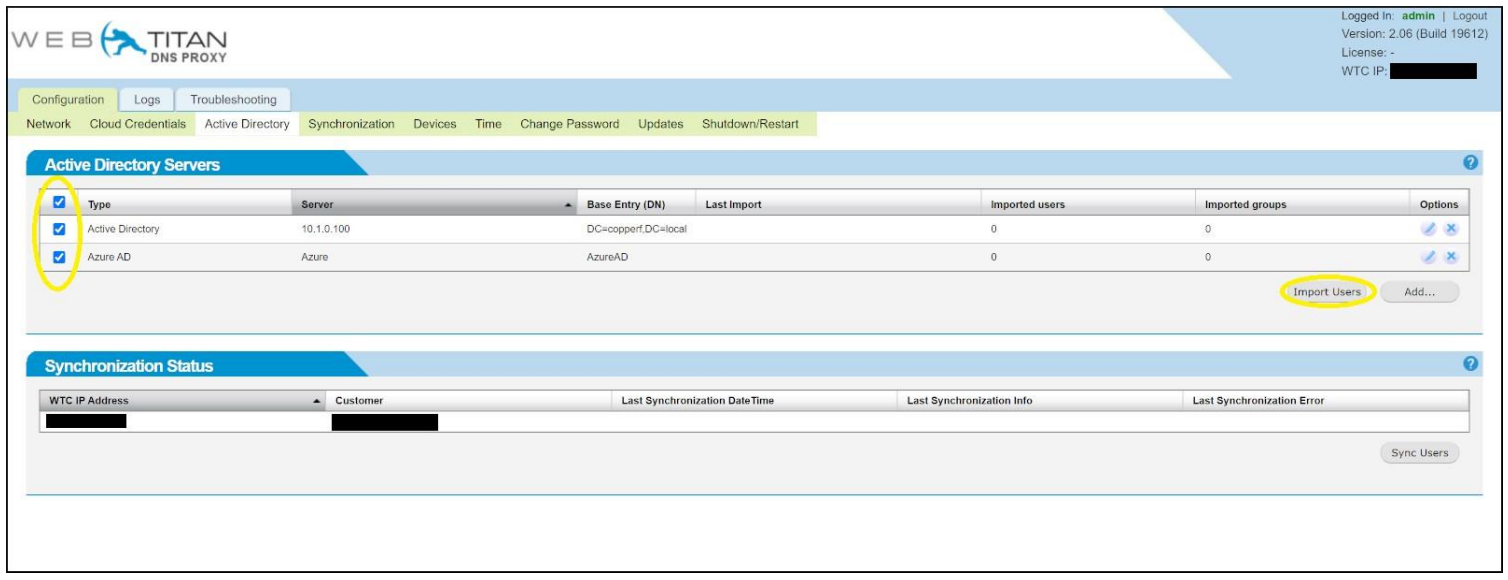
Primary DNSProxy Synchronization Setup

1. Locate the **Synchronization** tab, enter the credentials for **Secondary DNSProxy** & Click **Save**.

