Dynamic Attributes Connector

The following topics discuss how to configure and use the Dynamic Attributes Connector.

About the Dynamic Attributes Connector

The dynamic attributes connector enables your access control and DNS policy to adapt in real time to the changes in public and private cloud workloads and business-critical software-as-a-service (SaaS) applications. It simplifies policy management by keeping rules up to date without tedious manual updates and policy deployment. Customers require policy rules to be defined based on non-network constructs such as VM name or security group, so that firewall policy is persistent even when the IP address or VLAN changes.

Supported connectors

We currently support:

Table 1: List of supported connectors by dynamic attributes connector version and platform

CSDAC version	AWS	AWS security groups	AWS service tags	Azure	Azure Service Tags	Cisco Cyber Vision	Cisco Multicl. Defense	Generic text	GitHub	Google Cloud	Microsoft Office 365	vCenter	Tenable	Webex	Zoom
Version 1.1 (on-premises)	Yes	No	No	Yes	Yes	No	No	No	No	No	Yes	Yes	No	No	No
Version 2.0 (on-premises)	Yes	No	No	Yes	Yes	No	No	No	No	Yes	Yes	Yes	No	No	No
Version 2.2 (on-premises)	Yes	No	No	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	No	No	No
Version 2.3 (on-premises)	Yes	No	No	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes

CSDAC version	AWS	AWS security groups	AWS service tags	Azure	Azure Service Tags	Cisco Cyber Vision	Cisco Multicl. Defense	Generic text	GitHub	Google Cloud	Microsoft Office 365	vCenter	Tenable	Webex	Zoom
Version 3.0 (on-premises)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Cloud-delivered (Security Cloud Control)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes

More information about connectors:

- Amazon Web Services (AWS)

  For more information, see a resource like Tagging AWS resources on the Amazon documentation site.

  See Amazon Web Services Connector—About User Permissions and Imported Data

- Cisco Cyber Vision

  See Create a Cisco Cyber Vision connector, on page 21.

- Cisco Multicl. Defense

  See Create a Multicloud Defense connector, on page 20.

- Generic text list of IP addresses you specify

  For more information, see Create a generic text connector, on page 22.

- GitHub

  For more information, see Create a GitHub connector, on page 26.

- Google Cloud

  For more information, see Setting Up Your Environment in the Google Cloud documentation.

  See Google Cloud connector—About user permissions and imported data, on page 27.

- Microsoft Azure

  For more information, see this page on the Azure documentation site.

  See Azure Connector—About User Permissions and Imported Data.

- Microsoft Azure service tags

  For more information, see a resource like Virtual network service tags on Microsoft TechNet.

  See Create an Azure Service Tags connector, on page 19

- Office 365 IP addresses

  For more information, see Office 365 URLs and IP address ranges on docs.microsoft.com.

- Tenable vulnerabilities

  For more information, see Tenable connector, on page 31

- VMware categories and tags managed by vCenter and NSX-T

  For more information, see a resource like vSphere Tags and Attributes in the VMware documentation site.

- Webex IP addresses

  For more information, see Create a Webex connector, on page 35.

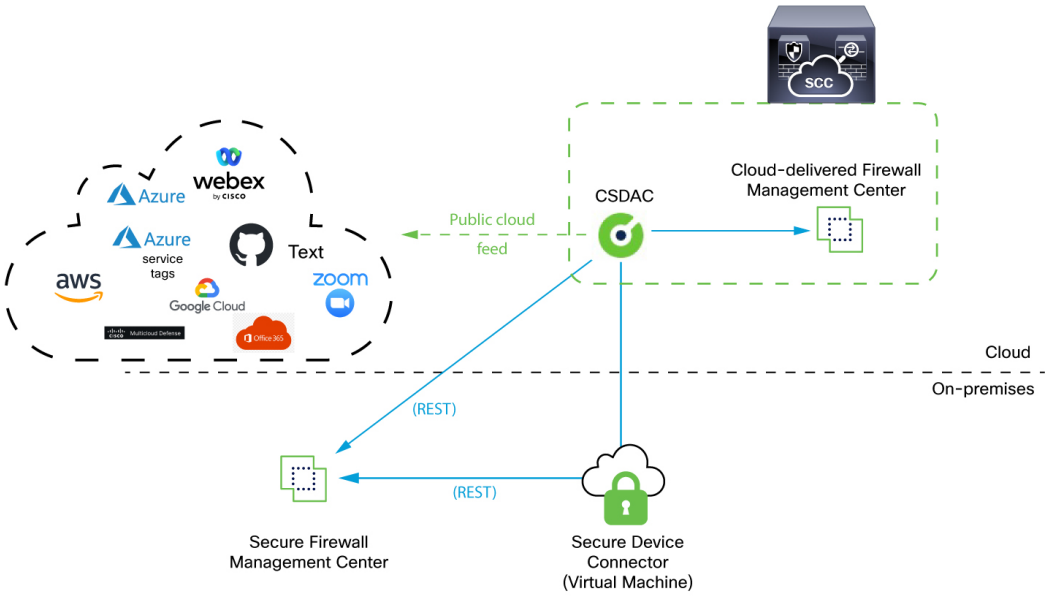
- Zoom IP addresses

  For more information, see Create a Zoom Connector, on page 36.

How It Works

This topic discusses the architecture of the Dynamic Attributes Connector.

The following figure shows how the system functions at a high level.



- The system supports certain public cloud providers.

  This topic discusses supported *connectors* (which are the connections to those providers).

- The dynamic attributes connector is provided with Security Cloud Control; it includes a Cloud-Delivered Firewall Management Center adapter and you can connect to an On-Prem Firewall Management Center using the Secure Device Connector.

  For more information about the Secure Device Connector, see Secure Device Connector (SDC).

- The *adapter* defined by the dynamic attributes connector receives those dynamic attributes filters as *dynamic objects* and enables you to use them in access control rules.

  You can create the following types of adapters:

  - *On-Prem Firewall Management Center* for an on-premises device.

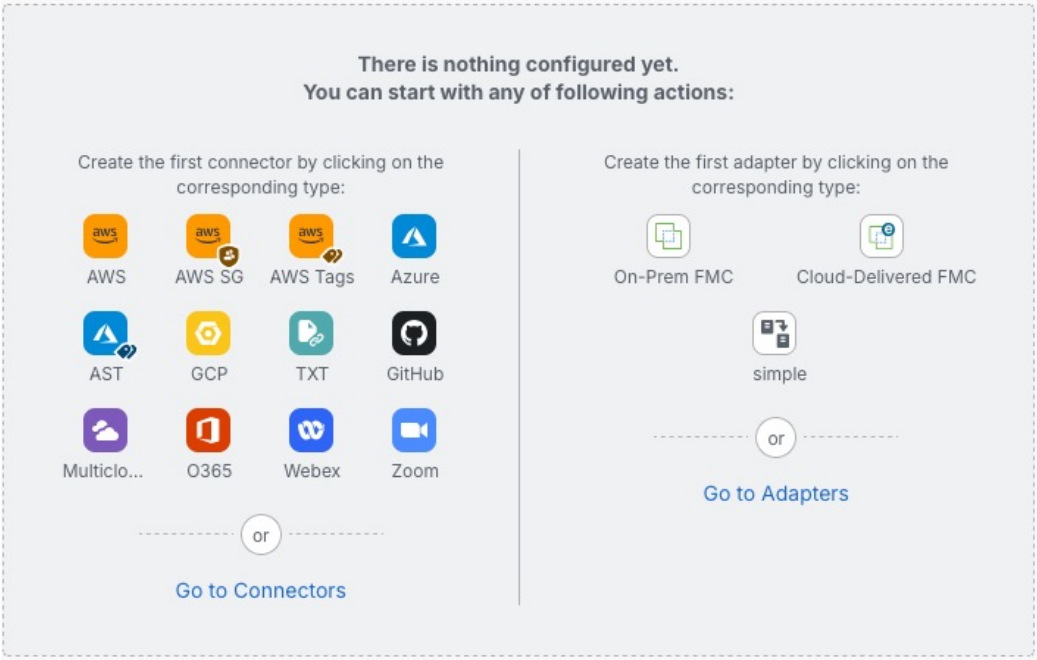
    This type of device might be managed by Security Cloud Control or it might be a standalone.

  - *Cloud-Delivered Firewall Management Center* for devices managed by Security Cloud Control.

About the dashboard

To access the dynamic attributes connector dashboard, log in to Security Cloud Control and click **Administration** > **Dynamic Attributes Connector** at the top of the page.

The dynamic attributes connector Dashboard page displays the status of your connectors, adapters, and filters at a glance. Following is an example of the Dashboard of an unconfigured system:



Among the things you can do with the Dashboard are:

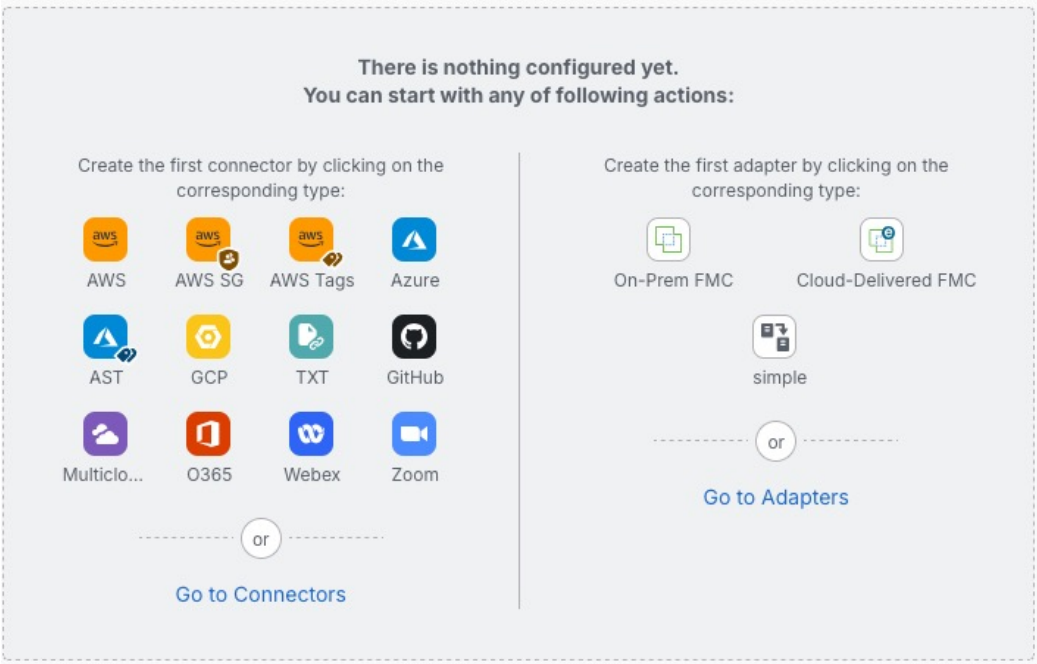
- Add, edit, and delete connectors and dynamic attributes filters.
- See how connectors and dynamic attributes filters are related to each other.
- View warnings and errors.

Related Topics

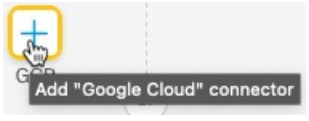
- Dashboard of an unconfigured system, on page 4
- Dashboard of a configured system, on page 5
- Add, edit, or delete connectors, on page 7
- Add, edit, or delete dynamic attributes filters, on page 8

Dashboard of an unconfigured system

Sample dynamic attributes connector Dashboard page of an unconfigured system:



The Dashboard initially displays all the types of connectors you can configure for your system. You can do any of the following:

- Hover the mouse pointer over a connector and click 

to create a new one.
- Click **Go to Connectors** to add, edit, or delete connectors (good for creating, editing, or deleting multiple connectors at the same time).

  For more information, see Create a connector, on page 10.

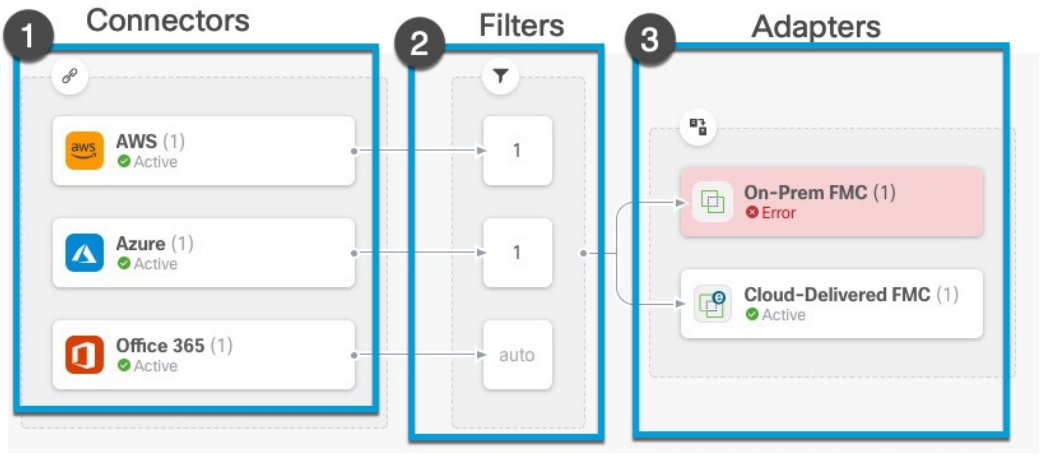
Related Topics:

- Dashboard of a configured system, on page 5
- Add, edit, or delete connectors, on page 7
- Add, edit, or delete dynamic attributes filters, on page 8

Dashboard of a configured system

Sample dynamic attributes connector Dashboard page of a configured system:

Click an area in the figure to learn more about it or click one of the links following the figure.



1 Create a connector, on page 10
2 Create dynamic attributes filters
3 Create an adapter, on page 37

The Dashboard shows the following (from left to right):

Connectors column	Filters column	Adapters column
List of connectors with a number indicating how many of each type are configured. Connectors collect dynamic attributes that could be sent to the configured adapter. Dynamic attributes filters specify what data is sent. Click to view more information about all configured connectors. You can also click the name of a connector to add, edit, or delete connectors; or to view detailed information about them. For more information, see Add, edit, or delete connectors, on page 7.	List of dynamic attributes filters associated with each connector with a number indicating how many of each filter are associated with a connector. Click to view more information about all configured filters. You can also click the name of a filter to add, edit, or delete filters; or to view detailed information about them. For more information, see Add, edit, or delete dynamic attributes filters, on page 8.	List of adapters. Adapters receive dynamic objects from configured connectors using configured dynamic attributes filters; these dynamic objects can be used in access control policies without the need to deploy them. Click to view more information about all configured adapters. You can also click the name of an adapter to add, edit, or delete adapters; or to view detailed information about them. For more information, see Create an adapter, on page 37.

Note Some connectors, such as Outlook 365 and Azure Service tags, automatically pull available dynamic objects without the need for a dynamic attributes filters. Those connectors display **Auto** in the column.

