Tenable Cloud Security Quick Reference Guide: Onboarding Microsoft Azure Accounts in Tenable Cloud Security

Last Revised: August 23, 2023

Table of Contents

Onboarding Microsoft Azure Accounts

This Quick Reference Guide provides the sequence of tasks required to onboard Microsoft Azure cloud accounts to Tenable Cloud Security (formerly known as Tenable.cs) and to perform a cloud scan. Tenable Cloud Security assesses your cloud infrastructure at runtime and identifies security and compliance violations.

Before you begin:

You must have the following:

- Credentials for your Tenable Vulnerability Management user account.
- An Azure subscription with sufficient permissions to register an application and assign a role with your Microsoft Entra ID tenant.

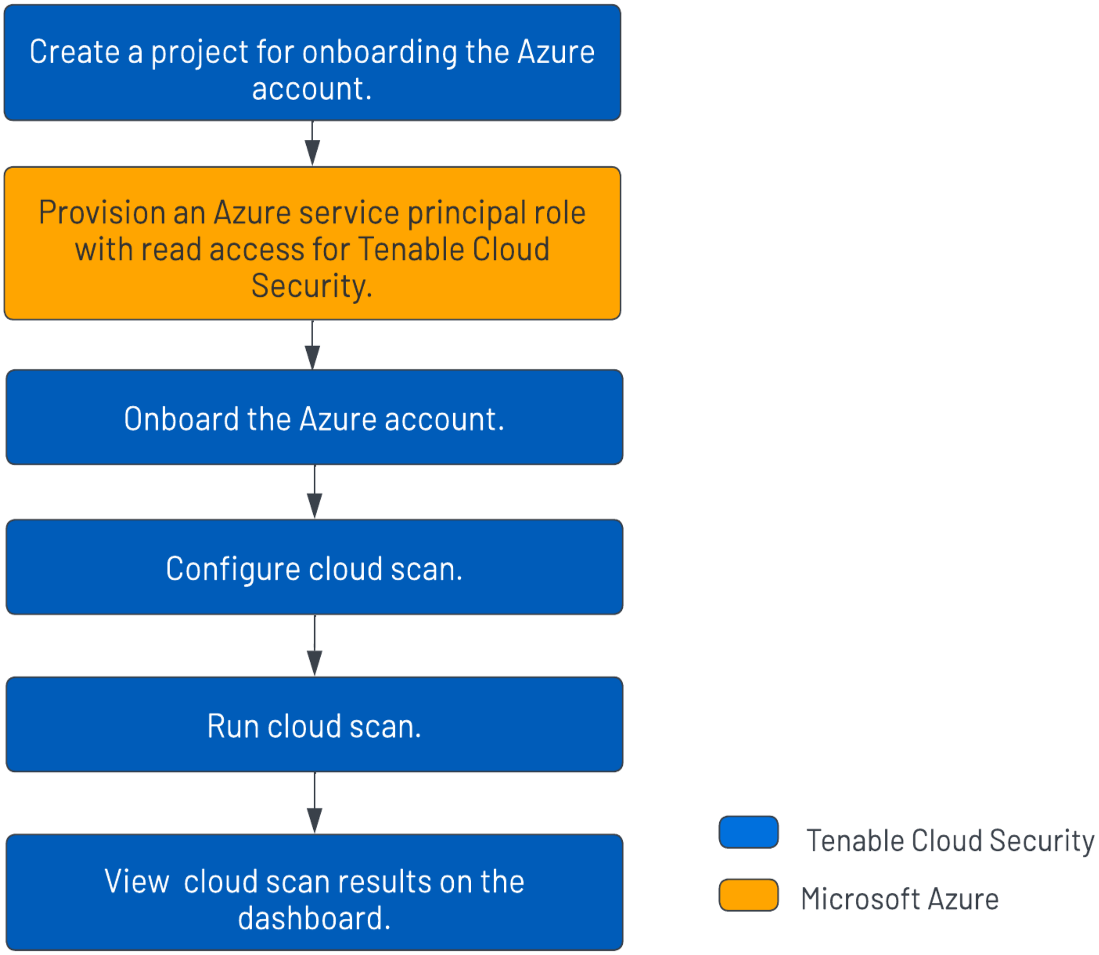
Overview

To establish the connection between Tenable Cloud Security and Azure cloud, Tenable Cloud Security requires an Azure service principal in the Azure subscription with read permissions to access the resources in the subscription. For creating a service principal, register an application through the Azure portal and then assign the **Reader** role to the application. To onboard the Azure service principal in Tenable Cloud Security, provide the tenant ID, application ID, and secret key value of your application for authenticating with Azure.

After connecting your cloud accounts, configure your cloud resources and then scan these cloud resources for any violations.

Workflow

The following workflow provides the high-level tasks for onboarding Azure accounts.


Create a project for onboarding the Azure account.
Provision an Azure service principal role with read access for Tenable Cloud Security.
Onboard the Azure account.
Configure cloud scan.
Run cloud scan.
View cloud scan results on the dashboard.
Tenable Cloud Security
Microsoft Azure

Video

Video: Onboarding Azure accounts with Tenable Cloud Security

Other Resources

- Tenable Cloud Security User Guide

  Provides conceptual information and instructions for using Tenable Cloud Security.

- Getting Started with Tenable Cloud Security

  Provides video resources in Tenable Product Education.

Create a Project

In Tenable Cloud Security Console, you can group resources, such as repositories and cloud accounts, into projects. Projects allow you to monitor, analyze, and manage all your resources at once.

To create a project:

1. Log in to Tenable Vulnerability Management.
2. In the left navigation bar, click **Cloud Security**.

   The Tenable Cloud Security home page appears.
3. In the left navigation bar, click ⊕ > **Project**.
4. In the **Give the project a name** section, type a name for your project. For example, **Azure-Project**.

   > **Note:** A project name can have a maximum of 25 characters.
5. Click **Continue**.
6. In the **Choose provider** section, select **Azure** as the cloud service provider.
7. Click **Create**.

   A confirmation message appears and Tenable Cloud Security creates the project. You can view the new project on the **Projects & Connections** page.

Create an Azure Service Principal Role

Tenable Cloud Security requires adequate permissions to read the resources in your Azure subscription. Provision a service principal role in the target Azure subscription and configure it for Tenable Cloud Security to read the resources in the same account.

The following permissions are required for a vulnerability scan of Azure virtual machines:

- Reader
- Disk Snapshot Contributor

Follow these steps to create a service principal and assign a role to it:

1. Register an application with Azure to create the service principal.
2. Choose one of the following options to assign a role to the service principal for accessing the resources in your subscription:
    - Create and assign a custom role with expanded Read access (comprehensive) to the service principal.
    - Assign the built-in Reader role (limited) to the service principal.
3. Create a client secret for authenticating the service principal from Tenable Cloud Security.

