



Completing Interface Configuration (Routed Mode)

This chapter includes tasks to complete the interface configuration for all models in routed firewall mode. This chapter includes the following sections:

- [Information About Completing Interface Configuration in Routed Mode, page 17-1](#)
- [Licensing Requirements for Completing Interface Configuration in Routed Mode, page 17-2](#)
- [Guidelines and Limitations, page 17-5](#)
- [Default Settings, page 17-6](#)
- [Completing Interface Configuration in Routed Mode, page 17-6](#)
- [Turning Off and Turning On Interfaces, page 17-22](#)
- [Monitoring Interfaces, page 17-22](#)
- [Feature History for Interfaces in Routed Mode, page 17-30](#)



Note

For multiple context mode, complete the tasks in this section in the context execution space. In the Configuration > Device List pane, double-click the context name under the active device IP address.

Information About Completing Interface Configuration in Routed Mode

This section includes the following topics:

- [Security Levels, page 17-1](#)
- [Dual IP Stack \(IPv4 and IPv6\), page 17-2](#)

Security Levels

Each interface must have a security level from 0 (lowest) to 100 (highest). For example, you should assign your most secure network, such as the inside host network, to level 100. While the outside network connected to the Internet can be level 0. Other networks, such as DMZs can be in between. You can assign interfaces to the same security level. See the [“Allowing Same Security Level Communication” section on page 17-20](#) for more information.

The level controls the following behavior:

- Network access—By default, there is an implicit permit from a higher security interface to a lower security interface (outbound). Hosts on the higher security interface can access any host on a lower security interface. You can limit access by applying an access list to the interface.

If you enable communication for same security interfaces (see the [“Allowing Same Security Level Communication” section on page 17-20](#)), there is an implicit permit for interfaces to access other interfaces on the same security level or lower.

- Inspection engines—Some application inspection engines are dependent on the security level. For same security interfaces, inspection engines apply to traffic in either direction.
 - NetBIOS inspection engine—Applied only for outbound connections.
 - SQL*Net inspection engine—If a control connection for the SQL*Net (formerly OraServ) port exists between a pair of hosts, then only an inbound data connection is permitted through the ASA.

- Filtering—HTTP(S) and FTP filtering applies only for outbound connections (from a higher level to a lower level).

If you enable communication for same security interfaces, you can filter traffic in either direction.

- **established** command—This command allows return connections from a lower security host to a higher security host if there is already an established connection from the higher level host to the lower level host.

If you enable communication for same security interfaces, you can configure **established** commands for both directions.

Dual IP Stack (IPv4 and IPv6)

The ASA supports the configuration of both IPv6 and IPv4 on an interface. You do not need to enter any special commands to do so; simply enter the IPv4 configuration commands and IPv6 configuration commands as you normally would. Make sure you configure a default route for both IPv4 and IPv6.

Licensing Requirements for Completing Interface Configuration in Routed Mode

Model	License Requirement
ASA 5505	<p>VLANs:</p> <p>Base License: 3 (2 regular zones and 1 restricted zone that can only communicate with 1 other zone)</p> <p>Security Plus License: 20</p> <p>VLAN Trunks:</p> <p>Base License: None.</p> <p>Security Plus License: 8.</p> <p>Interfaces of all types¹:</p> <p>Base License: 52.</p> <p>Security Plus License: 120.</p>

1. The maximum number of combined interfaces; for example, VLANs, physical, redundant, and bridge group interfaces.

Model	License Requirement
ASA 5510	<p>VLANs:</p> <p>Base License: 50</p> <p>Security Plus License: 100</p> <p>Interface Speed:</p> <p>Base License—All interfaces Fast Ethernet.</p> <p>Security Plus License—Ethernet 0/0 and 0/1: Gigabit Ethernet; all others Fast Ethernet.</p> <p>Interfaces of all types¹:</p> <p>Base License: 52</p> <p>Security Plus License: 120</p>
ASA 5520	<p>VLANs:</p> <p>Base License: 150.</p> <p>Interfaces of all types¹:</p> <p>Base License: 640</p>
ASA 5540	<p>VLANs:</p> <p>Base License: 200</p> <p>Interfaces of all types¹:</p> <p>Base License: 840</p>
ASA 5550	<p>VLANs:</p> <p>Base License: 400</p> <p>Interfaces of all types¹:</p> <p>Base License: 1640</p>

Model	License Requirement
ASA 5580	VLANs: Base License: 1024 Interfaces of all types ¹ : Base License: 4176
ASA 5512-X	VLANs: Base License: 50 Interfaces of all types ¹ : Base License: 328
ASA 5515-X	VLANs: Base License: 100 Interfaces of all types ¹ : Base License: 528
ASA 5525-X	VLANs: Base License: 200 Interfaces of all types ¹ : Base License: 928
ASA 5545-X	VLANs: Base License: 300 Interfaces of all types ¹ : Base License: 1328
ASA 5555-X	VLANs: Base License: 500 Interfaces of all types ¹ : Base License: 2128
ASA 5585-X	VLANs: Base License: 1024 Interface Speed for SSP-10 and SSP-20: Base License—1-Gigabit Ethernet for fiber interfaces 10 GE I/O License (Security Plus)—10-Gigabit Ethernet for fiber interfaces (SSP-40 and SSP-60 support 10-Gigabit Ethernet by default.) Interfaces of all types ¹ : Base License: 4176

1. The maximum number of combined interfaces; for example, VLANs, physical, redundant, bridge group, and EtherChannel interfaces.

Model	License Requirement
ASASM	VLANs: Base License: 1000

Guidelines and Limitations

This section includes the guidelines and limitations for this feature.

Context Mode Guidelines

- For the ASA 5510 and higher in multiple context mode, configure the physical interfaces in the system execution space according to [Chapter 15, “Starting Interface Configuration \(ASA 5510 and Higher\)”](#). Then, configure the logical interface parameters in the context execution space according to this chapter. For the ASASM in multiple context mode, configure switch ports and VLANs on the switch, and then assign VLANs to the ASASM according to [Chapter 2, “Configuring the Switch for Use with the ASA Services Module.”](#)

The ASA 5505 does not support multiple context mode.

- In multiple context mode, you can only configure context interfaces that you already assigned to the context in the system configuration according to the [“Configuring Multiple Contexts”](#) section on [page 9-15](#).
- PPPoE is not supported in multiple context mode.

Firewall Mode Guidelines

Supported in routed firewall mode. For transparent mode, see [Chapter 18, “Completing Interface Configuration \(Transparent Mode, 8.4 and Later\)”](#).

Failover Guidelines

Do not finish configuring failover interfaces with the procedures in this chapter. See the [“Configuring Active/Standby Failover”](#) section on [page 12-7](#) or the [“Configuring Active/Active Failover”](#) section on [page 13-8](#) to configure the failover and state links. In multiple context mode, failover interfaces are configured in the system configuration.

IPv6 Guidelines

Supports IPv6.

VLAN ID Guidelines for the ASASM

You can add any VLAN ID to the configuration, but only VLANs that are assigned to the ASA by the switch can pass traffic. To view all VLANs assigned to the ASA, use the **show vlan** command.

If you add an interface for a VLAN that is not yet assigned to the ASA by the switch, the interface will be in the down state. When you assign the VLAN to the ASA, the interface changes to an up state. See the **show interface** command for more information about interface states.

