Azure

NetApp Console setup and administration

NetApp
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Azure

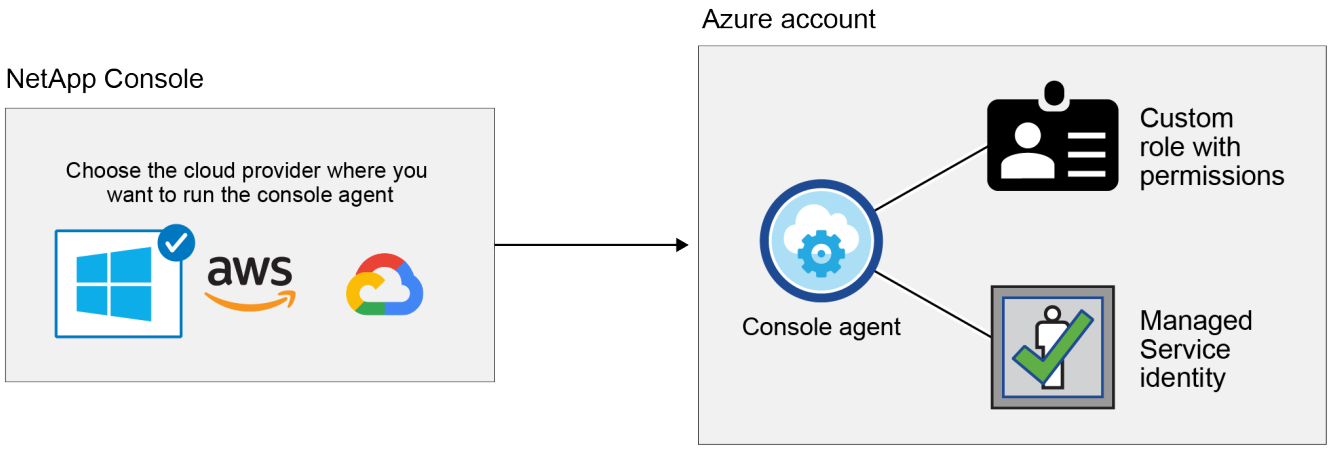
Learn about Azure credentials and permissions in NetApp Console

Learn how the NetApp Console uses Azure credentials to perform actions on your behalf and how those credentials are associated with marketplace subscriptions. Understanding these details can be helpful as you manage the credentials for one or more Azure subscriptions. For example, you might want to learn when to add additional Azure credentials to the Console.

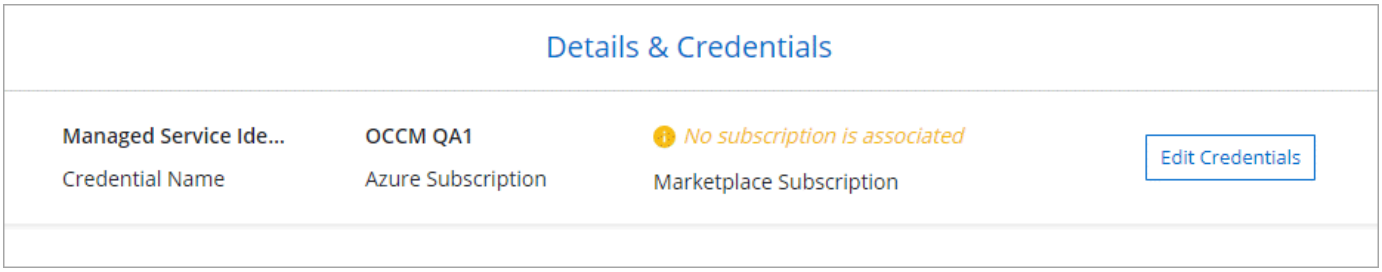
Initial Azure credentials

When you deploy a Console agent from the Console, you need to use an Azure account or service principal that has permissions to deploy the Console agent virtual machine. The required permissions are listed in the Agent deployment policy for Azure.

When the Console deploys the Console agent virtual machine in Azure, it enables a system-assigned managed identity on the virtual machine, creates a custom role, and assigns it to the virtual machine. The role provides the Console with the permissions required to manage resources and processes within that Azure subscription. Review how the Console uses the permissions.



If you create a new system for Cloud Volumes ONTAP, the Console selects these Azure credentials by default:



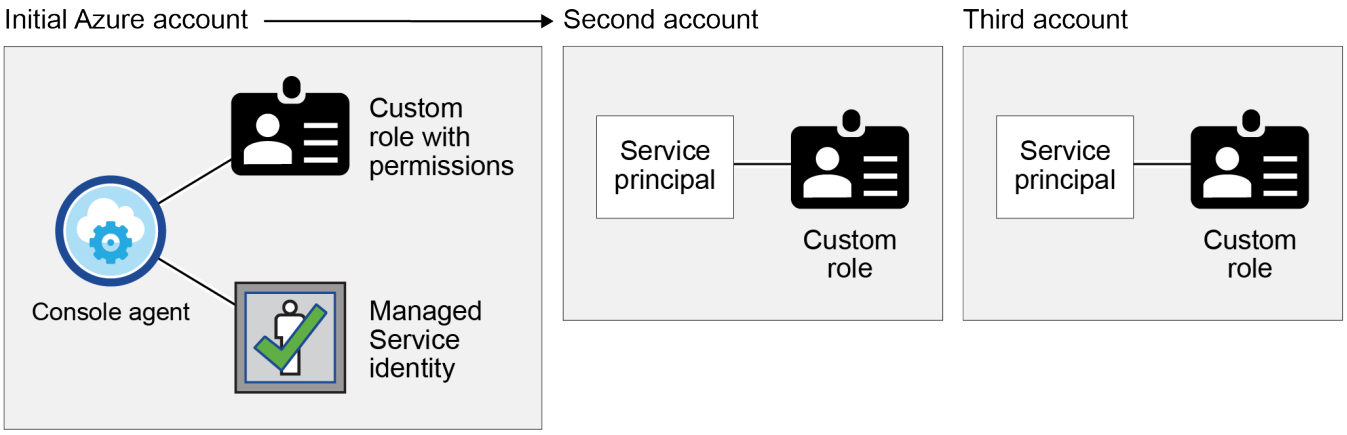
You can deploy all of your Cloud Volumes ONTAP systems using the initial Azure credentials, or you can add additional credentials.