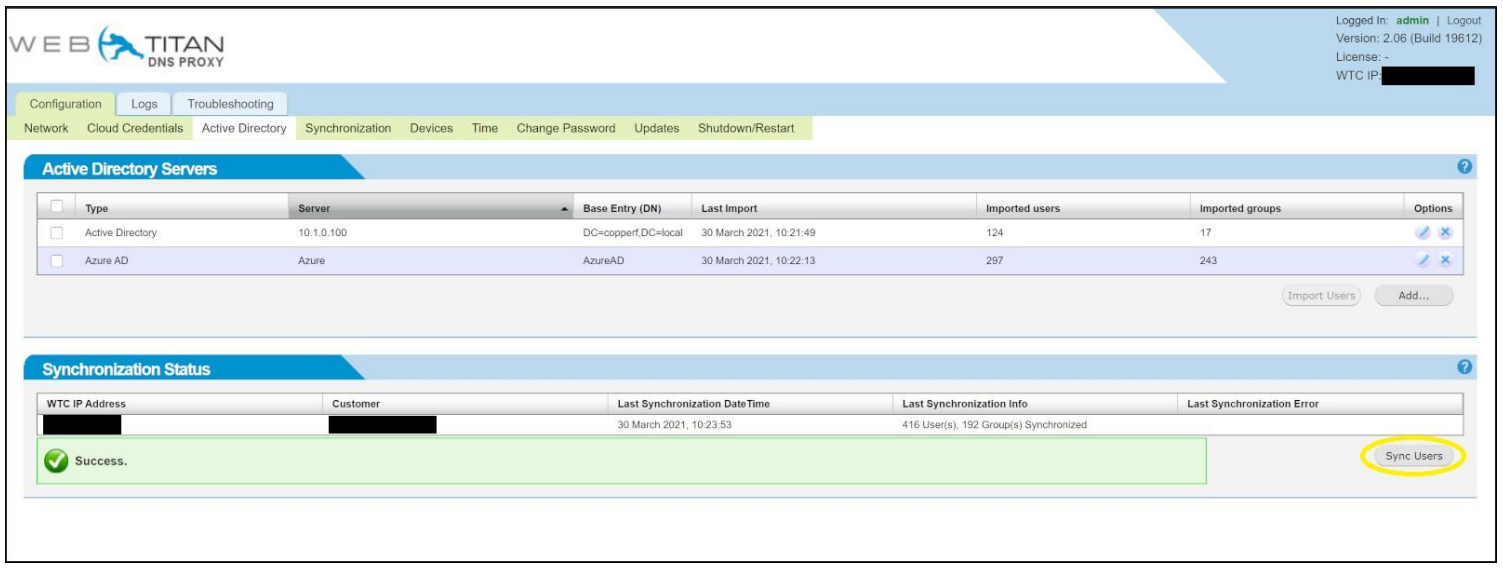




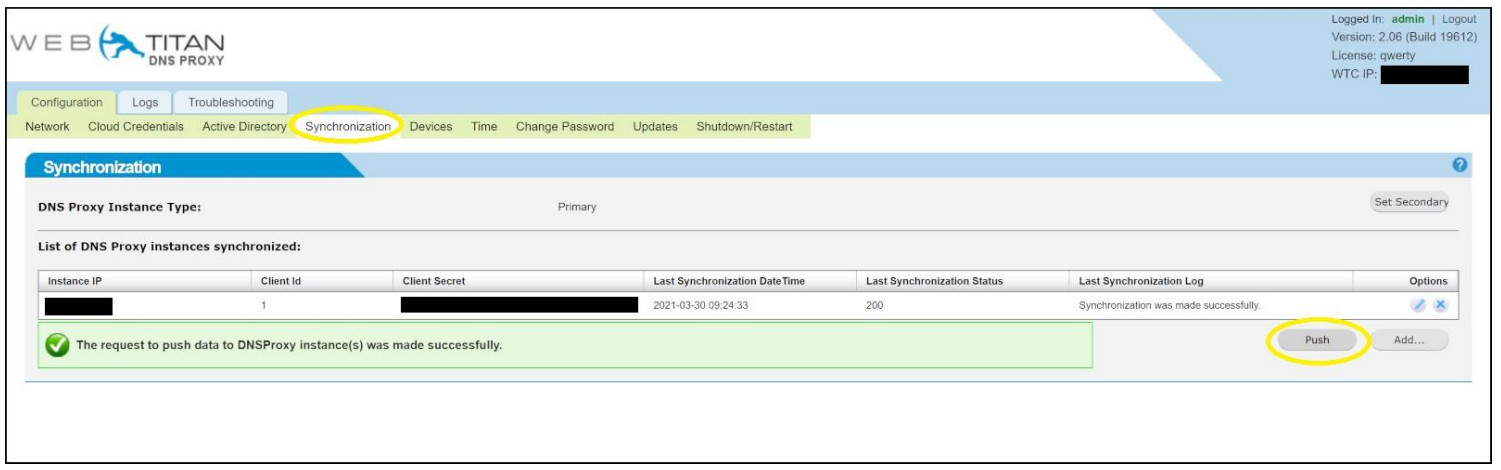
2. On the **Active Directory Servers table** Select Azure AD tick box and Click on **Import Users**.



