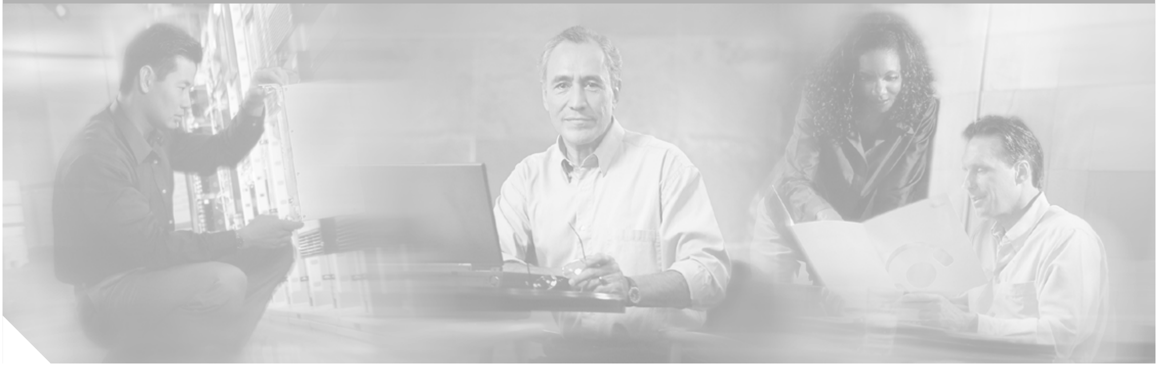

Cisco PIX 515E Security Appliance Getting Started Guide

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Installing and Setting Up the PIX 515E Security Appliance

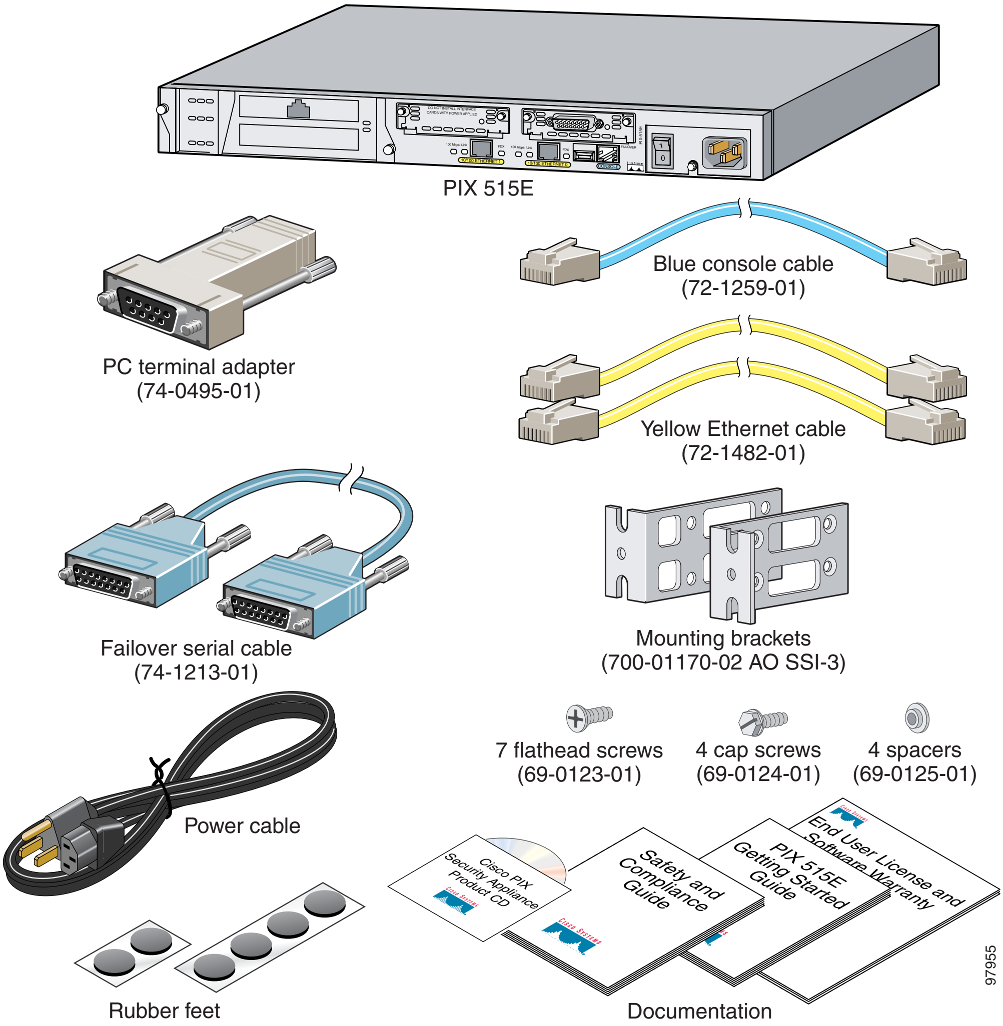
This chapter describes how to install and perform the initial configuration of the security appliance. This chapter includes the following sections:

- Verifying the Package Contents, page 1-2
- Installing the PIX 515E Security Appliance, page 1-3
- Front and Back Panel Components, page 1-4
- Setting Up the Security Appliance, page 1-5
- What to Do Next, page 1-9

Verifying the Package Contents

Verify the contents of the packing box, shown in Figure 1-1, to ensure that you have received all items necessary to install your PIX 515E security appliance.

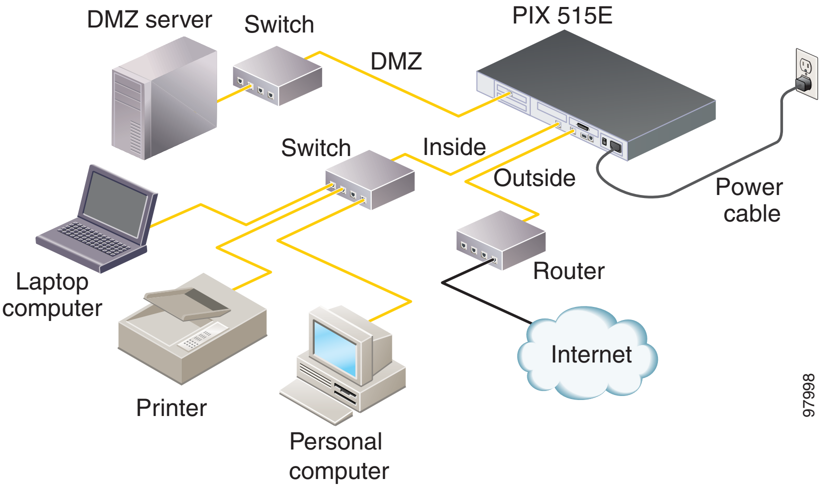
Figure 1-1 Contents of PIX 515E Package



Installing the PIX 515E Security Appliance

This section describes how to install your PIX 515E security appliance into your own network, which might resemble the example network in Figure 1-2.

Figure 1-2 Sample Network Layout



To install the PIX 515E security appliance, complete these steps:

Step 1 Mount the chassis in a rack by performing the following steps:

a. Attach the brackets to the chassis with the supplied screws. The brackets attach to the holes near the front of the chassis.

b. Attach the chassis to the equipment rack.

Step 2 Use one of the provided yellow Ethernet cables to connect the outside 10/100 Ethernet interface, Ethernet 0, to a DSL modem, cable modem, router, or switch.

Step 3 Use the other provided yellow Ethernet cable to connect the inside 10/100 Ethernet interface, Ethernet 1, to a switch or hub.

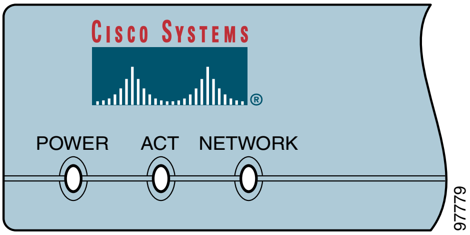
Step 4 Connect one end of the power cable to the rear of the PIX 515E security appliance and the other end to a power outlet.

Step 5 Power up the PIX 515E security appliance. The power switch is located at the rear of the chassis.

Front and Back Panel Components

Figure 1-3 illustrates the LEDs on the front panel of the PIX515E Security Appliance.

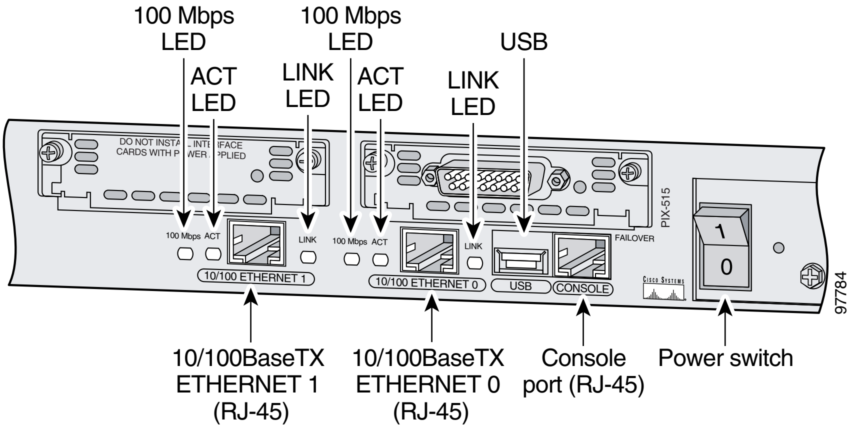
Figure 1-3 PIX515E Security Appliance Front Panel LEDs



LED	Color	State	Description
POWER	Green	On	On when the unit has power.
ACT	Green	On	If part of a failover pair, the light is on when the unit is the active unit.
		Off	If part of a failover pair, the light is off when the unit is in standby mode.
NETWORK	Green	Flashing	Flashing when at least one network interface is passing traffic.