Additional Azure subscriptions for a managed identity

The system-assigned managed identity assigned to the Console agent VM is associated with the subscription in which you launched the Console agent. If you want to select a different Azure subscription, then you need to associate the managed identity with those subscriptions.

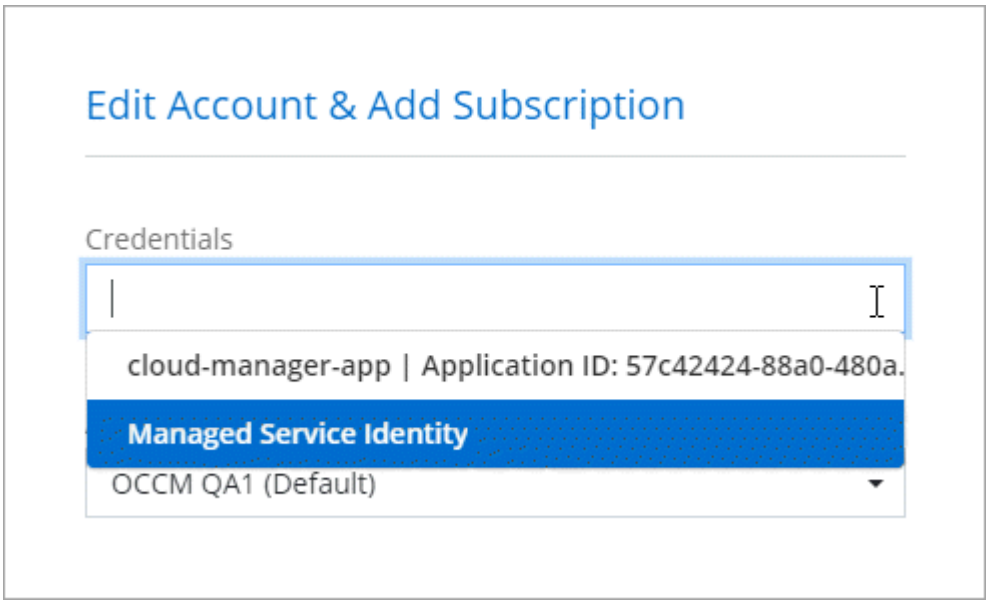
Additional Azure credentials

If you want to use different Azure credentials with the Console, then you must grant the required permissions by creating and setting up a service principal in Microsoft Entra ID for each Azure account. The following image shows two additional accounts, each set up with a service principal and custom role that provides permissions:



You would then add the account credentials to the Console by providing details about the AD service principal.

For example, you can switch between credentials when creating a new Cloud Volumes ONTAP system:



Credentials and marketplace subscriptions

The credentials that you add to a console agent must be associated with an Azure Marketplace subscription so that you can pay for Cloud Volumes ONTAP at an hourly rate (PAYGO) or NetApp data services or through an annual contract.

Learn how to associate an Azure subscription.

Note the following about Azure credentials and marketplace subscriptions:

- You can associate only one Azure Marketplace subscription with a set of Azure credentials
- You can replace an existing marketplace subscription with a new subscription

FAQ

The following question is related to credentials and subscriptions.

Can I change the Azure Marketplace subscription for Cloud Volumes ONTAP systems?

Yes, you can. When you change the Azure Marketplace subscription that's associated with a set of Azure credentials, all existing and new Cloud Volumes ONTAP systems will be charged against the new subscription.

Learn how to associate an Azure subscription.

Can I add multiple Azure credentials, each with different marketplace subscriptions?

All Azure credentials that belong to the same Azure subscription will be associated with the same Azure Marketplace subscription.

If you have multiple Azure credentials that belong to different Azure subscriptions, then those credentials can be associated with the same Azure Marketplace subscription or with different marketplace subscriptions.

Can I move existing Cloud Volumes ONTAP systems to a different Azure subscription?

No, it's not possible to move the Azure resources associated with your Cloud Volumes ONTAP system to a different Azure subscription.

How do credentials work for marketplace deployments and on-premises deployments?

The sections above describe the recommended deployment method for the Console agent, which is from the Console. You can also deploy a console agent in Azure from the Azure Marketplace, and you can install the Console agent software on your own Linux host.

If you use the Marketplace, you can provide permissions by assigning a custom role to the Console agent VM and to a system-assigned managed identity, or you can use a Microsoft Entra service principal.

For on-premises deployments, you can't set up a managed identity for the Console agent, but you can provide permissions by using a service principal.