3. On the **Synchronization Status table** Click on **Import Users**.

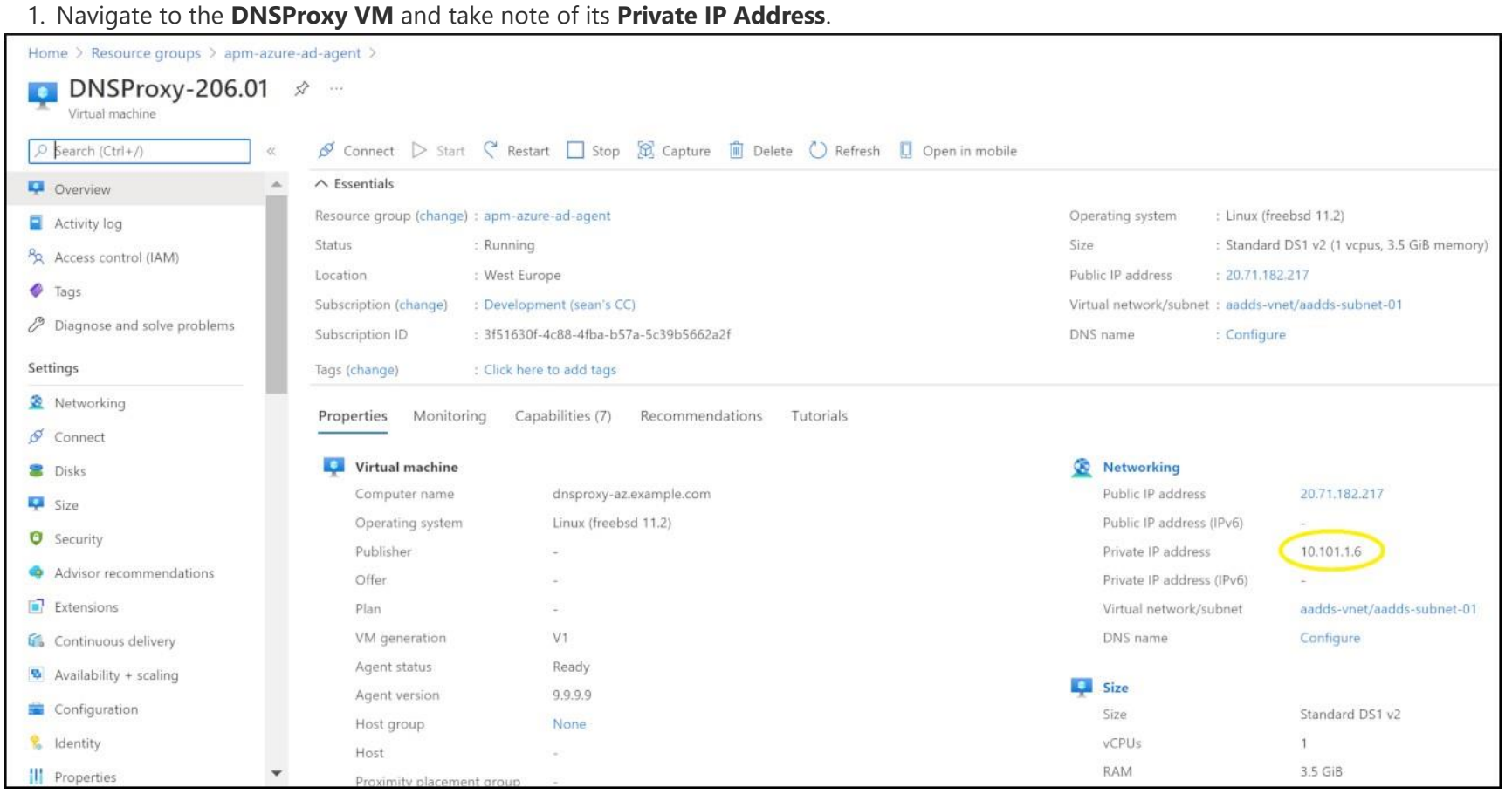


4. Locate the **Synchronization** tab and Click on **Push**.

