



Objects

Objects are reusable containers that define criteria that you want to use in policies or other settings. For example, network objects define host and subnet addresses.

Objects let you define criteria so that you can easily reuse the same criteria in different policies. When you update an object, all policies that use the object are automatically updated.

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Object Types

You can create the following types of object. In most cases, if a policy or setting allows an object, you must use an object.

Object Type	Main Use	Description
Application Filter	Access control rules.	An application filter object defines the applications used in an IP connection, or a filter that defines applications by type, category, tag, risk, or business relevance. You can use these objects in policies to control traffic instead of using port specifications. See Configuring Application Filter Objects, on page 6 .
Geolocation	Security policies.	A geolocation object defines countries and continents that host the device that is the source or destination of traffic. You can use these objects in policies to control traffic instead of using IP addresses. See Configuring Geolocation Objects, on page 9 .
Network	Security policies and a wide variety of device settings.	Network groups and network objects (collectively referred to as network objects) define the addresses of hosts or networks. See Configuring Network Objects and Groups, on page 3 .
Port	Security policies.	Port groups and port objects (collectively referred to as port objects) define the protocols, ports, or ICMP services for traffic. See Configuring Port Objects and Groups, on page 4 .

Object Type	Main Use	Description
Security Zone	Security policies.	A security zone is a grouping of interfaces. Zones divide the network into segments to help you manage and classify traffic. See Configuring Security Zones, on page 5 .
Syslog Servers	Access control rules. Diagnostic logging.	A syslog server object identifies a server that can receive connection-oriented or diagnostic system log (syslog) messages. See Configuring Syslog Servers, on page 10 .
URL	Access control rules.	URL objects and groups (collectively referred to as URL objects) define the URL or IP addresses of web requests. See Configuring URL Objects and Groups, on page 8 .

Managing Objects

You can configure objects directly through the Objects page, or you can configure them while editing policies. Either method yields the same results, a new or updated object, so use the technique that suits your needs at the time.

The following procedure explains how you can create and manage your objects directly through the Objects page.



Note When you edit a policy or setting, if a property requires an object, you are shown a list of the ones that are already defined, and you select the appropriate object. If the desired object does not yet exist, simply click the **Create New Object** link shown in the list.


Procedure

Step 1 Select Objects.

The Objects page has a table of contents listing the available types of objects. When you select an object type, you see a list of existing objects, and you can create new ones from here. You can also see the object contents and type.

Step 2 Select the object type from the table of contents and do any of the following:

- To create an object, click the + button. The content of the objects differ based on type; see the configuration topic for each object type for specific information.
- To create a group object, click the **Add Group** (📁) button. Group objects include more than one item.
- To edit an object, click the edit icon (✎) for the object. You cannot edit the contents of a pre-defined object.

- To delete an object, click the delete icon () for the object. You cannot delete an object if it is currently being used in a policy or another object, or if it is a pre-defined object.

Configuring Network Objects and Groups

Use network group and network objects (collectively referred to as network objects) to define the addresses of hosts or networks. You can then use the objects in security policies for purposes of defining traffic matching criteria, or in settings to define the addresses of servers or other resources.



A network object defines a single host or network address, whereas a network group object can define more than one address.


The following procedure explains how you can create and edit objects directly through the Objects page. You can also create network objects while editing an address property by clicking the **Create New Network** link shown in the object list.

Procedure

Step 1 Select **Objects**, then select **Network** from the table of contents.

Step 2 Do one of the following:

- To create an object, click the + button.
- To create a group, click the **Add Group** () button.
- To edit an object or group, click the edit icon () for the object.

To delete an unreferenced object, click the trash can icon () for the object.

Step 3 Enter a Name for the object and optionally, a description, and define the object contents.

We recommend that you do not use an IP address alone for the name so that you can easily tell object names from object contents or standalone IP addresses. If you want to use an IP address in the name, prefix it with something meaningful, such as host-192.168.1.2 or network-192.168.1.0. If you use an IP address as the name, the system adds a vertical bar as a prefix, for example, |192.168.1.2. FDM does not show the bar in the object selectors, but you will see this naming standard if you examine the running configuration using the **show running-config** command in the CLI.

Step 4 Configure the contents of the object.

Network Objects

Select the object **Type** and configure the contents:

- **Network**—Enter a network address using one of the following formats:
 - IPv4 network including subnet mask, for example, 10.100.10.0/24 or 10.100.10.0/255.255.255.0.
 - IPv6 network including prefix, for example, 2001:DB8:0:CD30::/60.
- **Host**—Enter a host IP address using one of the following formats:
 - IPv4 host address, for example, 10.100.10.10.