Register an application with Azure

When you register an application through the Azure portal, Azure automatically creates an application object and service principal in your tenant. For more information on the relationship between application registration, application objects, and service principals, see Application and service principal objects in Microsoft Entra ID.

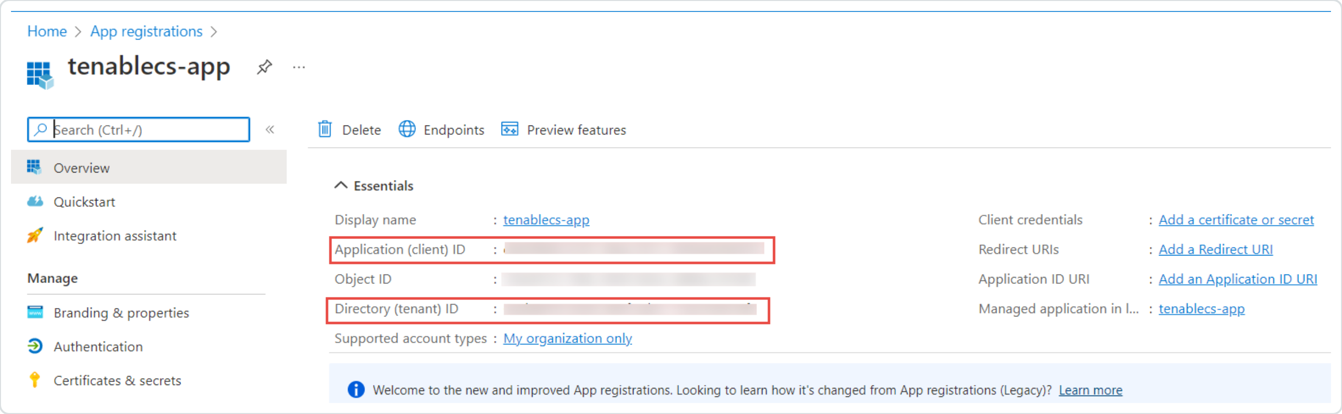
To create a service principal role in Azure:

1. Log in to the Microsoft Azure portal.
2. In the home page, click **App registrations**.

   The **App registrations** page appears.
3. Click **New registration**.

   The **Register an application** page appears.
4. Type a name for the application you want to register.
5. Click **Register**.

   The application details page appears.



Display name : tenablecs-app
Application (client) ID : [redacted]
Object ID : [redacted]
Directory (tenant) ID : [redacted]
Supported account types : My organization only
Client credentials : Add a certificate or secret
Redirect URIs : Add a Redirect URI
Application ID URI : Add an Application ID URI
Managed application in l... : tenablecs-app

Welcome to the new and improved App registrations. Looking to learn how it's changed from App registrations (Legacy)? Learn more

6. Note down the following values. You need these values when onboarding the service account in Tenable Cloud Security:

   - **Application (client) ID**: This is the client ID requested by Tenable Cloud Security.
   - **Directory (tenant) ID**: This is the Tenant ID requested by Tenable Cloud Security.

Create a custom role and assign it to the service principal

For a comprehensive Azure cloud scan for resources such as Storage Account, Kubernetes Cluster, Cosmos DB, Function App resources, create a custom role with expanded read access including the list APIs access. Additionally, Agentless Assessment requires the Disk Snapshot Contributor role along with the Reader role for scanning virtual machine snapshots.

For more information about these permissions, see Azure built-in roles in Azure documentation.

To create a custom role and assign it to the service principal:

1. On the home page of the Azure portal, do one of the following:

    - To create a role for a management group, click **Management groups**.

      The **Management groups** page appears.

    - To create a role for a subscription, click **Subscriptions**.

      The **Subscriptions** page appears.

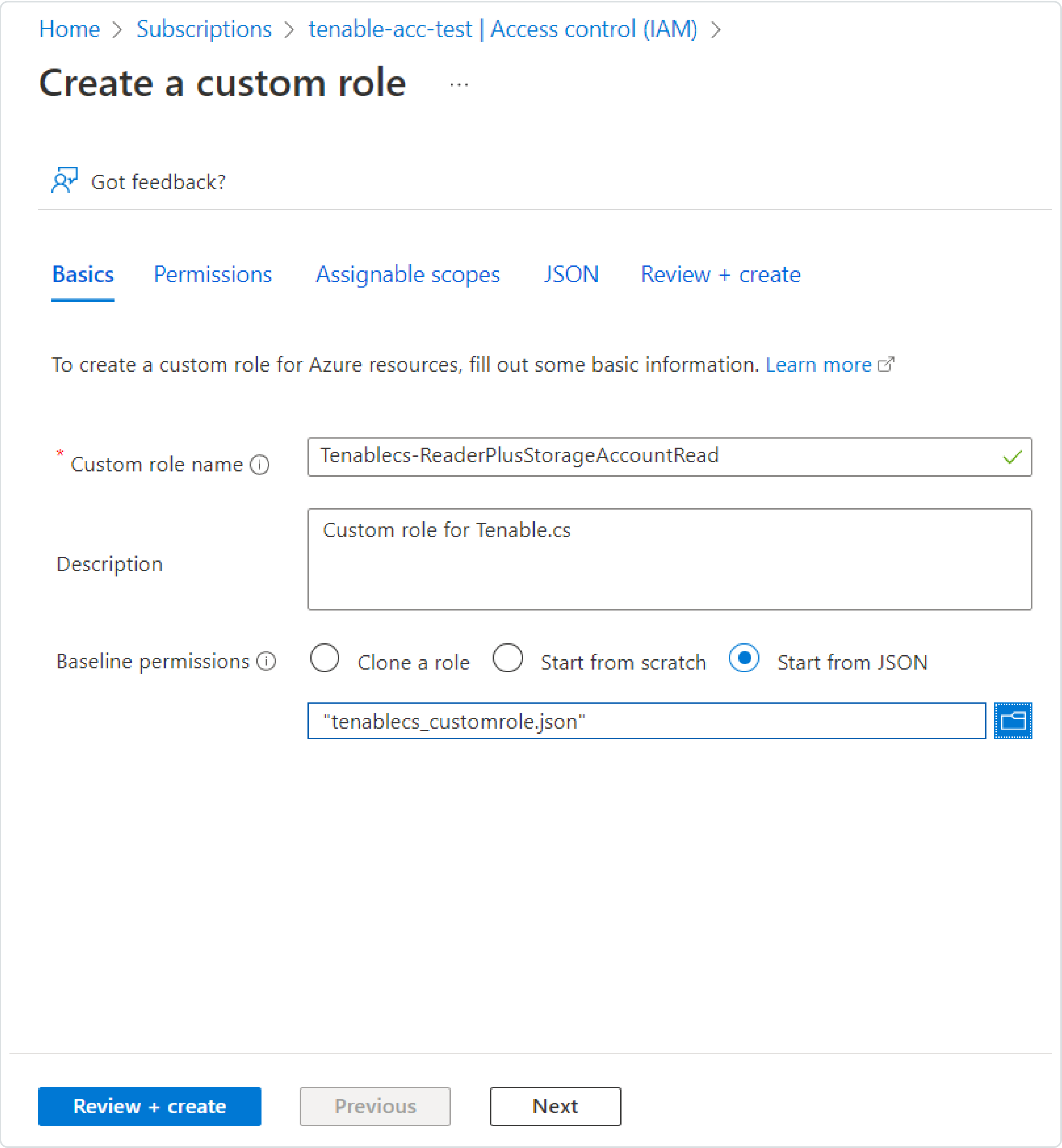
    > **Note:** To enable Tenable Cloud Security to discover all subscriptions under a management group, ensure that the service principal role is assigned to the management group. You can also assign the role to a root management group to discover all subscriptions under the root management group.

