Configuring the Umbrella DNS Connector for Cisco Secure Firewall Management Center

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This document describes how to set up the Umbrella DNS Connector in the Secure Firewall management center.

Benefits of the Umbrella Connector

Cisco Umbrella DNS Connection in management center helps to redirect DNS queries to Cisco Umbrella. This allows Cisco Umbrella to validate requests, whether to be allowed or blocked based on the domain names and applies DNS based security policy on the request. If you use Cisco Umbrella, you can configure the Cisco Umbrella Connection to redirect DNS queries to Cisco Umbrella.

The Umbrella Connector is part of the system's DNS inspection. If your existing DNS inspection policy map decides to block or drop a request based on your DNS inspection settings, the request is not forwarded to Cisco Umbrella. Thus, you have two lines of protection: your local DNS inspection policy and your Cisco Umbrella cloud-based policy.

When redirecting DNS lookup requests to Cisco Umbrella, the Umbrella Connector adds an EDNS (Extension mechanisms for DNS) record. An EDNS record includes the device identifier information, organization ID, and client IP address. Your cloud-based policy can use those criteria to control access in addition to the reputation of the FQDN. You can also elect to encrypt the DNS request using DNSCrypt to ensure the privacy of usernames and internal IP addresses.

Limitation

Management Center does not support integration with Umbrella via proxy.

System Requirements

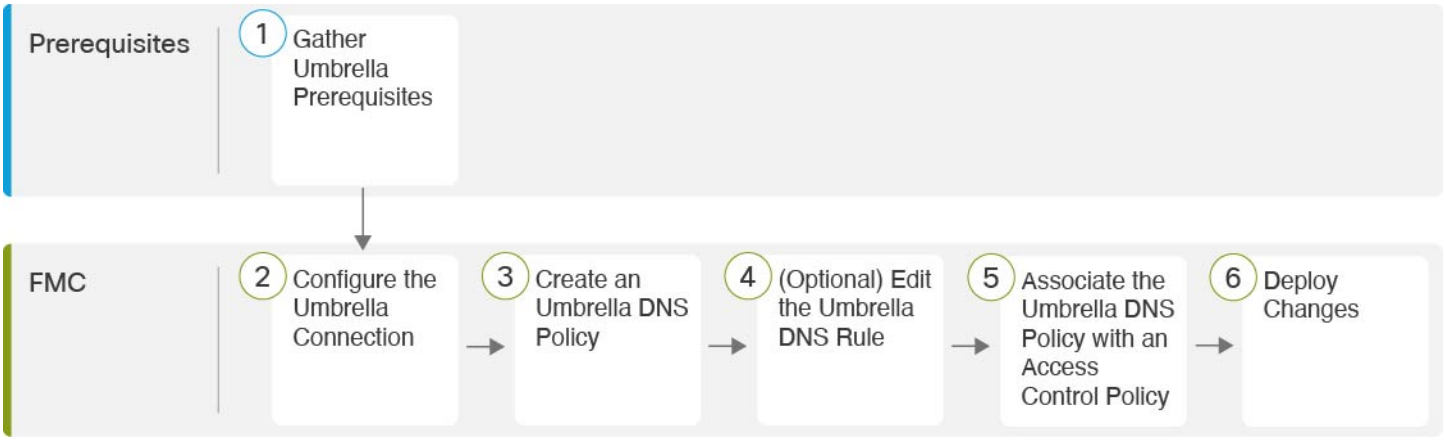
The table below shows the supported platforms for this procedure:

Table 1: Minimum Supported Platforms

Product	Version
Firepower Threat Defense	6.6.0 and later
Firewall Management Center	7.2 and later

Configure the Management Center Umbrella DNS Connector

Figure 1: End-to-End Procedure



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Gather Umbrella Prerequisites

