



Controlling Traffic with Network-Based Rules

Access control rules within *access control policies* exert granular control over network traffic logging and handling. Network-based conditions allow you to manage which traffic can traverse your network, using one or more of the following criteria:

- source and destination security zones
- source and destination IP addresses or geographical locations
- source and destination port, which also includes transport layer protocol and ICMP code options

You can combine network-based conditions with each other and with other types of conditions to create an access control rule. These access control rules can be simple or complex, matching and inspecting traffic using multiple conditions. For detailed information on access control rules, see [Tuning Traffic Flow Using Access Control Rules, page 6-1](#).



Note

Security Intelligence-based traffic filtering, and some decoding and preprocessing occur **before** network traffic is evaluated by access control rules. You can also configure the *SSL inspection* feature to block or decrypt encrypted traffic before access control rules evaluate it.

Table 7-1 License Requirements for Network-Based Access Control Rules

Requirement	Geolocation Control	All Other Network-Based Control
license	Any	Any

For information on building network-based access control rules, see:

- [Controlling Traffic by Security Zone, page 7-1](#)
- [Controlling Traffic by Network or Geographical Location, page 7-3](#)
- [Controlling Traffic by Port and ICMP Codes, page 7-5](#)

Controlling Traffic by Security Zone

License: Any

Zone conditions in access control rules allow you to control traffic by its source and destination security zones. A *security zone* is a grouping of one or more interfaces.

As a simple example, you could create two zones: Internal and External, and assign the first pair of interfaces on the device to those zones. Hosts connected to the network on the Internal side represent your protected assets.

To extend this scenario, you could deploy additional identically configured devices to protect similar resources in several different locations. Each of these devices protects the assets in its Internal security zone.

**Tip**

You are not required to group all internal (or external) interfaces into a single zone. Choose the grouping that makes sense for your deployment and security policies. For more information on creating zones, see [Working with Security Zones, page 2-32](#).

In this deployment, you may decide that although you want these hosts to have unrestricted access to the Internet, you nevertheless want to protect them by inspecting incoming traffic for intrusions and malware.

To accomplish this using access control, configure an access control rule with a zone condition where the **Destination Zone** is set to **Internal**. This simple access control rule matches traffic that leaves the device from any interface in the Internal zone.

To ensure that the system inspects matching traffic for intrusions and malware, choose a rule action of **Allow**, then associate this rule with an intrusion and a file policy. For more information, see [Using Rule Actions to Determine Traffic Handling and Inspection, page 6-6](#) and [Controlling Traffic Using Intrusion and File Policies, page 11-1](#).

If you want to build a more complex rule, you can add a maximum of 50 zones to each of the **Source Zones** and **Destination Zones** in a single zone condition:

- To match traffic *leaving* the device from an interface in the zone, add that zone to the **Destination Zones**.
Because devices deployed passively do not transmit traffic, you cannot use a zone comprised of passive interfaces in a **Destination Zone** condition.
- To match traffic *entering* the device from an interface in the zone, add that zone to the **Source Zones**.
- If you add both source and destination zone conditions to a rule, matching traffic must originate from one of the specified source zones **and** egress through one of the destination zones.

When building a zone condition, warning icons indicate invalid configurations. For details, see [Troubleshooting Access Control Policies and Rules, page 4-13](#).

To control traffic by zone:

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- Step 1** In the access control policy where you want to control traffic by zone, create a new access control rule or edit an existing rule.
For detailed instructions, see [Creating and Editing Access Control Rules, page 6-2](#).
- Step 2** In the rule editor, select the Zones tab.
The Zones tab appears.
- Step 3** Find and select the zones you want to add from the **Available Zones**.
To search for zones to add, click the **Search by name** prompt above the **Available Zones** list, then type a zone name. The list updates as you type to display matching zones.
Click to select a zone. To select multiple zones, use the Shift and Ctrl keys, or right-click and then select **Select All**.

- Step 4** Click **Add to Source** or **Add to Destination** to add the selected zones to the appropriate list.
You can also drag and drop selected zones.
- Step 5** Save or continue editing the rule.
You must apply the access control policy for your changes to take effect; see [Deploying Configuration Changes, page 4-12](#).

Controlling Traffic by Network or Geographical Location

License: feature dependent

Network conditions in access control rules allow you to control traffic by its source and destination IP address. You can either:

- explicitly specify the source and destination IP addresses for the traffic you want to control, or
- use the geolocation feature, which associates IP addresses with geographical locations, to control traffic based on its source or destination country or continent

When you build a network-based access control rule condition, you can manually specify IP address and geographical locations. Alternately, you can configure network conditions with network and geolocation *objects*, which are reusable and associate a name with one or more IP addresses, address blocks, countries, continents, and so on.