2. On the left navigation bar, click **Access Control (IAM)**.

   The **Access control (IAM)** page for your subscription appears.

3. In the **Create a custom role** section, click **Add**.

   The **Create a custom role** page appears.



To create a custom role for Azure resources, fill out some basic information. Learn more

* Custom role name: Tenablecs-ReaderPlusStorageAccountRead

Description: Custom role for Tenable.cs

Baseline permissions: ○ Clone a role ○ Start from scratch ● Start from JSON

"tenablecs_customrole.json"

4. In **Baseline permissions**, select the **Start from JSON** option.

   You can create a custom role in the following ways:

- **Clone a role**: Create a custom role by cloning an existing role and modifying the role, as required.
- **Start from scratch**: Create a custom role by using the Azure user interface.
- **Start from JSON**: Create a custom role by uploading a JSON file with the required permissions.

For more information about these methods, see Create or update Azure custom roles using the Azure portal in Azure documentation.

> **Note:** This procedure describes how to create a custom role using a JSON file.

5. Click 📂 to upload a JSON file that has the required permissions.

   Azure validates the JSON file and uploads the file for role creation.

   The following sample JSON file creates a role with read permissions along with the list APIs for the Storage Accounts, Kubernetes cluster, Cosmos DB, and Function App services for a **subscription**:

```
{
    "properties": {
        "roleName": "Tenablecs-ReaderPlusStorageAccountRead",
        "description": "Custom role for Tenable Cloud Security",
        "assignableScopes": [
            "/subscriptions/<subscription-id>"
        ],
        "permissions": [
            {
                "actions": [
                    "*/read",
                    "Microsoft.Storage/storageAccounts/listkeys/action",
                    "Microsoft.Storage/storageAccounts/listAccountSas/action",
                    "Microsoft.Storage/storageAccounts/listServiceSas/action",
                    "Microsoft.Storage/storageAccounts/localusers/listKeys/action",
                    "Microsoft.ContainerService/managedClusters/accessProfiles/listCredential/a-
ction",
                    "Microsoft.DocumentDB/databaseAccounts/listKeys/action",
                    "Microsoft.DocumentDB/databaseAccounts/readonlykeys/action",
                    "Microsoft.DocumentDB/databaseAccounts/listConnectionStrings/action",
                    "Microsoft.Web/sites/config/list/action"
                ],
                "notActions": [],
                "dataActions": [],
                "notDataActions": []
            }
        ]
    }
}
```

The following sample JSON file creates a role with read permissions along with the list APIs for the Storage Accounts, Kubernetes cluster, Cosmos DB, and Function App services for a **management group**:

```
{
    "properties": {
        "roleName": "Tenablecs-ReaderPlusStorageAccountRead",
        "description": "Custom role for Tenable Cloud Security",
        "assignableScopes": [
            "/providers/Microsoft.Management/managementGroups/<management-group-ID>"
        ],
        "permissions": [
            {
                "actions": [
                    "*/read",
                    "Microsoft.Storage/storageAccounts/listkeys/action",
                    "Microsoft.Storage/storageAccounts/listAccountSas/action",
                    "Microsoft.Storage/storageAccounts/listServiceSas/action",
                    "Microsoft.Storage/storageAccounts/localusers/listKeys/action",
                    "Microsoft.ContainerService/managedClusters/accessProfiles/listCredential/action",
                    "Microsoft.DocumentDB/databaseAccounts/listKeys/action",
                    "Microsoft.DocumentDB/databaseAccounts/readonlykeys/action",
                    "Microsoft.DocumentDB/databaseAccounts/listConnectionStrings/action",
                    "Microsoft.Web/sites/config/list/action"
                ],
                "notActions": [],
                "dataActions": [],
                "notDataActions": []
            }
        ]
    }
}
```