Figure 1-4 illustrates the back panel components.

Figure 1-4 PIX 515E Security Appliance Back Panel



Setting Up the Security Appliance

This section describes the initial configuration of the security appliance. You can perform the configuration steps using either the browser-based Cisco Adaptive Security Device Manager (ASDM) or the command-line interface (CLI). However, the procedures in this chapter refer to the method using ASDM.

Note To use ASDM, you must have a DES license or a 3DES-AES license. For more information, see Appendix A, "Obtaining a DES License or a 3DES-AES License."

This section includes the following topics:

- About the Factory-Default Configuration, page 1-6
- About the Adaptive Security Device Manager, page 1-6
- Using the Startup Wizard, page 1-7

About the Factory-Default Configuration

Cisco security appliances are shipped with a factory-default configuration that enables quick startup. The factory-default configuration automatically configures an interface for management so you can quickly connect to the device and use ASDM to complete your configuration.

By default, the security appliance management interface is configured with a default DHCP address pool. This configuration enables a client on the inside network to obtain a DHCP address from the security appliance to connect to the appliance. Administrators can then configure and manage the security appliance using ASDM.

About the Adaptive Security Device Manager

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The Adaptive Security Device Manager (ASDM) is a feature-rich graphical interface that enables you to manage and monitor the security appliance. Its web-based design provides secure access so that you can connect to and manage the security appliance from any location by using a web browser.

In addition to its complete configuration and management capability, ASDM features intelligent wizards to simplify and accelerate the deployment of the security appliance.

In addition to the ASDM web configuration tool, you can configure the security appliance by using the command-line interface. For more information, see the *Cisco Security Appliance Command Line Configuration Guide* and the *Cisco Security Appliance Command Reference*.

Using the Startup Wizard

ASDM includes a Startup Wizard to simplify the initial configuration of your security appliance. With a few steps, the Startup Wizard enables you to configure the security appliance so that it allows packets to flow securely between the inside network and the outside network.

This section describes how to use the Startup Wizard to set basic configuration parameters. This section includes the following topics:

- Before Launching the Startup Wizard, page 1-7
- Running the Startup Wizard, page 1-8

Before Launching the Startup Wizard

Before you launch the Startup Wizard, perform the following steps:

Step 1 Obtain a DES license or a 3DES-AES license.

To run ASDM, you must have a DES license or a 3DES-AES license. If you did not purchase one of these licenses with the security appliance, see Appendix A, "Obtaining a DES License or a 3DES-AES License" for information about how to obtain and activate one.

Step 2 Enable Java and Javascript in your web browser.

Step 3 Gather the following information:

- A unique hostname to identify the security appliance on your network.
- The IP addresses of your outside interface, inside interface, and any other interfaces to be configured.
- The IP addresses to use for Network Address Translation (NAT) or Port Address Translation (PAT) configuration.
- The IP address range for the DHCP server.

Running the Startup Wizard

To use the Startup Wizard to set up a basic configuration for the security appliance, perform the following steps:

Step 1 Use an Ethernet cable to connect your PC to the inside port (Ethernet 1) on the rear panel of the PIX 515E.

Step 2 Configure your PC to use DHCP (to receive an IP address automatically from the PIX 515E).

Alternatively, you can assign a static IP address to your PC. If you use a static IP address, use any address from the 192.168.1.0 range except 192.168.1.1. This IP address is assigned to the inside interface of the PIX 515E.

Step 3 Start ASDM.

a. On the PC connected to the inside port of the PIX 515E, start an Internet browser.

b. In the address field of the browser, enter this URL: **https://192.168.1.1/admin**.

Note The security appliance ships with a default IP address of 192.168.1.1. Remember to add the "**s**" in "**https**" or the connection fails. HTTPS (HTTP over SSL) provides a secure connection between your browser and the security appliance.

c. In the window that requires you to choose the method you want to use to run the ASDM software, choose either to download the ASDM launcher or to run the ASDM software as a Java applet.

Step 4 In the dialog box that requires a username and password, leave both fields empty. Press **Enter**.

Step 5 Click **Yes** to accept the certificates. Click **Yes** for all subsequent authentication and certificate dialog boxes.

ASDM starts.

Step 6 From the Wizards menu, choose Startup Wizard.

Step 7 Follow the instructions in the Startup Wizard to set up your security appliance.

For information about any field in the Startup Wizard, click **Help** at the bottom of the window.

Note Based on your network security policy, you should also consider configuring the security appliance to deny all ICMP traffic through the outside interface or any other interface that is necessary. You can configure this access control policy using the **icmp** command. For more information about the **icmp** command, see the *Cisco Security Appliance Command Reference*.

What to Do Next

Next, configure the security appliance for your deployment using one or more of the following chapters:

To Do This ...	See ...
Configure the security appliance to protect a DMZ web server	Chapter 2, "Scenario: DMZ Configuration"
Configure the security appliance for remote-access VPN	Chapter 3, "Scenario: IPsec Remote-Access VPN Configuration"
Configure the security appliance for Site-to-Site VPN	Chapter 4, "Scenario: Site-to-Site VPN Configuration"

Scenario: DMZ Configuration

This chapter describes a configuration scenario in which the security appliance is used to protect network resources located in a demilitarized zone (DMZ). A DMZ is a separate network located in the neutral zone between a private (inside) network and a public (outside) network.

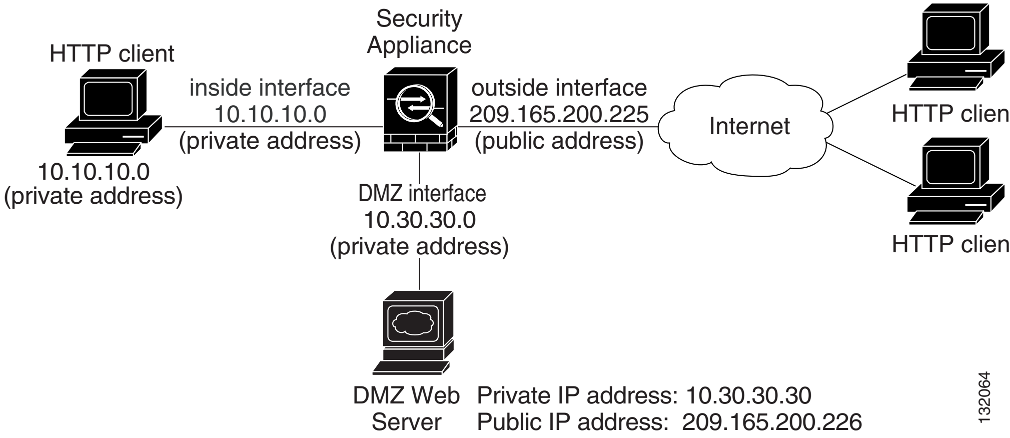
This chapter includes the following sections:

- Example DMZ Network Topology, page 2-1
- Configuring the Security Appliance for a DMZ Deployment, page 2-4
- What to Do Next, page 2-24

Example DMZ Network Topology

The example network topology shown in Figure 2-1 is typical of most DMZ implementations of the security appliance.

Figure 2-1 Network Layout for DMZ Configuration Scenario

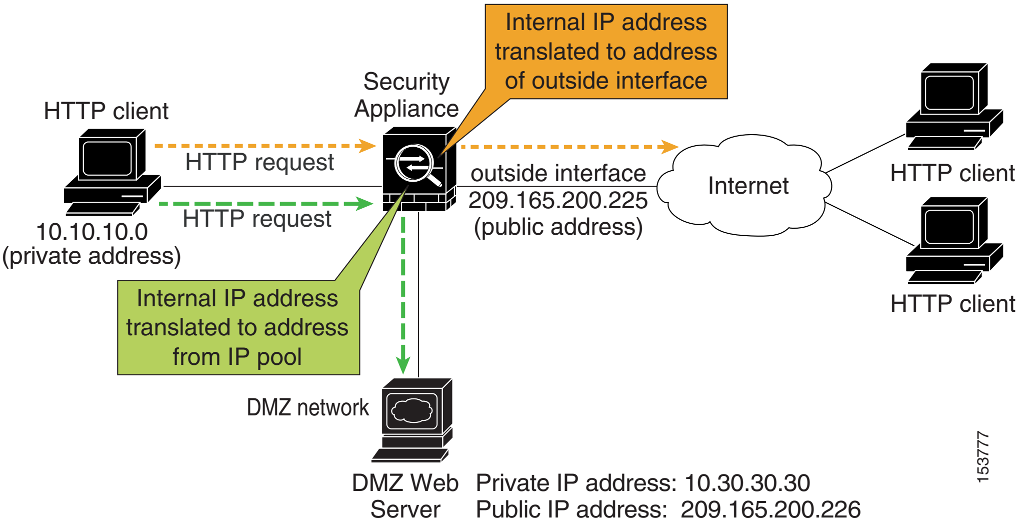


This example scenario has the following characteristics:

- The web server is on the DMZ interface of the security appliance.
- HTTP clients on the private network can access the web server in the DMZ and can also communicate with devices on the Internet.
- Clients on the Internet are permitted HTTP access to the DMZ web server; all other traffic is denied.
- The network has two routable IP addresses that are publicly available: one for the outside interface of the security appliance (209.165.200.225), and one for the public IP address of the DMZ web server (209.165.200.226).

Figure 2-2 shows the outgoing traffic flow of HTTP requests from the private network to both the DMZ web server and to the Internet.