Default Settings

This section lists default settings for interfaces if you do not have a factory default configuration. For information about the factory default configurations, see the [“Factory Default Configurations” section on page 3-17](#).

Default Security Level

The default security level is 0. If you name an interface “inside” and you do not set the security level explicitly, then the ASA sets the security level to 100.



Note

If you change the security level of an interface, and you do not want to wait for existing connections to time out before the new security information is used, you can clear the connections using the **clear local-host** command.

Default State of Interfaces for the ASASM

- In single mode or in the system execution space, VLAN interfaces are enabled by default.
- In multiple context mode, all allocated interfaces are enabled by default, no matter what the state of the interface is in the system execution space. However, for traffic to pass through the interface, the interface also has to be enabled in the system execution space. If you shut down an interface in the system execution space, then that interface is down in all contexts that share it.

Jumbo Frame Support

By default, the ASASM supports jumbo frames. Just configure the MTU for the desired packet size according to the [“Configuring the MAC Address and MTU” section on page 17-13](#).

Completing Interface Configuration in Routed Mode

This section includes the following topics:

- [Task Flow for Completing Interface Configuration, page 17-7](#)
- [Configuring General Interface Parameters, page 17-7](#)
- [Configuring the MAC Address and MTU, page 17-13](#)
- [Configuring IPv6 Addressing, page 17-15](#)
- [Allowing Same Security Level Communication, page 17-20](#)

Task Flow for Completing Interface Configuration

-
- | | |
|---------------|---|
| Step 1 | Set up your interfaces depending on your model: <ul style="list-style-type: none">• ASA 5510 and higher—Chapter 15, “Starting Interface Configuration (ASA 5510 and Higher).”• ASA 5505—Chapter 16, “Starting Interface Configuration (ASA 5505).”• ASASM—Chapter 2, “Configuring the Switch for Use with the ASA Services Module.” |
| Step 2 | (Multiple context mode) Allocate interfaces to the context according to the “Configuring Multiple Contexts” section on page 9-15. |
| Step 3 | (Multiple context mode) In the Configuration > Device List pane, double-click the context name under the active device IP address. |
| Step 4 | Configure general interface parameters, including the interface name, security level, and IPv4 address. See the “Configuring General Interface Parameters” section on page 17-7. |
| Step 5 | (Optional) Configure the MAC address and the MTU. See the “Configuring the MAC Address and MTU” section on page 17-13. |
| Step 6 | (Optional) Configure IPv6 addressing. See the “Configuring IPv6 Addressing” section on page 17-15. |
| Step 7 | (Optional) Allow same security level communication, either by allowing communication between two interfaces or by allowing traffic to enter and exit the same interface. See the “Allowing Same Security Level Communication” section on page 17-20. |
-

Configuring General Interface Parameters

This procedure describes how to set the name, security level, IPv4 address and other options.

For the ASA 5510 and higher, you must configure interface parameters for the following interface types:

- Physical interfaces
- VLAN subinterfaces
- Redundant interfaces
- EtherChannel interfaces

For the ASA 5505 and ASASM, you must configure interface parameters for the following interface types:

- VLAN interfaces

Guidelines and Limitations

- For the ASA 5550, for maximum throughput, be sure to balance your traffic over the two interface slots; for example, assign the inside interface to slot 1 and the outside interface to slot 0.
- If you are using failover, do not use this procedure to name interfaces that you are reserving for failover and Stateful Failover communications. See the [“Configuring Active/Standby Failover” section on page 12-7](#) or the [“Configuring Active/Active Failover” section on page 13-8](#) to configure the failover and state links.

Restrictions

- PPPoE is not supported in multiple context mode.
- PPPoE and DHCP are not supported on the ASASM.

Prerequisites

- Set up your interfaces depending on your model:
 - ASA 5510 and higher—[Chapter 15, “Starting Interface Configuration \(ASA 5510 and Higher\).”](#)
 - ASA 5505—[Chapter 16, “Starting Interface Configuration \(ASA 5505\).”](#)
 - ASASM—[Chapter 2, “Configuring the Switch for Use with the ASA Services Module.”](#)
- In multiple context mode, you can only configure context interfaces that you already assigned to the context in the system configuration according to the [“Configuring Multiple Contexts” section on page 9-15.](#)
- In multiple context mode, complete this procedure in the context execution space. To change from the system to a context configuration, in the Configuration > Device List pane, double-click the context name under the active device IP address.

Detailed Steps

Step 1 Choose the **Configuration > Device Setup > Interfaces** pane.

For the ASA 5505, the Interfaces tab shows by default.

Step 2 Choose the interface row, and click **Edit**.

The Edit Interface dialog box appears with the General tab selected.

The screenshot shows the 'Edit Interface' dialog box with the 'General' tab active. The 'Hardware Port' is set to 'GigabitEthernet0/0'. The 'Interface Name' is 'outside'. The 'Security Level' is '0'. There is a checkbox for 'Dedicate this interface to management only' which is unchecked. The 'Channel Group' is empty. The 'Enable Interface' checkbox is checked. Under 'IP Address', the 'Use Static IP' radio button is selected. The 'IP Address' field contains '10.86.194.225' and the 'Subnet Mask' is '255.255.254.0'. A 'Configure Hardware Properties...' button is visible in the top right.

Step 3 In the Interface Name field, enter a name up to 48 characters in length.

Step 4 In the Security level field, enter a level between 0 (lowest) and 100 (highest).

See the [“Security Levels” section on page 17-1](#) for more information.

Step 5 (Optional; not supported for redundant interfaces) To set this interface as a management-only interface, check the **Dedicate this interface to management-only** check box.

Through traffic is not accepted on a management-only interface. For the ASA 5510 and higher, see the [“Prerequisites” section on page 17-8](#) for more information.

(ASA 5512-X through ASA 5555-X) You cannot disable this option on the Management 0/0 interface.



Note The Channel Group field is read-only and indicates if the interface is part of an EtherChannel.

Step 6 If the interface is not already enabled, check the **Enable Interface** check box.

Step 7 To set the IP address, one of the following options.



Note For use with failover, you must set the IP address and standby address manually; DHCP and PPPoE are not supported. Set the standby IP addresses on the Configuration > Device Management > High Availability > Failover > Interfaces tab.

- To set the IP address manually, click the **Use Static IP** radio button and enter the IP address and mask.
- To obtain an IP address from a DHCP server, click the **Obtain Address via DHCP** radio button.

- To force a MAC address to be stored inside a DHCP request packet for option 61, click the **Use MAC Address** radio button.

Some ISPs expect option 61 to be the interface MAC address. If the MAC address is not included in the DHCP request packet, then an IP address will not be assigned.

- To use a generated string for option 61, click **Use “Cisco-<MAC>-<interface_name>-<host>”**.
- (Optional) To obtain the default route from the DHCP server, check **Obtain Default Route Using DHCP**.
- (Optional) To assign an administrative distance to the learned route, enter a value between 1 and 255 in the DHCP Learned Route Metric field. If this field is left blank, the administrative distance for the learned routes is 1.

- e. (Optional) To enable tracking for DHCP-learned routes, check **Enable Tracking for DHCP Learned Routes**. Set the following values:

Track ID—A unique identifier for the route tracking process. Valid values are from 1 to 500.

Track IP Address—Enter the IP address of the target being tracked. Typically, this would be the IP address of the next hop gateway for the route, but it could be any network object available off of that interface.