To learn how to set up permissions, refer to the following pages:

- Standard mode
  - Set up permissions for an Azure Marketplace deployment
  - Set up permissions for on-premises deployments
- Restricted mode
  - Set up permissions for restricted mode

Manage Azure credentials and marketplace subscriptions for NetApp Console

Add and manage Azure credentials so that the NetApp Console has the permissions that it needs to deploy and manage cloud resources in your Azure subscriptions. If you manage multiple Azure Marketplace subscriptions, you can assign each one of them to different Azure credentials from the Credentials page.

Overview

There are two ways to add additional Azure subscriptions and credentials in the Console.

1. Associate additional Azure subscriptions with the Azure managed identity.
2. To deploy Cloud Volumes ONTAP using different Azure credentials, grant Azure permissions using a service principal and add its credentials to the Console.

Associate additional Azure subscriptions with a managed identity

The Console enables you to choose the Azure credentials and Azure subscription in which you want to deploy Cloud Volumes ONTAP. You can't select a different Azure subscription for the managed identity profile unless you associate the managed identity with those subscriptions.

About this task

A managed identity is the initial Azure account when you deploy a Console agent from the Console. When you deploy the Console agent, the Console assigns the Console Operator role to the Console agent virtual machine.

Steps

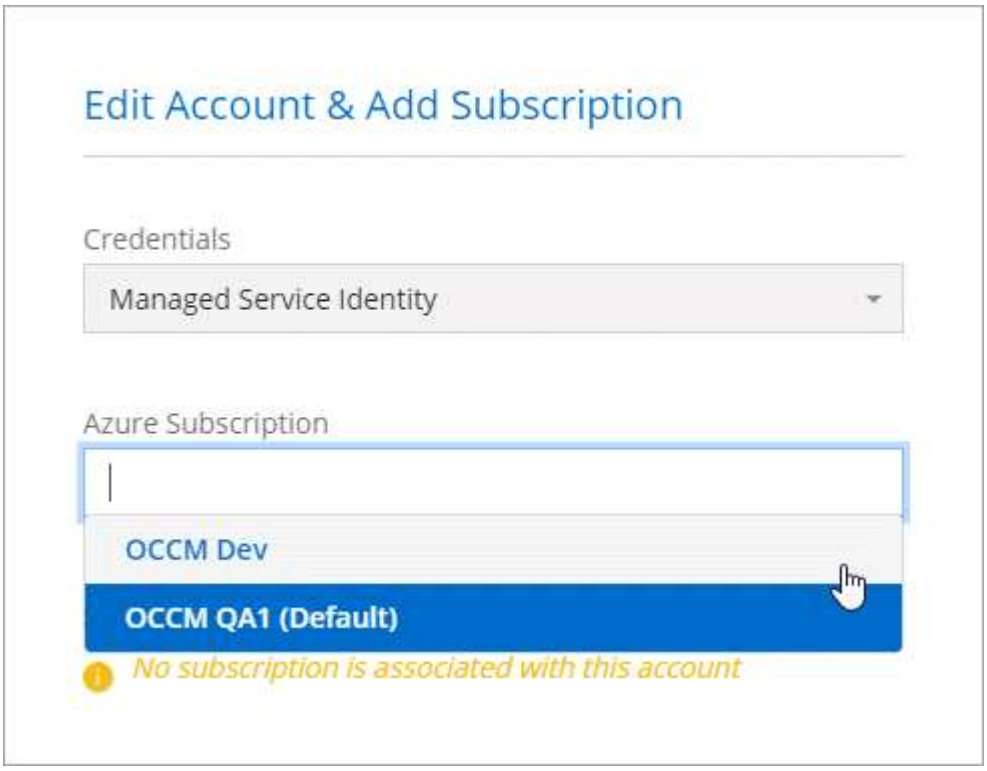
1. Log in to the Azure portal.
2. Open the **Subscriptions** service and then select the subscription in which you want to deploy Cloud Volumes ONTAP.
3. Select **Access control (IAM)**.
   a. Select **Add** > **Add role assignment** and then add the permissions:
      - Select the **Console Operator** role.

        Console Operator is the default name provided in a Console agent policy. If you chose a different name for the role, then select that name instead.

      - Assign access to a **Virtual Machine**.
      - Select the subscription in which a Console agent virtual machine was created.
      - Select a Console agent virtual machine.
      - Select **Save**.
4. Repeat these steps for additional subscriptions.

Result

When creating a new system, you can now select from multiple Azure subscriptions for the managed identity profile.



Add additional Azure credentials to NetApp Console

When you deploy a Console agent from the Console, the Console enables a system-assigned managed identity on the virtual machine that has the required permissions. The Console selects these Azure credentials by default when you create a new system for Cloud Volumes ONTAP.

An initial set of credentials isn't added if you manually installed a Console agent software on an existing system. Learn about Azure credentials and permissions.