Figure 2-2 Outgoing HTTP Traffic Flow from the Private Network



In Figure 2-2, the security appliance permits HTTP traffic originating from inside clients and destined for both the DMZ web server and devices on the Internet. To permit the traffic through, the security appliance configuration includes the following:

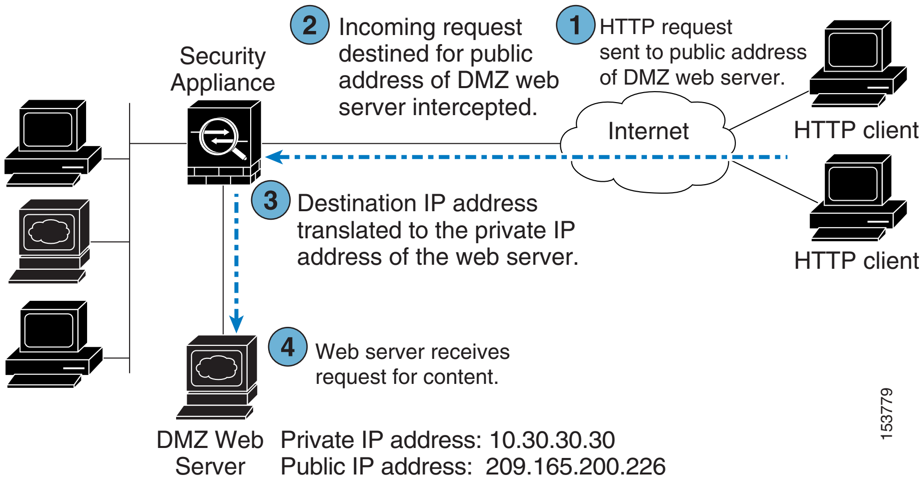
- Access control rules permitting traffic destined for the DMZ web server and for devices on the Internet.
- Address translation rules translating private IP addresses so that the private addresses are not visible to the Internet.

  For traffic destined for the DMZ web server, private IP addresses are translated to an address from an IP pool.

  For traffic destined for the Internet, private IP addresses are translated to the public IP address of the security appliance. Outgoing traffic appears to come from this address.

Figure 2-3 shows HTTP requests originating from the Internet and destined for the public IP address of the DMZ web server.

Figure 2-3 Incoming HTTP Traffic Flow From the Internet


Security Appliance
2 Incoming request destined for public address of DMZ web server intercepted.
1 HTTP request sent to public address of DMZ web server.
Internet
HTTP client
HTTP client
3 Destination IP address translated to the private IP address of the web server.
4 Web server receives request for content.
DMZ Web Server
Private IP address: 10.30.30.30
Public IP address: 209.165.200.226
153779

To permit incoming traffic to access the DMZ web server, the security appliance configuration includes the following:

- An address translation rule translating the public IP address of the DMZ web server to the private IP address of the DMZ web server.
- An access control rule permitting incoming HTTP traffic that is destined for the DMZ web server.

The procedures for creating this configuration are detailed in the remainder of this chapter.

Configuring the Security Appliance for a DMZ Deployment

This section describes how to use ASDM to configure the security appliance for the configuration scenario shown in Figure 2-1. The procedure uses sample parameters based on the scenario.

This configuration procedure assumes that the security appliance already has interfaces configured for the inside interface, the DMZ interface, and the outside interface. Set up interfaces of the security appliance by using the Startup Wizard in ASDM. Be sure that the DMZ interface security level is set between 0 and 100. (A common choice is 50.)

For more information about using the Startup Wizard, see Setting Up the Security Appliance, page 1-5.

The section includes the following topics:

- Configuration Requirements, page 2-5
- Starting ASDM, page 2-6
- Creating IP Pools for Network Address Translation, page 2-7
- Configuring NAT for Inside Clients to Communicate with the DMZ Web Server, page 2-12
- Configuring an External Identity for the DMZ Web Server, page 2-16
- Providing Public HTTP Access to the DMZ Web Server, page 2-18

The following sections provide detailed instructions for how to perform each step.

Configuration Requirements

Configuring the security appliance for this DMZ deployment requires the following configuration tasks:

- For the internal clients to have HTTP access to the DMZ web server, you must create a pool of IP addresses for address translation and identify which clients should use addresses from the pool. To accomplish this task, you should configure the following:
  - A pool of IP addresses for the DMZ interface. In this scenario, the IP pool is 10.30.30.50–10.30.30.60.
  - A dynamic NAT translation rule for the inside interface that specifies which client IP addresses can be assigned an address from the IP pool.
- For the internal clients to have access to HTTP and HTTPS resources on the Internet, you must create a rule that translates the real IP addresses of internal clients to an external address that can be used as the source address.

To accomplish this task, you should configure a PAT translation rule (port address translation rule, sometimes called an interface NAT) for the internal interface that translates internal IP addresses to the external IP address of the security appliance.

In this scenario, the internal address to be translated is that of a subnet of the private network (10.10.10.0). Addresses from this subnet are translated to the public address of the security appliance (209.165.200.225).

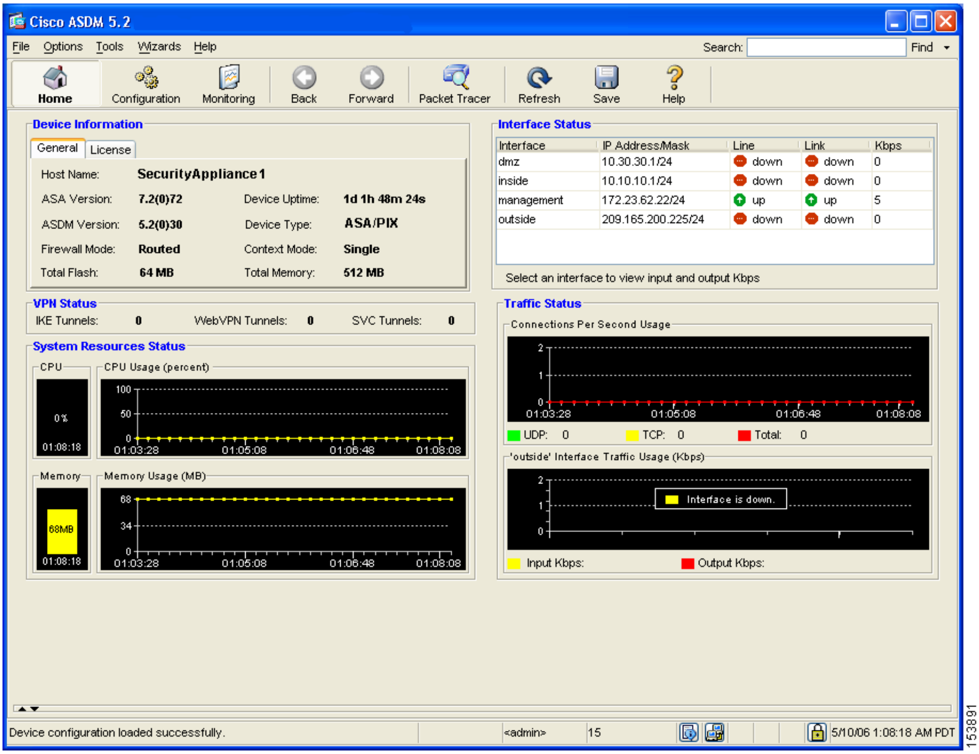
- For external clients to have HTTP access to the DMZ web server, you must configure an external identity for the DMZ web server and an access rule that permits HTTP requests coming from clients on the Internet. To accomplish this task, you should configure the following:
  - Create a static NAT rule. This rule translates the real IP address of the DMZ web server to a single public IP address. In this scenario, the public address of the web server is 209.165.200.226.
  - Create a security access rule permitting traffic from the Internet if the traffic is an HTTP request destined for the public IP address of the DMZ web server.

Starting ASDM

To run ASDM in a web browser, enter the factory-default IP address in the address field: **https://192.168.1.1/admin/**.

Note Remember to add the "**s**" in "**https**" or the connection fails. HTTPS (HTTP over SSL) provides a secure connection between your browser and the security appliance.

The Main ASDM window appears.



Host Name: SecurityAppliance1
ASA Version: 7.2(0)72 Device Uptime: 1d 1h 48m 24s
ASDM Version: 5.2(0)30 Device Type: ASA/PIX
Firewall Mode: Routed Context Mode: Single
Total Flash: 64 MB Total Memory: 512 MB

IKE Tunnels: 0 WebVPN Tunnels: 0 SVC Tunnels: 0

Interface	IP Address/Mask	Line	Link	Kbps
dmz	10.30.30.1/24	down	down	0
inside	10.10.10.1/24	down	down	0
management	172.23.62.22/24	up	up	5
outside	209.165.200.225/24	down	down	0

Select an interface to view input and output Kbps

CPU: 0% 01:08:18
Memory: 68MB 01:08:18

UDP: 0 TCP: 0 Total: 0

Input Kbps: Output Kbps:

Device configuration loaded successfully. <admin> 15 5/10/06 1:08:18 AM PDT

Creating IP Pools for Network Address Translation

The security appliance uses Network Address Translation (NAT) and Port Address Translation (PAT) to prevent internal IP addresses from being exposed externally. This procedure describes how to create a pool of IP addresses that the DMZ interface and outside interface can use for address translation.