**Note**

Route tracking is only available in single, routed mode.

SLA ID—A unique identifier for the SLA monitoring process. Valid values are from 1 to 2147483647.

Monitor Options—Click this button to open the Route Monitoring Options dialog box. In the Route Monitoring Options dialog box you can configure the parameters of the tracked object monitoring process.

- f. (Optional) To set the broadcast flag to 1 in the DHCP packet header when the DHCP client sends a discover requesting an IP address, check **Enable DHCP Broadcast flag for DHCP request and discover messages**.

The DHCP server listens to this broadcast flag and broadcasts the reply packet if the flag is set to 1.

- g. (Optional) To renew the lease, click **Renew DHCP Lease**.

- (Single mode only) To obtain an IP address using PPPoE, check **Use PPPoE**.

- a. In the Group Name field, specify a group name.
- b. In the PPPoE Username field, specify the username provided by your ISP.
- c. In the PPPoE Password field, specify the password provided by your ISP.
- d. In the Confirm Password field, retype the password.
- e. For PPP authentication, click either the **PAP**, **CHAP**, or **MSCHAP** radio button.

PAP passes cleartext username and password during authentication and is not secure. With CHAP, the client returns the encrypted [challenge plus password], with a cleartext username in response to the server challenge. CHAP is more secure than PAP, but it does not encrypt data. MSCHAP is similar to CHAP but is more secure because the server stores and compares only encrypted passwords rather than cleartext passwords as in CHAP. MSCHAP also generates a key for data encryption by MPPE.

- f. (Optional) To store the username and password in Flash memory, check the **Store Username and Password in Local Flash** check box.

The ASA stores the username and password in a special location of NVRAM. If an Auto Update Server sends a **clear configure** command to the ASA, and the connection is then interrupted, the ASA can read the username and password from NVRAM and re-authenticate to the Access Concentrator.

- g. (Optional) To display the PPPoE IP Address and Route Settings dialog box where you can choose addressing and tracking options, click **IP Address and Route Settings**. See the [“PPPoE IP Address and Route Settings” section on page 17-11](#) for more information.

Step 8 (Optional) In the Description field, enter a description for this interface.

The description can be up to 240 characters on a single line, without carriage returns. In the case of a failover or state link, the description is fixed as “LAN Failover Interface,” “STATE Failover Interface,” or “LAN/STATE Failover Interface,” for example. You cannot edit this description. The fixed description overwrites any description you enter here if you make this interface a failover or state link.



Note (ASA 5510 and higher) For information about the Configure Hardware Properties button, see the [“Enabling the Physical Interface and Configuring Ethernet Parameters” section on page 15-23](#).

Step 9 Click **OK**.

What to Do Next

- (Optional) Configure the MAC address and the MTU. See the [“Configuring the MAC Address and MTU” section on page 17-13](#).
- (Optional) Configure IPv6 addressing. See the [“Configuring IPv6 Addressing” section on page 17-15](#).

PPPoE IP Address and Route Settings

The Configuration > Interfaces > Add/Edit Interface > General > PPPoE IP Address and Route Settings > PPPoE IP Address and Route Settings dialog box lets you choose addressing and tracking options for PPPoE connections.

PPPoE IP Address and Route settings

IP Address

☒ Obtain IP Address using PPPoE
☐ Specify an IP address

IP Address: Subnet Mask: 255.255.255.0

Route Settings

☐ Obtain default route using PPPoE

PPPoE learned route metric:

☐ Enable tracking for PPPoE learned route

☒ Primary Track

Track ID: Track IP Address:

SLA ID: Monitoring Option...

☐ Secondary Track

Secondary Track ID:

OK Cancel Help

Fields

- **IP Address area**—Lets you choose between Obtaining an IP address using PPP or specifying an IP address, and contains the following fields:
 - **Obtain IP Address using PPP**—Select to enable the ASA to use PPP to get an IP address.
 - **Specify an IP Address**—Specify an IP address and mask for the ASA to use instead of negotiating with the PPPoE server to assign an address dynamically.
- **Route Settings Area**—Lets you configure route and tracking settings and contains the following fields:
 - **Obtain default route using PPPoE**—Sets the default routes when the PPPoE client has not yet established a connection. When using this option, you cannot have a statically defined route in the configuration.
 - **PPPoE learned route metric**—Assigns an administrative distance to the learned route. Valid values are from 1 to 255. If this field is left blank, the administrative distance for the learned routes is 1.
 - **Enable tracking**—Check this check box to enable route tracking for PPPoE-learned routes.



Note Route tracking is only available in single, routed mode.

- **Primary Track**—Select this option to configure the primary PPPoE route tracking.
- **Track ID**—A unique identifier for the route tracking process. Valid values are from 1 to 500.
- **Track IP Address**—Enter the IP address of the target being tracked. Typically, this would be the IP address of the next hop gateway for the route, but it could be any network object available off of that interface.

- SLA ID—A unique identifier for the SLA monitoring process. Valid values are from 1 to 2147483647.
- Monitor Options—Click this button to open the Route Monitoring Options dialog box. In the Route Monitoring Options dialog box you can configure the parameters of the tracked object monitoring process.
- Secondary Track—Select this option to configure the secondary PPPoE route tracking.
- Secondary Track ID—A unique identifier for the route tracking process. Valid values are from 1 to 500.

Configuring the MAC Address and MTU

This section describes how to configure MAC addresses for interfaces and how to set the MTU.

Information About MAC Addresses

By default, the physical interface uses the burned-in MAC address, and all subinterfaces of a physical interface use the same burned-in MAC address.

For the ASASM, all VLANs use the same MAC address provided by the backplane.

A redundant interface uses the MAC address of the first physical interface that you add. If you change the order of the member interfaces in the configuration, then the MAC address changes to match the MAC address of the interface that is now listed first. If you assign a MAC address to the redundant interface using this command, then it is used regardless of the member interface MAC addresses.

For an EtherChannel, all interfaces that are part of the channel group share the same MAC address. This feature makes the EtherChannel transparent to network applications and users, because they only see the one logical connection; they have no knowledge of the individual links. The port-channel interface uses the lowest numbered channel group interface MAC address as the port-channel MAC address.

Alternatively you can manually configure a MAC address for the port-channel interface. In multiple context mode, you can automatically assign unique MAC addresses to interfaces, including an EtherChannel port interface. We recommend manually, or in multiple context mode, automatically configuring a unique MAC address in case the group channel interface membership changes. If you remove the interface that was providing the port-channel MAC address, then the port-channel MAC address changes to the next lowest numbered interface, thus causing traffic disruption.

In multiple context mode, if you share an interface between contexts, you can assign a unique MAC address to the interface in each context. This feature lets the ASA easily classify packets into the appropriate context. Using a shared interface without unique MAC addresses is possible, but has some limitations. See the [“How the ASA Classifies Packets” section on page 9-3](#) for more information. You can assign each MAC address manually, or you can automatically generate MAC addresses for shared interfaces in contexts. See the [“Automatically Assigning MAC Addresses to Context Interfaces” section on page 9-24](#) to automatically generate MAC addresses. If you automatically generate MAC addresses, you can use this procedure to override the generated address.

For single context mode, or for interfaces that are not shared in multiple context mode, you might want to assign unique MAC addresses to subinterfaces. For example, your service provider might perform access control based on the MAC address.