- IPv6 host address, for example, 2001:DB8::0DB8:800:200C:417A or 2001:DB8:0:0:0DB8:800:200C:417A.

Network Groups

Click the + button to select network objects to add to the group. You can also create new objects.

Step 5 Click **Add** (for new objects) or **Save** (when editing objects) to save your changes.

Configuring Port Objects and Groups

Use port group and port objects (collectively referred to as port objects) to define the protocols, ports, or ICMP services for traffic. You can then use the objects in security policies for purposes of defining traffic matching criteria, for example, to use access rules to allow traffic to specific TCP ports.

A port object defines a single protocol, TCP/UDP port or port range, or ICMP service, whereas a port group object can define more than one service.

The system includes several pre-defined objects for common services. You can use these objects in your policies. However, you cannot edit or delete system-defined objects.





Note When creating port group objects, ensure that the combination of objects makes sense. For example, you cannot have a mixture of protocols in an object if you use it to specify both source and destination ports in an access rule. Exercise care when editing an object that is already being used, or you could invalid (and disable) policies that use the object.


The following procedure explains how you can create and edit objects directly through the Objects page. You can also create port objects while editing a service property by clicking the **Create New Port** link shown in the object list.

Procedure

Step 1 Select **Objects**, then select **Ports** from the table of contents.

Step 2 Do one of the following:

- To create an object, click the + button.
- To create a group, click the **Add Group** () button.
- To edit an object or group, click the edit icon () for the object.

To delete an unreferenced object, click the trash can icon () for the object.

Step 3 Enter a name for the object and optionally, a description, and define the object contents.

Port Objects

Select the **Protocol**, then configure the protocol as follows:

- **TCP, UDP**—Enter the single port or port range number, for example, 80 (for HTTP) or 1-65535 (to cover all ports).
- **ICMP, IPv6-ICMP**—Select the ICMP **Type** and optionally, the **Code**. Select **Any** for the type to apply to all ICMP messages. For information on the types and codes, see the following pages:
 - ICMP—<http://www.iana.org/assignments/icmp-parameters/icmp-parameters.xml>
 - ICMPv6—<http://www.iana.org/assignments/icmpv6-parameters/icmpv6-parameters.xml>
- **Other**—Select the desired protocol.

Port Groups

Click the + button to select port objects to add to the group. You can also create new objects.

- Step 4** Click **Add** (for new objects) or **Save** (when editing objects) to save your changes.
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Configuring Security Zones

A security zone is a grouping of interfaces. Zones divide the network into segments to help you manage and classify traffic. You can define multiple zones, but a given interface can be in one zone only.

The system creates the following zones during initial configuration. You can edit these zones to add or remove interfaces, or you can delete the zones if you no longer use them.

- **inside_zone**—Includes the inside interface. This zone is intended to represent internal networks.
- **outside_zone**—Includes the outside interface. This zone is intended to represent networks external to your control, such as the Internet.


Typically, you would group interfaces by the role they play in your network. For example, you would place the interface that connects to the Internet in the **outside_zone** security zone, and all of the interfaces for your internal networks in the **inside_zone** security zone. Then, you could apply access control rules to traffic coming from the outside zone and going to the inside zone.


Before creating zones, consider the access rules and other policies you want to apply to your networks. For example, you do not need to put all internal interfaces into the same zone. If you have 4 internal networks, and you want to treat one differently than the other three, you can create two zones rather than one. If you have an interface that should allow outside access to a public web server, you might want to use a separate zone for the interface.

The following procedure explains how you can create and edit objects directly through the Objects page. You can also create security zones while editing a security zone property by clicking the **Create New Security Zone** link shown in the object list.

Procedure

- Step 1** Select **Objects**, then select **Security Zones** from the table of contents.
- Step 2** Do one of the following:
- To create an object, click the + button.

- To edit an object, click the edit icon () for the object.

To delete an unreferenced object, click the trash can icon () for the object.

Step 3 Enter a Name for the object and optionally, a description.

Step 4 In the **Interfaces** list, click + and select the interfaces to add to the zone.

The list shows all named interfaces that are not currently in a zone. You must configure an interface and give it a name before you can add it to a zone.