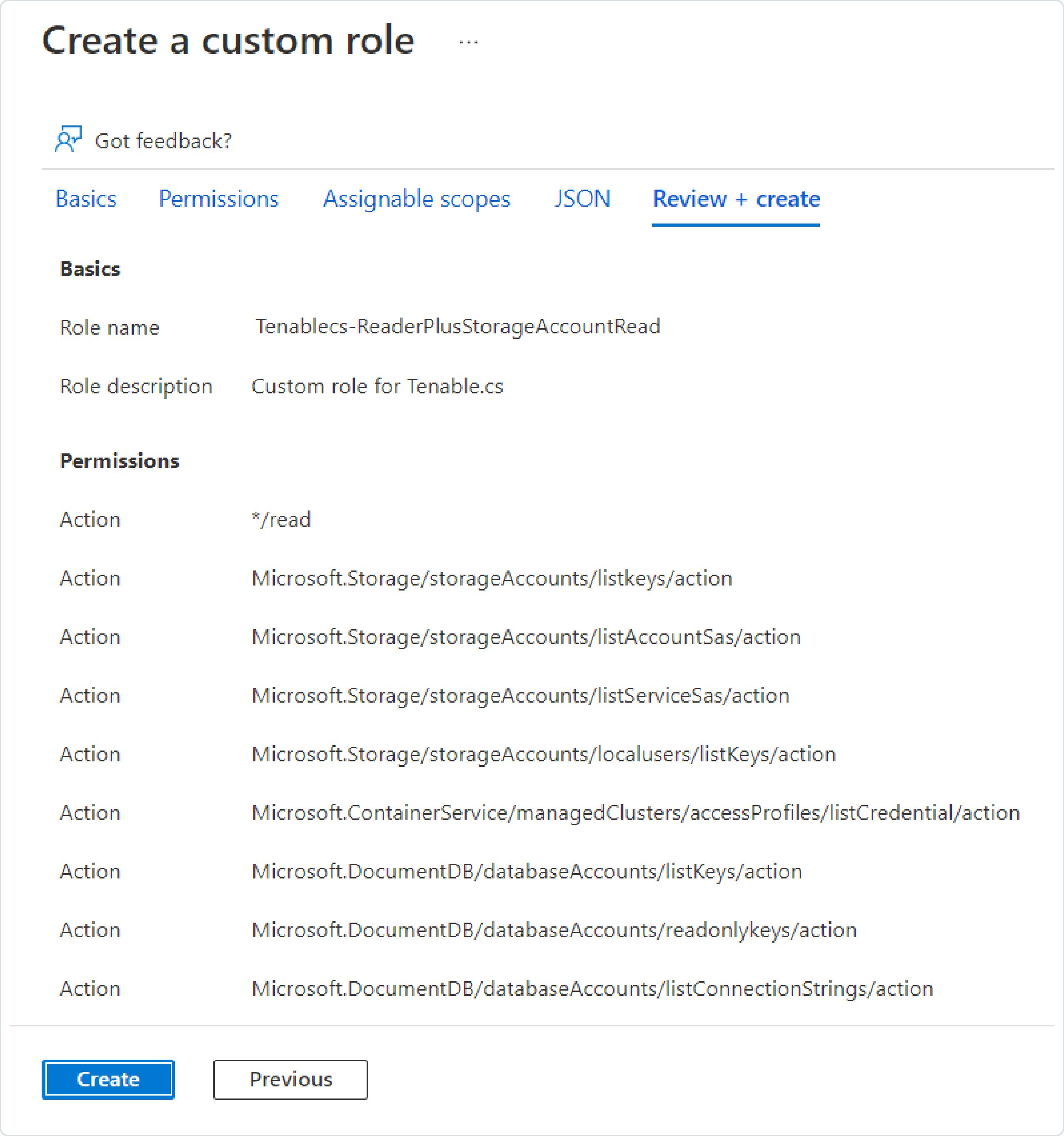
The following sample JSON file creates a custom role with read permissions along with permissions to access snapshots at a subscription-level, which is required for Agentless Assessment:

```
{
    "properties": {
        "roleName": "Tenablecs-ReaderPlusDiskSnapshotContributor",
        "description": "Custom role for Tenable Cloud Security",
        "assignableScopes": [
            "/subscriptions/<subscription-id>"
        ],
        "permissions": [
            {
                "actions": [
                    "*/read",
                    "Microsoft.Storage/storageAccounts/listkeys/action",
                    "Microsoft.Storage/storageAccounts/listAccountSas/action",
                    "Microsoft.Storage/storageAccounts/listServiceSas/action",
                    "Microsoft.Storage/storageAccounts/localusers/listKeys/action",
                    "Microsoft.Compute/snapshots/beginGetAccess/action"
                ],
                "notActions": [],
                "dataActions": [],
                "notDataActions": []
            }
        ]
    }
}
```

where `<subscription-id>` is your Azure subscription ID.

6. Click **Review + create**.

   The **Review + create** tab appears.



Basics

Role name	Tablecs-ReaderPlusStorageAccountRead
Role description	Custom role for Tenable.cs

Permissions

Action	*/read
Action	Microsoft.Storage/storageAccounts/listkeys/action
Action	Microsoft.Storage/storageAccounts/listAccountSas/action
Action	Microsoft.Storage/storageAccounts/listServiceSas/action
Action	Microsoft.Storage/storageAccounts/localusers/listKeys/action
Action	Microsoft.ContainerService/managedClusters/accessProfiles/listCredential/action
Action	Microsoft.DocumentDB/databaseAccounts/listKeys/action
Action	Microsoft.DocumentDB/databaseAccounts/readonlykeys/action
Action	Microsoft.DocumentDB/databaseAccounts/listConnectionStrings/action

7. Click **Create**.

   Azure creates the custom role and redirects you to the **Access control (IAM)** page.

8. In the **Grant access to this resource** section, click **Add role assignment** to assign the custom role to the service principal.

   The **Add role assignment** page appears.

9. On the **Role** tab, search for the custom role you created.

10. Select the custom role and click **Next**.

    The **Members** tab appears.

11. On the **Members** tab, do the following:

    a. Click **Select Members**.

    b. In the **Select members** window, search for the application you created.

    c. Select the application.

       The application appears under **Selected members**.

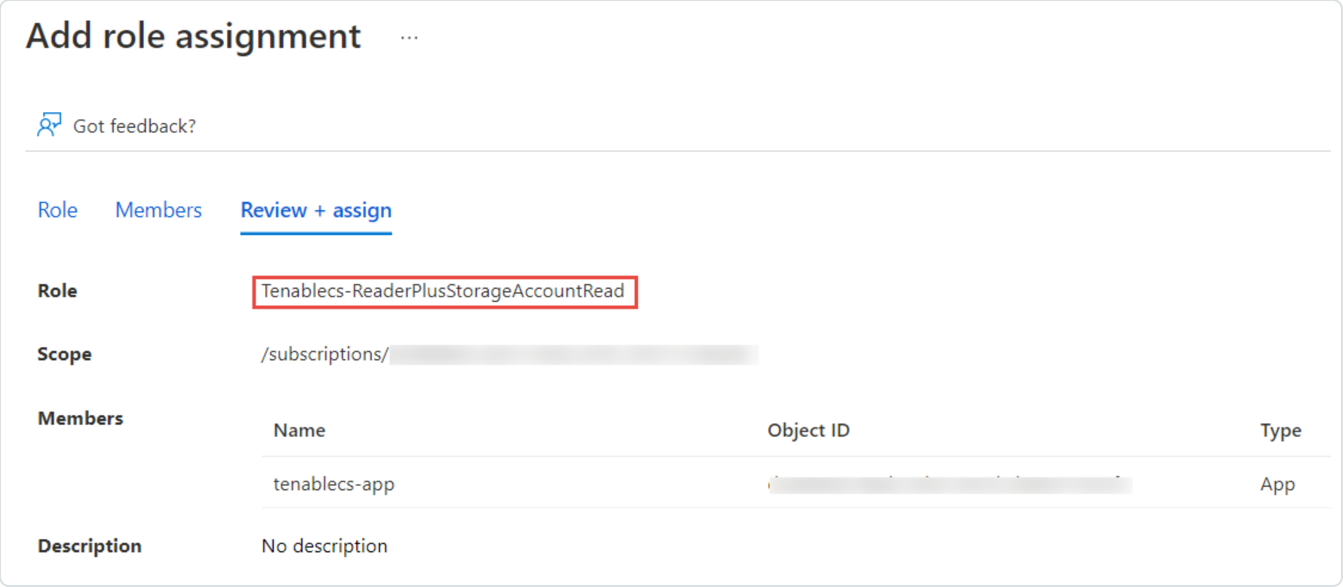
    d. Click **Select**.