The Dashboard indicates whether or not an object is available. The Dashboard page is refreshed every 15 seconds but you can click **Refresh** ( ) at the top of the page at any time to refresh immediately. If issues persist, check your network connection.

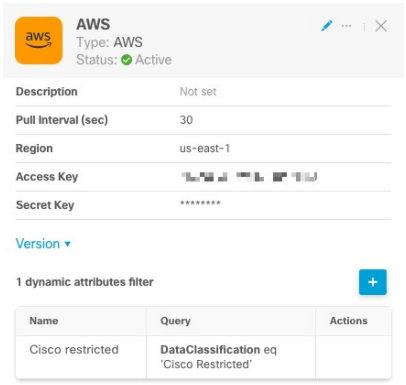
Related Topics:

Add, edit, or delete connectors

The Dashboard enables you to view or edit connectors. You can click the name of a connector to view all instances of that connector or you can click for the following additional options:

- **Go to Connectors** to view all connectors at the same time; you can add, edit, and delete connectors from there.
- **Add Connector** > ***type*** to add a connector of the indicated type.

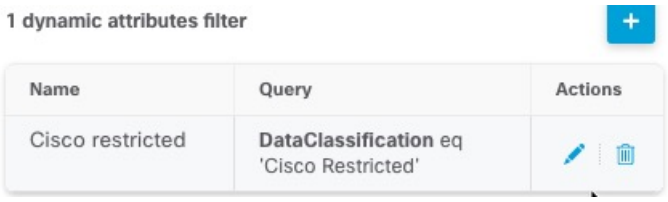
Click any connector in the connectors column ( ) to display more information about it; an example follows:



You have the following options:

- Click the Edit icon ( ) to edit this connector.
- Click the More icon ( ) for additional options.
- Click to close the panel.
- Click **Version** to display the version of the . You can optionally copy the version to the clipboard if necessary for Cisco TAC.

The table at the bottom of the panel enables you to add dynamic attributes filters; or to edit or dynamic attributes connector delete connectors. A sample follows:



Click the Add icon ( ) to add a dynamic attributes filter for this connector. For more information, see Create dynamic attributes filters.

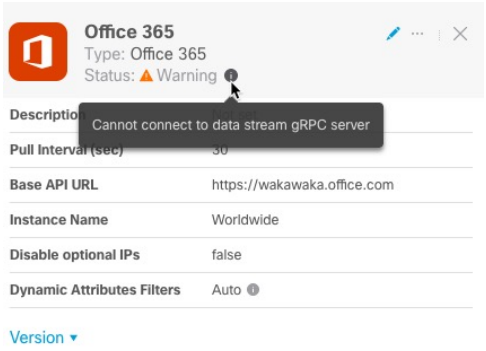
Hover the mouse pointer over the Actions column to either edit or delete the indicated connector.

View error information

To view error information for a connector:

1. On the Dashboard, click the name of the connector that is displaying the error.
2. In the right pane, click **Information** ( ).

   An example follows.



3. To resolve this issue, edit the connector settings as discussed in Create an Office 365 connector, on page 30.
4. If you cannot resolve the issue, click **Version** and copy the version to a text file.
5. Get your Security Cloud Control tenant ID as discussed in Get Your Tenant ID, on page 61
6. Provide all of this information to Cisco TAC.

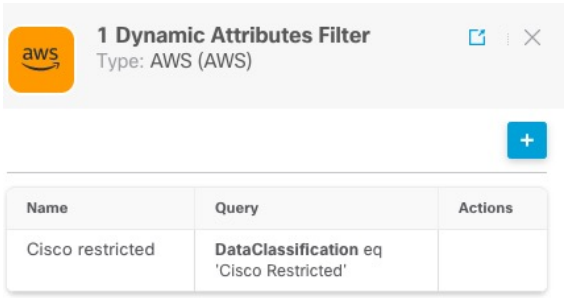
Add, edit, or delete dynamic attributes filters

The dashboard enables you to add, edit, or delete dynamic attributes filters. You can click the name of a filter to view all instances of that filter or you can click for the following additional options:

- **Go to Dynamic Attributes Filters** to view all configured dynamic attributes filters. You can add, edit, or delete dynamic attributes filters from there.
- **Add Dynamic Attributes Filters** to add a filter.

For more information about adding dynamic attributes filters, see Create dynamic attributes filters.

An example follows:



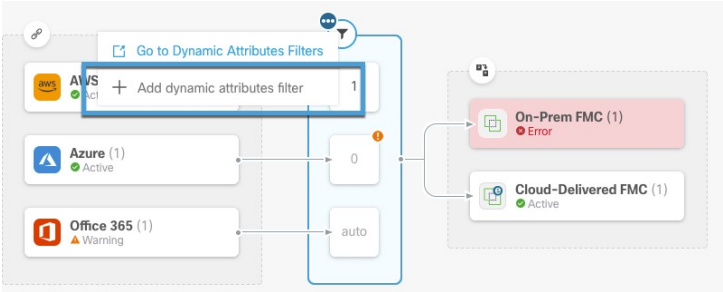
Note Some connectors, such as Outlook 365 and Azure Service tags, automatically pull available dynamic objects without the need for a dynamic attributes filters. Those connectors display **Auto** in the column.

You have the following options:

- Click a filter instance to view summary information about dynamic attributes filters associated with a connector.
- Click the Add icon ( ) to add a new dynamic attributes filter.

  For more information, see Create dynamic attributes filters.
- Click in the filters column ( ) indicates the indicated connector has no associated dynamic attributes filters. Without associated filters, the connector can send nothing to Firewall Management Center.

  One way to resolve the issue is to click in the filters column and click **Add Dynamic Attributes Filter**. A sample follows.



- Click to add, edit, or delete filters.
- Click to close the panel.

Create a connector

A *connector* is an interface with a cloud service. The connector retrieves network information from the cloud service so the network information can be used in policies on the Security Cloud Control.

We support the following:

Table 2: List of supported connectors by dynamic attributes connector version and platform

CSDAC version	AWS	AWS security groups	AWS service tags	Azure	Azure Service Tags	Cisco Cyber Vision	Cisco Multicl. Defense	Generic text	GitHub	Google Cloud	Microsoft Office 365	vCenter	Tenable	Webex	Zoom
Version 1.1 (on-premises)	Yes	No	No	Yes	Yes	No	No	No	No	No	Yes	Yes	No	No	No
Version 2.0 (on-premises)	Yes	No	No	Yes	Yes	No	No	No	No	Yes	Yes	Yes	No	No	No
Version 2.2 (on-premises)	Yes	No	No	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	No	No	No
Version 2.3 (on-premises)	Yes	No	No	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes
Version 3.0 (on-premises)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Cloud-delivered (Security Cloud Control)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes

Amazon Web Services connector—About user permissions and imported data

The dynamic attributes connector imports dynamic attributes from AWS to Security Cloud Control for use in policies.

Dynamic attributes imported

We import the following dynamic attributes from AWS:

- *Tags*, user-defined key-value pairs you can use to organize your AWS EC2 resources.

  For more information, see Tag your EC2 Resources in the AWS documentation

- *IP addresses* of virtual machines in AWS.

Minimum permissions required

The dynamic attributes connector requires a user at minimum with a policy that permits `ec2:DescribeTags`, `ec2:DescribeVpcs`, and `ec2:DescribeInstances` to be able to import dynamic attributes.

Create an AWS user with minimal permissions for the dynamic attributes connector

This task discusses how to set up a service account with minimum permissions to send dynamic attributes to Security Cloud Control. For a list of these attributes, see Amazon Web Services connector—About user permissions and imported data, on page 10.

Before you begin

You must already have set up your Amazon Web Services (AWS) account. For more information about doing that, see this article in the AWS documentation.

Procedure

Step 1 Log in to the AWS console as a user with the admin role.

Step 2 From the Dashboard, click **Security, Identity & Compliance** > **IAM**.

Step 3 Click **Access Management** > **Users**.

Step 4 Click **Add Users**.

Step 5 In the **User Name** field, enter a name to identify the user.

Step 6 Click **Access Key - Programmatic Access**.

Step 7 At the Set permissions page, click **Next** without granting the user access to anything. You can grant user access later.

Step 8 Add tags to the user if desired.

Step 9 Click **Create User**.

Step 10 Click **Download .csv** to download the user's key to your computer.

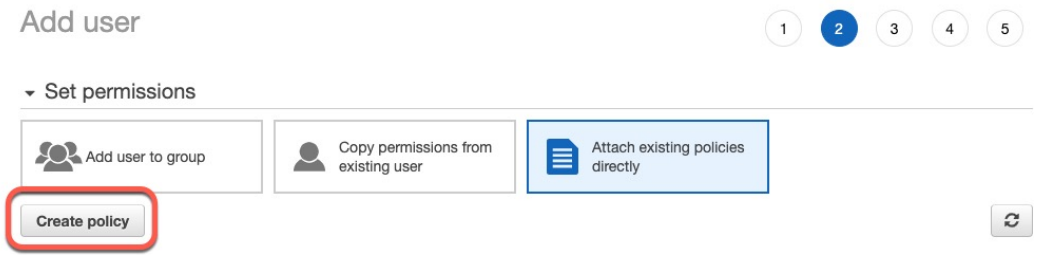
Note
This is the only opportunity you have to retrieve the user's key.

Step 11 Click **Close**.

Step 12 At the Identity and Access Management (IAM) page in the left column, click **Access Management** > **Policies**.

Step 13 Click **Create Policy**.

Step 14 On the Create Policy page, click **JSON**.



Step 15 Enter the following policy in the field:

```
{
 "Version": "2012-10-17",
 "Statement": [
  {
   "Effect": "Allow",
```

```
    "Action": [
     "ec2:DescribeTags",
     "ec2:DescribeInstances",
     "ec2:DescribeVpcs"
    ],
    "Resource": "*"
   }
  ]
}
```

Step 16 Click **Next**.

Step 17 Click **Review**.

Step 18 On the Review Policy page, enter the requested information and click **Create Policy**.

Step 19 On the Policies page, enter all or part of the policy name in the search field and press Enter.

Step 20 Click the policy you just created.

Step 21 Click **Actions** > **Attach**.

Step 22 If necessary, enter all or part of the user name in the search field and press Enter.

Step 23 Click **Attach Policy**.

What to do next

Create an AWS connector, on page 12.

Create an AWS connector

This task discusses how to configure a connector that sends data from AWS to the Security Cloud Control for use in policies.

Before you begin

Create a user with at least the privileges discussed in Create an AWS user with minimal permissions for the dynamic attributes connector, on page 11.

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 Click **Firewall**.

Step 3 Click **Administration** > **Dynamic Attributes Connector** > **Connectors**.

Step 4 Do any of the following:

- Add a new connector: click Add icon (), then click the name of the connector.
- Edit a connector: click Edit icon ().
- Delete a connector: click Delete icon ().

Step 5 Enter the following information.

Value	Description
Name	(Required.) Enter a name to uniquely identify this connector.
Description	Optional description.
Pull Interval	(Default 30 seconds.) Interval at which IP mappings are retrieved from AWS.
Region	(Required.) Enter your AWS region code.
Access Key	(Required.) Enter your access key.
Secret Key	(Required.) Enter your secret key.

Step 6 Click **Test** and make sure the test succeeds before you save the connector.

Step 7 Click **Save**.

Step 8 Make sure **Ok** is displayed in the Status column.

Amazon Web Services Security Groups connector—About user permissions

The dynamic attributes connector imports dynamic attributes from AWS to Security Cloud Control for use in policies.

Minimum permissions required

The dynamic attributes connector requires a user at minimum with a policy that permits `ec2:DescribeTags`, `ec2:DescribeVpcs`, and `ec2:DescribeInstances` to be able to import dynamic attributes.

Create an AWS Security Groups connector

This task discusses how to configure a connector that sends AWS security groups data to the Security Cloud Control for use in policies.

Before you begin

Do all of the following:

- Create AWS security groups as discussed in Work with security groups on the AWS documentation site.
- Create a user with at least the privileges discussed in Create an AWS user with minimal permissions for the dynamic attributes connector, on page 11.

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 Click **Firewall**.

Step 3 Click **Administration** > **Dynamic Attributes Connector** > **Connectors**.

Step 4 Do any of the following:

- Add a new connector: click Add icon ( ), then click the name of the connector.
- Edit a connector: click Edit icon (Edit).
- Delete a connector: click Delete icon (Delete).

Step 5 Enter the following information.

Value	Description
Name	(Required.) Enter a name to uniquely identify this connector.
Description	Optional description.
Pull Interval	(Default 30 seconds.) Interval at which IP mappings are retrieved from AWS. The minimum value for **Pull Interval** is 1 second. You can set the maximum to any value you want. We recommend against setting the minimum to a low value because it can generate a lot of traffic, and, when applicable, can result in your being billed for the traffic.
Region	(Required.) Enter your AWS region code.
AWS Access Key	(Required.) Enter your access key.
AWS Secret Key	(Required.) Enter your secret key.

Step 6 Click **Test** and make sure the test succeeds before you save the connector.

Step 7 Click **Save**.

Step 8 Make sure **Ok** is displayed in the Status column.

Create an AWS service tags connector

This topic discusses how to create a connector for Amazon Web Services (AWS) service tags to the Security Cloud Control for use in policies.

For more information, see resources like the following on the AWS documentation site:

- What are tags?
- AWS IP address ranges
- Tagging your AWS resources
- Guidance for Tagging on AWS
- AWS service points

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 Click **Firewall**.

Step 3 Click **Administration** > **Dynamic Attributes Connector** > **Connectors**.

Step 4 Do any of the following:

- Add a new connector: click Add icon ( ), then click the name of the connector.
- Edit a connector: click Edit icon (Edit).
- Delete a connector: click Delete icon (Delete).

Step 5 Enter the following information.

Value	Description
Name	(Required.) Enter a name to uniquely identify this connector.
Description	Optional description.
URL	(Required.) Do not change the URL unless advised to do so.

Step 6 Click **Test** and make sure **Test connection succeeded** is displayed before you save the connector.

Step 7 Click **Save**.

Step 8 Make sure **Ok** is displayed in the Status column.

Azure connector—About user permissions and imported data

The dynamic attributes connector imports dynamic attributes from Azure to Security Cloud Control for use in policies.

Dynamic attributes imported

We import the following dynamic attributes from Azure:

- *Tags*, key-value pairs associated with resources, resource groups, and subscriptions.

  For more information, see this page in the Microsoft documentation.

- *IP addresses* of virtual machines in Azure.

Minimum permissions required

The dynamic attributes connector requires a user at minimum with the **Reader** permission to be able to import dynamic attributes.

Create an Azure user with minimal permissions for the dynamic attributes connector

This task discusses how to set up a service account with minimum permissions to send dynamic attributes to Security Cloud Control. For a list of these attributes, see Azure connector—About user permissions and imported data, on page 15.

Before you begin

You must already have a Microsoft Azure account. To set one up, see this page on the Azure documentation site.

Procedure

Step 1 Log in to the Azure Portal as the owner of the subscription.

Step 2 Click **Azure Active Directory**.

Step 3 Find the instance of Azure Active Directory for the application you want to set up.