Before you begin

- Establish an account with Cisco Umbrella at https://umbrella.cisco.com, and log into Umbrella at http://login.umbrella.com.
- The Umbrella account must be configured with DNS policies.
- Install the DigiCert intermediate certificate in the management center (**Device > Certificates**). The following is the certificate to copy and paste:

```
-----BEGIN CERTIFICATE-----
MIIE6jCCA9KgAwIBAgIQCjUI1VwpKwF9+K1lwA/35DANBgkqhkiG9w0BAQsFADBhMQswCQYDVQQG
```

```
EwJVUzEVMBMGA1UEChMMRGlnaUNlcnQgSW5jMRkwFwYDVQQLExB3d3cuZGlnaWNlcnQuY29tMSAw
HgYDVQQDExdEaWdpQ2VydCBHbG9iYWwgUm9vdCBDQTAeFw0yMDA5MjQwMDAwMDBaFw0zMDA5MjMy
MzU5NTlaME8xCzAJBgNVBAYTAlVTMRUwEwYDVQQKEwxEaWdpQ2VydCBJbmMxKTAnBgNVBAMTIERp
Z2lDZXJ0IFRMUyBSU0EgU0hBMjU2IDIwMjAgQ0ExMIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIB
CgKCAQEAwUuzZUdwvN1PWNvsnO3DZuUfMRNUrUpmRh8sCuxkB+Uu3Ny5CiDt3+PE0J6aqXodgojl
EVbbHp9YwlHnLDQNLtKS4VbL8Xlfs7uHyiUDe5pSQWYQYE9XE0nw6Ddng9/n00tnTCJRpt8OmRDt
V1F0JuJ9x8piLhMbfyOIJVNvwTRYAIuE//i+p1hJInuWraKImxW8oHzf6VGo1bDtN+I2tIJLYrVJ
muzHZ9bjPvXj1hJeRPG/cUJ9WIQDgLGBAfr5yjK7tI4nhyfFK3TUqNaX3sNk+crOU6JWvHgXjkkD
Ka77SU+kFbnO8lwZV21reacroicgE7XQPUDTITAHk+qZ9QIDAQABo4IBrjCCAaowHQYDVR0OBBYE
FLdrouqoqoSMeeq02g+YssWVdrn0MB8GA1UdIwQYMBaAFAPeUDVW0Uy7ZvCj4hsbw5eyPdFVMA4G
A1UdDwEB/wQEAwIBhjAdBgNVHSUEFjAUBggrBgEFBQcDAQYIKwYBBQUHAwIwEgYDVR0TAQH/BAgw
BgEB/wIBADB2BggrBgEFBQcBAQRqMGgwJAYIKwYBBQUHMAGGGGh0dHA6Ly9vY3NwLmRpZ2ljZXJ0
LmNvbTBABggrBgEFBQcwAoY0aHR0cDovL2NhY2VydHMuZGlnaWNlcnQuY29tL0RpZ2lDZXJ0R2xv
YmFsUm9vdENBLmNydDB7BgNVHR8EdDByMDegNaAzhjFodHRwOi8vY3JsMy5kaWdpY2VydC5jb20v
RGlnaUNlcnRHbG9iYWxSb290Q0EuY3JsMDegNaAzhjFodHRwOi8vY3JsNC5kaWdpY2VydC5jb20v
RGlnaUNlcnRHbG9iYWxSb290Q0EuY3JsMDAGA1UdIAQpMCcwBwYFZ4EMAQEwCAYGZ4EMAQIBMAgG
BmeBDAECAjAIBgZngQwBAgMwDQYJKoZIhvcNAQELBQADggEBAHert3onPa679n/gWlbJhKrKW3EX
3SJH/E6f7tDBpATho+vFScH90cnfjK+URSxGKqNjOSD5nkoklEHIqdninFQFBstcHL4AGw+oWv8Z
u2XHFq8hVt1hBcnpj5h232sb0HIMULkwKXq/YFkQZhM6LawVEWwtIwwCPgU7/uWhnOKK24fXSuhe
50gG66sSmvKvhMNbg0qZgYOrAKHKCjxMoiWJKiKnpPMzTFuMLhoClw+dj20tlQj7T9rxkTgl4Zxu
YRiHas6xuwAwapu3r9rxxZf+ingkquqTgLozZXq8oXfpf2kUCwA/d5KxTVtzhwoT0JzI8ks5T1KE
SaZMkE4f97Q=
-----END CERTIFICATE-----
```