Information About the MTU

The MTU is the maximum datagram size that is sent on a connection. Data that is larger than the MTU value is fragmented before being sent.

The ASA supports IP path MTU discovery (as defined in RFC 1191), which allows a host to dynamically discover and cope with the differences in the maximum allowable MTU size of the various links along the path. Sometimes, the ASA cannot forward a datagram because the packet is larger than the MTU that you set for the interface, but the “don't fragment” (DF) bit is set. The network software sends a message to the sending host, alerting it to the problem. The host has to fragment packets for the destination so that they fit the smallest packet size of all the links along the path.

The default MTU is 1500 bytes in a block for Ethernet interfaces. This value is sufficient for most applications, but you can pick a lower number if network conditions require it.

Jumbo frames are supported by default on the ASASM. To enable jumbo frames, see the [“Enabling Jumbo Frame Support \(Supported Models\)” section on page 15-37](#). A jumbo frame is an Ethernet packet larger than the standard maximum of 1518 bytes (including Layer 2 header and FCS), up to 9216 bytes. Jumbo frames require extra memory to process, and assigning more memory for jumbo frames might limit the maximum use of other features, such as access lists. To use jumbo frames, set the value higher, for example, to 9000 bytes.

Prerequisites

- Set up your interfaces depending on your model:
 - ASA 5510 and higher—[Chapter 15, “Starting Interface Configuration \(ASA 5510 and Higher\).”](#)
 - ASA 5505—[Chapter 16, “Starting Interface Configuration \(ASA 5505\).”](#)
 - ASASM—[Chapter 2, “Configuring the Switch for Use with the ASA Services Module.”](#)
- In multiple context mode, you can only configure context interfaces that you already assigned to the context in the system configuration according to the [“Configuring Multiple Contexts” section on page 9-15](#).
- In multiple context mode, complete this procedure in the context execution space. To change from the system to a context configuration, in the Configuration > Device List pane, double-click the context name under the active device IP address.

Detailed Steps

-
- Step 1** Choose the **Configuration > Device Setup > Interfaces** pane.
For the ASA 5505, the Interfaces tab shows by default.
- Step 2** Choose the interface row, and click **Edit**.
The Edit Interface dialog box appears with the General tab selected.
- Step 3** Click the **Advanced** tab.

The screenshot shows the 'Advanced' tab of the ASA configuration window. The 'MTU' field is set to 1500. Below it, the 'Mac Address Cloning' section is visible, with instructions to enter MAC addresses in hexadecimal format. There are two input fields: 'Active Mac Ad...' and 'Standby Mac Ad...'. A vertical label '254699' is on the right side of the window.

Step 4 To set the MTU or to enable jumbo frame support (supported models only), enter the value in the MTU field, between 300 and 65,535 bytes.

The default is 1500 bytes.



Note When you set the MTU for a redundant or port-channel interface, the ASA applies the setting to all member interfaces.

- For models that support jumbo frames in single mode—If you enter a value for any interface that is greater than 1500, then you enable jumbo frame support automatically for all interfaces. If you set the MTU for all interfaces back to a value under 1500, then jumbo frame support is disabled.
- For models that support jumbo frames in multiple mode—If you enter a value for any interface that is greater than 1500, then be sure to enable jumbo frame support in the system configuration. See the [“Enabling Jumbo Frame Support \(Supported Models\)”](#) section on page 15-37.



Note Enabling or disabling jumbo frame support requires you to reload the ASA.

Step 5 To manually assign a MAC address to this interface, enter a MAC address in the Active Mac Address field in H.H.H format, where H is a 16-bit hexadecimal digit.

For example, the MAC address 00-0C-F1-42-4C-DE would be entered as 000C.F142.4CDE. The first two bytes of a manual MAC address cannot be A2 if you also want to use auto-generated MAC addresses.

Step 6 If you use failover, enter the standby MAC address in the Standby Mac Address field. If the active unit fails over and the standby unit becomes active, the new active unit starts using the active MAC addresses to minimize network disruption, while the old active unit uses the standby address.

What to Do Next

(Optional) Configure IPv6 addressing. See the [“Configuring IPv6 Addressing”](#) section on page 17-15.

Configuring IPv6 Addressing

This section describes how to configure IPv6 addressing. For more information about IPv6, see the [“IPv6 Addresses”](#) section on page A-5.

This section includes the following topics:

- [Information About IPv6, page 17-16](#)

- [Configuring a Global IPv6 Address, page 17-16](#)
- [Configuring IPv6 Neighbor Discovery, page 17-18](#)
- [\(Optional\) Configuring the Link-Local Addresses Automatically, page 17-19](#)
- [\(Optional\) Configuring the Link-Local Addresses Manually, page 17-19](#)

Information About IPv6

This section includes information about how to configure IPv6, and includes the following topics:

- [IPv6 Addressing, page 17-16](#)
- [Modified EUI-64 Interface IDs, page 17-16](#)

IPv6 Addressing

You can configure two types of unicast addresses for IPv6:

- **Global**—The global address is a public address that you can use on the public network.
- **Link-local**—The link-local address is a private address that you can only use on the directly-connected network. Routers do not forward packets using link-local addresses; they are only for communication on a particular physical network segment. They can be used for address configuration or for the ND functions such as address resolution and neighbor discovery.

At a minimum, you need to configure a link-local address for IPv6 to operate. If you configure a global address, a link-local address is automatically configured on the interface, so you do not also need to specifically configure a link-local address. If you do not configure a global address, then you need to configure the link-local address, either automatically or manually.

Modified EUI-64 Interface IDs

RFC 3513: Internet Protocol Version 6 (IPv6) Addressing Architecture requires that the interface identifier portion of all unicast IPv6 addresses, except those that start with binary value 000, be 64 bits long and be constructed in Modified EUI-64 format. The ASA can enforce this requirement for hosts attached to the local link.

When this feature is enabled on an interface, the source addresses of IPv6 packets received on that interface are verified against the source MAC addresses to ensure that the interface identifiers use the Modified EUI-64 format. If the IPv6 packets do not use the Modified EUI-64 format for the interface identifier, the packets are dropped and the following system log message is generated:

```
%ASA-3-325003: EUI-64 source address check failed.
```

The address format verification is only performed when a flow is created. Packets from an existing flow are not checked. Additionally, the address verification can only be performed for hosts on the local link. Packets received from hosts behind a router will fail the address format verification, and be dropped, because their source MAC address will be the router MAC address and not the host MAC address.

Configuring a Global IPv6 Address

To configure a global IPv6 address, perform the following steps.



Note

Configuring the global address automatically configures the link-local address, so you do not need to configure it separately.

Restrictions

The ASA does not support IPv6 anycast addresses.

Prerequisites

- Set up your interfaces depending on your model:
 - ASA 5510 and higher—[Chapter 15, “Starting Interface Configuration \(ASA 5510 and Higher\).”](#)
 - ASA 5505—[Chapter 16, “Starting Interface Configuration \(ASA 5505\).”](#)
 - ASASM—[Chapter 2, “Configuring the Switch for Use with the ASA Services Module.”](#)
- In multiple context mode, you can only configure context interfaces that you already assigned to the context in the system configuration according to the [“Configuring Multiple Contexts” section on page 9-15.](#)
- In multiple context mode, complete this procedure in the context execution space. To change from the system to a context configuration, in the Configuration > Device List pane, double-click the context name under the active device IP address.