Tip

After you create a network or geolocation object, you can use it not only to build access control rules, but also to represent IP addresses in various other places in the system's module interface. For more information, see [Managing Reusable Objects, page 2-1](#).

Note that if you want to write rules to control traffic by geographical location, to ensure you are using up-to-date geolocation data to filter your traffic, Cisco **strongly** recommends you regularly update the geolocation database (GeoDB) on your ASA FirePOWER module; see [Updating the Geolocation Database, page 46-19](#).

Table 7-2 License Requirements for Network Conditions

Requirement	Geolocation Control	IP Address Control
license	Any	Any

You can add a maximum of 50 items to each of the **Source Networks** and **Destination Networks** in a single network condition, and you can mix network and geolocation-based configurations:

- To match traffic *from* an IP address or geographical location, configure the **Source Networks**.
- To match traffic *to* an IP address or geographical location, configure the **Destination Networks**.

If you add both source and destination network conditions to a rule, matching traffic must originate from one of the specified IP addresses **and** be destined for one of the destination IP addresses.

When building a network condition, warning icons indicate invalid configurations. For details, see [Troubleshooting Access Control Policies and Rules, page 4-13](#).

Network conditions also allow you to handle proxied traffic based on the originating client. Use a source network condition to specify proxy servers, then add an original client constraint to specify original client IP addresses. The system uses a packet's X-Forwarded-For (XFF), True-Client-IP, or custom-defined HTTP header field to determine original client IP.

Traffic matches the rule if the proxy's IP address matches the rule's source network constraint, and the original client's IP address matches the rule's original client constraint. For example, to allow traffic from a specific original client address, but only if it uses a specific proxy, create three rules:

Rule 1: Blocks non-proxied traffic from a specific IP address (209.165.201.1)

Source Networks: 209.165.201.1

Original Client Networks: none/any

Action: Block

Rule 2: Allows proxied traffic from the same IP address, but only if the proxy server for that traffic is one you choose (209.165.200.225 or 209.165.200.238)

Source Networks: 209.165.200.225 and 209.165.200.238

Original Client Networks: 209.165.201.1

Action: Allow


Rule 3: Blocks proxied traffic from the same IP address if it uses any other proxy server.

Source Networks: any

Original Client Networks: 209.165.201.1

Action: Block

To control traffic by network or geographical location:

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- Step 1** In the access control policy where you want to control traffic by network, create a new access control rule or edit an existing rule; see [Creating and Editing Access Control Rules, page 6-2](#).
- Step 2** In the rule editor, select the Networks tab.
- Step 3** Find and select the networks you want to add from the **Available Networks**, as follows:
- Click the Networks tab to display network objects and groups to add; click the Geolocation tab to display geolocation objects.
 - To add a network object on the fly, which you can then add to the condition, click the add icon () above the **Available Networks** list; see [Working with Network Objects, page 2-3](#).
 - To search for network or geolocation objects to add, select the appropriate tab, click the **Search by name or value** prompt above the **Available Networks** list, then type an object name or the value of one of the object's components. The list updates as you type to display matching objects.
- To select an object, click it. To select multiple objects, use the Shift and Ctrl keys, or right-click and then select **Select All**.
- Step 4** If you want to filter proxied traffic:
- Click the **Source** sub-tab to specify a source network constraint.
 - Click the **Original Client** sub-tab to specify an original client network constraint. In proxied connections, the original client's IP address must match one of these networks to match the rule.
- Step 5** Click **Add to Source**, **Add to Original Client**, or **Add to Destination** to add the selected objects to the appropriate list.

You can also drag and drop selected objects.

- Step 6** Add any source or destination IP addresses or address blocks that you want to specify manually.
- Click the **Enter an IP address** prompt below the **Source Networks** or **Destination Networks** list; then type an IP address or address block and click **Add**.
- Step 7** Save or continue editing the rule.
- You must apply the access control policy for your changes to take effect; see [Deploying Configuration Changes, page 4-12](#).
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Controlling Traffic by Port and ICMP Codes

License: Any

Network conditions in access control rules allow you to control traffic by its source and destination port. In this context, “port” refers to one of the following:

- For TCP and UDP, you can control traffic based on the transport layer protocol. The system represents this configuration using the protocol number in parentheses, plus an optional associated port or port range. For example: TCP(6)/22.
- For ICMP and ICMPv6 (IPv6-ICMP), you can control traffic based on its Internet layer protocol plus an optional type and code. For example: ICMP(1):3:3.
- You can control traffic using other protocols that do not use ports.