Step 4 Click **Add** > **App registration**.

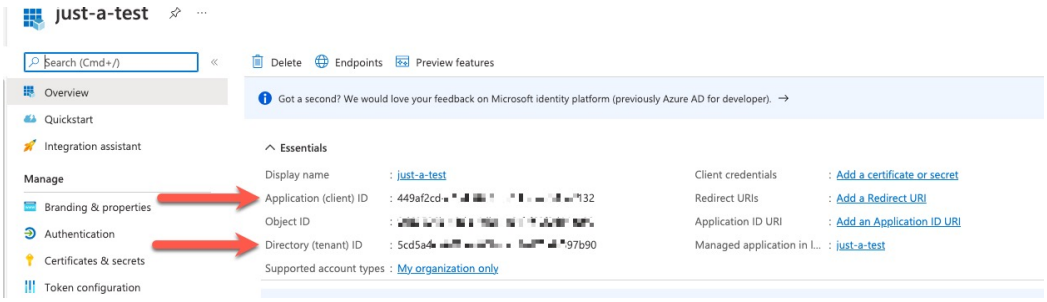
Step 5 In the **Name** field, enter a name to identify this application.

Step 6 Enter other information on this page as required by your organization.

Step 7 Click **Register**.

Step 8 On the next page, write down or copy the Client ID (also referred to as *application ID*) and the tenant ID (also referred to as the *directory ID*).

A sample follows.

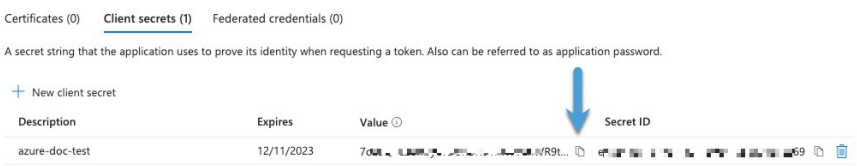


Step 9 Next to Client Credentials, click **Add a certificate or secret**.

Step 10 Click **New Client Secret**.

Step 11 Enter the requested information and click **Add**.

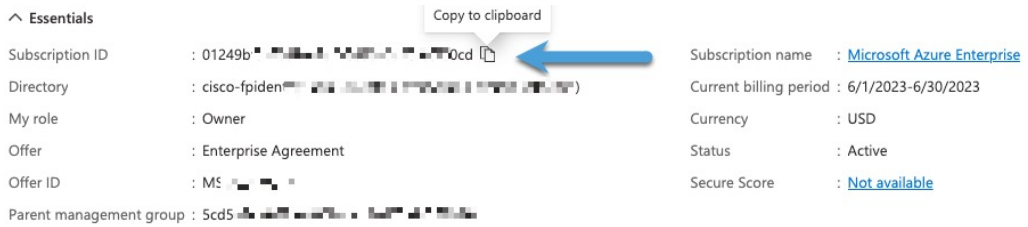
Step 12 Copy the value of the **Value** field to the clipboard. This value, *and not the* ***Secret ID***, is the client secret.



Step 13 Go back to the main Azure Portal page and click **Subscriptions**.

Step 14 Click the name of your subscription.

Step 15 Copy the subscription ID to the clipboard.



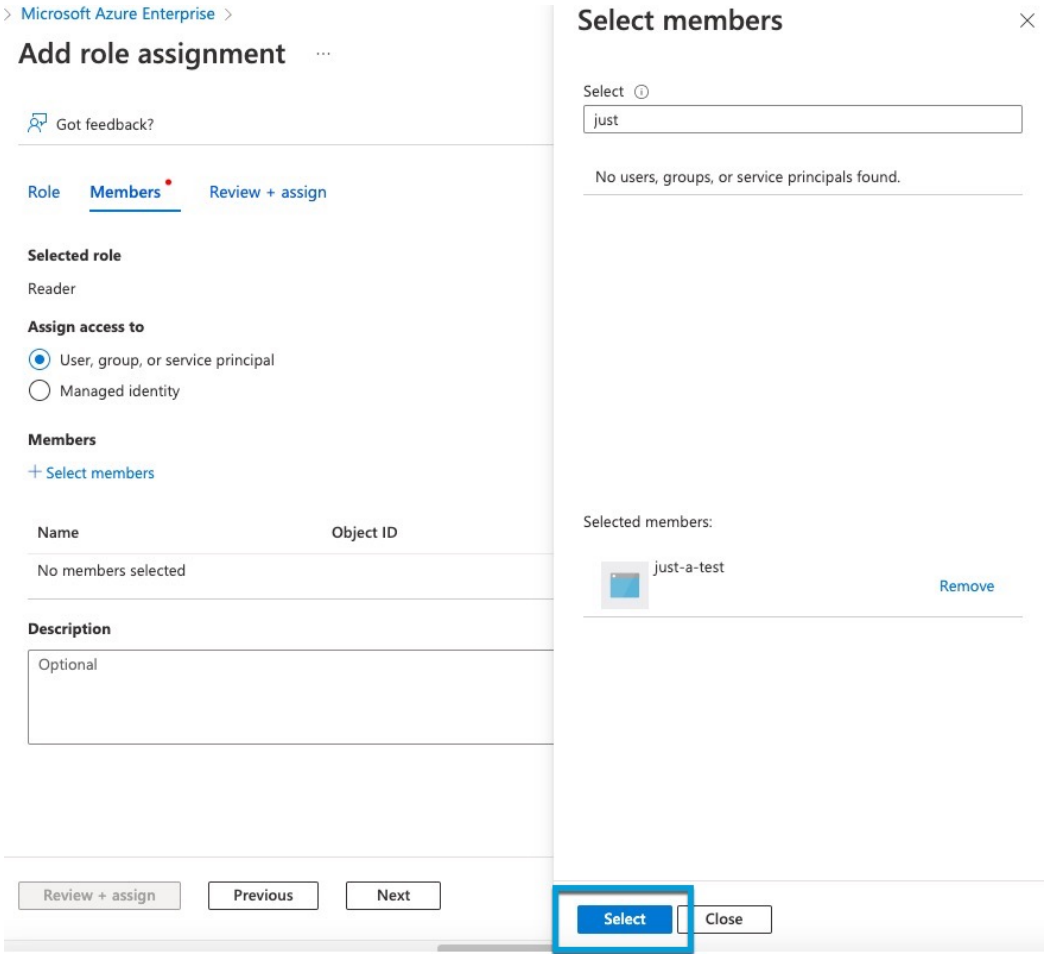
Step 16 Click **Access Control (IAM)**.

Step 17 Click **Add** > **Add role assignment**.

Step 18 Click **Reader** and click **Next**.

Step 19 Click **Select Members**.

Step 20 On the right side of the page, click the name of the app you registered and click **Select**.



Step 21 Click **Review + Assign** and follow the prompts to complete the action.

What to do next

See Create an Azure connector, on page 18.

Create an Azure connector

This task discusses how to create a connector to send data from Azure to Security Cloud Control for use in policies.

Before you begin

Create an Azure user with at least the privileges discussed in Create an Azure user with minimal permissions for the dynamic attributes connector, on page 16.

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 Click **Firewall**.

Step 3 Click **Administration** > **Dynamic Attributes Connector** > **Connectors**.

Step 4 Do any of the following:

- Add a new connector: click Add icon ( ), then click the name of the connector.
- Edit a connector: click Edit icon (Edit).
- Delete a connector: click Delete icon (Delete).

Step 5 Enter the following information.

Value	Description
Name	(Required.) Enter a name to uniquely identify this connector.
Description	Optional description.
Pull Interval	(Default 30 seconds.) Interval at which IP mappings are retrieved from Azure. The minimum value for **Pull Interval** is 1 second. You can set the maximum to any value you want. We recommend against setting the minimum to a low value because it can generate a lot of traffic, and, when applicable, can result in your being billed for the traffic.
Subscription Id	(Required.) Enter your Azure subscription ID.
Tenant Id	(Required.) Enter your tenant ID.
Client Id	(Required.) Enter your client ID.
Client Secret	(Required.) Enter your client secret.

Step 6 Click **Test** and make sure **Test connection succeeded** is displayed before you save the connector.

Step 7 Click **Save**.

Step 8 Make sure **Ok** is displayed in the Status column.

Create an Azure Service Tags connector

This topic discusses how to create a connector for Azure service tags to the Security Cloud Control for use in policies. The IP addresses associated with these tags are updated every week by Microsoft.

For more information, see Virtual network service tags on Microsoft TechNet.

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 Click **Firewall**.

Step 3 Click **Administration** > **Dynamic Attributes Connector** > **Connectors**.

Step 4 Do any of the following:

- Add a new connector: click Add icon ( ), then click the name of the connector.
- Edit a connector: click Edit icon (Edit).
- Delete a connector: click Delete icon (Delete).

Step 5 Enter the following information.

Value	Description
Name	(Required.) Enter a name to uniquely identify this connector.
Description	Optional description.
Pull Interval	(Default 30 seconds.) Interval at which IP mappings are retrieved from Azure. The minimum value for **Pull Interval** is 1 second. You can set the maximum to any value you want. We recommend against setting the minimum to a low value because it can generate a lot of traffic, and, when applicable, can result in your being billed for the traffic.
Subscription Id	(Required.) Enter your Azure subscription ID.
Tenant Id	(Required.) Enter your tenant ID.
Client Id	(Required.) Enter your client ID.
Client Secret	(Required.) Enter your client secret.

Step 6 Click **Test** and make sure **Test connection succeeded** is displayed before you save the connector.

Step 7 Click **Save**.

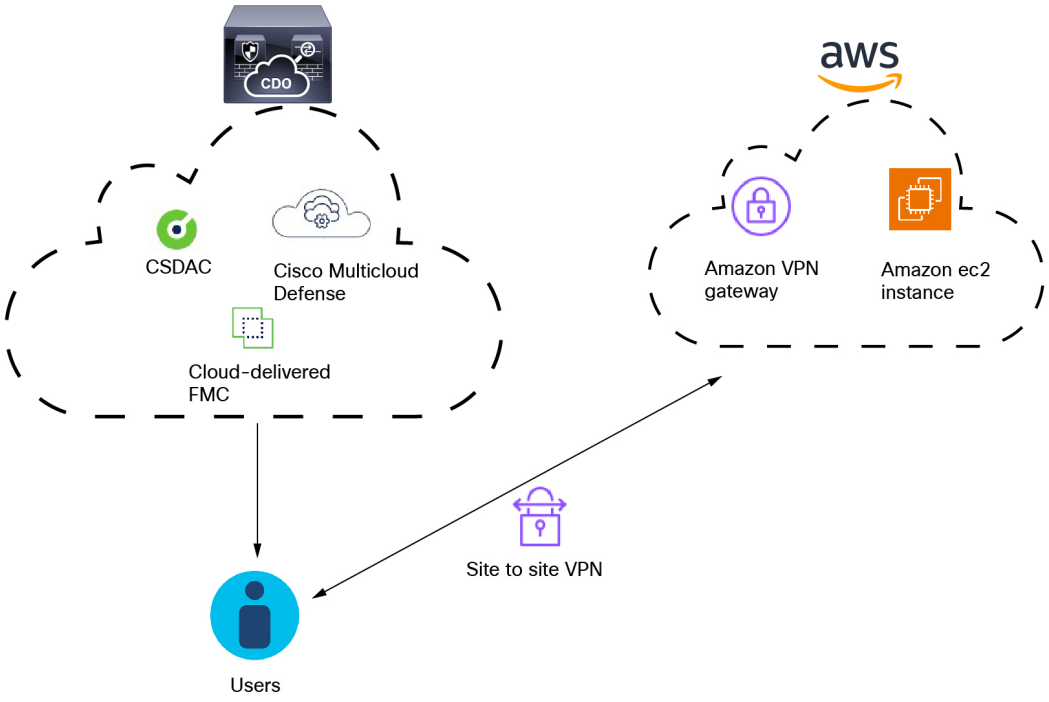
Step 8 Make sure **Ok** is displayed in the Status column.

Create a Multicloud Defense connector

This topic discusses how to create a connector for Cisco Multicloud Defense. The connector sends dynamic application address objects to the configured Cloud-Delivered Firewall Management Center.

For more information, see the Address Objects chapter in the *Cisco Multicloud Defense User Guide* and address object API documentation.

The following figure shows how the Cisco Multicloud Defense connector works.



As the figure shows:

- Users logging in and out of AWS create activity monitored by Multicloud Defense.
- The dynamic attributes connector and Multicloud Defense, both included in Security Cloud Control, send IP addresses from that activity to the Cloud-Delivered Firewall Management Center.
- These IP addresses can then be used in access control rules by the Cloud-Delivered Firewall Management Center.

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 Click **Firewall**.

Step 3 Click **Administration** > **Dynamic Attributes Connector** > **Connectors**.

Step 4 Do any of the following:

- Add a new connector: click Add icon (), then click the name of the connector.
- Edit a connector: click Edit icon ().
- Delete a connector: click Delete icon ().

Step 5 Enter a **Name** and optional **Description** to identify the connector.

Step 6 Enter a **Pull Interval**. (Default 30 seconds.) Interval at which objects are retrieved from the Multicloud Defense Connector.

Step 7 Click **Test** and make sure the test succeeds before you save the connector.

Step 8 Click **Save**.

Step 9 Make sure **Ok** is displayed in the Status column.

What to do next

You must create a Cloud-Delivered Firewall Management Center adapter as discussed in Create an adapter, on page 37.

Create a Cisco Cyber Vision connector

This task discusses how to send data from Cisco Cyber Vision to the Security Cloud Control.

Before you begin

Cisco Cyber Vision must be reachable from the machine on which the dynamic attributes connector is running. You must know its IP address, port, and API key.

To find the API key in the Cyber Vision management console, click **Admin** > **API** > **Token**, then click **Show** to display the token and  to copy the token to the clipboard.

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 Click **Firewall**.

Step 3 Click **Administration** > **Dynamic Attributes Connector** > **Connectors**.

Step 4 Do any of the following:

- Add a new connector: click Add icon (), then click the name of the connector.
- Edit a connector: click Edit icon ().
- Delete a connector: click Delete icon ().

Step 5 Enter the following information.

Value	Description
Name	(Required.) Enter a name to uniquely identify this connector.
Description	Optional description.
Cyber Vision Prefix	Enter an alphanumeric string to identify dynamic objects from this Cyber Vision's IP address when objects are sent to Security Cloud Control. If you have one Cyber Vision IP address, you can enter any value such as **1**.
Pull Interval	(Default 60 seconds.) Interval at which data mappings are retrieved from Cyber Vision. The minimum value for **Pull Interval** is 1 second. You can set the maximum to any value you want. We recommend against setting the minimum to a low value because it can generate a lot of traffic, and, when applicable, can result in your being billed for the traffic.
Host	(Required.) Enter the Cyber Vision fully qualified host name or IP address.
Port	(Required.) Enter the Cyber Vision listen port.
Token	(Required.) Enter the API token.

Step 6 Click **Test** and make sure the test succeeds before you save the connector.