If all named interfaces are already in zones, the list is empty. If you are trying to move an interface to a different zone, you must first remove it from its current zone.

Step 5 Click **Add** (for new objects) or **Save** (when editing objects) to save your changes.

Configuring Application Filter Objects

An application filter object defines the applications used in an IP connection, or a filter that defines applications by type, category, tag, risk, or business relevance. You can use these objects in policies to control traffic instead of using port specifications.

Although you can specify individual applications, application filters simplify policy creation and administration. For example, you could create an access control rule that identifies and blocks all high risk, low business relevance applications. If a user attempts to use one of those applications, the session is blocked.

You can select applications and application filters directly in a policy without using application filter objects. However, an object is convenient if you want to create several policies for the same group of applications or filters. The system includes several pre-defined application filters, which you cannot edit or delete.



Note Cisco frequently updates and adds additional application detectors via system and vulnerability database (VDB) updates. Thus, a rule blocking high risk applications can automatically apply to new applications without you having to update the rule manually.

The following procedure explains how you can create and edit objects directly through the Objects page. You can also create application filter objects while editing an access control rule by clicking the **Save As Filter** link after adding application criteria to the Applications tab.


Before you begin


When editing a filter, if a selected application was removed by a VDB update, “(Deprecated)” appears after the application name. You must remove these applications from the filter, or subsequent deployments and system software upgrades will be blocked.

Procedure

Step 1 Select **Objects**, then select **Application Filters** from the table of contents.

Step 2 Do one of the following:

- To create an object, click the + button.
- To edit an object, click the edit icon () for the object.

To delete an unreferenced object, click the trash can icon () for the object.

Step 3 Enter a Name for the object and optionally, a description.

Step 4 In the **Applications** list, click **Add +** and select the applications and filters to add to the object.

The initial list shows applications in a continually scrolling list. Click **Advanced Filter** to see the filter options and to get an easier view for selecting applications. Click **Add** when you have made your selections. You can repeat the process to add additional applications or filters.

Note Multiple selections within a single filter criteria have an OR relationship. For example, Risk is High OR Very High. The relationship between filters is AND, so Risk is High OR Very High, AND Business Relevance is Low OR Very Low. As you select filters, the list of applications in the display updates to show only those that meet the criteria. You can use these filters to help you find applications that you want to add individually, or to verify that you are selecting the desired filters to add to the rule.

Risks

The likelihood that the application is used for purposes that might be against your organization's security policy, from very low to very high.

Business Relevance

The likelihood that the application is used within the context of your organization's business operations, as opposed to recreationally, from very low to very high.

Types

The type of application:

- **Application Protocol**—Application protocols such as HTTP and SSH, which represent communications between hosts.
- **Client Protocol**—Clients such as web browsers and email clients, which represent software running on the host.
- **Web Application**—Web applications such as MPEG video and Facebook, which represent the content or requested URL for HTTP traffic.

Categories

A general classification for the application that describes its most essential function.

Tags

Additional information about the application, similar to category.

For encrypted traffic, the system can identify and filter traffic using only the applications tagged **SSL Protocol**. Applications without this tag can only be detected in unencrypted or decrypted traffic. Also, the system assigns the **decrypted traffic** tag to applications that the system can detect in decrypted traffic only, not encrypted or unencrypted.

Applications List (bottom of the display)

This list updates as you select filters from the options above the list, so you can see the applications that currently match the filter. Use this list to verify that your filter is targeting the desired applications when you intend to add filter criteria to the rule. If your intention is to add specific applications, select them from this list.

Step 5 Click **Add** (for new objects) or **Save** (when editing objects) to save your changes.

Configuring URL Objects and Groups

Use URL objects and groups (collectively referred to as URL objects) to define the URL or IP addresses of web requests. You can use these objects to implement manual URL filtering in access control policies.

A URL object defines a single URL or IP address, whereas a URL group object can define more than one URL or address.