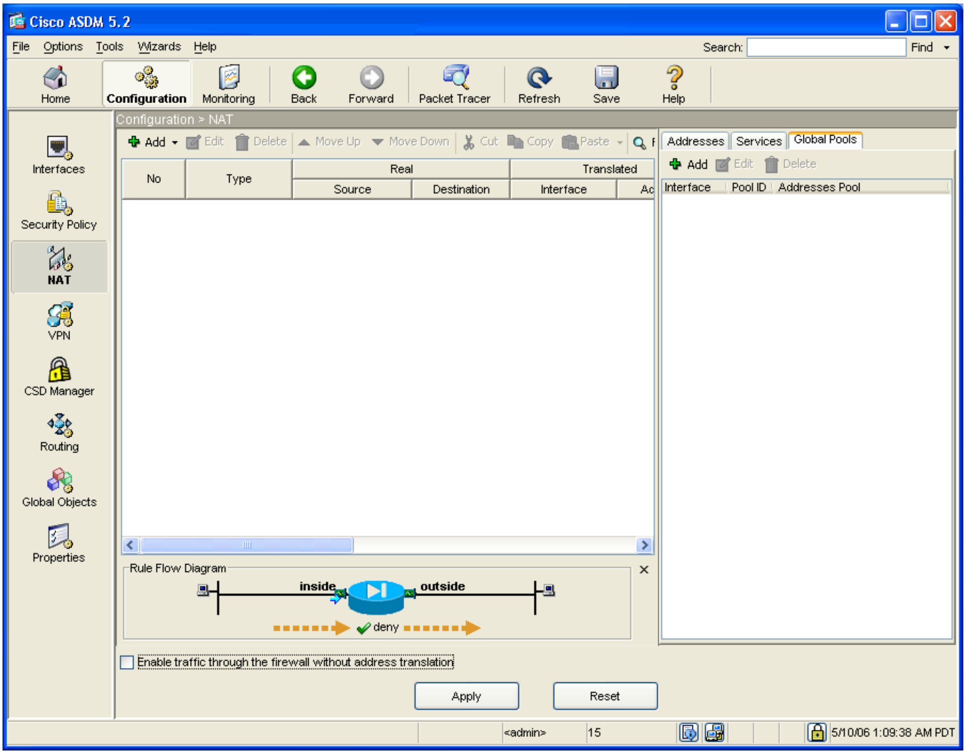
A single IP pool can contain both NAT and PAT entries, and it can contain entries for more than one interface.

To configure a pool of IP addresses that can be used for network address translation, perform the following steps:

Step 1 In the ASDM window, click the **Configuration** tool.

a. In the Features pane, click **NAT**.

The NAT Configuration screen appears.



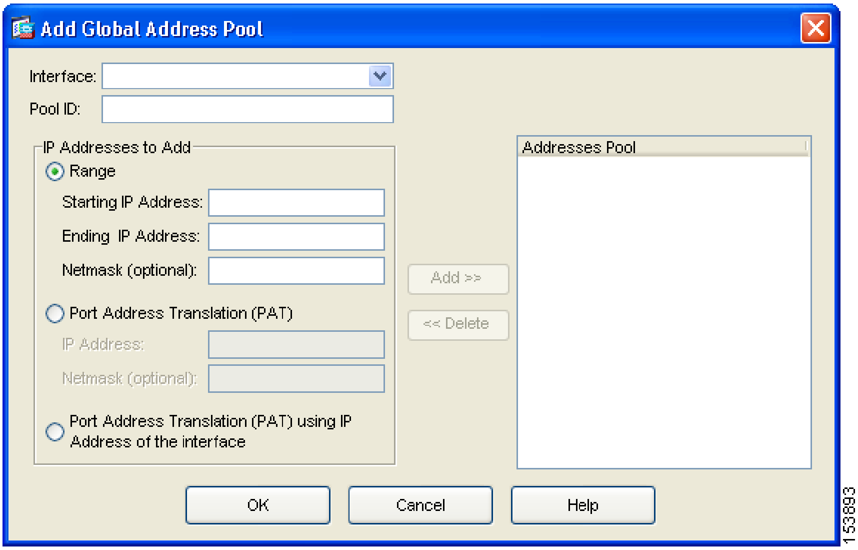
□ Enable traffic through the firewall without address translation

b. In the right pane, click the **Global Pools** tab.

c. Click **Add** to create a new global pool for the DMZ interface.

The Add Global Address Pool dialog box appears.

Note For most configurations, IP pools are added to the less secure, or public, interfaces.



d. From the Interfaces drop-down list, choose DMZ.

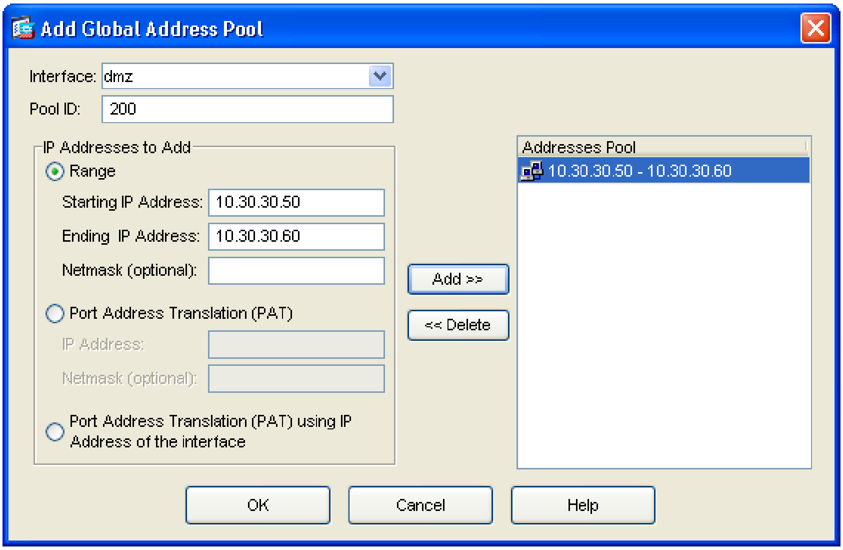
e. To create a new IP pool, enter a unique Pool ID. In this scenario, the Pool ID is 200.

f. In the IP Addresses to Add area, specify the range of IP addresses to be used by the DMZ interface:

- Click the **Range** radio button.
- Enter the Starting IP address and Ending IP address of the range. In this scenario, the range of IP addresses is 10.30.30.50–10.30.30.60.
- (Optional) Enter the Netmask for the range of IP addresses.

g. Click **Add** to add this range of IP addresses to the Address Pool.

The Add Global Pool dialog box configuration should be similar to the following:



Add Global Address Pool

Interface: dmz

Pool ID: 200

IP Addresses to Add

● Range

Starting IP Address: 10.30.30.50

Ending IP Address: 10.30.30.60

Netmask (optional):

○ Port Address Translation (PAT)

IP Address:

Netmask (optional):

○ Port Address Translation (PAT) using IP Address of the interface

Addresses Pool

10.30.30.50 - 10.30.30.60

h. Click **OK** to return to the Configuration > NAT window.

Step 2 Add addresses to the IP pool to be used by the outside interface. These addresses are used to translate private IP addresses so that inside clients can communicate securely with clients on the Internet.

In this scenario, there are limited public IP addresses available. Use Port Address Translation (PAT) so that many internal IP addresses can map to the same public IP address, as follows:

a. In the right pane of the NAT Configuration screen, click the **Global Pools** tab.

b. Under the Global Pools tab, click **Add**.

The Add Global Pool Item dialog box appears.

c. From the Interface drop-down list, choose Outside.

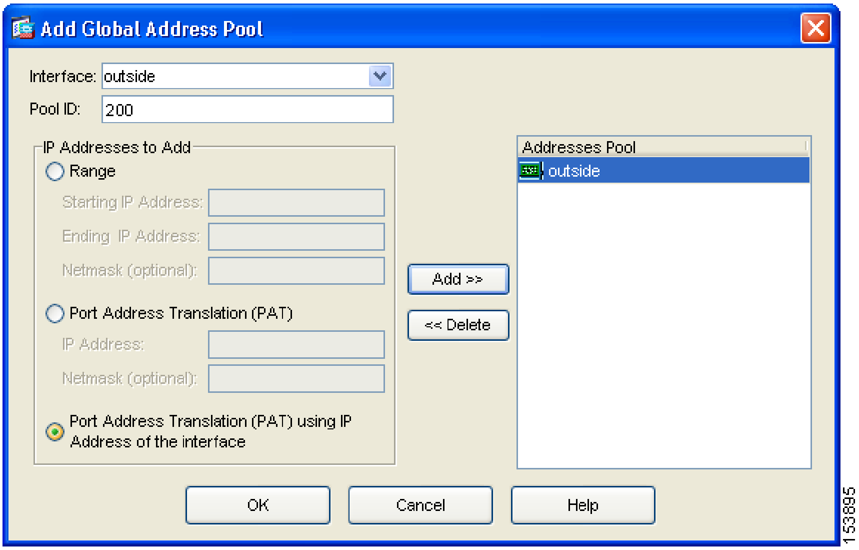
d. Specify a Pool ID for the Outside interface.

You can add these addresses to the same IP pool that contains the address pool used by the DMZ interface (in this scenario, the Pool ID is 200).

e. Click the **Port Address Translation (PAT) using the IP address of the interface** radio button.

If you select the option Port Address Translation using the IP address of the interface, all traffic initiated from the inside network exits the security appliance using the IP address of the outside interface. To the devices on the Internet, it appears that all traffic is coming from this one IP address.

f. Click the **Add** button to add this new address to the IP pool.