Step 7 Click **Save**.

Step 8 Make sure **Ok** is displayed in the Status column.

Create a generic text connector

This task discusses how to create an ad hoc list of IP addresses you maintain manually and retrieve at an interval you select (30 seconds by default). You can update the list of addresses anytime you want.

Before you begin

Create text files with IP addresses and put it on a web server that is accessible from the Security Cloud Control. IP addresses can include CIDR notation. The text file must have only one IP address per line.

For example, you might have a list of IP addresses for an "allow list" in access control rules and another list of IP addresses for a "block list" in access control rules.

You can specify up to 10,000 IP addresses per text file.

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 Click **Firewall**.

Step 3 Click **Administration** > **Dynamic Attributes Connector** > **Connectors**.

Step 4 Do any of the following:

- Add a new connector: click Add icon (), then click the name of the connector.
- Edit a connector: click Edit icon ().
- Delete a connector: click Delete icon ().

Step 5 Enter the following information:

Item	Description
Name	Enter a name to identify the connector.
Description	(Optional.) Enter a description
Pull Interval	Change the frequency, in seconds, at which the dynamic attributes connector retrieves IP addresses from the text file. The default is 30 seconds. The minimum value for **Pull Interval** is 1 second. You can set the maximum to any value you want. We recommend against setting the minimum to a low value because it can generate a lot of traffic, and, when applicable, can result in your being billed for the traffic.
URLs	Enter a URL from which to retrieve IP addresses.
Add another URL	(Optional.) Click the link to add more URLs to an existing list.
Certificate	(Optional.) If a certificate chain is required for a secure connection to the web server, you have the following options: • Click **Get Certificate** > **Fetch** to automatically fetch the certificate or, if that is not possible, get the certificate manually as discussed in Manually get a certificate authority (CA) chain, on page 23. • Click **Get Certificate** > **Browse from file** to upload a certificate chain you downloaded previously.

Step 6 Click **Test** and make sure the test succeeds before you save the connector.

Step 7 Click **Save**.

Step 8 Make sure **Ok** is displayed in the Status column.

Manually get a certificate authority (CA) chain

In the event you cannot automatically fetch the certificate authority chain, use one of the following browser-specific procedures to get a certificate chain used to connect securely to vCenter or Firewall Management Center.

The *certificate chain* is the root certificate and all subordinate certificates.

You can optionally use one of these procedures to connect to the following:

- vCenter or NSX
- Firewall Management Center

Get a Certificate Chain—Mac (Chrome and Firefox)

Use this procedure to get a certificate chain using the Chrome and Firefox browsers on Mac OS.

1. Open a Terminal window.
2. Enter the following command.

   ```
   security verify-cert -P url[:port]
   ```

   where *url* is the URL (including scheme) to vCenter or Firewall Management Center. For example:

   ```
   security verify-cert -P https://myvcenter.example.com
   ```

   If you access vCenter or Firewall Management Center using NAT or PAT, you can add a port as follows:

   ```
   security verify-cert -P https://myvcenter.example.com:12345
   ```

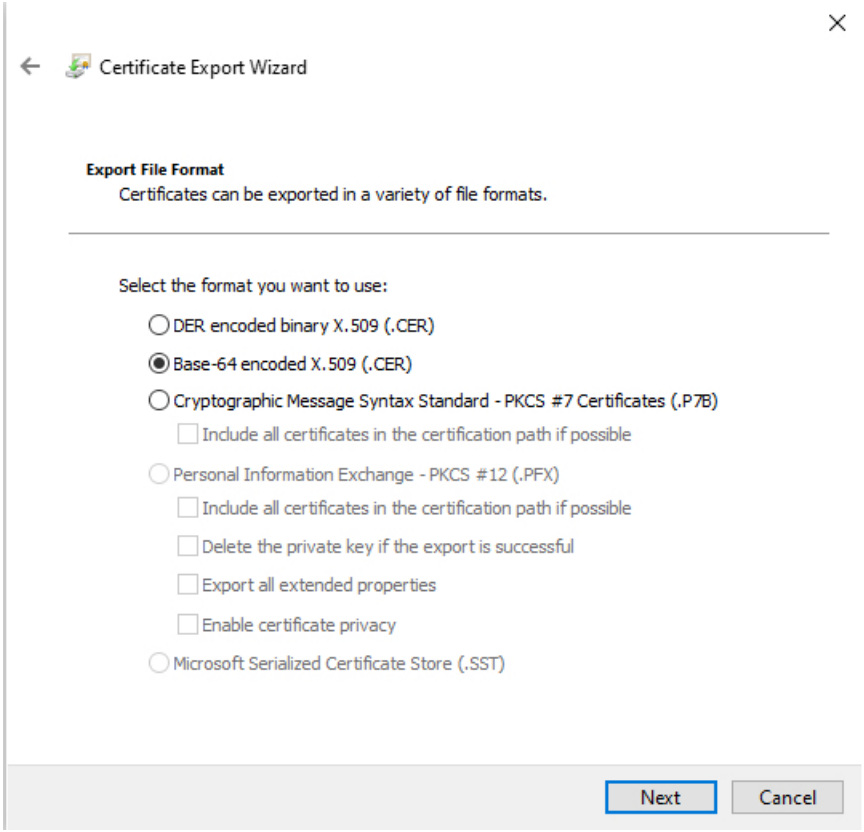
3. Save the entire certificate chain to a plaintext file.
   - *Include* all `-----BEGIN CERTIFICATE-----` and `-----END CERTIFICATE-----` delimiters.
   - *Exclude* any extraneous text (for example, the name of the certificate and any text contained in angle brackets (< and >) as well as the angle brackets themselves.
4. Repeat these tasks for vCenter Firewall Management Center.

Get a Certificate Chain—Windows Chrome

Use this procedure to get a certificate chain using the Chrome browser on Windows.

1. Log in to vCenter or Firewall Management Center using Chrome.
2. In the browser address bar, click the lock to the left of the host name.
3. Click **Certificate**.
4. Click the **Certification Path** tab.
5. Click the top (that is, first) certificate in the chain.
6. Click **View Certificate**.
7. Click the **Details** tab.
8. Click **Copy to File**.
9. Follow the prompts to create a CER-formatted certificate file that includes the entire certificate chain.

   When you're prompted to choose an export file format, click **Base 64-Encoded X.509 (.CER)** as the following figure shows.



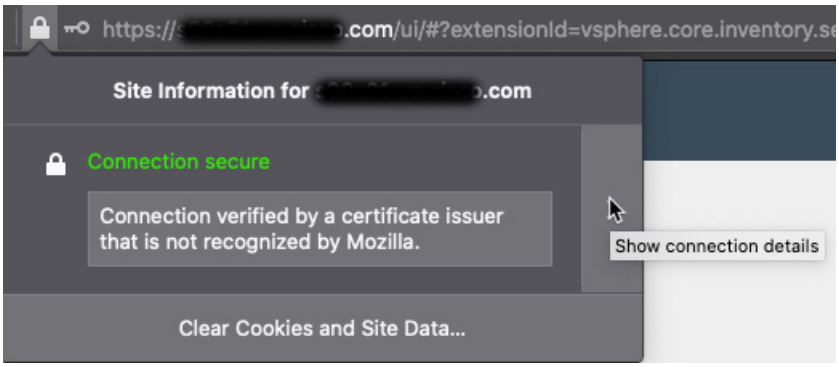
10. Follow the prompts to complete the export.
11. Open the certificate in a text editor.
12. Repeat the process for all certificates in the chain.

    You must paste each certificate in the text editor in order, first to last.
13. Repeat these tasks for vCenter or Firewall Management Center.

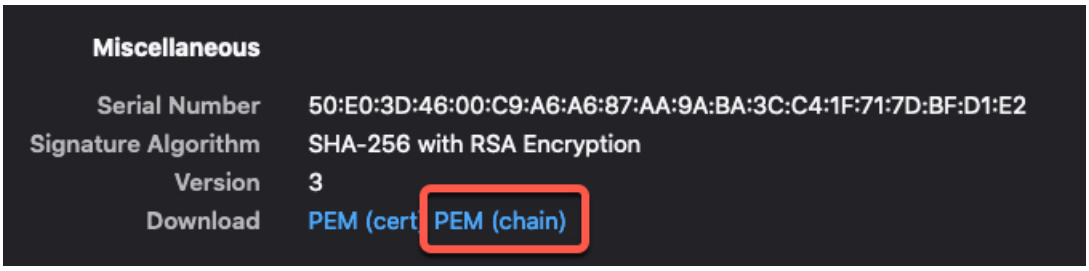
Get a Certificate Chain—Windows Firefox

Use the following procedure to get a certificate chain for the Firefox browser on either Windows or Mac OS.

1. Log in to vCenter or Firewall Management Center. using Firefox.
2. Click the lock to the left of the host name.
3. Click the right arrow (**Show connection details**). The following figure shows an example.



4. Click **More Information**.
5. Click **View Certificate**.
6. If the resulting dialog box has tab pages, click the tab page corresponding to the top-level CA.
7. Scroll to the Miscellaneous section.
8. Click **PEM (chain)** in the Download row. The following figure shows an example.



9. Save the file.
10. Repeat these tasks for vCenter or Firewall Management Center.

Create a GitHub connector

This section discusses how to create a GitHub connector that sends data to the Security Cloud Control for use in policies. The IP addresses associated with these tags are maintained by GitHub. You do not have to create a dynamic attributes filters.

For more information, see About GitHub's IP addresses.

Note Do not change the URL because doing so will fail to retrieve any IP addresses.

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 Click **Firewall**.

Step 3 Click **Administration** > **Dynamic Attributes Connector** > **Connectors**.

Step 4 Do any of the following:

- Add a new connector: click Add icon (), then click the name of the connector.
- Edit a connector: click Edit icon ().
- Delete a connector: click Delete icon ().

Step 5 Enter a **Name** and an optional description.

Step 6 (Optional.) In the **Pull Interval** field, change the frequency, in seconds, at which the dynamic attributes connector retrieves IP addresses from GitHub. The default is 21,600 seconds (6 hours).

Step 7 Click **Test** and make sure the test succeeds before you save the connector.

Step 8 Click **Save**.

Step 9 Make sure **Ok** is displayed in the Status column.

Google Cloud connector—About user permissions and imported data

The dynamic attributes connector imports dynamic attributes from Google Cloud to Security Cloud Control for use in policies.

Dynamic attributes imported

We import the following dynamic attributes from Google Cloud:

- *Labels*, key-value pairs you can use to organize your Google Cloud resources.

  For more information, see Creating and Managing Labels in the Google Cloud documentation.
- *Network tags*, key-value pairs associated with an organization, folder, or project.

  For more information, see Creating and Managing Tags in the Google Cloud documentation.
- *IP addresses* of virtual machines in Google Cloud.

Minimum permissions required

The dynamic attributes connector requires a user at minimum with the **Basic** > **Viewer** permission to be able to import dynamic attributes.

Create a Google Cloud user with minimal permissions for the dynamic attributes connector

This task discusses how to set up a service account with minimum permissions to send dynamic attributes to Security Cloud Control. For a list of these attributes, see Google Cloud connector—About user permissions and imported data, on page 27.

Before you begin

You must already have set up your Google Cloud account. For more information about doing that, see Setting Up Your Environment in the Google Cloud documentation.

Procedure

Step 1 Log in to your Google Cloud account as a user with the owner role.

Step 2 Click **IAM & Admin** > **Service Accounts** > **Create Service Account**.

Step 3 Enter the following information:

- **Service account name**: A name to identify this account; for example, **CSDAC**.
- **Service account ID**: Should be populated with a unique value after you enter the service account name.
- **Service account description**: Enter an optional description.

For more information about service accounts, see Understanding Service Accounts in the Google Cloud documentation.

Step 4 Click **Create and Continue**.

Step 5 Follow the prompts on your screen until the Grant users access to this service account section is displayed.

Step 6 Grant the user the **Basic** > **Viewer** role.

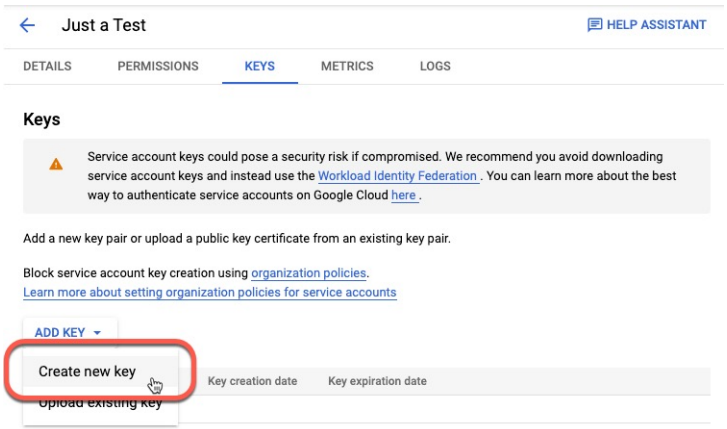
Step 7 Click **Done**.

A list of service accounts is displayed.

Step 8 Click **More** (⋮) at the end of the row of the service account you created.

Step 9 Click **Manage Keys**.

Step 10 Click **Add Key** > **Create New Key**.



Step 11 Click **JSON**.

Step 12 Click **Create**.

The JSON key is downloaded to your computer.

Step 13 Keep the key handy when you configure the GCP connector.

What to do next

See Create a Google Cloud connector, on page 29.

Create a Google Cloud connector

Before you begin

Have your Google Cloud JSON-formatted service account data ready; it's required to set up the connector.

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 Click **Firewall**.

Step 3 Click **Administration** > **Dynamic Attributes Connector** > **Connectors**.

Step 4 Do any of the following:

- Add a new connector: click Add icon ( ), then click the name of the connector.
- Edit a connector: click Edit icon (Edit).
- Delete a connector: click Delete icon (Delete).

Step 5 Enter the following information.

Value	Description
Name	(Required.) Enter a name to uniquely identify this connector.
Description	Optional description.
Pull Interval	(Default 30 seconds.) Interval at which IP mappings are retrieved from AWS. The minimum value for **Pull Interval** is 1 second. You can set the maximum to any value you want. We recommend against setting the minimum to a low value because it can generate a lot of traffic, and, when applicable, can result in your being billed for the traffic.
GCP region	(Required.) Enter the GCP region in which your Google Cloud is located. For more information, see Regions and Zones in the Google Cloud documentation.
Service account	Paste the JSON code for your Google Cloud service account.

Step 6 Click **Test** and make sure the test succeeds before you save the connector.

Step 7 Click **Save**.

Step 8 Make sure **Ok** is displayed in the Status column.

Create an Office 365 connector

This task discusses how to create a connector for Office 365 tags to send data to the Security Cloud Control for use in policies. The IP addresses associated with these tags are updated every week by Microsoft. You do not have to create a dynamic attributes filter to use the data.

For more information, see Office 365 URLs and IP address ranges on docs.microsoft.com.

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 Click **Firewall**.

Step 3 Click **Administration** > **Dynamic Attributes Connector** > **Connectors**.