Detailed Steps

Step 1 Choose the **Configuration > Device Setup > Interfaces** pane.

Step 2 Choose an interface, and click **Edit**.

The Edit Interface dialog box appears with the General tab selected.

Step 3 Click the **IPv6** tab.

The screenshot shows the 'Edit Interface' dialog box with the 'IPv6' tab selected. The 'General' tab is also visible. The 'IPv6' tab contains the following configuration options:

- ☐ Enable IPv6
- ☐ Enforce EUI-64
- DAD Attempts: 1
- NS Interval: 1000 milliseconds
- Reachable Time: 0 milliseconds
- RA Lifetime: 1800 seconds
- ☐ Suppress RA
- RA Interval: 200 seconds
- ☐ RA Interval in Milliseconds

Below these options is the 'Interface IPv6 Addresses' section, which includes a 'Link-local address' field and an 'Add' button. At the bottom, there is a table with columns 'Address' and 'EUI64', and buttons for 'Add', 'Edit', and 'Delete'.

Step 4 Check the **Enable IPv6** check box.

Step 5 (Optional) To enforce the use of Modified EUI-64 format interface identifiers in IPv6 addresses on a local link, check the **Enforce EUI-64** check box.

See the [“Modified EUI-64 Interface IDs” section on page 17-16](#) for more information.

Step 6 (Optional) In the top area, customize the IPv6 configuration by referring to [Chapter 32, “Configuring IPv6 Neighbor Discovery.”](#)

Step 7 Configure the global IPv6 address using one of the following methods.

- Stateless autoconfiguration—In the Interface IPv6 Addresses area, check the **Enable address autoconfiguration** check box.

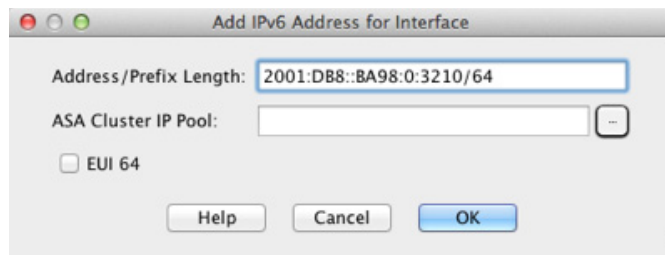
Enabling stateless autoconfiguration on the interface configures IPv6 addresses based upon prefixes received in Router Advertisement messages. A link-local address, based on the Modified EUI-64 interface ID, is automatically generated for the interface when stateless autoconfiguration is enabled.



Note Although RFC 4862 specifies that hosts configured for stateless autoconfiguration do not send Router Advertisement messages, the ASA does send Router Advertisement messages in this case. See the **Suppress RA** check box to suppress messages.

- Manual configuration—To manually configure a global IPv6 address:
 - a. In the Interface IPv6 Addresses area, click **Add**.

The Add IPv6 Address for Interface dialog box appears.



- b. In the Address/Prefix Length field, enter either full global IPv6 address, including the interface ID, or enter the IPv6 prefix, along with the IPv6 prefix length. If you only enter the prefix, then be sure to check the **EUI 64** checkbox to generate the interface ID using the Modified EUI-64 format. For example, 2001:0DB8::BA98:0:3210/48 (full address) or 2001:0DB8::/48 (prefix, with EUI 64 checked). See the “[IPv6 Addresses](#)” section on page A-5 for more information about IPv6 addressing.



Note For information about the ASA Cluster IP Pool, see the “[Configuring Individual Interfaces \(Recommended for the Management Interface\)](#)” section on page 10-32.

- c. Click **OK**.

Step 8 (Optional) To configure which IPv6 prefixes are included in IPv6 router advertisements, refer to the “[Configuring the IPv6 Prefix in Router Advertisements](#)” section on page 32-11.

Step 9 Click **OK**.

You return to the Configuration > Device Setup > Interfaces pane.

Configuring IPv6 Neighbor Discovery

See [Chapter 32, “Configuring IPv6 Neighbor Discovery,”](#) to configure IPv6 neighbor discovery.

(Optional) Configuring the Link-Local Addresses Automatically

If you do not want to configure a global address, and only need to configure a link-local address, you have the option of generating the link-local addresses based on the interface MAC addresses (Modified EUI-64 format. Because MAC addresses use 48 bits, additional bits must be inserted to fill the 64 bits required for the interface ID.)

To manually assign the link-local address (not recommended), see the [“\(Optional\) Configuring the Link-Local Addresses Manually”](#) section on page 17-19.

For other IPv6 options, including enforcing the Modified EUI-64 format, and DAD settings, see the [“Configuring a Global IPv6 Address”](#) section on page 17-16.

To automatically configure the link-local addresses for an interface, perform the following steps:

-
- | | |
|---------------|---|
| Step 1 | Choose the Configuration > Device Setup > Interfaces pane. |
| Step 2 | Select an interface, and click Edit .

The Edit Interface dialog box appears with the General tab selected. |
| Step 3 | Click the IPv6 tab. |
| Step 4 | In the IPv6 configuration area, check the Enable IPv6 check box.

This option enables IPv6 and automatically generates the link-local address using the Modified EUI-64 interface ID based on the interface MAC address. |
| Step 5 | Click OK . |
-

(Optional) Configuring the Link-Local Addresses Manually

If you do not want to configure a global address, and only need to configure a link-local address, you have the option of manually defining the link-local address. Note that we recommend automatically assigning the link-local address based on the Modified EUI-64 format. For example, if other devices enforce the use of the Modified EUI-64 format, then a manually-assigned link-local address may cause packets to be dropped.

To automatically assign the link-local address (recommended), see the [“\(Optional\) Configuring the Link-Local Addresses Automatically”](#) section on page 17-19.

For other IPv6 options, including enforcing the Modified EUI-64 format, and DAD settings, see the [“Configuring a Global IPv6 Address”](#) section on page 17-16.

To assign a link-local address to an interface, perform the following steps:

-
- | | |
|---------------|--|
| Step 1 | Choose the Configuration > Device Setup > Interfaces pane. |
| Step 2 | Select an interface, and click Edit .

The Edit Interface dialog box appears with the General tab selected. |
| Step 3 | Click the IPv6 tab. |
| Step 4 | To set the link-local address, enter an address in the Link-local address field.

A link-local address should start with FE8, FE9, FEA, or FEB, for example fe80::20d:88ff:feec:6a82. See the “IPv6 Addresses” section on page A-5 for more information about IPv6 addressing. |

Step 5 Click **OK**.

Allowing Same Security Level Communication

By default, interfaces on the same security level cannot communicate with each other, and packets cannot enter and exit the same interface. This section describes how to enable inter-interface communication when interfaces are on the same security level, and how to enable intra-interface communication.

Information About Inter-Interface Communication

Allowing interfaces on the same security level to communicate with each other provides the following benefits:

- You can configure more than 101 communicating interfaces.
If you use different levels for each interface and do not assign any interfaces to the same security level, you can configure only one interface per level (0 to 100).
- You want traffic to flow freely between all same security interfaces without access lists.

If you enable same security interface communication, you can still configure interfaces at different security levels as usual.