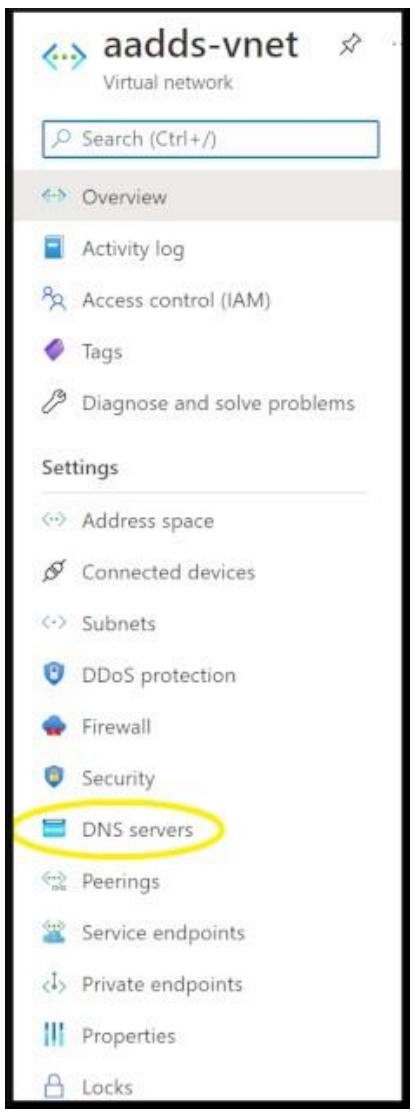


Configure Azure VNet to use DNSProxy

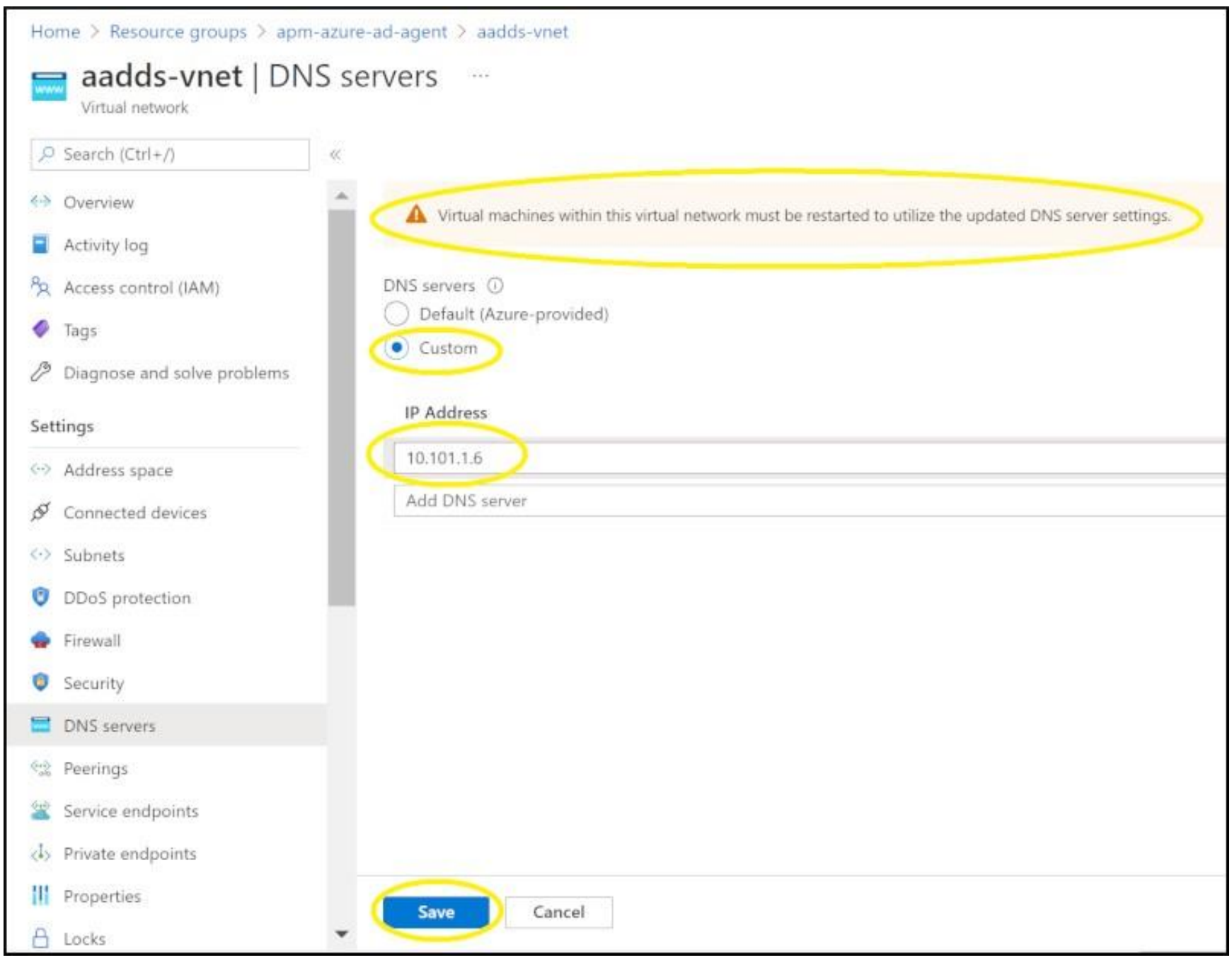
1. Navigate to the **DNSProxy VM** and take note of its **Private IP Address**.