Step 4 Do any of the following:

- Add a new connector: click Add icon ( ), then click the name of the connector.
- Edit a connector: click Edit icon (Edit).
- Delete a connector: click Delete icon (Delete).

Step 5 Enter the following information.

Value	Description
Name	(Required.) Enter a name to uniquely identify this connector.
Description	Optional description.
Pull Interval	(Default 30 seconds.) Interval at which IP mappings are retrieved from Azure. The minimum value for **Pull Interval** is 1 second. You can set the maximum to any value you want. We recommend against setting the minimum to a low value because it can generate a lot of traffic, and, when applicable, can result in your being billed for the traffic.
Base API URL	(Required.) Enter the URL from which to retrieve Office 365 information, if it's different from the default. For more information, see Office 365 IP Address and URL web service on the Microsoft documentation site.
Instance name	(Required.) From the list, click an instance name. For more information, see Office 365 IP Address and URL web service on the Microsoft documentation site.
Disable optional IPs	(Required.) Enter **true** or **false**.

Step 6 Click **Test** and make sure the test succeeds before you save the connector.

Step 7 Click **Save**.

Step 8 Make sure **Ok** is displayed in the Status column.

Tenable connector

These topics provide information about creating and using the Tenable connector for vulnerability management.

Related Topics

About the Tenable connector, on page 31
Get the Tenable API key and secret, on page 31
Create a Tenable connector, on page 32
About Tenable dynamic objects in IDS, IPS, and access control policies, on page 34

About the Tenable connector

Tenable Vulnerability Management is a platform that helps organizations understand, report, and manage known vulnerabilities. When used with the Cloud-Delivered Firewall Management Center, the Tenable connector:

- Creates a dynamic object with a list of IP addresses known to have Common Vulnerability Exposures (CVEs).
- Populates those IP addresses and associated vulnerabilities to the Cloud-Delivered Firewall Management Center network map as host entries.

  Network map entries provide the basis for intrusion policy recommendations.

The dynamic object created by this connector can be used in access control rules, or anywhere dynamic objects are supported. For example, you can use the dynamic object to block vulnerable devices from accessing highly sensitive resources.

Supported products

We support Tenable Vulnerability Management only. We *do not* support Tenable Security Center.

Support for the Tenable connector with the On-Prem Firewall Management Center is currently limited to creating the dynamic object. The On-Prem Firewall Management Center does *not* receive network map entries from the Tenable connector, and therefore cannot be used with intrusion policy recommendations.

Related Topics

About the Tenable connector, on page 31
Get the Tenable API key and secret, on page 31
Create a Tenable connector, on page 32
About Tenable dynamic objects in IDS, IPS, and access control policies, on page 34

Get the Tenable API key and secret

To configure the Tenable connector, you must create an API key and secret as described in this topic.

Note API keys inherit the permissions of the user account that generates them. Create the API key and secret using an account with full visibility to all hosts and vulnerabilities. For more information, see Permissions.

Procedure

Step 1 Log in to Tenable as an administrator.

Step 2 Click your profile image in the top right of the page.

Step 3 Click **My Profile** > **API Keys**.

Step 4 Click **Generate**.
You are required to confirm the action.

Step 5 Under Custom API keys, click (Copy to clipboard) to copy both the access key and secret key to the clipboard.

Step 6 Save these values for later use.

What to do next

See Create a Tenable connector, on page 32.

Related Topics

About the Tenable connector, on page 31
Get the Tenable API key and secret, on page 31
Create a Tenable connector, on page 32
About Tenable dynamic objects in IDS, IPS, and access control policies, on page 34

Create a Tenable connector

This task explains how to configure the Tenable connector in Cisco Security Cloud. After you configure the connector, you must also configure an adapter to receive the dynamic object.

Before you begin

- Configure Tenable Vulnerability Management : Consult Tenable documentation.
- Get required information: Get the Tenable API key and secret, on page 31.

We support Tenable Vulnerability Management only. We *do not* support Tenable Security Center.

Required User Role:

- Super Admin

Procedure

Step 1 Log in to Cisco Security Cloud.

Step 2 Click **Firewall**.

Step 3 Click **Administration** > **Dynamic Attributes Connector** > **Connectors**.

Step 4 Do any of the following:

- Add a new connector: click Add icon (

), then click the name of the connector.
- Edit a connector: click Edit icon (

).
- Delete a connector: click Delete icon (

).

Step 5 Enter the following information.

Value	Description
Name	(Required.) Enter a name to uniquely identify this connector.
Description	Optional description.
Pull Interval	(Default 21600 seconds or six hours.) Interval at which IP mappings are retrieved from Tenable. We recommend a minimum value of 3600 seconds (one hour) to avoid issues with Tenable rate limiting.
Integration Key	Enter the API key you got in Get the Tenable API key and secret, on page 31.
Secret Key	Enter the secret key obtained in Get the Tenable API key and secret, on page 31.
Dynamic Object Name	Enter a name to identify the dynamic object created by this connector.
Severity Score	Click the minimum vulnerability severity level for the dynamic attributes connector to send IP addresses to the Cloud-Delivered Firewall Management Center. (For example, if you click **high**, IP addresses of hosts with either high or severe vulnerabilities are sent.) Choices: • **severe** • **high** • **medium** • **low**

Value	Description
Severity System	Choices: • **VPR**: (Vulnerability priority rating.) Proprietary Tenable vulnerability rating that dynamically scores threats. VPR values range from 0.1-10.0, with a higher value representing a higher likelihood of exploit: • VPR **severe** is 9.0 and greater • VPR **high** is 7.0 and greater • VPR **severe** is 4.0 and greater • VPR **low** is 0.1 and greater • **CVSSv3**: (Common vulnerability scoring system version 3.) Industry-standard system that retrieves values from the national vulnerability database to describe risk associated with vulnerabilities. CVSS scores power a vulnerability's severity and risk value. For more information, see CVSS vs. VPR.

Step 6 Click **Test**. Save the connector only after the test succeeds.

Step 7 Click **Save**.

Step 8 Make sure **Ok** is displayed in the Status column.

What to do next

See Create an adapter, on page 37.

Related Topics

About the Tenable connector, on page 31
Get the Tenable API key and secret, on page 31
Create a Tenable connector, on page 32
About Tenable dynamic objects in IDS, IPS, and access control policies, on page 34

About Tenable dynamic objects in IDS, IPS, and access control policies

You can use IPS, IDS, and access control policies and rules to monitor or block traffic to and from servers with vulnerabilities identified by the Tenable connector:

1. To monitor traffic and inform you about vulnerabilities *without* blocking the traffic, create an intrusion detection system (IDS) policy with recommendations.
2. To monitor traffic, inform you about vulnerabilities, and block matching traffic, create an intrusion prevention system (IPS) policy with recommendations.
3. Create a new access control policy or add rules to an existing policy. Associate your IDS or IPS policy with an access control rule.

More information about intrusion policies:

- Overview of Intrusion Policies
- Create a Custom Snort 3 Intrusion Policy
- Overview of Secure Firewall Recommended Rules
- Generate New Secure Firewall Recommendations in Snort 3

More information about access control policies:

- Access Control Rule Configuration to Perform Intrusion Prevention

Related Topics

About the Tenable connector, on page 31
Get the Tenable API key and secret, on page 31
Create a Tenable connector, on page 32
About Tenable dynamic objects in IDS, IPS, and access control policies, on page 34

Create a Webex connector

This section discusses how to create a Webex connector that sends data to the Security Cloud Control for use in policies. The IP addresses associated with these tags are maintained by Webex. You do not have to create a dynamic attributes filters.

For more information, see Port Reference for Webex Calling.

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 Click **Firewall**.

Step 3 Click **Administration** > **Dynamic Attributes Connector** > **Connectors**.

Step 4 Do any of the following:

- Add a new connector: click Add icon (), then click the name of the connector.
- Edit a connector: click Edit icon ().
- Delete a connector: click Delete icon ().

Step 5 Enter the following information.

Value	Description
Name	(Required.) Enter a name to uniquely identify this connector.
Description	Optional description.

Value	Description
Pull Interval	(Default 30 seconds.) Interval at which IP mappings are retrieved from Webex. The minimum value for **Pull Interval** is 1 second. You can set the maximum to any value you want. We recommend against setting the minimum to a low value because it can generate a lot of traffic, and, when applicable, can result in your being billed for the traffic.
Provider Reserved IPs	(Required.) (Required.) Slide to enabled to retrieve any reserved IP addresses.

Step 6 Click **Test** and make sure the test succeeds before you save the connector.

Step 7 Click **Save**.

Step 8 Make sure **Ok** is displayed in the Status column.

Create a Zoom Connector

This section discusses how to create a Zoom connector that sends data to the Security Cloud Control for use in policies. The IP addresses associated with these tags are maintained by Zoom. You do not have to create a dynamic attributes filters.

For more information, see Zoom network firewall or proxy server settings.

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 Click **Firewall**.

Step 3 Click **Administration** > **Dynamic Attributes Connector** > **Connectors**.

Step 4 Do any of the following:

- Add a new connector: click Add icon ( ), then click the name of the connector.
- Edit a connector: click Edit icon (Edit).
- Delete a connector: click Delete icon (Delete).

Step 5 Enter the following information.

Value	Description
Name	(Required.) Enter a name to uniquely identify this connector.
Description	Optional description.

Value	Description
Pull Interval	(Default 30 seconds.) Interval at which IP mappings are retrieved from Zoom. The minimum value for **Pull Interval** is 1 second. You can set the maximum to any value you want. We recommend against setting the minimum to a low value because it can generate a lot of traffic, and, when applicable, can result in your being billed for the traffic.
Provider Reserved IPs	(Required.) Slide to enabled to retrieve any reserved IP addresses.

Step 6 Click **Test** and make sure the test succeeds before you save the connector.

Step 7 Click **Save**.

Step 8 Make sure **Ok** is displayed in the Status column.

Create an adapter

An *adapter* is a secure connection to Cloud-Delivered Firewall Management Center or an On-Prem Firewall Management Center to which you push network information from cloud objects for use in access control policies.

You can create the following adapters:

- *On-Prem Firewall Management Center* for an on-premises Secure Firewall Management Center.
- *Cloud-Delivered Firewall Management Center* for devices managed by Cisco Security Cloud.

Note You must have a **Super Admin** user role to create the first adapter. To view or modify existing adapters, you must have an Admin or Super Admin user role.

How to create an On-Prem Firewall Management Center adapter

This topic discusses how to create an adapter to push dynamic objects from the dynamic attributes connector to Cisco Security Cloud.

Before you begin

Onboard the firewall manager to Cisco Security Cloud as discussed in *Onboard a Management Center* in the *Managing Security and Network Devices with Security Cloud Control* online help.

Note Support for the Tenable connector with the On-Prem Firewall Management Center is currently limited to creating the dynamic object. The On-Prem Firewall Management Center does *not* receive network map entries from the Tenable connector, and therefore cannot be used with intrusion policy recommendations.

Required User Role:

- Super Admin

Procedure

Step 1 Log in to Cisco Security Cloud as a user with the Super Admin role.

Step 2 Click **Firewall**.

Step 3 Click **Administration** > **Dynamic Attributes Connector** > **Adapters**.

Step 4 To add an adapter, click Add icon ( ) > On-Prem Firewall Management Center.

Step 5 To edit or delete an adapter, click Edit icon (Edit), or Delete icon (Delete).

Step 6 Add or edit the following information.

Value	Description
Name	(Required.) Enter a unique name to identify this adapter.
Description	Optional description of the adapter.
Primary Device	From the list, click the IP address of a management center associated with your tenant.
Secondary Device	(Optional.) If you have a secondary On-Prem Firewall Management Center, click its name from the list.

Step 7 Click **OK**.

How to create a Cloud-Delivered Firewall Management Center adapter

This topic discusses how to create an adapter to push dynamic objects from the dynamic attributes connector to Cisco Security Cloud.

Before you begin

Required User Role:

- Super Admin

Procedure

Step 1 Log in to Cisco Security Cloud as a user with the Super Admin role.

Step 2 Click **Firewall**.

Step 3 Click **Administration** > **Dynamic Attributes Connector** > **Adapters**.

Step 4 To add an adapter, click Add icon ( ) > Cloud-Delivered Firewall Management Center.

Step 5 To edit or delete an adapter, click Edit icon (Edit), or Delete icon (Delete).

Step 6 Edit the following information.

Value	Description
Name	(Required.) Enter a unique name to identify this adapter.
Description	Optional description of the adapter.
Cloud FMC URL	From the list, click the URL for your Cloud-Delivered Firewall Management Center.

Step 7 Click **Test** and make sure the test succeeds before you save the adapter.

Step 8 Click **Save**.

Create dynamic attributes filters

Dynamic attributes filters that you define using the Dynamic Attributes Connector are exposed in the Security Cloud Control as dynamic objects that can be used in access control policies. For example, restrict access to an AWS server for the Finance Department to only members of the Finance group defined in Microsoft Active Directory.

Note You cannot create dynamic attributes filters for AWS, Azure, Azure Service Tags, Cisco Multicloud Defense, Generic Text, GitHub, Google Cloud, and Outlook 365, pxGrid Cloud identity source, Tenable, vCenter, Webex, and Zoom). These types of cloud objects provide their own IP addresses.

For more information about access control rules, see Create access control rules or DNS rules using dynamic attributes filters.

Before you begin

Create a connector, on page 10

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 Click **Firewall**.

Step 3 Click **Administration** > **Dynamic Attributes Connector** > **Dynamic Attributes Filters**.

Step 4 Do any of the following:

- Add a new filter: click **Add** ( ).
- Edit or delete a filter: Click **More** ( ), then click **Edit** or **Delete** at the end of the row.

Step 5 Enter the following information.

Item	Description
Name	Unique name to identify the dynamic filter (as a dynamic object) in a policy and in the Security Cloud Control Object Manager (**External Attributes** > **Dynamic Object**).
Connector	From the list, click the name of a connector to use.
Query	Click Add  .

Step 6 To add or edit a query, enter the following information.

Item	Description
Key	Click a key from the list. Keys are fetched from the connector.
Operation	Click one of the following: • **Equals** to exactly match the key to the value. • **Contains** to match the key to the value if any part of the value matches.
Values	Click either **Any** or **All** and click one or more values from the list. Click **Add another value** to add values to your query.

Step 7 Click **Show Preview** to display a list of networks or IP addresses returned by your query.

Step 8 When you're finished, click **Save**.

Step 9 (Optional.) Verify the dynamic object in the Security Cloud Control.

a) Log in to the Security Cloud Control.
b) Click **Policies** > **Firewall Threat Defense**.
c) Click **Objects** > **Object Management** > **External Attributes** > **Dynamic Object**.