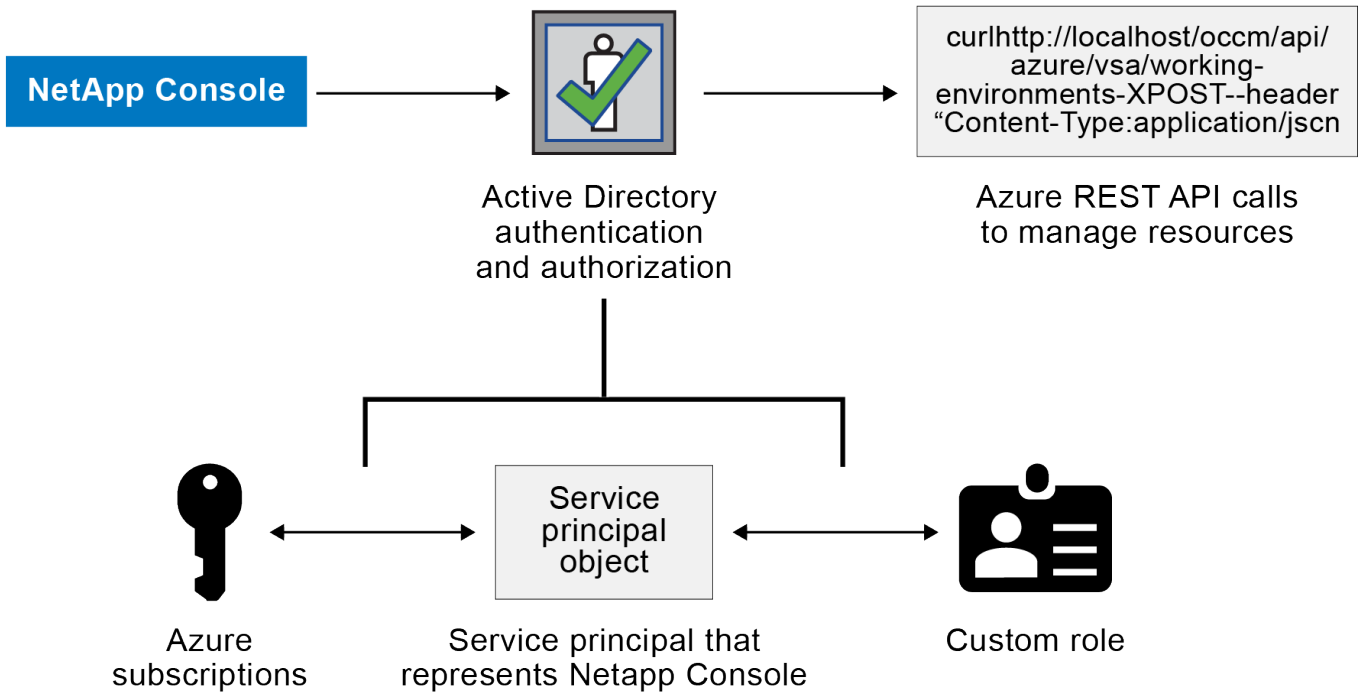
If you want to deploy Cloud Volumes ONTAP using *different* Azure credentials, then you must grant the required permissions by creating and setting up a service principal in Microsoft Entra ID for each Azure account. You can then add the new credentials to the Console.

Grant Azure permissions using a service principal

The Console needs permissions to perform actions in Azure. You can grant the required permissions to an Azure account by creating and setting up a service principal in Microsoft Entra ID and by obtaining the Azure credentials that the Console needs.

About this task

The following image depicts how the Console obtains permissions to perform operations in Azure. A service principal object, which is tied to one or more Azure subscriptions, represents the Console in Microsoft Entra ID and is assigned to a custom role that allows the required permissions.



Steps

1. Create a Microsoft Entra application.
2. Assign the application to a role.
3. Add Windows Azure Service Management API permissions.
4. Get the application ID and directory ID.
5. Create a client secret.

Create a Microsoft Entra application

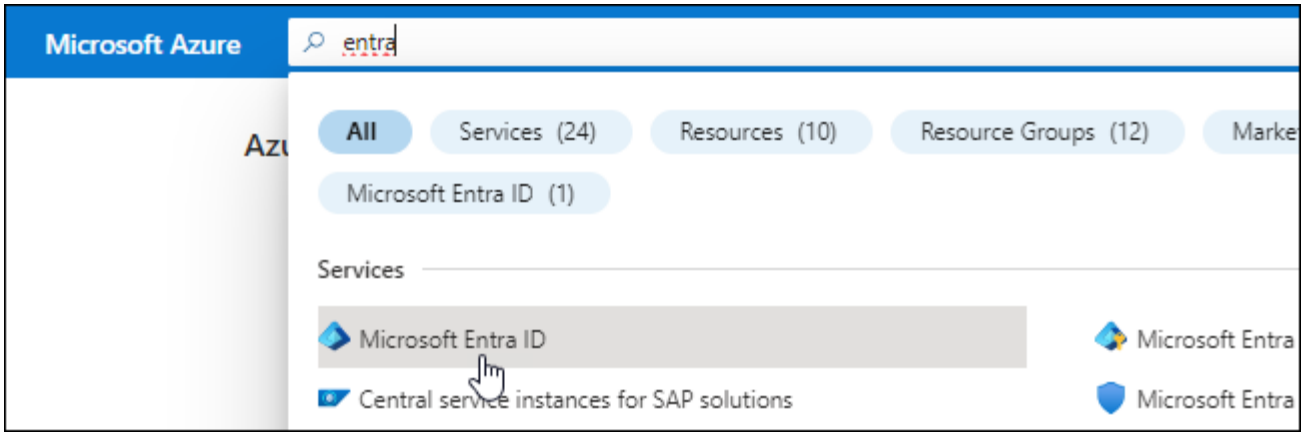
Create a Microsoft Entra application and service principal that the Console can use for role-based access control.

Steps

1. Ensure that you have permissions in Azure to create an Active Directory application and to assign the application to a role.

   For details, refer to Microsoft Azure Documentation: Required permissions

2. From the Azure portal, open the **Microsoft Entra ID** service.



3. In the menu, select **App registrations**.
4. Select **New registration**.
5. Specify details about the application:
   - **Name**: Enter a name for the application.
   - **Account type**: Select an account type (any will work with the NetApp Console).
   - **Redirect URI**: You can leave this field blank.
6. Select **Register**.