       Azure adds the application for assigning the selected custom role.

    e. Click **Next**.

       The **Review + assign** tab appears.

12. Review the details of the role and click **Review + assign**.



Add role assignment ...

Role: Tenablecs-ReaderPlusStorageAccountRead

Scope: /subscriptions/[redacted]

Members:

Name	Object ID	Type
tenablecs-app	[redacted]	App

Description: No description

Azure assigns the custom role to the service principal of the application and redirects you to the **Access control (IAM)** page.

Assign the Reader role to the service principal

Tenable Cloud Security requires the **Reader** role for accessing the resources for a cloud scan. This role provides limited permissions to the service principal. If you want to perform a comprehensive scan including managed clusters and storage accounts, create a custom role with expanded read permissions.

1. On the home page of the Azure portal, do one of the following:

    - To assign the role to a management group, click **Management groups**.

      The **Management groups** page appears.

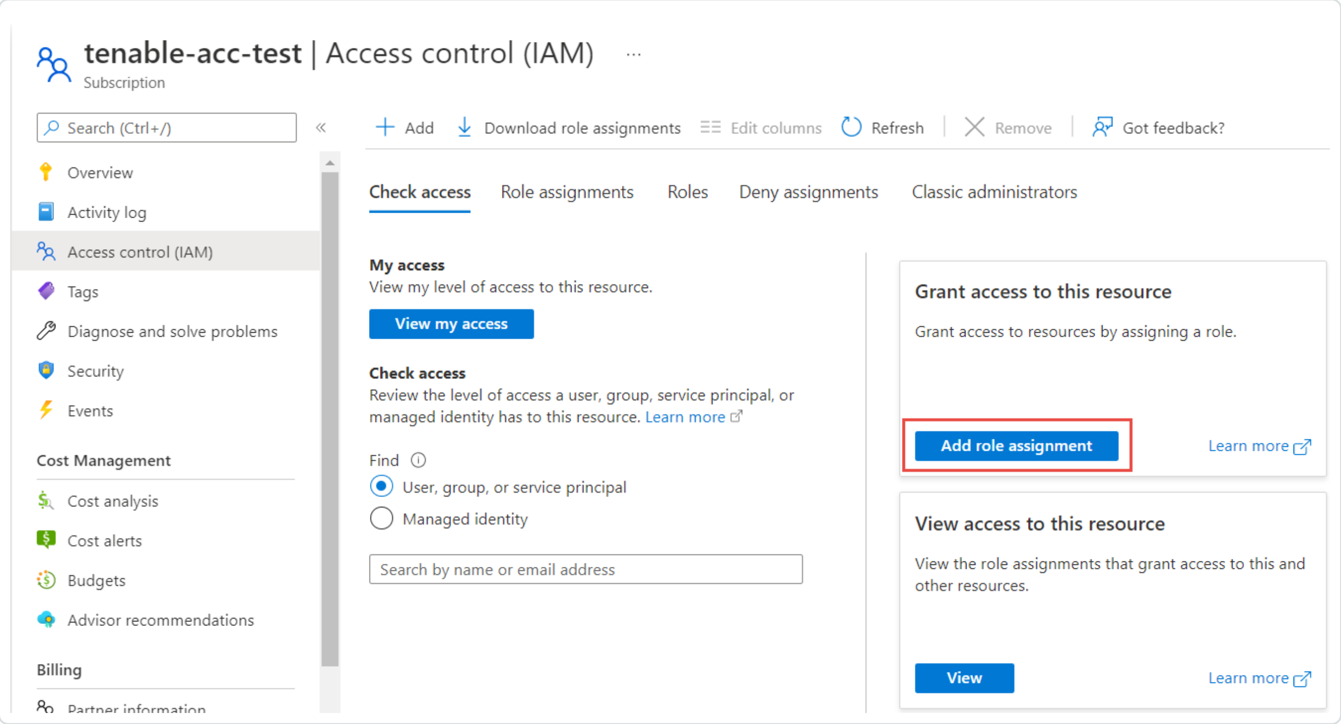
      > **Note:** To enable Tenable Cloud Security to discover all subscriptions under a management group, ensure that the service principal role is assigned to the management group. You can also assign the role to a root management group to discover all subscriptions under the root management group.

    - To create a role for a subscription, click **Subscriptions**.

      The **Subscriptions** page appears.

2. On the left navigation bar, click **Access Control (IAM)**.

    The **Access control (IAM)** page for your subscription appears.



tenable-acc-test | Access control (IAM) ···

Subscription

Search (Ctrl+/) «

- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems
- Security
- Events

Cost Management

- Cost analysis
- Cost alerts
- Budgets
- Advisor recommendations

Billing

- Partner information

My access

View my level of access to this resource.

Check access

Review the level of access a user, group, service principal, or managed identity has to this resource. Learn more

Find

● User, group, or service principal

○ Managed identity

Search by name or email address

Grant access to this resource

Grant access to resources by assigning a role.

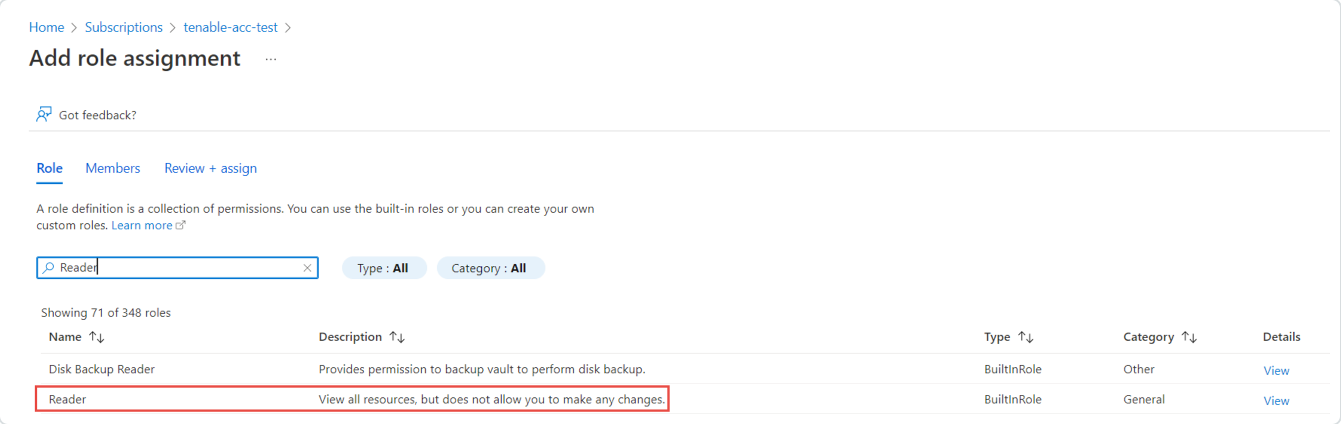
View access to this resource

View the role assignments that grant access to this and other resources.