2. Navigate to the **VNet page**, in the left-hand navigation pane locate **DNS Servers** & Click on it.



3. On the DNS Server page, Select custom and Add the Private IP of the DNSProxy.

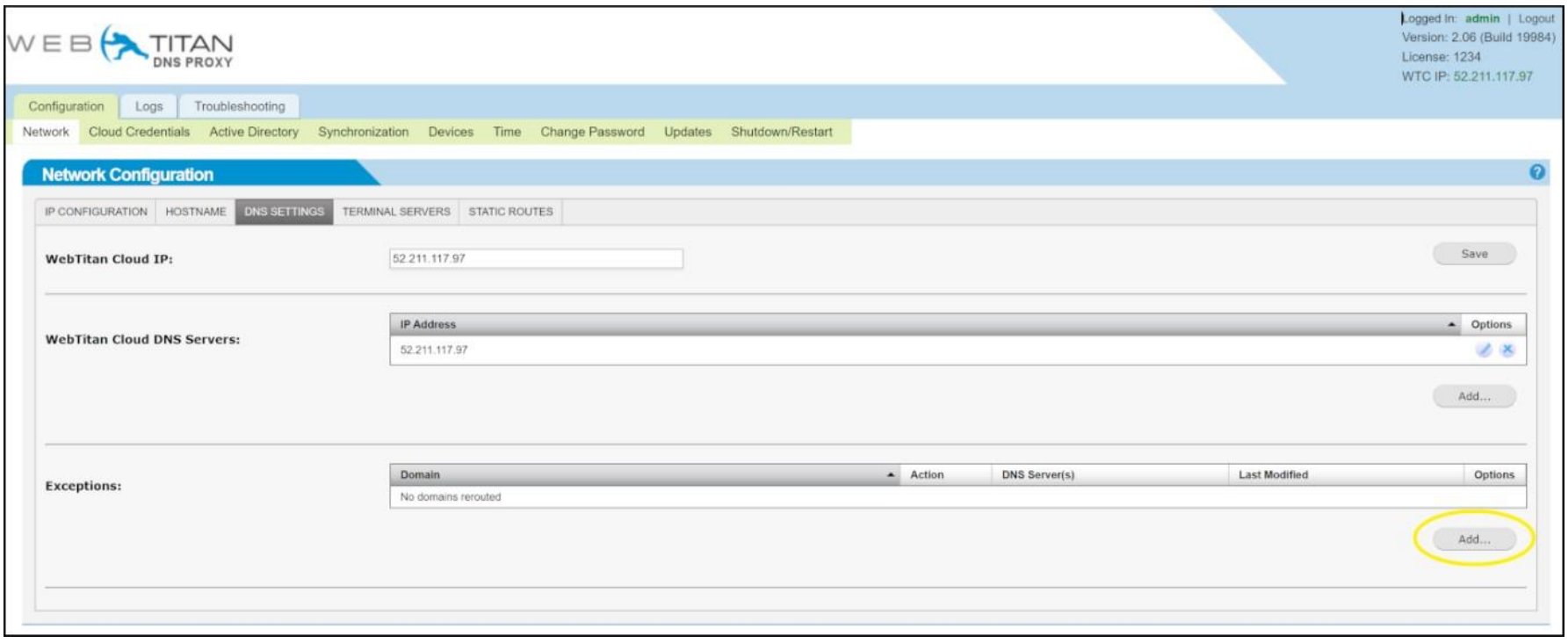


IMPORTANT: You must restart the DNSProxy immediately after this step.

IMPORTANT: All VM must be restarted for them to use the DNSProxy for processing DNS request, they will keep using the oldDNS settings till restarted.

Configure DNSProxy with Azure Specific Redirects

1. On DNSProxy Navigate to **Configuration->Network->DNS Settings**



2. On the **Redirect Pane** click on **Add**

The following list is by no means exhaustive:

```
core.windows.net
internal.cloudapp.net
prd.aadg.trafficmanager.net
prd.ags.akadns.net
prd.ags.msidentity.com
prd.ags.trafficmanager.net
privatelink.msidentity.com
```

These domains have been observed as windows azure related lookups that generate a lot of noise in the history on WTC.