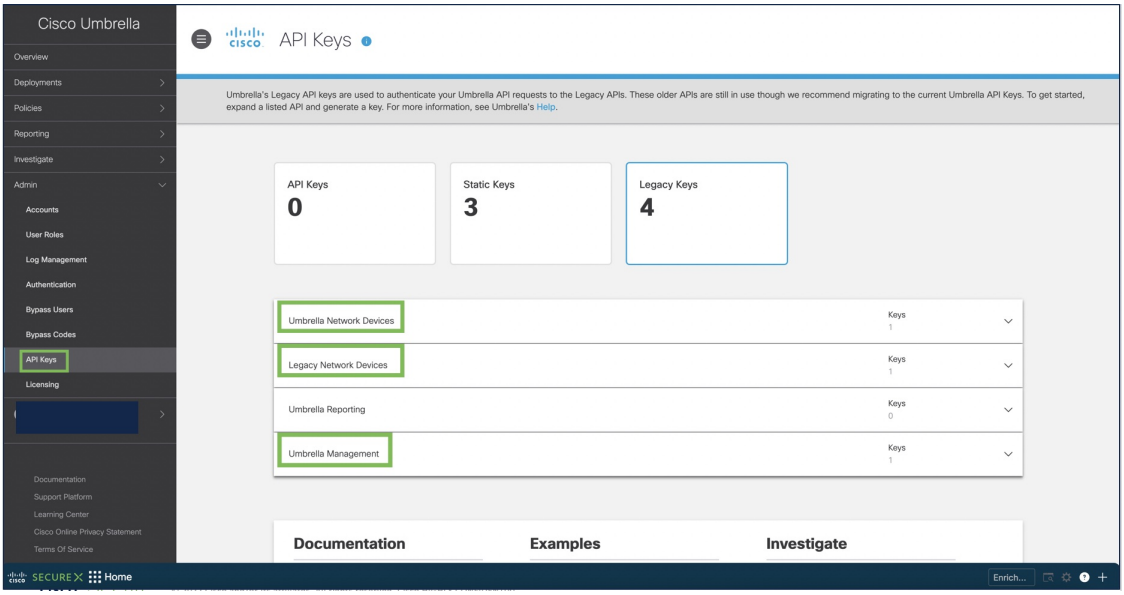

When you add the certificate in the management center, ensure that you check the **CA Only** check box.

- Obtain the following data from Umbrella:
  - Organization ID
  - Network Device Key
  - Network Device Secret
  - Legacy Network Device Token
- Ensure that the management center is connected to the internet.
- Ensure that the base license with the export-controlled feature option is enabled in the management center.
- Ensure that the DNS server is configured to resolve api.opendns.com.
- Ensure that the management center can resolve management.api.umbrella.com for policy configuration.
- Configure the threat defense route to api.opendns.com.

Procedure

Step 1 In the Umbrella dashboard, choose **Admin** > **API Keys** > **Legacy Keys**.

Figure 2: Umbrella Keys for Integration



Step 2 Obtain the **Organization ID** from the URL: `dashboard.umbrella.com/o/[Organization ID]/#/admin/apikeys`

Copy the number displayed in the URL and paste it in the **Organization ID** field in the management center Umbrella Connection Details page.

Step 3 Click **Umbrella Network Devices**.

a) If the **Key** and **Secret** are not available or known, click **Refresh** to generate a key and secret pair.
b) Copy the Key and paste it in the **Network Device Key** field in the management center Umbrella Connection Details page.
c) Copy the Secret and paste it in the **Network Device Secret** in the management center Umbrella Connection Details page.

Step 4 Click **Legacy Network Devices**.

a) If the **Key** is not available or known, click **Refresh** to generate a key.
b) Copy the Key and paste it in the **Legacy Network Device Token** field in the management center Umbrella Connection Details page.