Add Global Address Pool

Interface: outside

Pool ID: 200

IP Addresses to Add

○ Range

Starting IP Address:

Ending IP Address:

Netmask (optional):

○ Port Address Translation (PAT)

IP Address:

Netmask (optional):

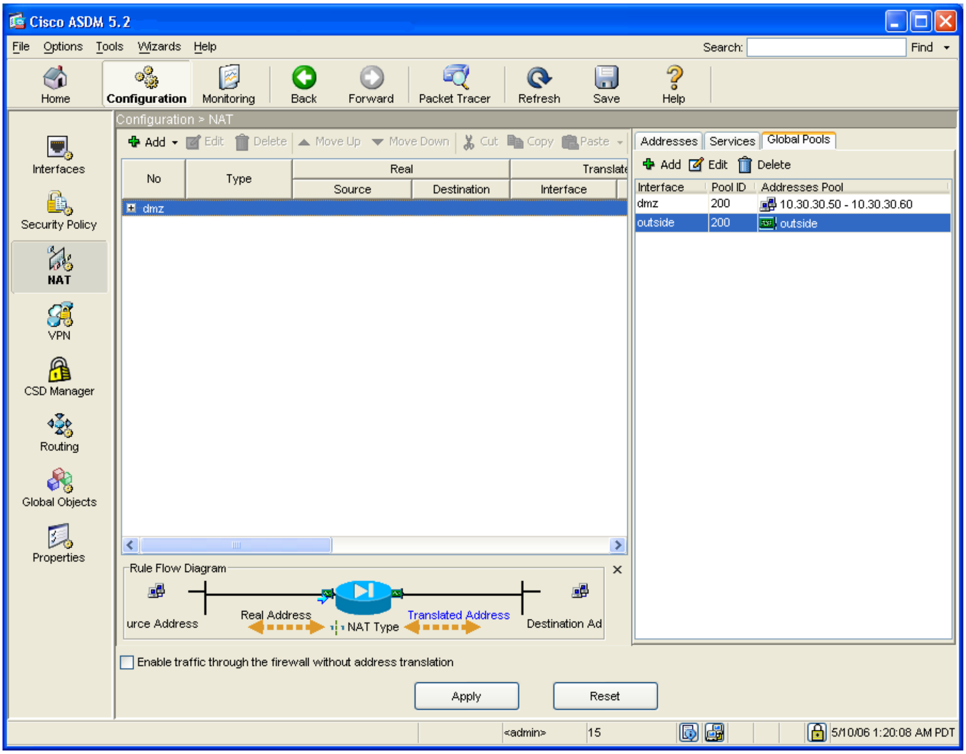
● Port Address Translation (PAT) using IP Address of the interface

Addresses Pool

outside

g. Click **OK**.

The displayed configuration should be similar to the following:



No	Type	Real		Translate
		Source	Destination	Interface
⊞ dmz				

Interface	Pool ID	Addresses Pool
dmz	200	10.30.30.50 - 10.30.30.60
outside	200	outside

☐ Enable traffic through the firewall without address translation

153896

Step 3 Confirm that the configuration values are correct.

Step 4 Click **Apply** in the main ASDM window.

Configuring NAT for Inside Clients to Communicate with the DMZ Web Server

In the previous procedure, you created a pool of IP addresses that could be used by the security appliance to mask the private IP addresses of inside clients.

In this procedure, you configure a Network Address Translation (NAT) rule that associates IP addresses from this pool with the inside clients so they can communicate securely with the DMZ web server.

To configure NAT between the inside interface and the DMZ interface, perform the following steps starting from the main ASDM window:

Step 1 In the main ASDM window, click the **Configuration** tool.

Step 2 In the Features pane, click **NAT**.

Step 3 From the Add drop-down list, choose Add Dynamic NAT Rule.

The Add Dynamic NAT Rule dialog box appears.

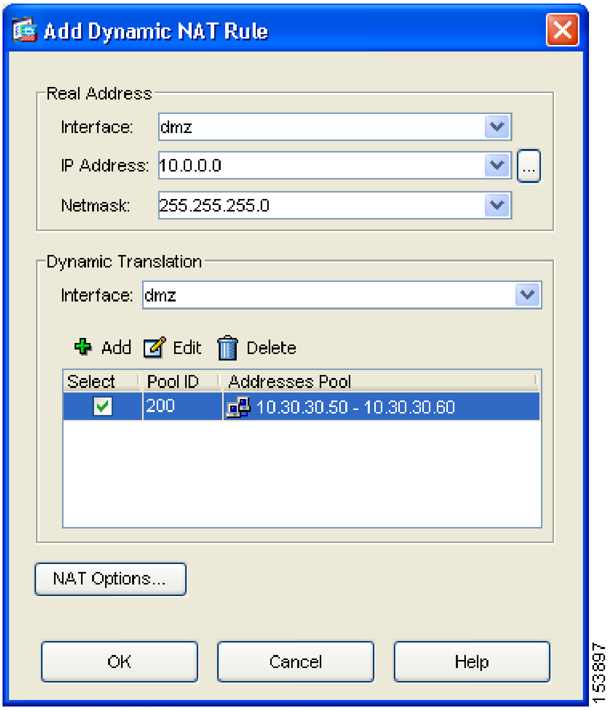
Step 4 In the Real Address area, specify the IP address to be translated. For this scenario, address translation for inside clients is done according to the IP address of the subnet.

- **a.** From the Interface drop-down list, choose the Inside interface.
- **b.** Enter the IP address of the client or network. In this scenario, the IP address of the network is 10.10.10.0.
- **c.** From the Netmask drop-down list, choose the Netmask. In this scenario, the netmask is 255.255.255.0.

Step 5 In the Dynamic Translation area:

- **a.** From the Interface drop-down list, choose the DMZ interface.
- **b.** To specify the address pool to be used for this Dynamic NAT rule, check the **Select** check box next to Global Pool ID. In this scenario, the IP pool ID is 200.

  In this scenario, the IP pool that we want to use is already created. If it was not already created, you would click **Add** to create a new IP pool.



Real Address

Interface: dmz

IP Address: 10.0.0.0

Netmask: 255.255.255.0

Dynamic Translation

Interface: dmz

Select	Pool ID	Addresses Pool
☑	200	10.30.30.50 - 10.30.30.60

c. Click **OK** to add the Dynamic NAT Rule and return to the Configuration > NAT window.

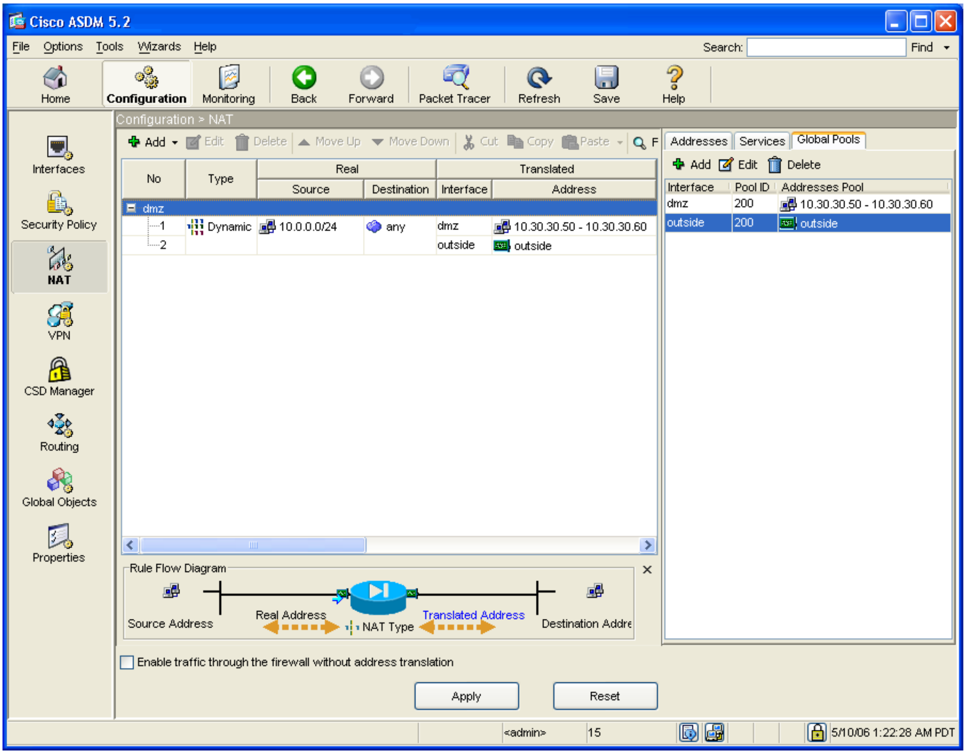
Review the configuration screen to verify that the translation rule appears as you expected.

Note When you click OK to create this rule, notice that there are actually two translation rules created:

- A translation rule between the inside and DMZ interfaces to be used when inside clients communicate with the DMZ web server.
- A translation rule between the inside and outside interfaces to be used when inside clients communicate with the Internet.

ASDM is able to create both rules because the addresses to be used for translation are both in the same IP pool.

The displayed configuration should be similar to the following:



		Real		Translated	
No	Type	Source	Destination	Interface	Address
dmz					
1	Dynamic	10.0.0.0/24	any	dmz	10.30.30.50 - 10.30.30.60
2				outside	outside

Interface	Pool ID	Addresses Pool
dmz	200	10.30.30.50 - 10.30.30.60
outside	200	outside

☐ Enable traffic through the firewall without address translation

153898

Step 6 Click **Apply** to complete the security appliance configuration changes.

Configuring NAT for Inside Clients to Communicate with Devices on the Internet

In the previous procedure, you configured a Network Address Translation (NAT) rule that associates IP addresses from the IP pool with the inside clients so they can communicate securely with the DMZ web server.

For many configurations, you would also need to create a NAT rule between the inside interface and the outside interface to enable inside clients to communicate with the Internet.

However, in this scenario you do not need to create this rule explicitly. The reason is that the IP pool (pool ID 200) contains both types of addresses needed for address translation: the range of IP addresses to be used by the DMZ interface, and the IP address to be used for the outside interface. This enables ASDM to create the second translation rule for you.

Configuring an External Identity for the DMZ Web Server

The DMZ web server needs to be accessible by all hosts on the Internet. This configuration requires translating the private IP address of the DMZ web server to a public IP address, enabling access to outside HTTP clients that are unaware of the security appliance. To map the real web server IP address (10.30.30.30) statically to a public IP address (209.165.200.226), perform the following steps:

Step 1 In the ASDM window, click the **Configuration** tool.

Step 2 In the Features pane, click **NAT**.