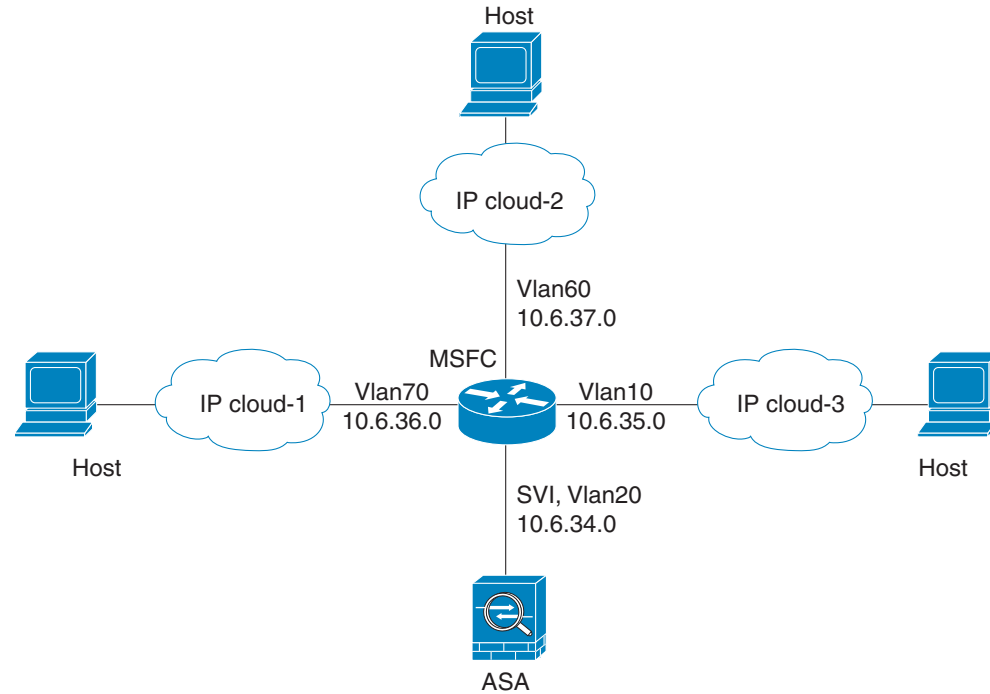
Information About Intra-Interface Communication

Intra-interface communication might be useful for VPN traffic that enters an interface, but is then routed out the same interface. The VPN traffic might be unencrypted in this case, or it might be reencrypted for another VPN connection. For example, if you have a hub and spoke VPN network, where the ASA is the hub, and remote VPN networks are spokes, for one spoke to communicate with another spoke, traffic must go into the ASA and then out again to the other spoke.

**Note**

All traffic allowed by this feature is still subject to firewall rules. Be careful not to create an asymmetric routing situation that can cause return traffic not to traverse the ASA.

For the ASASM, before you can enable this feature, you must first correctly configure the MSFC so that packets are sent to the ASA MAC address instead of being sent directly through the switch to the destination host. [Figure 17-1](#) shows a network where hosts on the same interface need to communicate.

Figure 17-1 Communication Between Hosts on the Same Interface

The following sample configuration shows the Cisco IOS **route-map** commands used to enable policy routing in the network shown in [Figure 17-1](#):

```
route-map intra-inter3 permit 0
  match ip address 103
  set interface Vlan20
  set ip next-hop 10.6.34.7
!
route-map intra-inter2 permit 20
  match ip address 102
  set interface Vlan20
  set ip next-hop 10.6.34.7
!
route-map intra-inter1 permit 10
  match ip address 101
  set interface Vlan20
  set ip next-hop 10.6.34.7
```

Detailed Steps

- To enable interfaces on the same security level to communicate with each other, from the Configuration > Interfaces pane, check **Enable traffic between two or more interfaces which are configured with same security level**.
- To enable communication between hosts connected to the same interface, check **Enable traffic between two or more hosts connected to the same interface**.

Turning Off and Turning On Interfaces

This section describes how to turn off and on an interface.

All interfaces are enabled by default. In multiple context mode, if you disable or reenables the interface within a context, only that context interface is affected. But if you disable or reenables the interface in the system execution space, then you affect that interface for all contexts.

Detailed Steps

- Step 1** Depending on your context mode:
- For single mode, choose the **Configuration > Device Setup > Interfaces** pane.
 - For multiple mode in the System execution space, choose the **Configuration > Context Management > Interfaces** pane.

By default, all physical interfaces are listed.

- Step 2** Click a VLAN interface that you want to configure, and click **Edit**.

The Edit Interface dialog box appears.

- Step 3** To enable or disable the interface, check or uncheck the **Enable Interface** check box.

Monitoring Interfaces

This section includes the following topics:

- [ARP Table, page 17-23](#)
- [DHCP, page 17-23](#)
- [MAC Address Table, page 17-26](#)
- [Dynamic ACLs, page 17-26](#)

- [Interface Graphs, page 17-26](#)
- [PPPoE Client, page 17-29](#)
- [Interface Connection, page 17-29](#)

ARP Table

The Monitoring > Interfaces > ARP Table pane displays the ARP table, including static and dynamic entries. The ARP table includes entries that map a MAC address to an IP address for a given interface.

Fields

- Interface—Lists the interface name associated with the mapping.
- IP Address—Shows the IP address.
- MAC Address—Shows the MAC address.
- Proxy ARP—Displays Yes if proxy ARP is enabled on the interface. Displays No if proxy ARP is not enabled on the interface.
- Clear—Clears the dynamic ARP table entries. Static entries are not cleared.
- Refresh—Refreshes the table with current information from the ASA and updates Last Updated date and time.
- Last Updated—*Display only*. Shows the date and time the display was updated.

DHCP

The ASA lets you monitor DHCP status, including the addresses assigned to clients, the lease information for the ASA interface, and DHCP statistics.

DHCP Server Table

The Monitoring > Interfaces > DHCP > DHCP Server Table lists the IP addresses assigned to DHCP clients.

Fields

- IP Address—Shows the IP address assigned to the client.
- Client-ID—Shows the client MAC address or ID.
- Lease Expiration—Shows the date that the DHCP lease expires. The lease indicates how long the client can use the assigned IP address. Remaining time is also specified in the number of seconds and is based on the timestamp in the Last Updated display-only field.
- Number of Active Leases—Shows the total number of DHCP leases.
- Refresh—Refreshes the information from the ASA.
- Last Updated—Shows when the data in the table was last updated.

DHCP Client Lease Information

If you obtain the ASA interface IP address from a DHCP server, the Monitoring > Interfaces > DHCP > DHCP Server Table > DHCP Client Lease Information pane shows information about the DHCP lease.