3. In the **Grant access to this resource** section, click **Add role assignment**.

   The **Add role assignment** page appears.

4. On the **Role** tab, search for the **Reader** role.



Home > Subscriptions > tenable-acc-test >

Add role assignment ···

A role definition is a collection of permissions. You can use the built-in roles or you can create your own custom roles. Learn more

Reader

Type : **All**   Category : **All**

Showing 71 of 348 roles

Name ↑↓	Description ↑↓	Type ↑↓	Category ↑↓	Details
Disk Backup Reader	Provides permission to backup vault to perform disk backup.	BuiltInRole	Other	View
Reader	View all resources, but does not allow you to make any changes.	BuiltInRole	General	View

5. Select the **Reader** role and click **Next**.

   The **Members** tab appears.

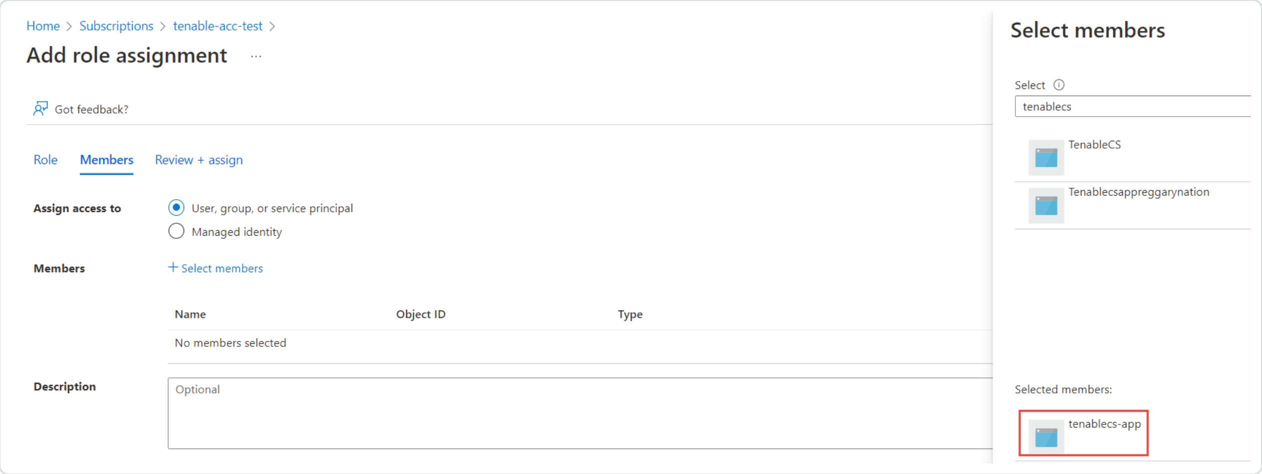
6. On the **Members** tab, do the following:

a. Click **Select Members**.

b. In the **Select members** window, search for the application you created.

c. Select the application.

The application appears under **Selected members**.



Home > Subscriptions > tenable-acc-test >

Add role assignment ...

Got feedback?

Role | Members | Review + assign

Assign access to: ● User, group, or service principal ○ Managed identity

Members: + Select members

Name	Object ID	Type
No members selected		

Description: Optional

Select members

Select: tenablecs

TenableCS

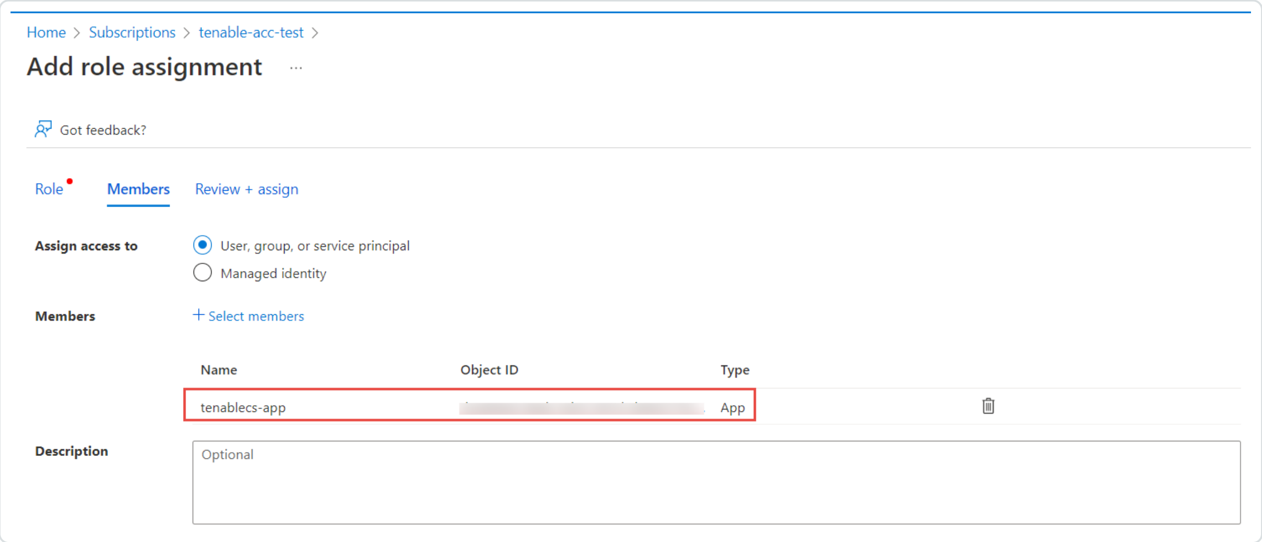
Tenablecsappreggarynation

Selected members:

tenablecs-app

d. Click **Select**.

Azure adds the application for assigning the **Reader** role.



Home > Subscriptions > tenable-acc-test >

Add role assignment ...

Got feedback?