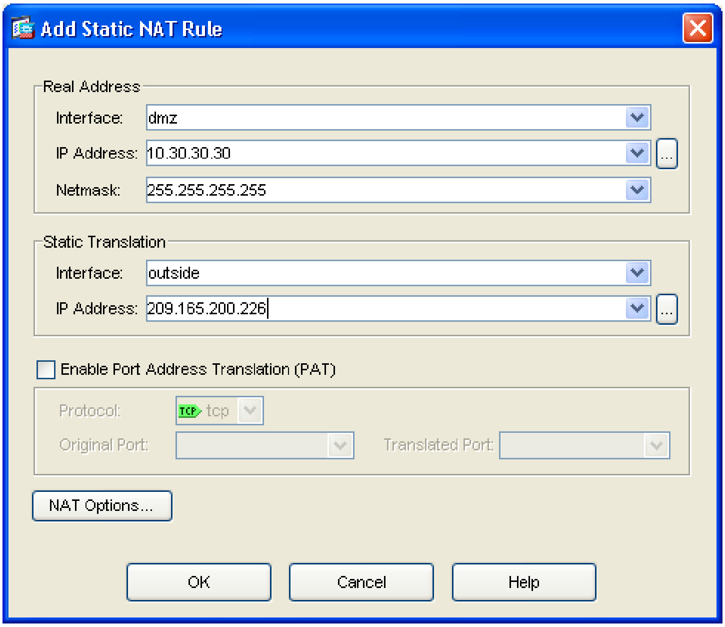
Step 3 From the Add drop-down list, choose Add Static NAT Rule. The Add Static NAT Rule dialog box appears.

Step 4 In the Real Address area, specify the real IP address of the web server:

a. From the Interface drop-down list, choose the DMZ interface.

b. Enter the real IP address of the DMZ web server. In this scenario, the IP address is 10.30.30.30.

c. From the Netmask drop-down list, choose the Netmask 255.255.255.255.



Add Static NAT Rule

Real Address
Interface: dmz
IP Address: 10.30.30.30
Netmask: 255.255.255.255

Static Translation
Interface: outside
IP Address: 209.165.200.226

□ Enable Port Address Translation (PAT)

Protocol: tcp
Original Port:
Translated Port:

153899

Step 5 In the Static Translation area, specify the public IP address to be used for the web server:

a. From the Interface drop-down list, choose Outside.

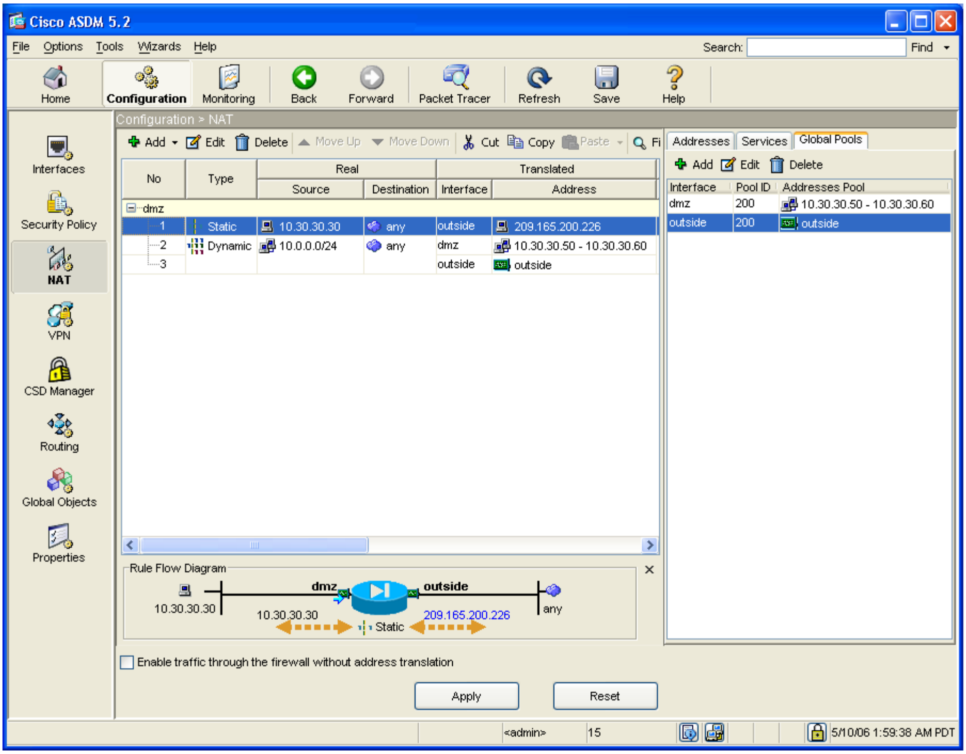
b. From the IP Address drop-down list, choose the public IP address of the DMZ web server.

In this scenario, the public IP address of the DMZ web server is 209.165.200.226.

Step 6 Click **OK** to add the rule and return to the list of Address Translation Rules.

This rule maps the real web server IP address (10.30.30.30) statically to the public IP address of the web server (209.165.200.226).

The displayed configuration should be similar to the following:



No	Type	Real		Translated	
		Source	Destination	Interface	Address
dmz					
1	Static	10.30.30.30	any	outside	209.165.200.226
2	Dynamic	10.0.0.0/24	any	dmz	10.30.30.50 - 10.30.30.60
3				outside	outside

Interface	Pool ID	Addresses Pool
dmz	200	10.30.30.50 - 10.30.30.60
outside	200	outside

□ Enable traffic through the firewall without address translation

153900

Step 7 Click **Apply** to complete the security appliance configuration changes.

Providing Public HTTP Access to the DMZ Web Server

By default, the security appliance denies all traffic coming in from the public network. You must create an access control rule on the security appliance to permit specific traffic types from the public network to resources in the DMZ. This access control rule specifies the interface of the security appliance that processes the traffic, whether the traffic is incoming or outgoing, the origin and destination of the traffic, and the type of traffic protocol and service to be permitted.

In this section, you create an access rule that permits incoming HTTP traffic originating from any host or network on the Internet, if the destination of the traffic is the web server on the DMZ network. All other traffic coming in from the public network is denied.

To configure the access control rule, perform the following steps:

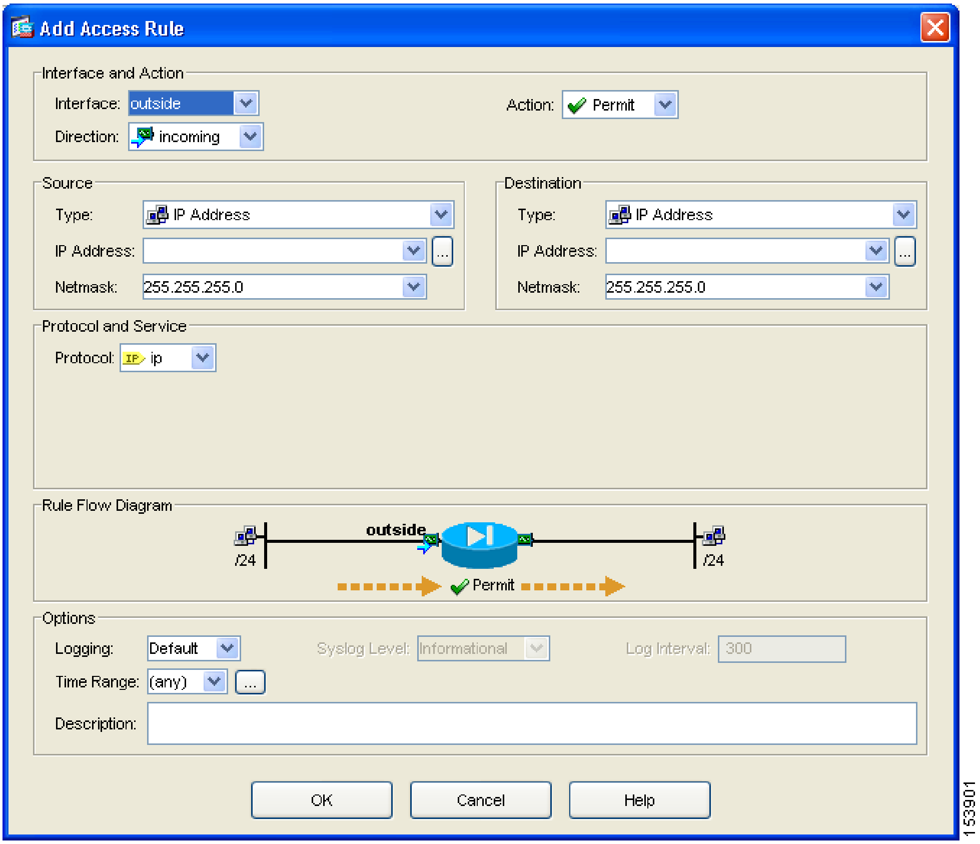
Step 1 In the ASDM window:

a. Click the **Configuration** tool.

b. In the Features pane, click **Security Policy**.

c. Click the **Access Rules** tab, and then from the Add pull-down list, choose Add Access Rule.

The Add Access Rule dialog box appears.



Add Access Rule

Interface and Action
Interface: outside
Action: Permit
Direction: incoming

Source
Type: IP Address
IP Address:
Netmask: 255.255.255.0

Destination
Type: IP Address
IP Address:
Netmask: 255.255.255.0

Protocol and Service
Protocol: ip

Options
Logging: Default
Syslog Level: Informational
Log Interval: 300
Time Range: (any)
Description:

Step 2 In the Interface and Action area:

a. From the Interface drop-down list, choose Outside.

b. From the Direction drop-down list, choose Incoming.

c. From the Action drop-down list, choose Permit.

Step 3 In the Source area:

a. From the Type drop-down list, choose IP Address.

b. Enter the IP address of the source host or source network. Use 0.0.0.0 to allow traffic originating from any host or network.

Alternatively, if the address of the source host or network is preconfigured, choose the source IP address from the IP Address drop-down list.

c. Enter the netmask for the source IP address or select one from the Netmask drop-down list.

Step 4 In the Destination area:

a. In the IP address field, enter the public IP address of the destination host or network, such as a web server. (In this scenario, the public IP address of the DMZ web server is 209.165.200.226.)