Configure the Umbrella Connection

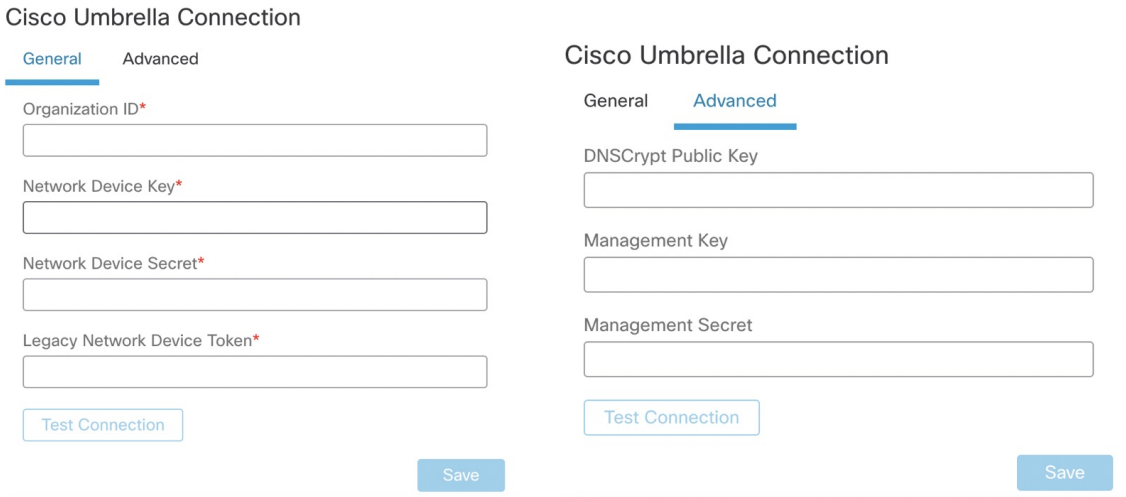
Procedure

Step 1 In the management center, choose **Integration** > **Other Integrations** > **Cloud Services** > **Cisco Umbrella Connection**.

Step 2 Obtain the following details and add them to the **General** settings:

- **Organization ID**—A unique number that identifies your organization on Cisco Umbrella. Every Umbrella organization is a separate instance of Umbrella and has its own dashboard. Organizations are identified by their name and their organization ID (Org ID).
- **Network Device Key**—The key to fetch umbrella policy from Cisco Umbrella.
- **Network Device Secret** —The secret to fetch umbrella policy from Cisco Umbrella.
- **Legacy Network Device Token** —An Umbrella Legacy Network Devices API token is issued through the Cisco Umbrella dashboard. Umbrella requires the API token to register a network device.

Figure 3: Cisco Umbrella Connection Parameters



Step 3 Under **Advanced**, configure the following optional settings:

- **DNSCrypt Public Key**—DNSCrypt authenticates and encrypts the DNS queries between the endpoint and the DNS server. To enable DNSCrypt, you can configure the DNSCrypt public key for certificate verification. The key is a 32-byte hexadecimal value and is preconfigured to B735:1140:206F:225d:3E2B:d822:D7FD:691e:A1C3:3cc8:D666:8d0c:BE04:bfab:CA43:FB79, which is the public key of the Umbrella Anycast servers.
- **Management Key**—A key to fetch datacenter details from Umbrella cloud for VPN policy.
- **Management Secret**—A secret used to fetch datacenters from Umbrella cloud for VPN.

Step 4 Click **Test Connection**—Test if the Cisco Umbrella Cloud is reachable from the management center. When you provide the required organization ID and network device details, the umbrella connection is created.

Step 5 Once the information has been added, click **Save** to save the connection details.

Create an Umbrella DNS Policy

Procedure

Step 1 In the management center, choose **Policies** > **DNS**. All existing DNS policies will be shown.

Step 2 Click **Add DNS Policy** > **Umbrella DNS Policy**.

Step 3 Enter a name and description for the policy, then click **Save**.

(Optional) Configure the Umbrella DNS Rule

If you require any changes to the settings described in this procedure, edit the Umbrella DNS Rule.

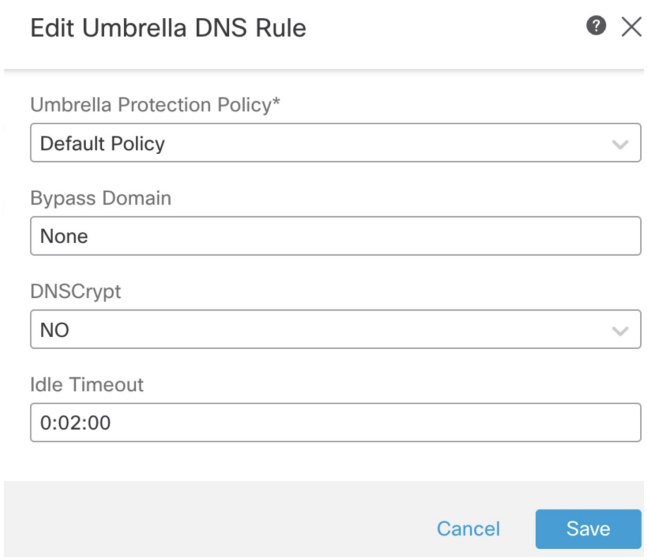
Procedure

Step 1 Choose **Policies** > **DNS**.