Fields

- Select an interface—Lists the ASA interfaces. Choose the interface for which you want to view the DHCP lease. If an interface has multiple DHCP leases, then choose the interface and IP address pair you want to view.
- Attribute and Value—Lists the attributes and values of the interface DHCP lease.
 - Temp IP addr—*Display only*. The IP address assigned to the interface.
 - Temp sub net mask—*Display only*. The subnet mask assigned to the interface.
 - DHCP lease server—*Display only*. The DHCP server address.
 - state—*Display only*. The state of the DHCP lease, as follows:
 - Initial—The initialization state, where the ASA begins the process of acquiring a lease. This state is also shown when a lease ends or when a lease negotiation fails.
 - Selecting—The ASA is waiting to receive DHCPOFFER messages from one or more DHCP servers, so it can choose one.
 - Requesting—The ASA is waiting to hear back from the server to which it sent its request.
 - Purging—The ASA is removing the lease because of an error.
 - Bound—The ASA has a valid lease and is operating normally.
 - Renewing—The ASA is trying to renew the lease. It regularly sends DHCPREQUEST messages to the current DHCP server, and waits for a reply.
 - Rebinding—The ASA failed to renew the lease with the original server, and now sends DHCPREQUEST messages until it gets a reply from any server or the lease ends.
 - Holdldown—The ASA started the process to remove the lease.
 - Releasing—The ASA sends release messages to the server indicating that the IP address is no longer needed.
 - Lease—*Display only*. The length of time, specified by the DHCP server, that the interface can use this IP address.
 - Renewal—*Display only*. The length of time until the interface automatically attempts to renew this lease.
 - Rebind—*Display only*. The length of time until the ASA attempts to rebind to a DHCP server. Rebinding occurs if the ASA cannot communicate with the original DHCP server, and 87.5 percent of the lease time has expired. The ASA then attempts to contact any available DHCP server by broadcasting DHCP requests.
 - Next timer fires after—*Display only*. The number of seconds until the internal timer triggers.
 - Retry count—*Display only*. If the ASA is attempting to establish a lease, this field shows the number of times the ASA tried sending a DHCP message. For example, if the ASA is in the Selecting state, this value shows the number of times the ASA sent discover messages. If the ASA is in the Requesting state, this value shows the number of times the ASA sent request messages.
 - Client-ID—*Display only*. The client ID used in all communication with the server.

- Proxy—*Display only*. Specifies if this interface is a proxy DHCP client for VPN clients, True or False.
- Hostname—*Display only*. The client hostname.

DHCP Statistics

The Monitoring > Interfaces > DHCP > DHCP Statistics pane shows statistics for the DHCP server feature.

Fields

- Message Type—Lists the DHCP message types sent or received:
 - BOOTREQUEST
 - DHCPDISCOVER
 - DHCPREQUEST
 - DHCPDECLINE
 - DHCPRELEASE
 - DHCPINFORM
 - BOOTREPLY
 - DHCPPOFFER
 - DHCPACK
 - DHCPNAK
- Count—Shows the number of times a specific message was processed.
- Direction—Shows if the message type is Sent or Received.
- Total Messages Received—Shows the total number of messages received by the ASA.
- Total Messages Sent—Shows the total number of messages sent by the ASA.
- Counter—Shows general statistical DHCP data, including the following:
 - DHCP UDP Unreachable Errors
 - DHCP Other UDP Errors
 - Address Pools
 - Automatic Bindings
 - Expired Bindings
 - Malformed Messages
- Value—Shows the number of each counter item.
- Refresh—Updates the DHCP table listings.
- Last Updated—Shows when the data in the tables was last updated.

MAC Address Table

The Monitoring > Interfaces > MAC Address Table pane shows the static and dynamic MAC address entries. See the [“MAC Address Table” section on page 17-26](#) for more information about the MAC address table and adding static entries.

Fields

- Interface—Shows the interface name associated with the entry.
- MAC Address—Shows the MAC address.
- Type—Shows if the entry is static or dynamic.
- Age—Shows the age of the entry, in minutes. To set the timeout, see the [“MAC Address Table” section on page 17-26](#).
- Refresh—Refreshes the table with current information from the ASA.

Dynamic ACLs

The Monitoring > Interfaces > Dynamic ACLs pane shows a table of the Dynamic ACLs, which are functionally identical to the user-configured ACLs except that they are created, activated and deleted automatically by the ASA. These ACLs do not show up in the configuration and are only visible in this table. They are identified by the “(dynamic)” keyword in the ACL header.

When you choose an ACL in this table, the contents of the ACL are shown in the bottom text field.

Fields

- ACL—Shows the name of the dynamic ACL.
- Element Count—Shows the number of elements in the ACL
- Hit Count—Shows the total hit count for all of the elements in the ACL.

Interface Graphs

The Monitoring > Interfaces > Interface Graphs pane lets you view interface statistics in graph or table form. If an interface is shared among contexts, the ASA shows only statistics for the current context. The number of statistics shown for a subinterface is a subset of the number of statistics shown for a physical interface.

Fields

- Available Graphs for—Lists the types of statistics available for monitoring. You can choose up to four types of statistics to show in one graph window. You can open multiple graph windows at the same time.
 - Byte Counts—Shows the number of bytes input and output on the interface.
 - Packet Counts—Shows the number of packets input and output on the interface.
 - Packet Rates—Shows the rate of packets input and output on the interface.
 - Bit Rates—Shows the bit rate for the input and output of the interface.
 - Drop Packet Count—Shows the number of packets dropped on the interface.

These additional statistics display for physical interfaces:

- Buffer Resources—Shows the following statistics:

Overruns—The number of times that the ASA was incapable of handing received data to a hardware buffer because the input rate exceeded the ASA capability to handle the data.

Underruns—The number of times that the transmitter ran faster than the ASA could handle.

No Buffer—The number of received packets discarded because there was no buffer space in the main system. Compare this with the ignored count. Broadcast storms on Ethernet networks are often responsible for no input buffer events.

- Packet Errors—Shows the following statistics:

CRC—The number of Cyclical Redundancy Check errors. When a station sends a frame, it appends a CRC to the end of the frame. This CRC is generated from an algorithm based on the data in the frame. If the frame is altered between the source and destination, the ASA notes that the CRC does not match. A high number of CRCs is usually the result of collisions or a station transmitting bad data.

Frame—The number of frame errors. Bad frames include packets with an incorrect length or bad frame checksums. This error is usually the result of collisions or a malfunctioning Ethernet device.

Input Errors—The number of total input errors, including the other types listed here. Other input-related errors can also cause the input error count to increase, and some datagrams might have more than one error; therefore, this sum might exceed the number of errors listed for the other types.

Runts—The number of packets that are discarded because they are smaller than the minimum packet size, which is 64 bytes. Runts are usually caused by collisions. They might also be caused by poor wiring and electrical interference.

Giants—The number of packets that are discarded because they exceed the maximum packet size. For example, any Ethernet packet that is greater than 1518 bytes is considered a giant.

Deferred—For FastEthernet interfaces only. The number of frames that were deferred before transmission due to activity on the link.

- Miscellaneous—Shows statistics for received broadcasts.

- Collision Counts—For FastEthernet interfaces only. Shows the following statistics:

Output Errors—The number of frames not transmitted because the configured maximum number of collisions was exceeded. This counter should only increment during heavy network traffic.

Collisions—The number of messages retransmitted due to an Ethernet collision (single and multiple collisions). This usually occurs on an overextended LAN (Ethernet or transceiver cable too long, more than two repeaters between stations, or too many cascaded multiport transceivers). A packet that collides is counted only once by the output packets.

Late Collisions—The number of frames that were not transmitted because a collision occurred outside the normal collision window. A late collision is a collision that is detected late in the transmission of the packet. Normally, these should never happen. When two Ethernet hosts try to talk at once, they should collide early in the packet and both back off, or the second host should see that the first one is talking and wait. If you get a late collision, a device is jumping in and trying to send the packet on the Ethernet while the ASA is partly finished sending the packet. The ASA does not resend the packet, because it may have freed the buffers that held the first part of the packet. This is not a real problem because networking protocols are designed to cope with collisions by resending packets. However, late collisions indicate a problem exists in your network. Common problems are large repeated networks and Ethernet networks running beyond the specification.