Role | Members | Review + assign

Assign access to: ● User, group, or service principal ○ Managed identity

Members: + Select members

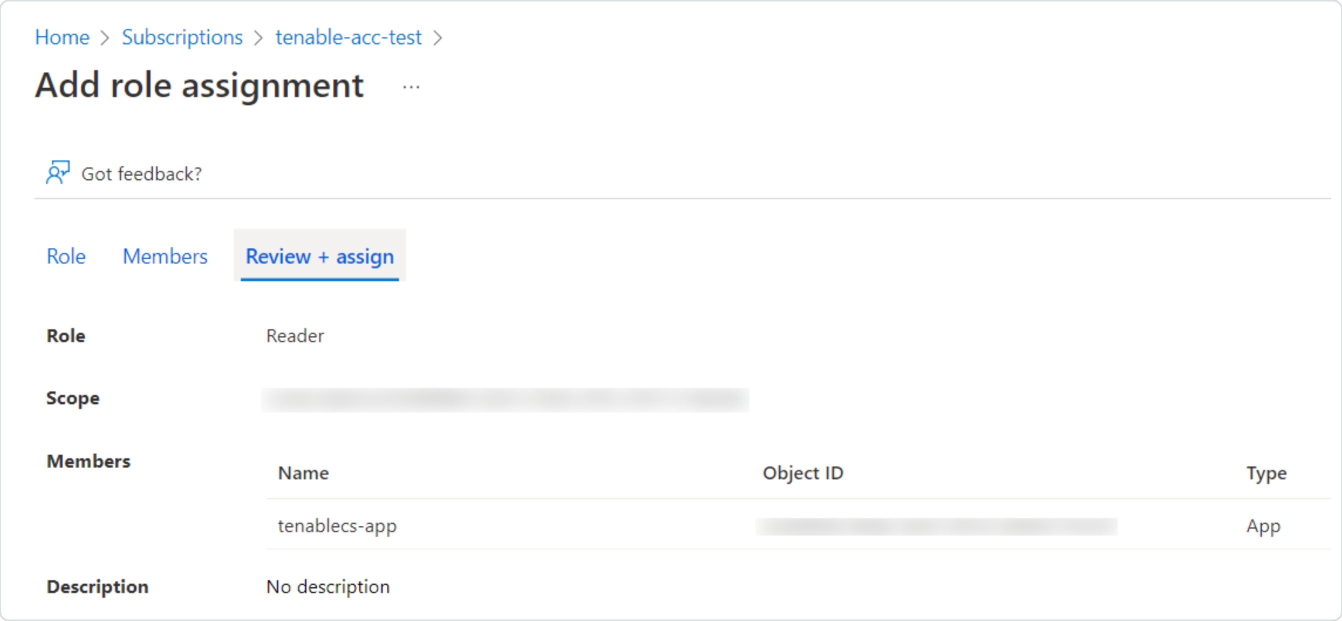
Name	Object ID	Type
tenablecs-app	[redacted]	App

Description: Optional

e. Click **Next**.

The **Review + assign** tab appears.

7. Review the details of the role and click **Review + assign**.



Home > Subscriptions > tenable-acc-test >

Add role assignment ...

Got feedback?

Role Reader

Scope [redacted]

Members

Name	Object ID	Type
tenablecs-app	[redacted]	App

Description No description

Azure assigns the role to the service principal of the application and redirects you to the **Access control (IAM)** page.

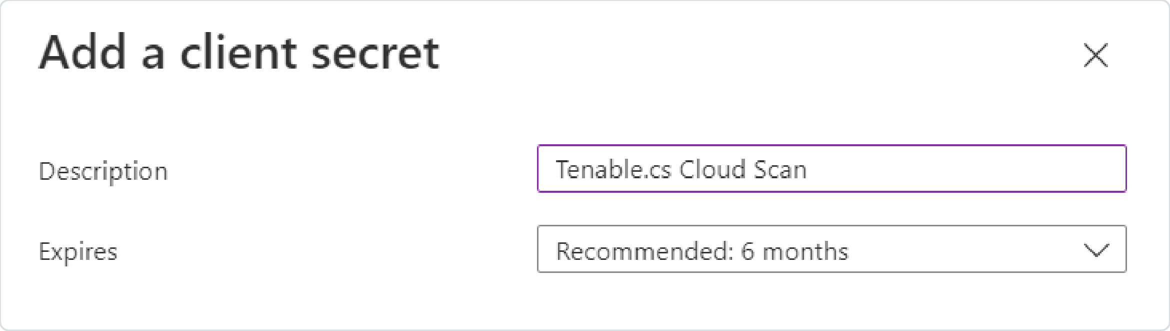
Create a client secret

You can create a new application secret to authenticate the service principal.

1. On the home page of the Azure portal, click **App Registrations**.
2. Click the application that you created for Tenable Cloud Security.
3. On the left navigation bar, click **Certificates & secrets**.

   The **Certificates & secrets** page appears.
4. Click **New client secret**.

   The **Add a client secret** page appears.



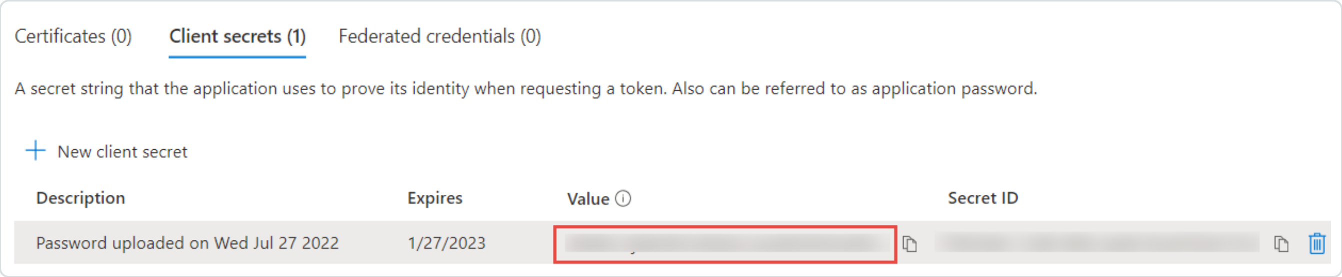
Add a client secret

Description: Tenable.cs Cloud Scan

Expires: Recommended: 6 months

5. Provide a relevant description for the secret. For example, Tenable Cloud Security Scan.
6. Set an expiration for the client secret.
7. Click **Add**.

   The client secret value and ID appear.



A secret string that the application uses to prove its identity when requesting a token. Also can be referred to as application password.

Description	Expires	Value ⓘ	Secret ID
Password uploaded on Wed Jul 27 2022	1/27/2023	[redacted]	[redacted]

8. Record the **Value** of this client secret.

> **Note:** You cannot view this value again because Azure masks this value.

What to do next:

Onboard an Azure Account

You must have the following values for onboarding the Azure account in Tenable Cloud Security:

- Client ID
- Tenant ID
- Secret value

Onboard an Azure Account

In Tenable Cloud Security, you can connect your Microsoft Azure cloud account using a service principal. In Microsoft Azure, a service principal is an entity that requires access to the resources secured by a Microsoft Entra ID tenant.

Before you begin:

- Ensure you have the following Azure values:
  - Client ID
  - Secret value
  - Tenant ID

  For more information, see Create an Azure Service Principal Role.