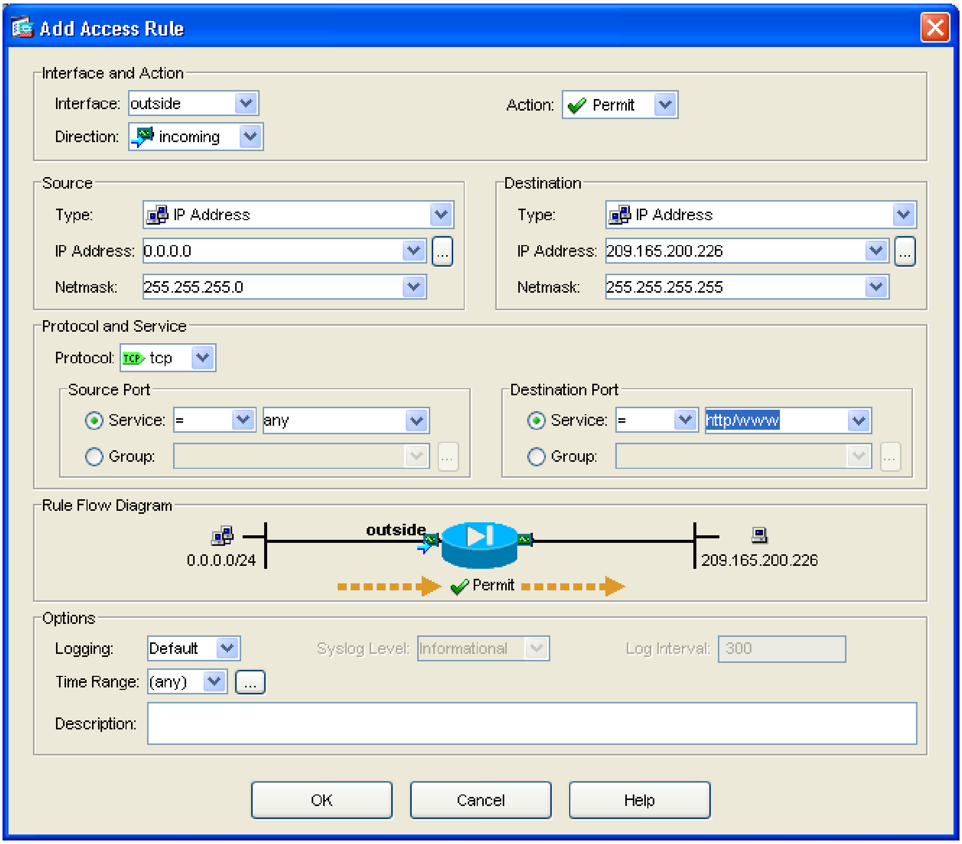
Step 5 In the Protocol and Service area, specify the type of traffic that you want to permit through the security appliance.

a. From the Protocol drop-down list, choose tcp.

b. In the Source Port area, click the **Service** radio button, choose "**=**" (equal to) from the Service drop-down list, and then choose Any from the next drop-down list.

c. In the Destination Port area, click the **Service** radio button, choose "**=**" (equal to) from the Service drop-down list, and then choose HTTP/WWW from the next drop-down list.

At this point, the entries in the Add Access Rule dialog box should be similar to the following:



Add Access Rule

Interface and Action
Interface: outside
Action: Permit
Direction: incoming

Source
Type: IP Address
IP Address: 0.0.0.0
Netmask: 255.255.255.0

Destination
Type: IP Address
IP Address: 209.165.200.226
Netmask: 255.255.255.255

Protocol and Service
Protocol: tcp

Source Port
● Service: = any
○ Group:

Destination Port
● Service: = http/www
○ Group:

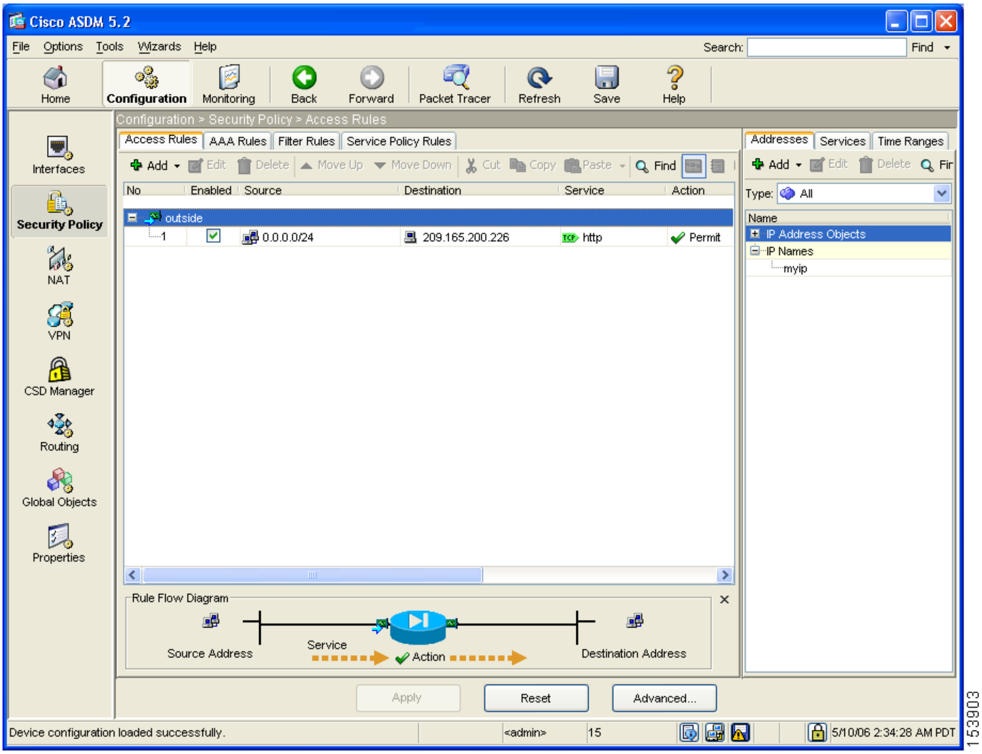
Rule Flow Diagram

Options
Logging: Default
Syslog Level: Informational
Log Interval: 300
Time Range: (any)
Description:

153902

d. Click **OK**.

Step 6 The displayed configuration should be similar to the following. Verify that the information you entered is accurate.


Cisco ASDM 5.2
File Options Tools Wizards Help
Search: Find
Home Configuration Monitoring Back Forward Packet Tracer Refresh Save Help
Configuration > Security Policy > Access Rules
Interfaces
Security Policy
NAT
VPN
CSD Manager
Routing
Global Objects
Properties
Access Rules AAA Rules Filter Rules Service Policy Rules
Add Edit Delete Move Up Move Down Cut Copy Paste Find
Addresses Services Time Ranges
Add Edit Delete Fir
Type: All
Name
IP Address Objects
IP Names
myip
Rule Flow Diagram
Source Address
Service
Action
Destination Address
Apply Reset Advanced...
153903

No	Enabled	Source	Destination	Service	Action
outside					
1	☑	0.0.0.0/24	209.165.200.226	http	✓ Permit

Device configuration loaded successfully. <admin> 15 5/10/06 2:34:28 AM PDT

Step 7 Click **Apply** to save the configuration changes to the configuration that the security appliance is currently running.

Clients on both the private and public networks can now resolve HTTP requests for content from the DMZ web server, while keeping the private network secure.

Note Although the destination address specified is the private address of the DMZ web server (10.30.30.30), HTTP traffic from any host on the Internet destined for the public address 209.165.200.226 is permitted through the security appliance. The address translation (209.165.200.226 to 10.30.30.30) allows the traffic to be permitted. For information about creating the translation rule, see the "Configuring NAT for Inside Clients to Communicate with the DMZ Web Server" section on page 2-12.

Step 8 If you want the configuration changes to be saved to the startup configuration so that they are applied the next time the device starts, from the File menu, click **Save**.

Alternatively, ASDM prompts you to save the configuration changes permanently when you exit ASDM.

If you do not save the configuration changes, the old configuration takes effect the next time the device starts.

What to Do Next

If you are deploying the security appliance solely to protect a web server in a DMZ, you have completed the initial configuration.

You may want to consider performing some of the following additional steps:

To Do This ...	See ...
Refine configuration and configure optional and advanced features	*Cisco Security Appliance Command Line Configuration Guide*
Learn about daily operations	*Cisco Security Appliance Command Reference* *Cisco Security Appliance Logging Configuration and System Log Messages*

You can configure the security appliance for more than one application. The following sections provide configuration procedures for other common applications of the security appliance.

To Do This ...	See ...
Configure a remote-access VPN	Chapter 3, “Scenario: IPsec Remote-Access VPN Configuration”
Configure a site-to-site VPN	Chapter 4, “Scenario: Site-to-Site VPN Configuration”

CHAPTER 3

Scenario: IPsec Remote-Access VPN Configuration

This chapter describes how to use the security appliance to accept remote-access IPsec VPN connections. A remote-access VPN enables you to create secure connections, or tunnels, across the Internet, thus providing secure access to off-site users.

If you are implementing an Easy VPN solution, this chapter describes how to configure the Easy VPN server (sometimes called a headend device).