   You've created the AD application and service principal.

Assign the application to a role

You must bind the service principal to one or more Azure subscriptions and assign it the custom "Console Operator" role so the Console has permissions in Azure.

Steps

1. Create a custom role:

   Note that you can create an Azure custom role using the Azure portal, Azure PowerShell, Azure CLI, or REST API. The following steps show how to create the role using the Azure CLI. If you would prefer to use a different method, refer to Azure documentation

   a. Copy the contents of the custom role permissions for the Console agent and save them in a JSON file.

   b. Modify the JSON file by adding Azure subscription IDs to the assignable scope.

      You should add the ID for each Azure subscription from which users will create Cloud Volumes ONTAP systems.

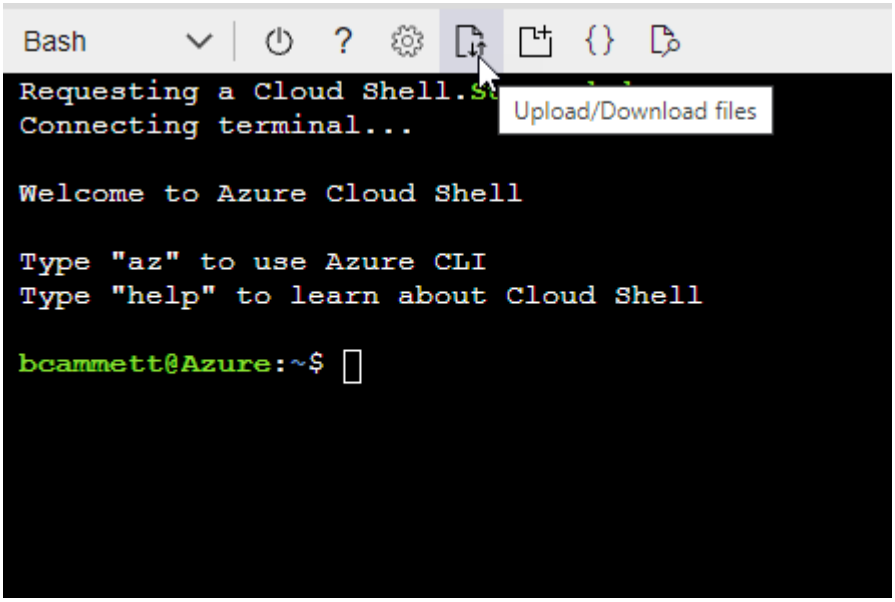
      Example

```
"AssignableScopes": [
"/subscriptions/d333af45-0d07-4154-943d-c25fbzzzzzzz",
"/subscriptions/54b91999-b3e6-4599-908e-416e0zzzzzzz",
"/subscriptions/398e471c-3b42-4ae7-9b59-ce5bbzzzzzzz"
]
```

c. Use the JSON file to create a custom role in Azure.

   The following steps describe how to create the role by using Bash in Azure Cloud Shell.

   - Start Azure Cloud Shell and choose the Bash environment.
   - Upload the JSON file.

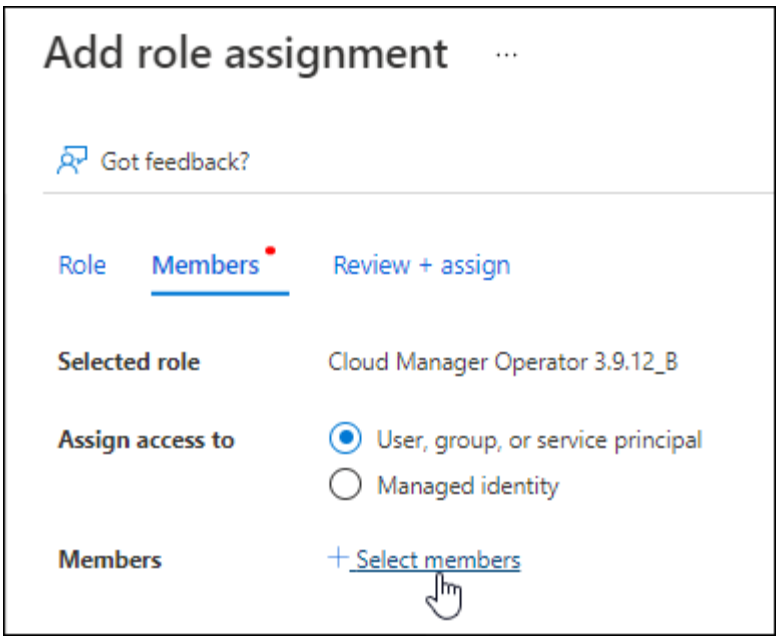


   - Use the Azure CLI to create the custom role:

```
az role definition create --role-definition agent_Policy.json
```

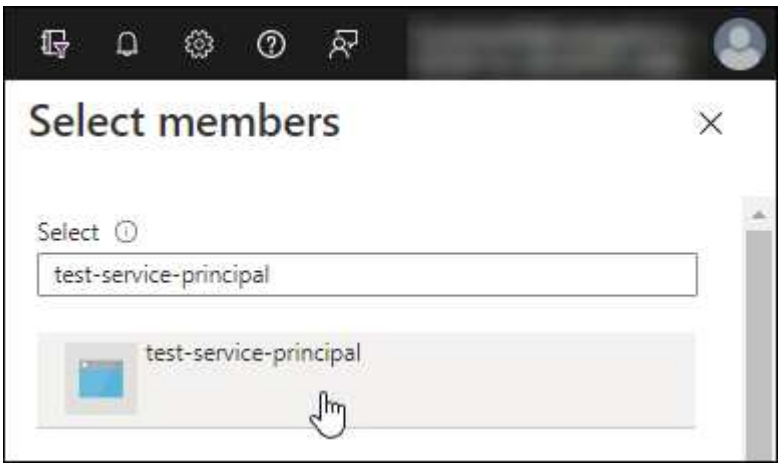
     You should now have a custom role called Console Operator that you can assign to the Console agent virtual machine.