Step 2 Click the **Edit** (✎) icon on the DNS Policy to configure.

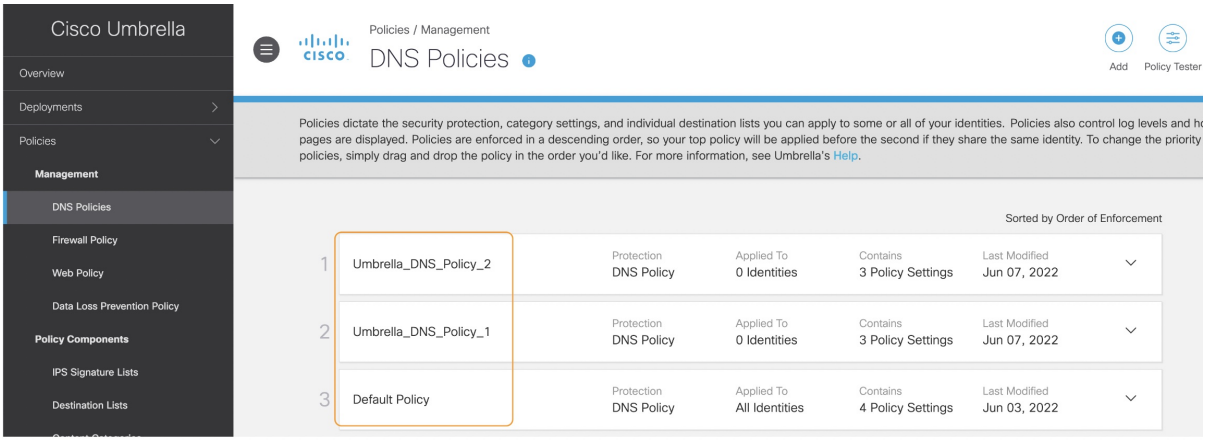
Step 3 Navigate to the correct rule, and click the **Edit** (✎) icon again to edit the rule.

Figure 4: Edit Umbrella DNS Rule



a) **Umbrella Protection Policy**: Choose a DNS policy from the DNS policies defined in the Umbrella Dashboard.

Figure 5: DNS Policies in Umbrella



b) **Bypass Domain**: Specify which domains should bypass Cisco Umbrella and go directly to the DNS servers.

For multiple domains, enter a comma-separated list. For example, you can configure a list of local domains that Umbrella DNS must not filter or evaluate.

c) **DNSCrypt**: Choose Yes or No from the drop-down list. This option encrypts the DNS requests and forwards them to the Umbrella cloud on UDP port 443. When a new rule is created, the default setting of the **DNSCrypt** is **YES**.

If you enable this option, ensure that you provide the **DNSCrypt Public Key** in the **Advanced** section of the **Cisco Umbrella Connection** settings.

d) **Idle Timeout**: Specify the time interval to wait for a response from the Umbrella cloud, after which the management center disconnects from Umbrella. When a new rule is created, the default setting of the **Idle Timeout** is 00:02:00

The format for **Idle Timeout** is (hh:mm:ss).

Associate the Umbrella DNS Policy with an Access Control Policy

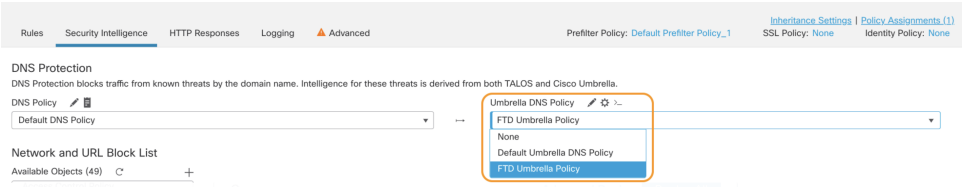
Procedure

Step 1 Navigate to **Policies** > **Access Control** and select the Access Policy to edit.

Step 2 Select **Security Intelligence**.

Step 3 Under **Umbrella DNS Policy**, select the policy to be used for the Umbrella DNS Policy.

Figure 6: Umbrella DNS Policy Assignment



Step 4 Select **Save** to save all changes.

Deploy Changes

Procedure

Step 1 On the management center menu bar, click **Deploy** and then select **Deployment**.