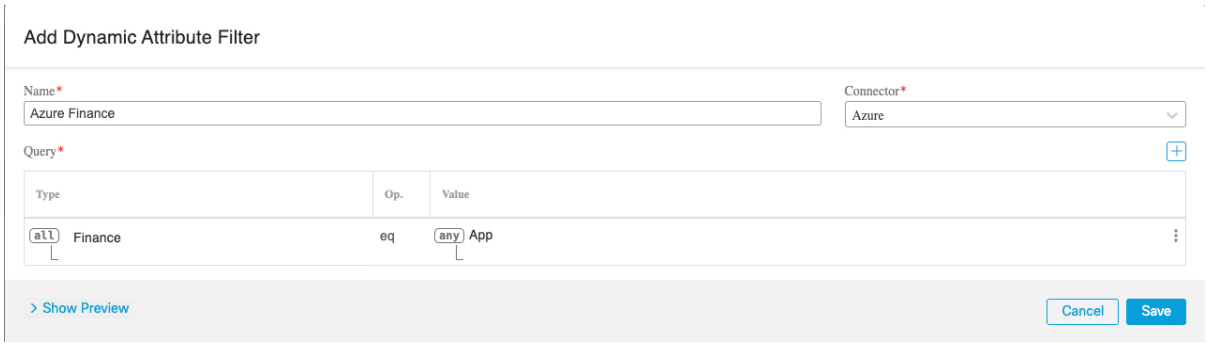
The dynamic attribute query you created should be displayed as a dynamic object.

Dynamic attribute filter examples

This topic provides some examples of setting up dynamic attribute filters.

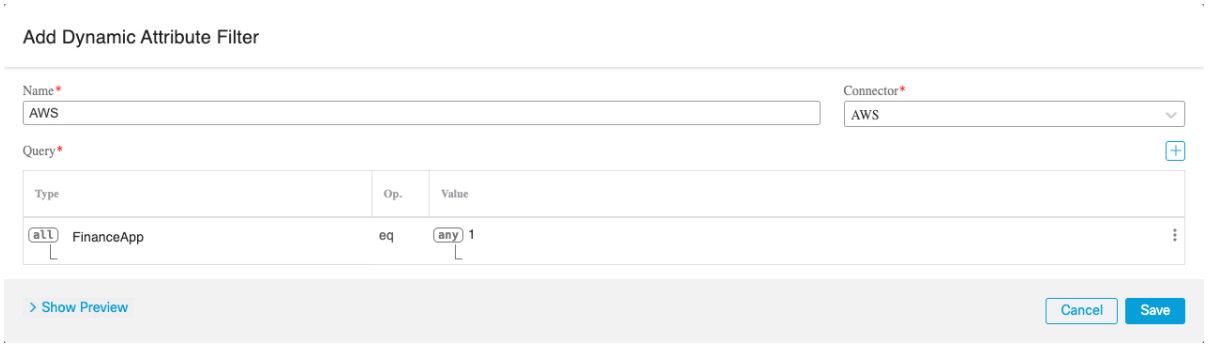
Example: Azure

The following example shows one criterion: a server tagged as a Finance app.



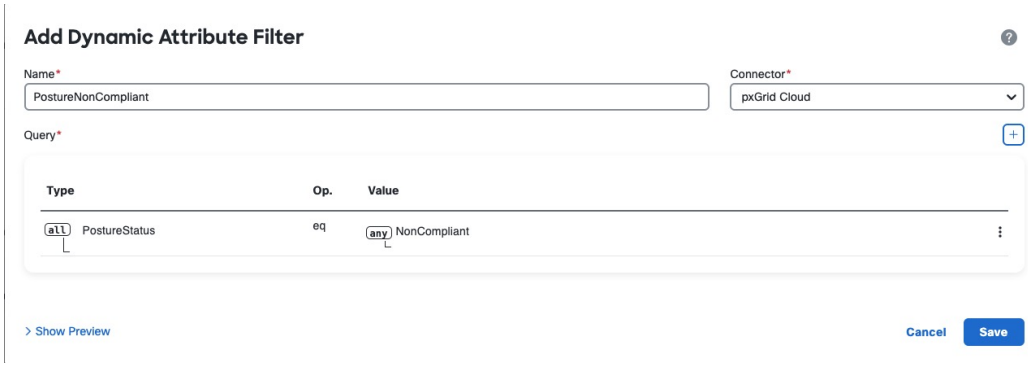
Example: AWS

The following example shows one criterion: a FinanceApp with a value of 1.



Example: pxGrid Cloud

The following example shows one criterion: PostureStatus is NonCompliant.



Dynamic firewall

These topics describe how to integrate user identity data (including Microsoft AD and ISE) with user trust data provided by Identity Intelligence to enhance your ability to detect identity-based exploits in your network.

Related Topics

About the dynamic firewall, on page 42

How to configure the dynamic firewall, on page 42

About the dynamic firewall

Previously, the Security Cloud Control collected information about users exclusively from the configured identity source, such as Microsoft Active Directory, the passive identity agent, Cisco Identity Services Engine (Cisco ISE), and so on. This information generally included user name, group, and IP address.

The dynamic firewall enables you to add user risk scores from Cisco Identity Intelligence to identity source-provided information so you can set policies based on always-current user posture and risk. We enable you to pair user identity with intelligence and use that information in reporting and access control policies.

To use the dynamic firewall, you must:

- Have an Identity Intelligence tenant

  See Duo Identity Security with Cisco Identity Intelligence.

- Set up an identity source:
  - Cisco Identity Services Engine (Cisco ISE)
  - pxGrid Cloud

    pxGrid Cloud combines identity and posture in the same feed

    More information: What is pxGrid?

  In addition to providing authentication information, Cisco ISE and pxGrid Cloud can provide the following:

  - SGT Exchange Protocol over TCP (SXP) binding and directory session information if desired. For more information, see the *Cisco Identity Services Engine Administrator Guide*
  - Posture and mobile device management compliance. For more information, see Compliance.

- Set up an identity realm:

The *identity source* provides authentication information (login, logout) as well as posture. The identity source can also provide SXP binding and session directory information if desired.

The *identity realm* provides user, group, and IP address information.

How to configure the dynamic firewall

This topic helps you understand the concepts and options to configure the dynamic firewall discussed in About the dynamic firewall, on page 42.

Summary

The dynamic firewall integrates an identity source (such as Cisco ISE) with Cisco Identity Intelligence, which provides user trust information to the Secure Firewall Management Center.

1. Configure Cisco Identity Intelligence to collect user trust information.
2. Configure a supported Secure Firewall Management Center identity source.
3. Configure a supported identity realm.

4. Enable the dynamic attributes connector.
5. Configure the dynamic firewall.

Workflow

The following procedure provides a high-level overview of how to configure the dynamic firewall.

1. As a Duo user with the Owner role, provision a Cisco Identity Intelligence tenant.

   You can provision a tenant from Duo Advantage as discussed in *Provision Your Cisco Identity Intelligence Tenant*.

2. In Cisco Identity Intelligence, create an API integration and use the information to set up the dynamic firewall.

   We use Cisco Identity Intelligence to find user and device risk information in your network.

   For more information about Cisco Identity Intelligence, see How-to Guides.

   For more information about this task, see Get required information for Identity Intelligence, on page 44.

3. (Microsoft Azure AD realm only.) In Identity Intelligence, create a Microsoft Entra ID integration.

   For more information, see Microsoft Entra ID (Azure AD) Data Integration.

4. Create an identity source. (If you already have an identity source, continue with the next step.)

   You can do this in any of the following ways:

   - The Configure Dynamic Firewall dialog box displays **Configure** links to start setting up your identity source.
   - Click **Integration** > **Other Integrations** > **Identity Sources**.

   For more information about creating identity sources, see:

   - Ways to configure the Cisco Identity Services Engine (Cisco ISE) identity source
   - How to configure a pxGrid Cloud identity source (Cisco ISE 3.3 or earlier)
   - How to configure a pxGrid Cloud identity source (Cisco ISE 3.4 or later)

5. Create an identity realm.

   We support the following realms:

   - Create an LDAP realm or an Active Directory realm and realm directory

     Only Microsoft AD is supported; LDAP realms are not supported.

   - Create a Microsoft Azure AD (SAML) realm for passive authentication

6. Create the dynamic firewall instance. (If you already have a dynamic firewall instance, continue with the next step.)

   Click **Administration** > **Dynamic Attributes Connector** and click **Configure Dynamic Firewall**.

   See Create a dynamic firewall instance, on page 46.

7. Associate your identity source with Cisco Identity Intelligence.

See Associate an identity source with Identity Intelligence, on page 47.

8. View system-defined filters.

   We create dynamic attributes filters for the following:

   - Untrusted device
   - Trusted device
   - Untrusted user
   - Questionable user

   You can edit or replace these dynamic attributes filters as discussed in Create dynamic attributes filters, on page 54.

9. View system-defined access control rules.

   We create an access control policy named Dynamic Firewall Policy (or similar) with the following rules:

   - Block an untrusted user from any source network to any destination network.
   - Monitor a questionable user from any source network to any destination network.
   - Block an untrusted device from any source network to any destination network.

   You can edit or delete the access control policy and rules as discussed in View and edit the system-created access control policy, on page 53.

Related Topics

About the dynamic firewall, on page 42
How to configure the dynamic firewall, on page 42

Get required information for Identity Intelligence

This task discusses how to create an API client, which provides all the get required information to set up Identity Intelligence in the dynamic firewall.

If you already have an API client and you know the values of all the following, you can skip this procedure and continue with Create a dynamic firewall instance, on page 46:

- **Client ID**
- **API URL**
- **Token URL**
- **Client Secret**

Before you begin

Integrating with the dynamic firewall requires you to create an *API client integration* in Identity Intelligence.

Among the values you must know about your API client integration is the client secret, which is displayed when you create the API client only. For that reason you might need to create the API integration first.

For more information about creating an API cilent integration, see Public API.

Procedure

Step 1 Log in to your Identity Intelligence tenant.

Step 2 Click (**Integrations**).

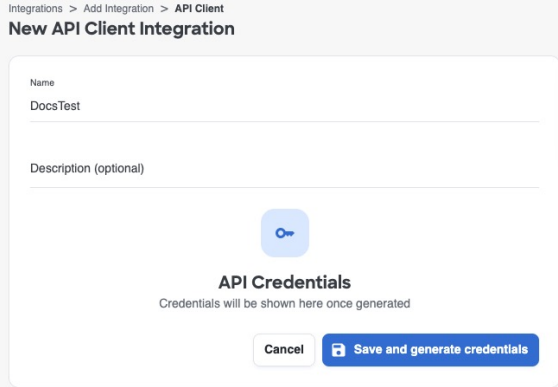
Step 3 Click **Add Integration**.

Step 4 On the next page, under API Clients, click **Add API Client**.

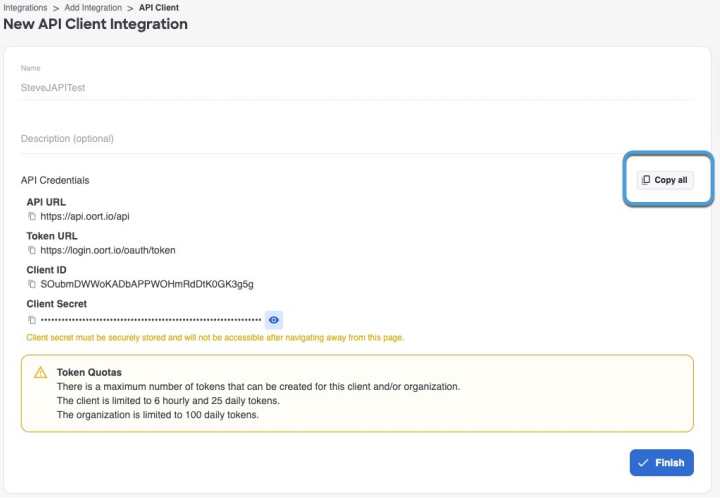
Step 5 Enter a **Name** and an optional **Description**.

Step 6 Click **Save and Generate Credentials**.

The following figure shows an example.



Step 7 On the next page, click **Copy all** as the following figure shows.



Step 8 Save the credentials for later use.

Step 9 Click **Finish**.

What to do next

See Create a dynamic firewall instance, on page 46.

Related Topics

About the dynamic firewall, on page 42
How to configure the dynamic firewall, on page 42

Create an identity source and realm for the dynamic firewall

Before you configure the dynamic firewall, you must configure a supported identity realm and identity source.

Configure an identity realm

These identity realms are supported:

- Create an LDAP realm or an Active Directory realm and realm directory

  Only Microsoft AD is supported; LDAP realms are not supported.

- Create a Microsoft Azure AD (SAML) realm for passive authentication

Configure an identity source

These identity sources are supported:

- On-premises Cisco ISE: Ways to configure the Cisco Identity Services Engine (Cisco ISE) identity source
- Single or multiple Cisco ISE clusters:
  - How to configure a pxGrid Cloud identity source (Cisco ISE 3.4 or later)
  - How to configure a pxGrid Cloud identity source (Cisco ISE 3.3 or earlier)

Related Topics

About the dynamic firewall, on page 42
How to configure the dynamic firewall, on page 42

Create a dynamic firewall instance

This task discusses how to create a new instance of the dynamic firewall, which is an association between an identity source and Identity Intelligence.

Before you begin

Do all of the following:

- Create an identity source:
  - Ways to configure the Cisco Identity Services Engine (Cisco ISE) identity source.
  - Create a pxGrid Cloud identity source.

Procedure

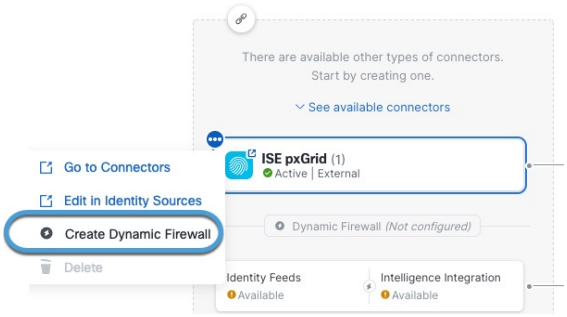
Step 1 If you haven't already done so, log in to Security Cloud Control.

Step 2 Click **Firewall**.

Step 3 Click **Administration** > **Dynamic Attributes Connector**.

Step 4 Click next to the name of the identity source with which to add the dynamic firewall.

The following figure shows an example.



Note
If you do not see an identity source, create one before continuing:

- Ways to configure the Cisco Identity Services Engine (Cisco ISE) identity source
- How to configure a pxGrid Cloud identity source (Cisco ISE 3.3 or earlier)
- How to configure a pxGrid Cloud identity source (Cisco ISE 3.4 or later)

Step 5 Click **Create Dynamic Firewall**.

Step 6 Continue with Associate an identity source with Identity Intelligence, on page 47.

Related Topics

About the dynamic firewall, on page 42
How to configure the dynamic firewall, on page 42

Associate an identity source with Identity Intelligence

This task discusses how you associate an identity source with Identity Intelligence, which provides user and device trust ratings to the Security Cloud Control.

For more information, see User Trust Level.

Before you begin

Before you begin, make sure you:

- Understand how the identity realm, identity source, and Identity Intelligence work together as discussed in About the dynamic firewall, on page 42.