2. Assign the application to the role:
   a. From the Azure portal, open the **Subscriptions** service.
   b. Select the subscription.
   c. Select **Access control (IAM) > Add > Add role assignment**.
   d. In the **Role** tab, select the **Console Operator** role and select **Next**.
   e. In the **Members** tab, complete the following steps:
      - Keep **User, group, or service principal** selected.
      - Select **Select members**.



- Search for the name of the application.

  Here's an example:



- Select the application and select **Select**.
- Select **Next**.

f. Select **Review + assign**.

   The service principal now has the required Azure permissions to deploy the Console agent.

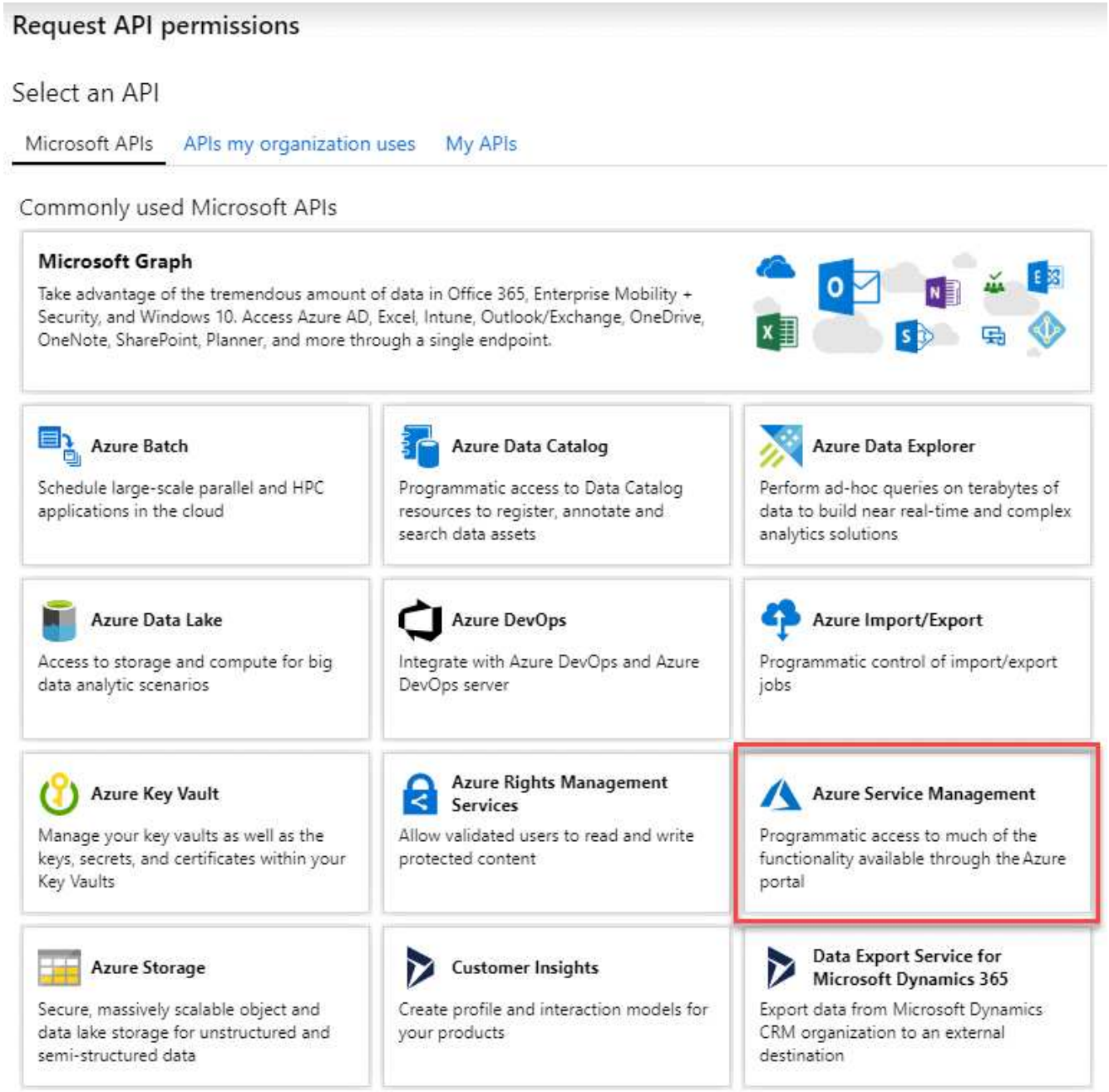
   If you want to deploy Cloud Volumes ONTAP from multiple Azure subscriptions, then you must bind the service principal to each of those subscriptions. In the NetApp Console, you can select the subscription that you want to use when deploying Cloud Volumes ONTAP.