When you build a port-based access control rule condition, you can manually specify ports. Alternately, you can configure port conditions with port *objects*, which are reusable and associate a name with one or more ports.



Tip

After you create a port object, you can use it not only to build access control rules, but also to represent ports in various other places in the system’s module interface. You can create port objects either using the object manager or on-the-fly while you are configuring access control rules. For more information, see [Working with Port Objects, page 2-9](#).

You can add a maximum of 50 items to each of the **Selected Source Ports** and **Selected Destination Ports** lists in a single network condition:

- To match traffic *from* a port, configure the **Selected Source Ports**.
If you add only source ports to a condition, you can add ports that use different transport protocols. For example, you can add both DNS over TCP and DNS over UDP as source port conditions in a single access control rule.
- To match traffic *to* a port, configure the **Selected Destination Ports**.
If you add only destination ports to a condition, you can add ports that use different transport protocols.
- To match traffic both originating from specific **Selected Source Ports** and destined for specific **Selected Destination Ports**, configure both.


If you add both source and destination ports to a condition, you can only add ports that share a single transport protocol (TCP or UDP). For example, if you add DNS over TCP as a source port, you can add Yahoo Messenger Voice Chat (TCP) as a destination port but not Yahoo Messenger Voice Chat (UDP).

Keep the following points in mind when building a port condition:

- When you add a destination ICMP port with the type set to 0 or a destination ICMPv6 port with the type set to 129, the access control rule only matches unsolicited echo replies. ICMP echo replies sent in response to ICMP echo requests are ignored. For a rule to match on any ICMP echo, use ICMP type 8 or ICMPv6 type 128.
- When you use the GRE (47) protocol as a destination port condition, you can only add other network-based conditions to the access control rule, that is, zone, and network conditions. You cannot save the rule if you add reputation or user-based conditions.

When building a port condition, warning icons indicate invalid configurations. For example, you can use the object manager to edit in-use port objects so that the rules that use those object groups become invalid. For details, see [Troubleshooting Access Control Policies and Rules, page 4-13](#).

To control traffic by port:

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- Step 1** In the access control policy where you want to control traffic by port, create a new access control rule or edit an existing rule.
- For detailed instructions, see [Creating and Editing Access Control Rules, page 6-2](#).
- Step 2** In the rule editor, select the Ports tab.
- The Ports tab appears.
- Step 3** Find and select the ports you want to add from the **Available Ports**, as follows:
- To add a port object on the fly, which you can then add to the condition, click the add icon () above the Available Ports list; see [Working with Port Objects, page 2-9](#).
 - To search for port objects and groups to add, click the **Search by name or value** prompt above the **Available Ports** list, then type either the name of the object, or the value of a port in the object. The list updates as you type to display matching objects. For example, if you type 80, the ASA FirePOWER module displays the Cisco-provided HTTP port object.
- To select an object, click it. To select multiple objects, use the Shift and Ctrl keys, or right-click and then select **Select All**.
- Step 4** Click **Add to Source** or **Add to Destination** to add the selected objects to the appropriate list.
- You can also drag and drop selected objects.
- Step 5** Add any source or destination ports that you want to specify manually.
- For source ports, select either **TCP** or **UDP** from the **Protocol** drop-down list under the **Selected Source Ports** list. Then, enter a **Port**. You can specify a single port with a value from 0 to 65535.
 - For destination ports, select a protocol (including **All** for all protocols) from the **Protocol** drop down list under the **Selected Destination Ports** list. You can also type the number of an unassigned protocol that does not appear in the list.

If you select **ICMP** or **IPv6-ICMP**, a pop-up window appears where you can select a type and a related code. For more information on ICMP types and codes, see

<http://www.iana.org/assignments/icmp-parameters/icmp-parameters.xml> and

<http://www.iana.org/assignments/icmpv6-parameters/icmpv6-parameters.xml>.

If you do not want to specify a protocol, or optionally if you specified TCP or UDP, enter a **Port**. You can specify a single port with a value from 0 to 65535.

Click **Add**. Note that the ASA FirePOWER module will not add a port to a rule condition that results in an invalid configuration.

Step 6 Save or continue editing the rule.

You must apply the access control policy for your changes to take effect; see [Deploying Configuration Changes](#), page 4-12.