- Input Queue—Shows the number of packets in the input queue, the current and the maximum, including the following statistics:
 - Hardware Input Queue—The number of packets in the hardware queue.
 - Software Input Queue—The number of packets in the software queue.
- Output Queue—Shows the number of packets in the output queue, the current and the maximum, including the following statistics:
 - Hardware Output Queue—The number of packets in the hardware queue.
 - Software Output Queue—The number of packets in the software queue.
- Add—Adds the selected statistic type to the selected graph window.
- Remove—Removes the selected statistic type from the selected graph window. This button name changes to Delete if the item you are removing was added from another panel, and is not being returned to the Available Graphs pane.
- Show Graphs—Shows the graph window name to which you want to add a statistic type. If you have a graph window already open, a new graph window is listed by default. If you want to add a statistic type to an already open graph, choose the open graph window name. The statistics already included on the graph are shown in the Selected Graphs pane, to which you can add additional types. Graph windows are named for ASDM followed by the interface IP address and the name “Graph”. Subsequent graphs are named “Graph (2)” and so on.
- Selected Graphs—Shows the statistic types you want to show in the selected graph window. You can include up to four types.
 - Show Graphs—Shows the graph window or updates the graph with additional statistic types if added.

Graph/Table

The Monitoring > Interfaces > Interface Graphs > Graph/Table window shows a graph for the selected statistics. The Graph window can show up to four graphs and tables at a time. By default, the graph or table displays the real-time statistics. If you enable History Metrics (see the [“Enabling History Metrics” section on page 4-34](#)), you can view statistics for past time periods.

Fields

- View—Sets the time period for the graph or table. To view any time period other than real-time, enable History Metrics (see the [“Enabling History Metrics” section on page 4-34](#)). The data is updated according to the specification of the following options:
 - Real-time, data every 10 sec
 - Last 10 minutes, data every 10 sec
 - Last 60 minutes, data every 1 min
 - Last 12 hours, data every 12 min
 - Last 5 days, data every 2 hours
- Export—Exports the graph in comma-separated value format. If there is more than one graph or table on the Graph window, the Export Graph Data dialog box appears. Choose one or more of the graphs and tables listed by checking the check box next to the name.
- Print—Prints the graph or table. If there is more than one graph or table on the Graph window, the Print Graph dialog box appears. Choose the graph or table you want to print from the Graph/Table Name list.

- **Bookmark**—Opens a browser window with a single link for all graphs and tables on the Graphs window, as well as individual links for each graph or table. You can then copy these URLs as bookmarks in your browser. ASDM does not have to be running when you open the URL for a graph; the browser launches ASDM and then displays the graph.

PPPoE Client

The Monitoring > Interfaces > PPPoE Client > PPPoE Client Lease Information pane displays information about current PPPoE connections.

Fields

Select a PPPoE interface—Select an interface that you want to view PPPoE client lease information.

Refresh—loads the latest PPPoE connection information from the ASA for display.

Interface Connection

The Monitoring > Interfaces > *interface* connection node in the Monitoring > Interfaces tree only appears if static route tracking is configured. If you have several routes tracked, there will be a node for each interface that contains a tracked route.

See the following for more information about the route tracking information available:

- [Track Status for, page 17-29](#)
- [Monitoring Statistics for, page 17-29](#)

Track Status for

The Monitoring > Interfaces > interface connection > Track Status for pane displays information about the tracked object.

Fields

- **Tracked Route**—*Display only*. Displays the route associated with the tracking process.
- **Route Statistics**—*Display only*. Displays the reachability of the object, when the last change in reachability occurred, the operation return code, and the process that is performing the tracking.

Monitoring Statistics for

The Monitoring > Interfaces > interface connection > Monitoring Statistics for pane displays statistics for the SLA monitoring process.

Fields

- **SLA Monitor ID**—*Display only*. Displays the ID of the SLA monitoring process.
- **SLA statistics**—*Display only*. Displays SLA monitoring statistics, such as the last time the process was modified, the number of operations attempted, the number of operations skipped, and so on.

Feature History for Interfaces in Routed Mode

Table 17-1 lists the release history for this feature.

Table 17-1 Feature History for Interfaces

Feature Name	Releases	Feature Information
Increased VLANs	7.0(5)	Increased the following limits: <ul style="list-style-type: none"> ASA5510 Base license VLANs from 0 to 10. ASA5510 Security Plus license VLANs from 10 to 25. ASA5520 VLANs from 25 to 100. ASA5540 VLANs from 100 to 200.
Increased VLANs	7.2(2)	<p>The maximum number of VLANs for the Security Plus license on the ASA 5505 was increased from 5 (3 fully functional; 1 failover; one restricted to a backup interface) to 20 fully functional interfaces. In addition, the number of trunk ports was increased from 1 to 8. Now there are 20 fully functional interfaces, you do not need to use the backup interface command to cripple a backup ISP interface; you can use a fully-functional interface for it. The backup interface command is still useful for an Easy VPN configuration.</p> <p>VLAN limits were also increased for the ASA 5510 (from 10 to 50 for the Base license, and from 25 to 100 for the Security Plus license), the ASA 5520 (from 100 to 150), the ASA 5550 (from 200 to 250).</p>
Gigabit Ethernet Support for the ASA 5510 Security Plus License	7.2(3)	The ASA 5510 now supports GE (Gigabit Ethernet) for port 0 and 1 with the Security Plus license. If you upgrade the license from Base to Security Plus, the capacity of the external Ethernet0/0 and Ethernet0/1 ports increases from the original FE (Fast Ethernet) (100 Mbps) to GE (1000 Mbps). The interface names will remain Ethernet 0/0 and Ethernet 0/1.
Native VLAN support for the ASA 5505	7.2(4)/8.0(4)	<p>You can now include the native VLAN in an ASA 5505 trunk port.</p> <p>We modified the following screen: Configuration > Device Setup > Interfaces > Switch Ports > Edit Switch Port.</p>
Jumbo packet support for the ASA 5580	8.1(1)	<p>The Cisco ASA 5580 supports jumbo frames. A jumbo frame is an Ethernet packet larger than the standard maximum of 1518 bytes (including Layer 2 header and FCS), up to 9216 bytes. You can enable support for jumbo frames for all interfaces by increasing the amount of memory to process Ethernet frames. Assigning more memory for jumbo frames might limit the maximum use of other features, such as access lists.</p> <p>We modified the following screen: Configuration > Device Setup > Interfaces > Add/Edit Interface > Advanced.</p>

Table 17-1 *Feature History for Interfaces (continued)*

Feature Name	Releases	Feature Information
Increased VLANs for the ASA 5580	8.1(2)	The number of VLANs supported on the ASA 5580 are increased from 100 to 250.
IPv6 support for transparent mode	8.2(1)	IPv6 support was introduced for transparent firewall mode.
Support for Pause Frames for Flow Control on the ASA 5580 10 Gigabit Ethernet Interfaces	8.2(2)	You can now enable pause (XOFF) frames for flow control. We modified the following screens: (Single Mode) Configuration > Device Setup > Interfaces > Add/Edit Interface > Advanced (Multiple Mode, System) Configuration > Interfaces > Add/Edit Interface