Add Windows Azure Service Management API permissions

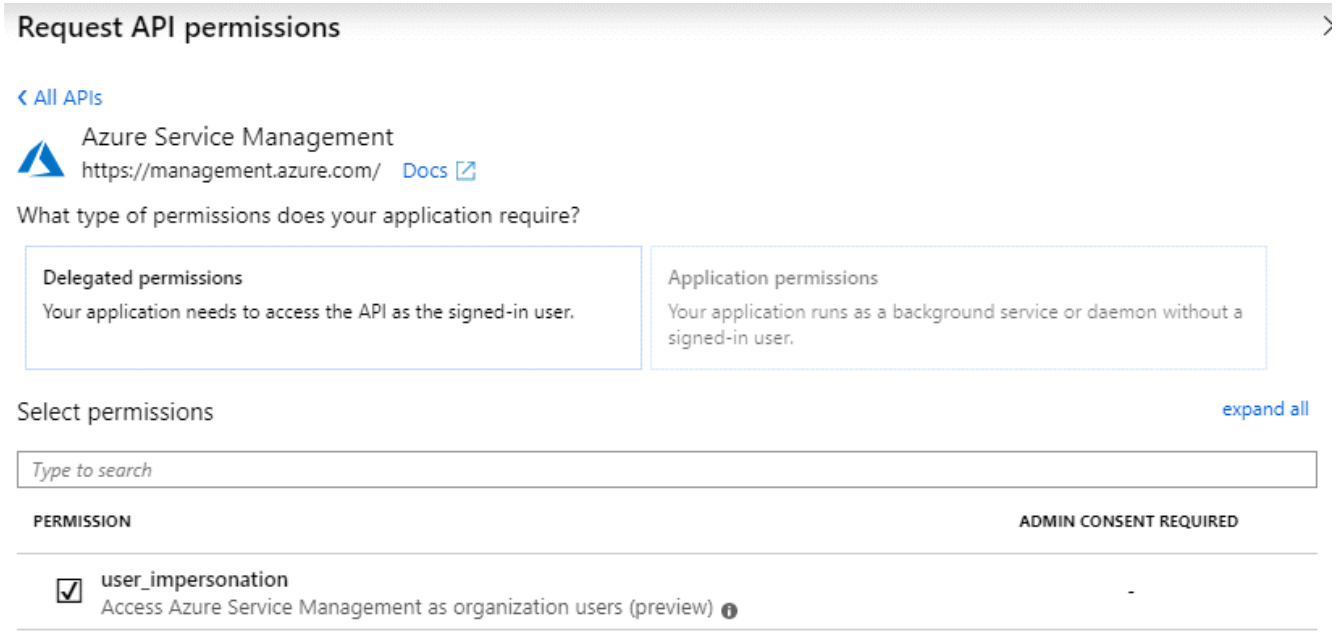
You must assign "Windows Azure Service Management API" permissions to the service principal.

Steps

1. In the **Microsoft Entra ID** service, select **App registrations** and select the application.
2. Select **API permissions > Add a permission**.
3. Under **Microsoft APIs**, select **Azure Service Management**.



4. Select **Access Azure Service Management as organization users** and then select **Add permissions**.

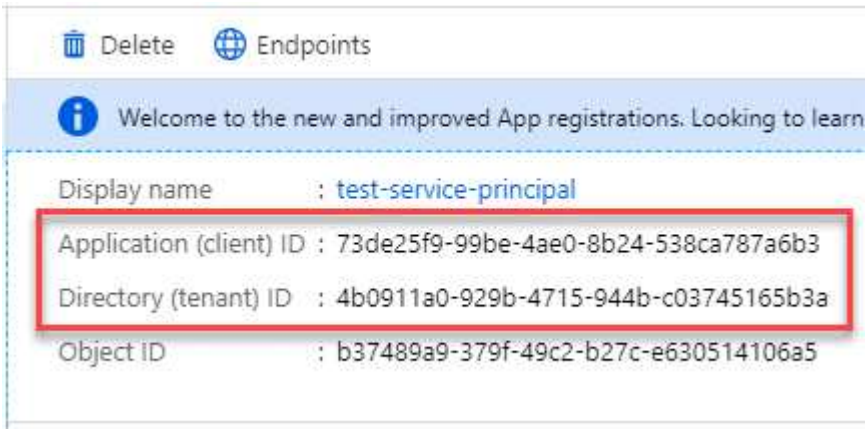


Get the application ID and directory ID

When you add the Azure account to the Console, you need to provide the application (client) ID and the directory (tenant) ID for the application. The Console uses the IDs to programmatically sign in.

Steps

1. In the **Microsoft Entra ID** service, select **App registrations** and select the application.
2. Copy the **Application (client) ID** and the **Directory (tenant) ID**.



When you add the Azure account to the Console, you need to provide the application (client) ID and the directory (tenant) ID for the application. The Console uses the IDs to programmatically sign in.

Create a client secret

Create a client secret and provide its value to the Console for authentication with Microsoft Entra ID.

Steps

1. Open the **Microsoft Entra ID** service.
2. Select **App registrations** and select your application.

3. Select **Certificates & secrets > New client secret**.
4. Provide a description of the secret and a duration.
5. Select **Add**.
6. Copy the value of the client secret.

Result

Your service principal is now setup and you should have copied the application (client) ID, the directory (tenant) ID, and the value of the client secret. You need to enter this information in the Console when you add an Azure account.

Add the credentials to the Console

After you provide an Azure account with the required permissions, you can add the credentials for that account to the Console. Completing this step enables you to launch Cloud Volumes ONTAP using different Azure credentials.