To connect an Azure subscription with a service principal:

1. In the left navigation bar, click ⊕ > **Connection** > **Azure subscription**.
2. In the **Choose a workflow to discover Azure subscriptions** section, click **Service principal (recommended)**.
3. Click **Continue**.
4. In the **Discover Azure subscription(s)** section, enter your **Client ID**, **Secret value**, and **Tenant ID**.
5. Click **Continue**.

   Tenable Cloud Security connects to your Microsoft Azure account using the specified credentials, and displays the list of subscriptions.
6. In the **Choose Azure subscription(s)** section, select the required subscriptions.
7. Click **Continue**.
8. For the selected subscriptions, in the **Choose resource group(s)** section, do one of the following:

- To select all available resource groups, click **All (recommended)**.
- To select specific resource groups, click **Specific**, and select a resource group in the list.

> **Tip:** You can search for specific resource groups, and filter the list by subscriptions.

9. Click **Continue**.
10. (Optional) In the **Choose projects to add the Azure project(s) to** section, create or select a project for the Azure subscription.

    - To create a new project for your Azure account, click **Add a project**. For more information, see Create a Project.
    - Select a project from the list.

    > **Tip:** You can also search for specific projects.

11. In the **Choose prerequisites** section, select the check boxes:

    - Ensure that you have granted all permissions.
    - Ensure that you already have snapshots or or followed the provided instructions to create snapshots for the instances you wish to scan.

      Click the links to view documentation for providing permissions to Tenable Cloud Security for scanning and creating snapshots for Agentless Assessment.

12. Click **Connect Cloud Account**.

    On the **Projects & Connections** page, you can view the Azure project with the connected Azure account and view the selected VPCs.

Configure a Cloud Scan

To run a cloud scan after onboarding your cloud accounts, you must select and run a scan profile. Tenable Cloud Security provides a default scan profile for each cloud provider. You can also create your custom scan profiles. After creating a scan profile, you can run a misconfiguration scan for your cloud account. A misconfiguration scan scans for policy violations in IaC repositories and cloud resources. You can view the scan results on the **Findings > Misconfigurations** page.

To configure a cloud scan:

1. Create a Scan Profile.
2. (Optional) Schedule a Scan.

Create a Scan Profile

Scan profiles allow you to group the scan operations of different cloud resources and schedule scans according to your needs. You can create different scan profiles to run scans targeting different resources.

> **Note:** You can create a maximum of 10 scan profiles.

Before you begin:

To run a vulnerability scan using Agentless Assessment, see the following:

- Configure Vulnerability Scan using Agentless Assessment for AWS
- Configure Vulnerability Scan using Agentless Assessment for Azure

To create a scan profile:

1. Click **Projects & Connections**.

   Tenable Cloud Security lists all the projects in the **Projects** tab.

2. In the row for the project for which you are creating the scan profile, click ⋮ **> Manage cloud scan profiles**.

   The **Manage scan profiles** window appears with the default scan profile.

   > **Note:** You can use the default scan profile to perform a scan. Click the default scan profile to view the resources that get scanned. Vulnerability scan with agentless assessment is enabled by default for the default scan profile.

3. Click **New Scan Profile**.

   The **Create new scan profile for cloud** window appears.

   > **Note:** To create a scan profile from an existing scan profile, create a copy of the scan profile and then edit the profile.

4. In the **Scan profile name** box, type a name for the scan profile or retain the default name.

5. In **Step 1 Cloud config assessment options**, retain the default selections or do one of the following:

   - Select the check box next to the option to select all the resources within a category.
   - Click the drop-down arrow ⌄ to show all the available resources in the category. Select the check boxes as needed.

     > **Note**: The count next to the drop-down arrow ⌄ shows: Number of resources available / Number of resources selected.

   - Select a resource by searching for it in the **Search resources** box.

6. (Optional) In **Step 2**, click the **Enable Vulnerability Scan** toggle to enable vulnerability assessment.

   > **Note**: The vulnerability scan option is available only for AWS EC2 Instances and Azure Virtual Machines. When you enable vulnerability scan, Tenable Cloud Security starts scanning for vulnerabilities after the misconfiguration scan completes.

7. Click **Preview** to view the resources selected in the cloud scan profile.

8. Click **Create Scan Profile**.

   Tenable Cloud Security creates the scan profile and displays it in the **Manage scan profiles** window.

What to do next:

Initiate the scan for the scan profile. For more information, see Run a Cloud Scan.

Schedule a Scan

You can add a scan schedule to your scan profile and run scans at regular intervals. Tenable Cloud Security starts immediately after the duration since the schedule was submitted. For example, if you set the scan schedule to 6 hours now, Tenable Cloud Security starts the scan exactly after 6 hours from now. Tenable Cloud Security runs scheduled scans with the default scan profile.

Note: You can add only one schedule for a scan profile.

To schedule a scan for a scan profile:

1. On the home page, click **Projects & Connections**.

   Tenable Cloud Security displays the list of projects in the **Projects** tab.

2. In the row for the project that you want to scan, click ⋮ **> Manage cloud scan profiles**.

   The **Manage scan profiles** window appears.

3. In the row of the scan profile for which you want to schedule a scan, ⋮ **> Schedule scan**.

   The **Schedule scan** window appears.

4. In the **Select interval** drop-down box, select the required schedule to run the scan: Every 6 hours, 12 hours, or 24 hours.

5. Click **Schedule Scan**.

   Tenable Cloud Security schedules the scan for the selected interval and displays a confirmation message.

Note: To delete a scheduled scan, in the row for the project, click ⋮ **> Delete scheduled scan**.

Run a Cloud Scan

You can create a scan profile to include the resource types that you want to scan and trigger a scan for that profile.

To start a scan:

1. Click **Projects & Connections**.

   Tenable Cloud Security displays the list of projects in the **Projects** tab.

2. In the row for the project for the cloud scan, click ⋮ and do one of the following:

   - **Run default scan profile** — Select this option to run a scan on the default scan profile. If there are no other scan profiles, Tenable Cloud Security runs a scan on the system default scan profile.

     > **Note:** Vulnerability scan with agentless assessment is enabled by default for the default scan profile.

   - **Manage cloud scan profiles** — Select this option to create a new scan profile or use a scan profile that you created earlier.

     The **Manage scan profile** window appears and lists all the scan profiles.

   Tenable Cloud Security runs the scan and updates the scan status column of the project on completion of the scan.

   > **Note:** You can view or edit other scan profiles of a project when the cloud scan is running with one of the scan profiles.

What to do next:

After running a cloud scan, you can view a summary of issues, critical security insights, remediation insights, number of cloud and IaC drifts, failing policies, and impacted resources for your project. For more information, see View Tenable Cloud Security Dashboards and Reports.