Troubleshooting DNSProxy Deployment

Error: The access token is from the wrong issuer

`az account get-access-token` needs to be applied in Azure Cloud Shell

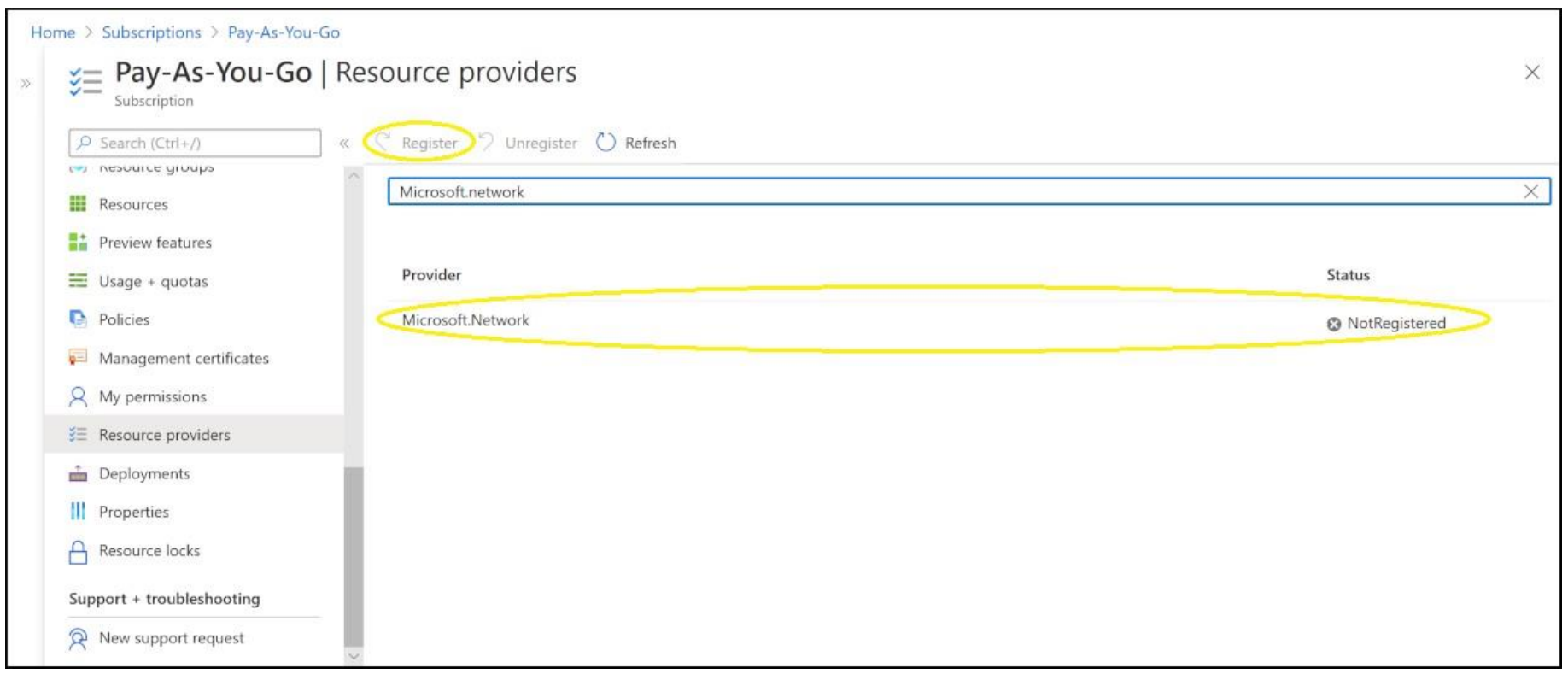
```
The access token is from the wrong issuer 'https://sts.windows.net/642f1773-84ee-4a58-81b8-1b2c13bdaa93/'. It must match the tenant 'https://sts.windows.net/896d169b-ffab-4391-8348-fc1b4644dfdd/' associated with this subscription. Please use the authority (URL) 'https://login.windows.net/896d169b-ffab-4391-8348-fc1b4644dfdd' to get the token. Note, if the subscription is transferred to another tenant there is no impact to the services, but information about new tenant could take time to propagate
```

Error: The subscription is not registered to use namespace

The Resource provider for the mentioned namespace needs to be made available to your tenant.

```
StatusCode: 409
ReasonPhrase: Conflict
ErrorCode: MissingSubscriptionRegistration
ErrorMessage: The subscription is not registered to use namespace 'Microsoft.Network'. See https://aka.ms/rps-not-found for how to register subscriptions.
Additional details:
    Code: MissingSubscriptionRegistration
    Message: The subscription is not registered to use namespace 'Microsoft.Network'. See https://aka.ms/rps-not-found for how to register subscriptions.
```

Navigate to **Resource providers**, search for the missing namespace, **highlight** it and click on **register**



Troubleshooting WebTitan AzureAD Enterprise App

This section lists the common error messages you may run into while accessing activity reports using the Microsoft Graph API and steps for their resolution.

Error: Tenant is not B2C or tenant doesn't have premium license

Accessing sign-in reports requires an Azure Active Directory premium 1 (P1) license. If you see this error message while accessing sign-ins, make sure that your tenant is licensed with an Azure AD P1 license.

Error: Application missing AAD 'Read directory data' permission

Follow the steps in the [Prerequisites to access the WebTitan AzureAD Enterprise App] to ensure your application is running with the right set of permissions.

Error: Application missing Microsoft Graph API 'Read all audit log data' permission

Follow the steps in the [Prerequisites to access the WebTitan AzureAD Enterprise App] to ensure your application is running with the right set of permissions.

Error: Access token validation failure. Invalid audience.

Follow the steps in the Prerequisites to access the WebTitan AzureAD Enterprise App to ensure your application is running with the right set of permissions.