Step 2 Identify and choose the devices on which you want to deploy configuration changes.

- Search—Search for the device name, type, domain, group, or status in the search box.
- Expand—Click **Expand Arrow** ( ) to view device-specific configuration changes to be deployed.

  By selecting the device check box, all the changes for the device, which are listed under the device, are pushed for deployment. However, you can use the **Policy selection** ( ) to select individual policies or configurations to deploy while withholding the remaining changes without deploying them.

  Optionally, use **Show or Hide Policy** ( ) to selectively view or hide the associated unmodified policies.

Step 3 (Optional) Click **Estimate** to get a rough estimate of the deployment duration.

Step 4 Click **Deploy**.

Step 5 If the system identifies errors or warnings in the changes to be deployed, it displays them in the **Validation Messages** window. To view complete details, click the arrow icon before the warnings or errors.

You have the following choices:

- Deploy—Continue deploying without resolving warning conditions. You cannot proceed if the system identifies errors.
- Close—Exit without deploying. Resolve the error and warning conditions, and attempt to deploy the configuration again.

Validate Deployment

Procedure

Step 1 After the deployment is complete, validate the deployment in the management center.

Step 2 Select **Deploy**, then the **Deployment History** icon.

Step 3 Select the job associated with the Umbrella Connector.

Step 4 Select the **Transcript Details** ( ) icon.

The following command line interface transcript is generated:

Example:

```
FMC >> strong-encryption-disable
FMC >> umbrella-global
FMC >> token umbrella_token
10.0.0.0 >> [info] : Please make sure all the Umbrella Connector prerequisites are satisfied:
1. DNS server is configured to resolve api.opendns.com
2. Route to api.opendns.com is configured
3. Root certificate of Umbrella registration is installed
4. Unit has a 3DES license
FMC >> local-domain-bypass "test.com"
FMC >> timeout edns hh:mm:ss
FMC >> exit
FMC >> policy-map type inspect dns preset_dns_map
FMC >> parameters
FMC >> umbrella tag "Default Policy"
FMC >> dnscrypt
```

Troubleshooting Deployment Issues

Legacy Network Device Token Not Configured

Error: Umbrella global cannot be configured as legacy network device token is empty.

- **Possible Cause** Umbrella connection details were not added to the **Integration** tab. Use Configure the Umbrella Connection, on page 4 to configure the details within the **Integration** tab.
- **Possible Cause** The management center does not have a connection to the internet. Without internet connectivity, management center is unable to connect to the Umbrella cloud.
- **Possible Cause** Umbrella connection details were added, but the information is not correct. Use Configure the Umbrella Connection, on page 4 to input the proper information and test the connection to ensure that Umbrella is connected.

Export-Controlled Features Not Enabled

You can enable (register) or disable (release) optional licenses. You must enable a license to use the features controlled by the license.

If you no longer want to use the features covered by an optional term license, you can disable the license. Disabling the license releases it in your Cisco Smart Software Manager account, so that you can apply it to another device.

You can also enable evaluation versions of these licenses when running in evaluation mode. In evaluation mode, the licenses are not registered with Cisco Smart Software Manager until you register the device. However, you cannot enable the RA VPN or Carrier license in evaluation mode.

Before you begin

Before disabling a license, ensure that you are not using it. Rewrite or delete any policies that require the license.

For units operating in a high availability configuration, you enable or disable licenses on the active unit only. The change is reflected on the standby unit the next time you deploy the configuration, when the standby unit requests (or frees) the necessary licenses. When enabling licenses, you must ensure that your Cisco Smart Software Manager account has sufficient licenses available, or you could have one unit compliant while the other unit is non-compliant.

Procedure

Step 1 Click the name of the device in the menu, then click **View Configuration** in the Smart License summary.

Step 2 Click the **Enable/Disable** control for each optional license as desired.

- **Enable**—Registers the license with your Cisco Smart Software Manager account and enables the controlled features. You can now configure and deploy policies controlled by the license.
- **Disable**—Unregisters the license with your Cisco Smart Software Manager account and disables the controlled features. You cannot configure the features in new policies, nor can you deploy policies that use the feature.

Step 3 If you enabled the **RA VPN** license, select the type of license you have available in your account.

You can use any of the following licenses: **Plus**, **Apex**, or **VPN Only**. You can select **Plus and Apex** if you have both licenses and you want to use them both.