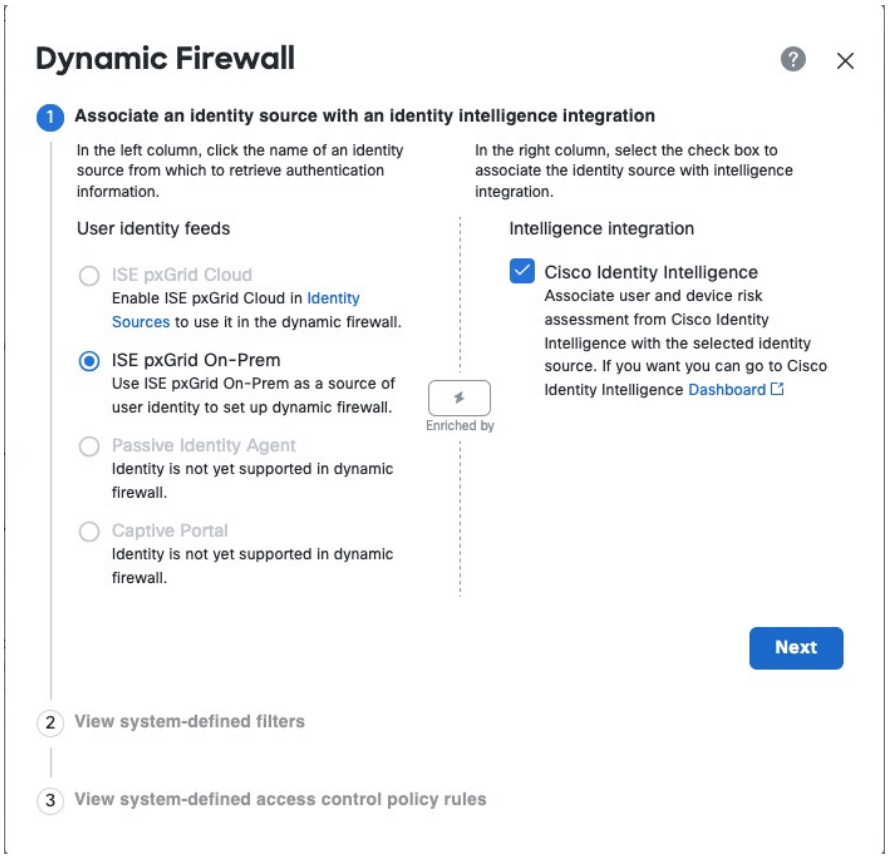
- Completed the tasks discussed in Create a dynamic firewall instance, on page 46.

Procedure

Step 1 Start with Create a dynamic firewall instance, on page 46.

Step 2 On the next page, from the left column, click your identity source. Then, in the right column, select the **Cisco Identity Intelligence** check box to add user intelligence, including user and device risk.

The following figure shows an example.



Step 3 Click **Next**.

Step 4 Continue with Configure Identity Intelligence, on page 48.

Related Topics

About the dynamic firewall, on page 42
How to configure the dynamic firewall, on page 42

Configure Identity Intelligence

This task discusses how you associate an identity source with Identity Intelligence, which provides user and device risk ratings to the Security Cloud Control.

Before you begin

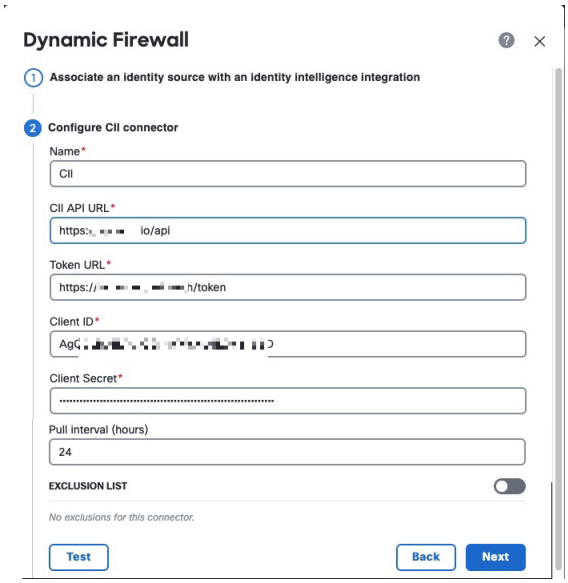
Complete the tasks discussed in Associate an identity source with Identity Intelligence, on page 47.

Procedure

Step 1 Complete the tasks discussed in Associate an identity source with Identity Intelligence, on page 47.

Step 2 If you selected the **Cisco Identity Intelligence** check box, enter the information you found for Identity Intelligence as described in Get required information for Identity Intelligence, on page 44.

The following figure shows an example.



Step 3 (Optional.) For Identity Intelligence to consider a specific set of users as trusted, slide **Exclusion List** to **Slider enabled** ().

Enter one user name per line in **username@domain.com** format. Users in this list are considered trusted by Identity Intelligence.

Step 4 Click **Test**.

Only if the test succeeds, continue with the next step.

If any errors are displayed, check all of your Identity Intelligence values and try again.

Step 5 Click **Next**.

Step 6 Continue with View system-defined filters, on page 50.

Related Topics

About the dynamic firewall, on page 42
How to configure the dynamic firewall, on page 42

View system-defined filters

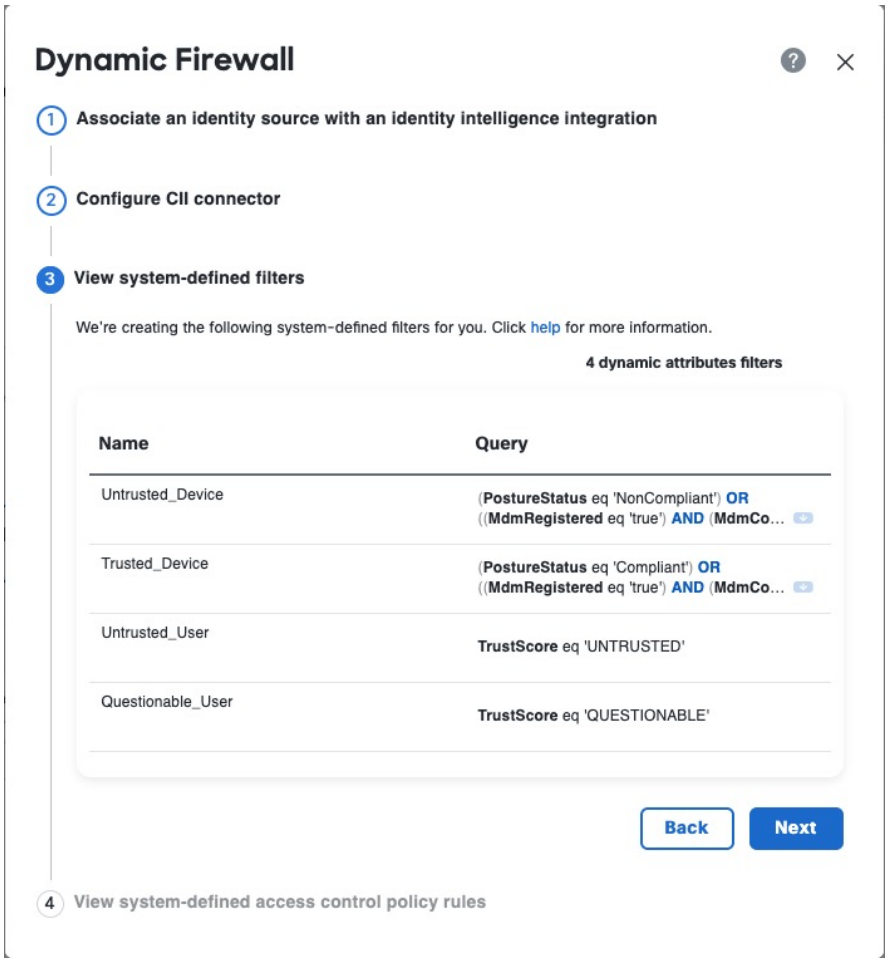
This task discusses how you associate an identity source with Cisco Identity Intelligence, which provides user and device risk ratings to the Security Cloud Control.

Before you begin

See Configure Identity Intelligence, on page 48.

Procedure

Step 1 The system displays a set of system-defined dynamic attributes filters, as the following figure shows.



Step 2 View the system-created filters. Click on any row to expand the filter so you can view the filter and see its details.

Step 3 Click **Next**.

Step 4 Continue with View system-defined access control rules, on page 51.

Related Topics

About the dynamic firewall, on page 42
How to configure the dynamic firewall, on page 42

View system-defined access control rules

This task discusses access control rules created by the dynamic firewall.

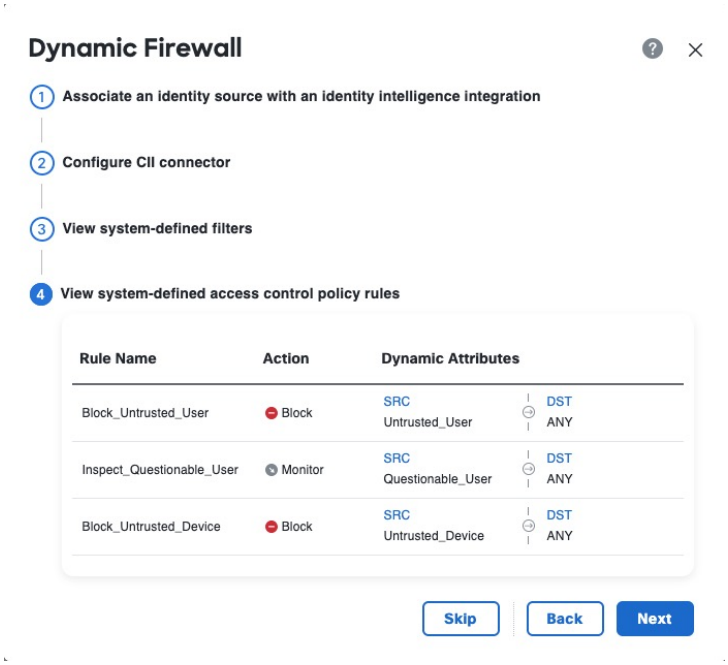
Before you begin

See View system-defined filters, on page 50.

Procedure

Step 1 View the system-created access control rules.

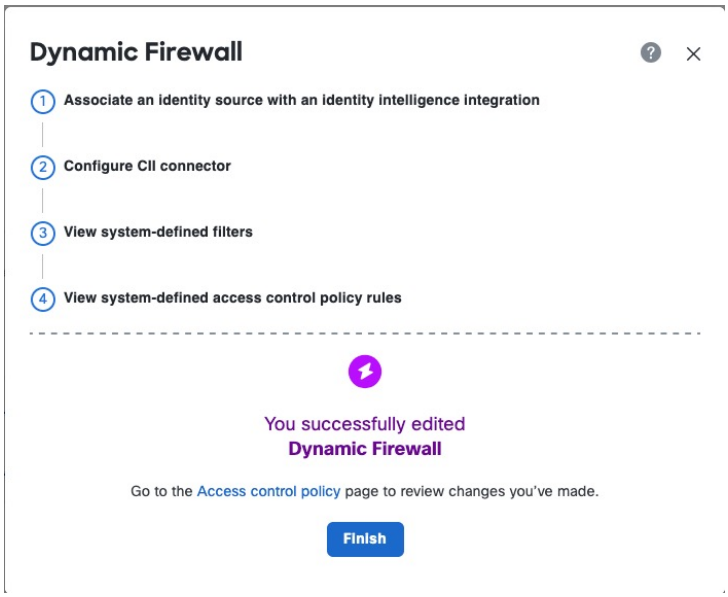
The following figure shows an example.



Step 2 Choose one of these options:

- Click **Skip** to skip creating these access control rules. You can create your own anytime.
- Click **Next** to create an access control policy named Dynamic Firewall Policy with the rules shown in the preceding figure.
- Click **Back** to return to system-created filters.

Step 3 After you click **Next**, if you created access control rules successfully, the following page is displayed:



Related Topics

About the dynamic firewall, on page 42
How to configure the dynamic firewall, on page 42

Edit the user exclusion list

(Optional.) You can instruct Identity Intelligence to treat specific users as trusted.

Before you begin

Configure the dynamic firewall as discussed in Create a dynamic firewall instance, on page 46.

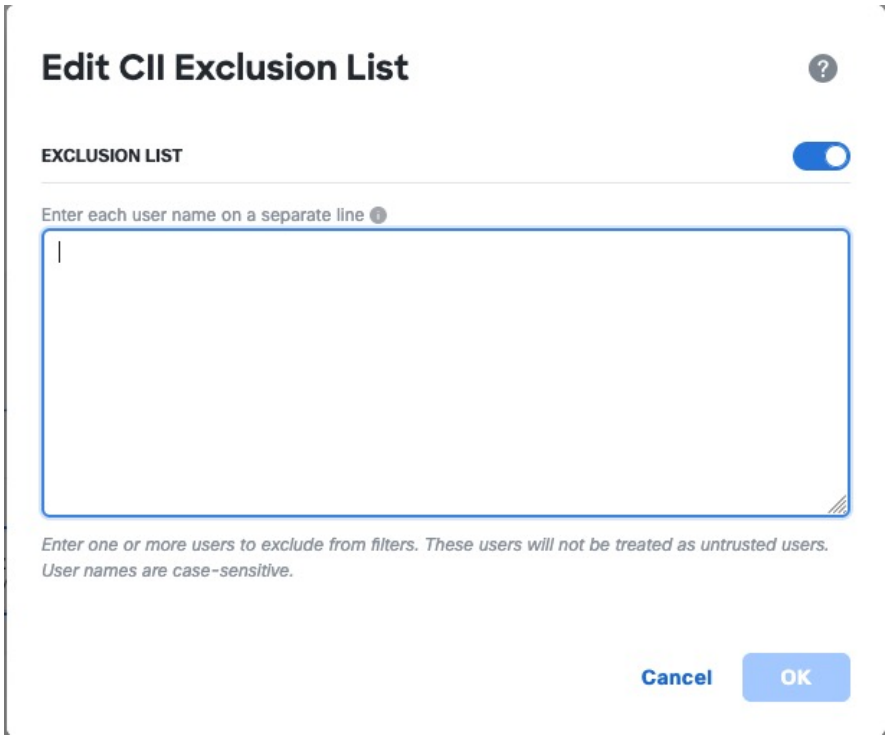
Procedure

Step 1 Click **Administration** > **Dynamic Attributes Connector**.

Step 2 Click next to the name of the identity source.

Step 3 Click **Edit CII Exclusion List**.

The following dialog box is displayed.



Step 4 In the provided field, enter one user name in `username@domain.com` format on a line, press Enter, and enter another user name.

Each user name is considered as trusted by Identity Intelligence.

Related Topics

About the dynamic firewall, on page 42
How to configure the dynamic firewall, on page 42

View and edit the system-created access control policy

This topic discusses how you can edit the system-created access control rules and policy. Initially, the policy isn't associated with any devices but if you want to use it you can add devices, change rules, reorder rules, or delete rules.

Before you begin

Complete the tasks described in View system-defined access control rules, on page 51.