Before you begin

If you just created these credentials in your cloud provider, it might take a few minutes until they are available for use. Wait a few minutes before you add the credentials to the Console.

Before you begin

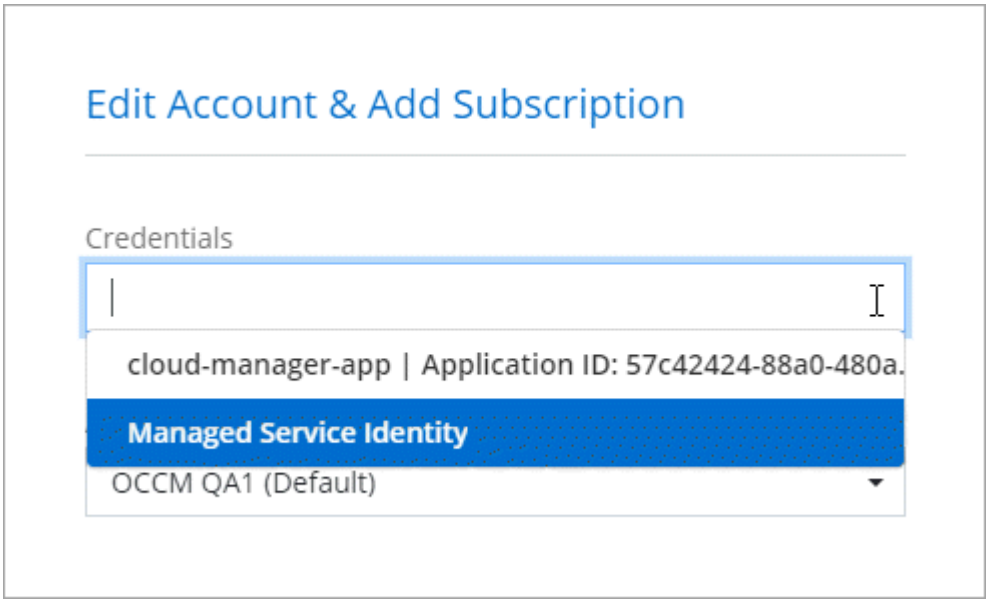
You need to create a Console agent before you can change Console settings. Learn how to create a Console agent.

Steps

1. Select **Administration > Credentials**.
2. Select **Add Credentials** and follow the steps in the wizard.
   a. **Credentials Location**: Select **Microsoft Azure > Agent**.
   b. **Define Credentials**: Enter information about the Microsoft Entra service principal that grants the required permissions:
      - Application (client) ID
      - Directory (tenant) ID
      - Client Secret
   c. **Marketplace Subscription**: Associate a Marketplace subscription with these credentials by subscribing now or by selecting an existing subscription.
   d. **Review**: Confirm the details about the new credentials and select **Add**.

Result

You can switch to a different set of credentials from the Details and Credentials page when adding a system to the Console



Manage existing credentials

Manage the Azure credentials that you've already added to the Console by associating a Marketplace subscription, editing credentials, and deleting them.

Associate an Azure Marketplace subscription to credentials

After you add your Azure credentials to the Console, you can associate an Azure Marketplace subscription to those credentials. You can use the subscription to create a pay-as-you-go Cloud Volumes ONTAP system and access NetApp data services.

There are two scenarios in which you might associate an Azure Marketplace subscription after you've already added the credentials to the Console:

- You didn't associate a subscription when you initially added the credentials to the Console.
- You want to change the Azure Marketplace subscription that is associated with Azure credentials.

  Replacing the current marketplace subscription updates it for existing and new Cloud Volumes ONTAP systems.

Steps

1. Select **Administration > Credentials**.
2. Select **Organization credentials**.
3. Select the action menu for a set of credentials that are associated with a Console agent and then select **Configure Subscription**.

   You must select credentials that are associated with a Console agent. You can't associate a marketplace subscription with credentials that are associated with the NetApp Console.

4. To associate the credentials with an existing subscription, select the subscription from the down-down list and select **Configure**.

5. To associate the credentials with a new subscription, select **Add Subscription > Continue** and follow the steps in the Azure Marketplace:
   a. If prompted, log in to your Azure account.
   b. Select **Subscribe**.
   c. Fill out the form and select **Subscribe**.
   d. After the subscription process is complete, select **Configure account now**.

      You'll be redirected to the NetApp Console.

   e. From the **Subscription Assignment** page:
      - Select the Console organizations or accounts that you'd like to associate this subscription with.
      - In the **Replace existing subscription** field, choose whether you'd like to automatically replace the existing subscription for one organization or account with this new subscription.

        The Console replaces the existing subscription for all credentials in the organization or account with this new subscription. If a set of credentials wasn't ever associated with a subscription, then this new subscription won't be associated with those credentials.

        For all other organizations or accounts, you'll need to manually associate the subscription by repeating these steps.

      - Select **Save**.

Edit credentials

Edit your Azure credentials in the Console. For example, you can update the client secret if a new secret was created for the service principal application.

Steps

1. Select **Administration > Credentials**.
2. Select **Organization credentials**.
3. Select the action menu for a set of credentials and then select **Edit Credentials**.
4. Make the required changes and then select **Apply**.

Delete credentials

If you no longer need a set of credentials, you can delete them. You can only delete credentials that aren't associated with a system.

Steps

1. Select **Administration > Credentials**.
2. Select **Organization credentials**.
3. On the **Organization credentials** page, select the action menu for a set of credentials and then select **Delete Credentials**.
4. Select **Delete** to confirm.

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