When creating URL objects, keep the following points in mind:

- If you do not include a path (that is, there is no / character in the URL), the match is based on the server's hostname only. The hostname is considered a match if it comes after the :// separator, or after any dot in the hostname. For example, ign.com matches ign.com and www.ign.com, but it does not match verisign.com.
- If you include one or more / character, the entire URL string is used for a substring match, including the server name, path, and any query parameters. However, we recommend that you do not use manual URL filtering to block or allow individual web pages or parts of sites, as servers can be reorganized and pages moved to new paths. Substring matching can also lead to unexpected matches, where the string you include in the URL object also matches paths on unintended servers or strings within query parameters.
- The system disregards the encryption protocol (HTTP vs HTTPS). In other words, if you block a website, both HTTP and HTTPS traffic to that website is blocked, unless you use an application condition to target a specific protocol. When creating a URL object, you do not need to specify the protocol when creating an object. For example, use example.com rather than http://example.com.
- If you plan to use a URL object to match HTTPS traffic in an access control rule, create the object using the subject common name in the public key certificate used to encrypt the traffic. Also, the system disregards subdomains within the subject common name, so do not include subdomain information. For example, use example.com rather than www.example.com.

However, please understand that the subject common name in the certificate might be completely unrelated to a web site's domain name. For example, the subject common name in the certificate for youtube.com is *.google.com (this of course might change at any time). You will get more consistent results if you use the SSL Decryption policy to decrypt HTTPS traffic so that URL filtering rules work on decrypted traffic.





Note URL objects will not match HTTPS traffic if the browser resumes a TLS session because the certificate information is no longer available. Thus, even if you carefully configure the URL object, you might get inconsistent results for HTTPS connections.


The following procedure explains how you can create and edit objects directly through the Objects page. You can also create URL objects while editing a URL property by clicking the **Create New URL** link shown in the object list.

Procedure

Step 1 Select **Objects**, then select **URL** from the table of contents.

Step 2 Do one of the following:

- To create an object, click the + button.
- To create a group, click the **Add Group** () button.
- To edit an object or group, click the edit icon () for the object.

To delete an unreferenced object, click the trash can icon () for the object.

Step 3 Enter a Name for the object and optionally, a description.

Step 4 Define the object contents.

URL Objects

Enter a URL or IP address in the **URL** box. You cannot use wildcards in the URL.

URL Groups

Click the + button to select URL objects to add to the group. You can also create new objects.

Step 5 Click **Add** (for new objects) or **Save** (when editing objects) to save your changes.

Configuring Geolocation Objects

A geolocation object defines countries and continents that host the device that is the source or destination of traffic. You can use these objects in policies to control traffic instead of using IP addresses. For example, using geographical location, you could easily restrict access to a particular country without needing to know all of the potential IP addresses used there.

You can typically select geographical locations directly in a policy without using geolocation objects. However, an object is convenient if you want to create several policies for the same group of countries and continents.




Note To ensure that you are using up-to-date geographical location data to filter your traffic, Cisco strongly recommends that you regularly update the geolocation database (GeoDB).


The following procedure explains how you can create and edit objects directly through the Objects page. You can also create geolocation objects while editing a network property by clicking the **Create New Geolocation** link shown in the object list.

Procedure

Step 1 Select **Objects**, then select **Geolocation** from the table of contents.

Step 2 Do one of the following:

- To create an object, click the + button.
- To edit an object, click the edit icon () for the object.

To delete an unreferenced object, click the trash can icon () for the object.

Step 3 Enter a Name for the object and optionally, a description.

Step 4 In the **Continents/Countries** list, click **Add** + and select the continents and countries to add to the object.

Selecting a continent selects all countries within the continent.

Step 5 Click **Add** (for new objects) or **Save** (when editing objects) to save your changes.

Configuring Syslog Servers

A syslog server object identifies a server that can receive connection-oriented or diagnostic system log (syslog) messages. If you have a syslog server set up for log collection and analysis, create objects to define them and use the objects in the related policies.

You can send the following types of events to the syslog server:


- Connection events. Configure the syslog server object on the following types of policy: access control rules and default action.
- Diagnostic events. See [Configuring Diagnostic Logging](#).


The following procedure explains how you can create and edit objects directly through the Objects page. You can also create syslog server objects while editing a syslog server property by clicking the **Add Syslog Server** link shown in the object list.

Procedure

Step 1 Select **Objects**, then select **Syslog Servers** from the table of contents.

Step 2 Do one of the following:

- To create an object, click the + button.
- To edit an object, click the edit icon () for the object.

To delete an unreferenced object, click the trash can icon () for the object.

Step 3 Configure the syslog server properties:

- **Device Interface**—Select the interface through which the syslog server is reached.

- **IP Address**—Enter the IP address of the syslog server.
- **Port**—Enter the UDP port that the server uses for receiving syslog messages. The default is 514. If you change the default, the port must be in the range 1025 to 65535.

Step 4 Click **Add** (for new objects) or **Save** (when editing objects) to save your changes.