Procedure

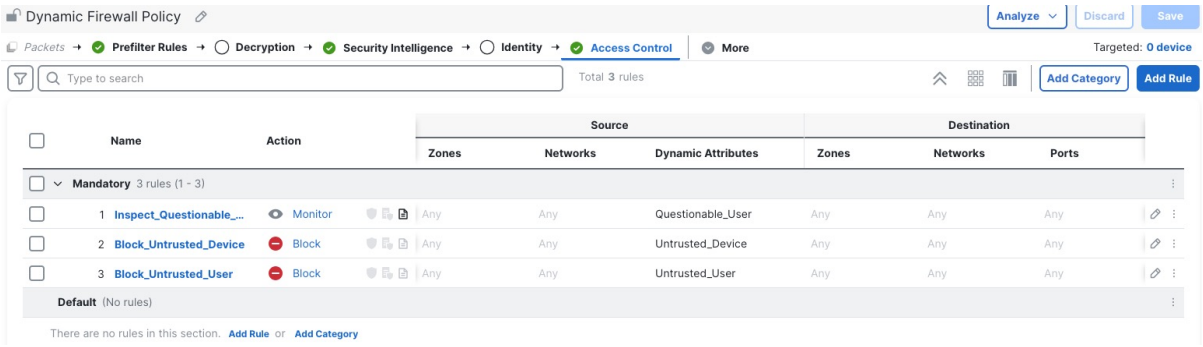
Step 1 If you haven't already done so, log in to Security Cloud Control.

Step 2 Click **Firewall**.

Step 3 Click **Policies** > **Firewall Threat Defense** > **Access Control heading** > **Access Control**.

Step 4 Click **Edit** ( ) next to the policy named Dynamic Firewall Policy (or similar).

The following figure shows a sample access control policy.



Note that in this access control policy, only the rule set to monitor questionable users logs anything. To adjust the logging settings, see Logging settings for access control policies.

Step 5 Do any of the following:

- Target the access control policy at devices: Assigning devices to an access control policy.
- Edit the policy, including adding logging: Managing access control policies.
- Edit access control rules: Managing access control rules.
- Set advanced policy options: Configuring advanced settings for the access control policy.
- Associate other policies with this access control policy: Associating other policies with access control.

Related Topics

About the dynamic firewall, on page 42
How to configure the dynamic firewall, on page 42

Create dynamic attributes filters

Dynamic attributes filters that you define using the Dynamic Attributes Connector are exposed in the Security Cloud Control as dynamic objects that can be used in access control policies. For example, you could restrict access to an AWS server for the Finance Department to only members of the Finance group defined in Microsoft Active Directory.

Note You cannot create dynamic attributes filters for AWS, Azure, Azure Service Tags, Cisco Multicloud Defense, Generic Text, GitHub, Google Cloud, and Outlook 365, pxGrid Cloud identity source, Tenable, vCenter, Webex, and Zoom). These types of cloud objects provide their own IP addresses.

For more information about access control rules, see Create access control rules or DNS rules using dynamic attributes filters.

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 Click **Firewall**.

Step 3 Click **Administration** > **Dynamic Attributes Connector** > **Connectors**.

Step 4 Do any of the following:

- Add a new filter: click **Add** ( ).
- Edit or delete a filter: Click **More** ( ), then click **Edit** or **Delete** at the end of the row.

Step 5 Enter the following information.

Item	Description
Name	Unique name to identify the dynamic filter (as a dynamic object) in access control policy and in the Security Cloud Control Object Manager (**External Attributes** > **Dynamic Object**).
Connector	From the list, click the name of a connector to use.

Step 6 To add a query, enter the following information.

Item	Description
Key	Click a key from the list. Keys are fetched from the connector.
Operation	Click one of the following: • **Equals** to exactly match the key to the value. • **Contains** to match the key to the value if any part of the value matches.
Values	Click either **Any** or **All** and click one or more values from the list. Click **Add another value** to add values to your query.

Step 7 Click **Show Preview** to display a list of networks or IP addresses returned by your query.

Step 8 When you're finished, click **Save**.

Step 9 (Optional.) Verify the dynamic object in the Security Cloud Control.

a) Log in to the Security Cloud Control.
b) Click **Policies** > **Firewall Threat Defense**.
c) Click **Objects** > **Object Management** > **External Attributes** > **Dynamic Object**.
The dynamic attribute query you created should be displayed as a dynamic object.

Related Topics

About the dynamic firewall, on page 42
How to configure the dynamic firewall, on page 42

Use Dynamic Objects in Access Control Policies

The dynamic attributes connector enables you to configure dynamic attributes filters, seen in the Security Cloud Controlas dynamic objects, in access control rules.

About dynamic objects in access control rules

A *dynamic object* is automatically pushed from the dynamic attributes connector to the Secure Firewall Manager after you create connectors and save a dynamic attributes filter on the connector.

You can use these dynamic objects on the access control rule's **Dynamic Attributes** tab page. You can add dynamic objects as source or destination attributes; for example, in an access control block rule, you can add a Finance dynamic object as a destination attribute to block access to Finance servers by whatever objects match the other criteria in the rule.

Note You cannot create dynamic attributes filters for AWS, Azure, Azure Service Tags, Cisco Multicloud Defense, Generic Text, GitHub, Google Cloud, and Outlook 365, pxGrid Cloud identity source, Tenable, vCenter, Webex, and Zoom). These types of cloud objects provide their own IP addresses.

Create dynamic attributes filters

Dynamic attributes filters that you define using the Dynamic Attributes Connector are exposed in the Security Cloud Control as dynamic objects that can be used in access control policies. For example, restrict access to an AWS server for the Finance Department to only members of the Finance group defined in Microsoft Active Directory.

Note You cannot create dynamic attributes filters for AWS, Azure, Azure Service Tags, Cisco Multicloud Defense, Generic Text, GitHub, Google Cloud, and Outlook 365, pxGrid Cloud identity source, Tenable, vCenter, Webex, and Zoom). These types of cloud objects provide their own IP addresses.

For more information about access control rules, see Create access control rules or DNS rules using dynamic attributes filters.

Before you begin

Create a connector, on page 10

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 Click **Firewall**.

Step 3 Click **Administration** > **Dynamic Attributes Connector** > **Dynamic Attributes Filters**.

Step 4 Do any of the following:

- Add a new filter: click **Add** ( ).
- Edit or delete a filter: Click **More** ( ), then click **Edit** or **Delete** at the end of the row.

Step 5 Enter the following information.

Item	Description
Name	Unique name to identify the dynamic filter (as a dynamic object) in a policy and in the Security Cloud Control Object Manager (**External Attributes** > **Dynamic Object**).
Connector	From the list, click the name of a connector to use.
Query	Click Add .

Step 6 To add or edit a query, enter the following information.

Item	Description
Key	Click a key from the list. Keys are fetched from the connector.
Operation	Click one of the following: • **Equals** to exactly match the key to the value. • **Contains** to match the key to the value if any part of the value matches.
Values	Click either **Any** or **All** and click one or more values from the list. Click **Add another value** to add values to your query.

Step 7 Click **Show Preview** to display a list of networks or IP addresses returned by your query.

Step 8 When you're finished, click **Save**.

Step 9 (Optional.) Verify the dynamic object in the Security Cloud Control.

a) Log in to the Security Cloud Control.
b) Click **Policies** > **Firewall Threat Defense**.
c) Click **Objects** > **Object Management** > **External Attributes** > **Dynamic Object**.

The dynamic attribute query you created should be displayed as a dynamic object.

Dynamic attributes rule conditions

Dynamic attributes include:

- (Source or destination.) Dynamic objects (such as from the dynamic attributes connector)

  The dynamic attributes connector enables you to collect data (such as networks and IP addresses) from cloud providers and send it to the Secure Firewall Management Center so they can be used in access control rules.

  For more information about the dynamic attributes connector, see About the Dynamic Attributes Connector , on page 1.

- (Source only.) SGT objects contain tags either manually defined or defined in ISE. For more information, see Source and destination Security Group Tag (SGT) matching and Security Group Tag.
- (Source only.) Location IP objects, defined by Cisco ISE
- (Source only.) Device type objects, defined by Cisco ISE (also referred to as endpoint profile objects)

Dynamic attributes can be used as source criteria and destination criteria in access control rules. Use the following guidelines:

- Objects of different types are ANDd together
- Objects of a similar type are ORd together

For example, if you choose source destination criteria SGT 1, SGT 2, and device type 1; the rule is matched if device type 1 is detected on either SGT 1 or SGT 2. As another example, if you select both a security group tag, and a dynamic object that lists IP addresses, the rule matches if traffic with the tag originates from (or is destined to) one of those IP addresses.

Create access control rules or DNS rules using dynamic attributes filters

This topic discusses how to create access control rules using dynamic objects (these dynamic objects are named after the dynamic attributes filters you created previously).

To add dynamic attributes filters to DNS policies, see Creating Basic DNS Policies.

To add dynamic attributes filters to DNS policies, see Creating Basic DNS Policies.

Before you begin

Create dynamic attributes filters as discussed in Create dynamic attributes filters.

Note You cannot create dynamic attributes filters for AWS, Azure, Azure Service Tags, Cisco Multicloud Defense, Generic Text, GitHub, Google Cloud, and Outlook 365, pxGrid Cloud identity source, Tenable, vCenter, Webex, and Zoom). These types of cloud objects provide their own IP addresses.

Procedure

Step 1 Log in to Security Cloud Control as a user with the Super Admin role.

Step 2 Click **Firewall**.

Step 3 Click **Policies** > **Firewall Threat Defense** > **Access Control heading** > **Access Control**.

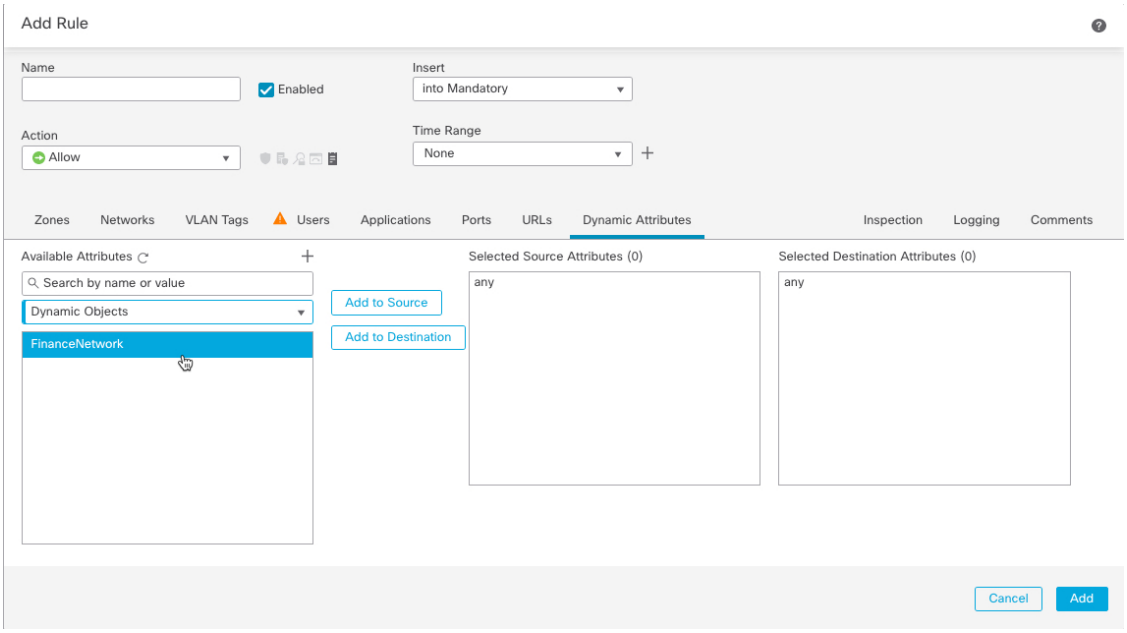
Step 4 Click **Edit** ( ) next to an access control policy.

Step 5 Click **Add Rule**.

Step 6 Click the **Dynamic Attributes** tab.

Step 7 In the Available Attributes section, from the list, click **Dynamic Objects**.

The following figure shows an example.



This example shows a dynamic object named `APIC Dynamic Attribute` that corresponds to the dynamic attribute filter created in the dynamic attributes connector.

Step 8 Add the desired object to source or destination attributes.

Step 9 Add other conditions to the rule if desired.

What to do next

See Dynamic attributes rule conditions, on page 58.

Use dynamic objects in DNS policies

The dynamic attributes connector enables you to configure dynamic filters, seen in the Secure Firewall Management Center as dynamic objects, in DNS rules. For information about DNS policies, see DNS Policies for Security Intelligence.

A dynamic object is automatically pushed from the dynamic attributes connector to the Secure Firewall Management Center after you create connectors and save a dynamic attributes filter on the connector.

You can use these dynamic objects on the DNS rule's Dynamic Attributes tab page, similarly to the way you use Security Group Tags (SGTs). You can add dynamic objects as source or destination attributes, except for endpoint device type objects, which are source only.

Procedure

Step 1 Click **Policies** > **Access Control heading** > **DNS** and create or edit a DNS policy.

Step 2 Add or edit a rule.

Step 3 Click the **Dynamic Attributes** tab.

Step 4 In the **Dynamic Attributes** list, select the objects you want to use, then add them to the source or destination lists as appropriate. Initially, all security group and dynamic objects are listed, by you can uncheck the Security Group option to see dynamic objects only.

Step 5 On the **DNS** tab, select the appropriate list or feed to match the DNS requests you are targeting.

Step 6 Add other conditions to the rule if desired and set the action.

Step 7 Click **Save**.

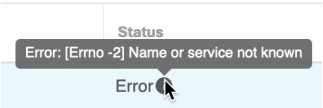
Troubleshoot the Dynamic Attributes Connector

How to troubleshoot issues with the dynamic attributes connector, including using provided tools.

Troubleshoot error messages

Problem: Name or service not known error

This error is displayed as a tooltip when you hover the mouse over an error condition on a connector. An example follows; yours might look different.

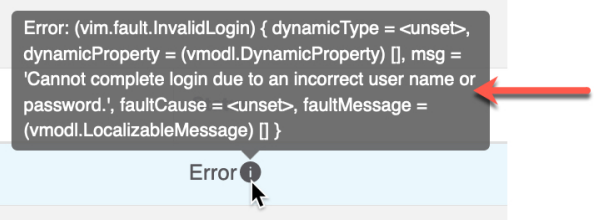


Solution: Edit the connector and check for:

- A trailing slash on a host name
- Verify the password is correct

Problem: Incorrect username or password

This error is displayed as a tooltip when you hover the mouse over an error condition on a connector.



Solution: Edit the connector and change the user name or password.

Get Your Tenant ID

If you require assistance with the dynamic attributes connector, you must provide your tenant ID to Cisco TAC so we can look at your logs.

Procedure

Step 1 Log in to Security Cloud Control.

Step 2 Click **Administration** > **General Settings**.

Step 3 Copy your tenant ID to the clipboard to provide to Cisco TAC.

A sample follows.