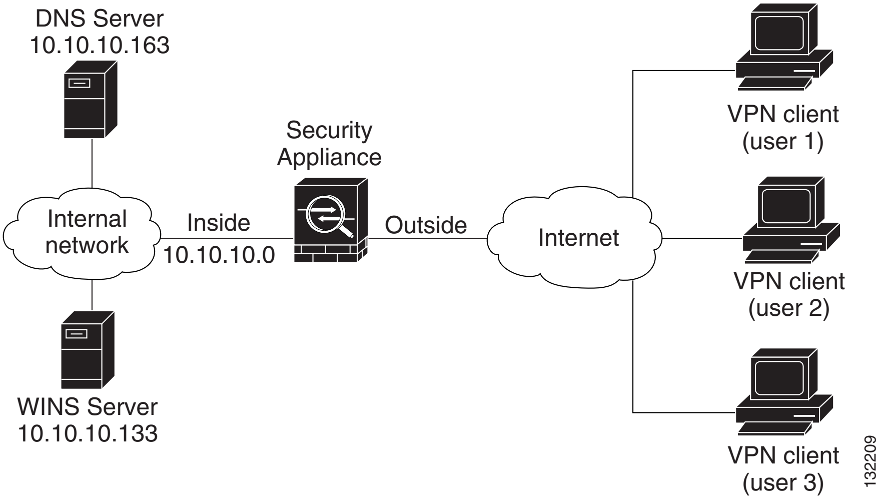
This chapter includes the following sections:

- Example IPsec Remote-Access VPN Network Topology, page 3-1
- Implementing the IPsec Remote-Access VPN Scenario, page 3-2
- What to Do Next, page 3-18

Example IPsec Remote-Access VPN Network Topology

Figure 3-1 shows an security appliance configured to accept requests from and establish IPsec connections with VPN clients, such as a Cisco Easy VPN hardware client, over the Internet.

Figure 3-1 Network Layout for Remote Access VPN Scenario



Implementing the IPsec Remote-Access VPN Scenario

This section describes how to configure the security appliance to accept IPsec VPN connections from remote clients and devices. If you are implementing an Easy VPN solution, this section describes how to configure an Easy VPN server (also known as a headend device).

Values for example configuration settings are taken from the remote-access scenario illustrated in Figure 3-1.

This section includes the following topics:

- Information to Have Available, page 3-3
- Starting ASDM, page 3-3
- Configuring the PIX 515E for an IPsec Remote-Access VPN, page 3-5
- Selecting VPN Client Types, page 3-6

- Specifying the VPN Tunnel Group Name and Authentication Method, page 3-7
- Specifying a User Authentication Method, page 3-8
- (Optional) Configuring User Accounts, page 3-10
- Configuring Address Pools, page 3-11
- Configuring Client Attributes, page 3-12
- Configuring the IKE Policy, page 3-13
- Configuring IPsec Encryption and Authentication Parameters, page 3-15
- Specifying Address Translation Exception and Split Tunneling, page 3-16
- Verifying the Remote-Access VPN Configuration, page 3-17

Information to Have Available

Before you begin configuring the security appliance to accept remote access IPsec VPN connections, make sure that you have the following information available:

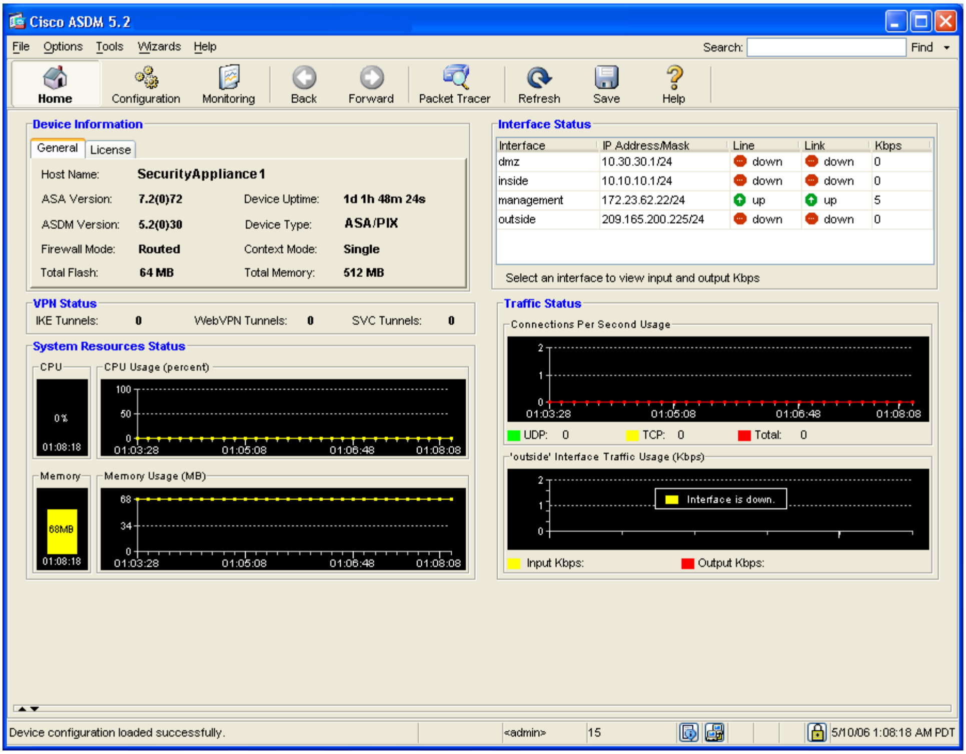
- Range of IP addresses to be used in an IP pool. These addresses are assigned to remote VPN clients as they are successfully connected.
- List of users to be used in creating a local authentication database, unless you are using a AAA server for authentication.
- Networking information to be used by remote clients when connecting to the VPN, including:
  - IP addresses for the primary and secondary DNS servers
  - IP addresses for the primary and secondary WINS servers
  - Default domain name
  - List of IP addresses for local hosts, groups, and networks that should be made accessible to authenticated remote clients

Starting ASDM

To run ASDM in a web browser, enter the factory default IP address in the address field: **https://192.168.1.1/admin/**.

Note Remember to add the "**s**" in "**https**" or the connection fails. HTTPS (HTTP over SSL) provides a secure connection between your browser and the security appliance.

The Main ASDM window appears.



Host Name: SecurityAppliance1

ASA Version:	7.2(0)72	Device Uptime:	1d 1h 48m 24s
ASDM Version:	5.2(0)30	Device Type:	ASA/PIX
Firewall Mode:	Routed	Context Mode:	Single
Total Flash:	64 MB	Total Memory:	512 MB

IKE Tunnels: 0 WebVPN Tunnels: 0 SVC Tunnels: 0

Interface	IP Address/Mask	Line	Link	Kbps
dmz	10.30.30.1/24	down	down	0
inside	10.10.10.1/24	down	down	0
management	172.23.62.22/24	up	up	5
outside	209.165.200.225/24	down	down	0

Select an interface to view input and output Kbps

🟩 UDP: 0 🟨 TCP: 0 🟥 Total: 0

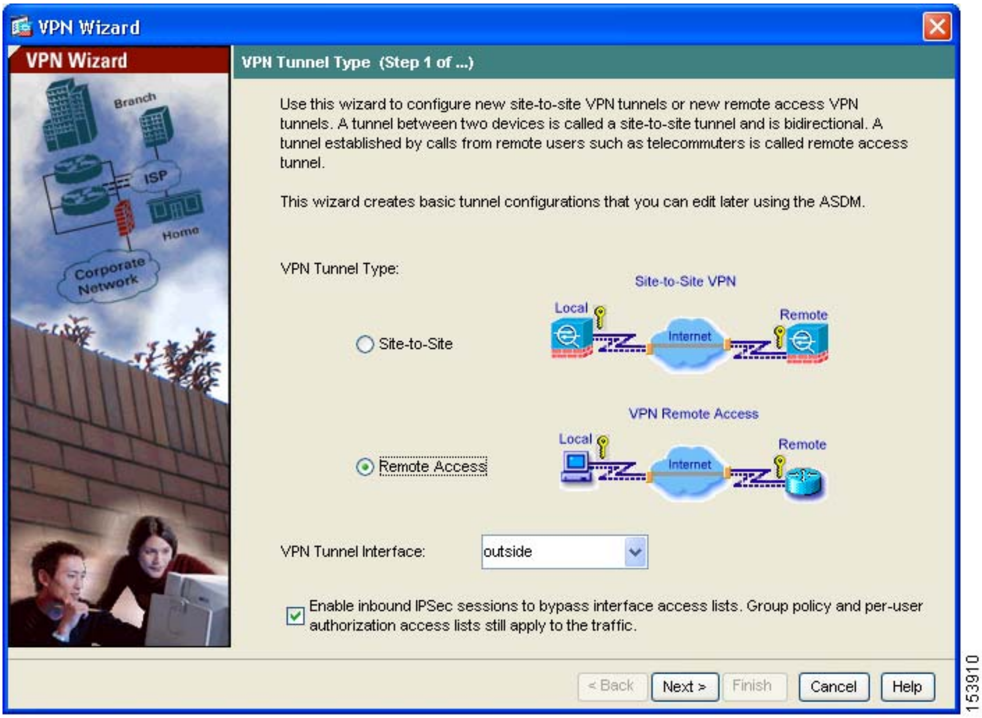
🟨 Input Kbps: 🟥 Output Kbps:

Device configuration loaded successfully. <admin> 15 5/10/06 1:08:18 AM PDT

Configuring the PIX 515E for an IPsec Remote-Access VPN

To begin the process for configuring a remote-access VPN, perform the following steps:

Step 1 In the main ASDM window, choose **VPN Wizard** from the Wizards drop-down menu. The VPN Wizard Step 1 screen appears.



VPN Tunnel Type (Step 1 of ...)

Use this wizard to configure new site-to-site VPN tunnels or new remote access VPN tunnels. A tunnel between two devices is called a site-to-site tunnel and is bidirectional. A tunnel established by calls from remote users such as telecommuters is called remote access tunnel.

This wizard creates basic tunnel configurations that you can edit later using the ASDM.

VPN Tunnel Type:

○ Site-to-Site

● Remote Access

VPN Tunnel Interface: outside

☑ Enable inbound IPSec sessions to bypass interface access lists. Group policy and per-user authorization access lists still apply to the traffic.

Step 2 In Step 1 of the VPN Wizard, perform the following steps:

a. Click the **Remote Access VPN** radio button.

b. From the drop-down list, choose Outside as the enabled interface for the incoming VPN tunnels.

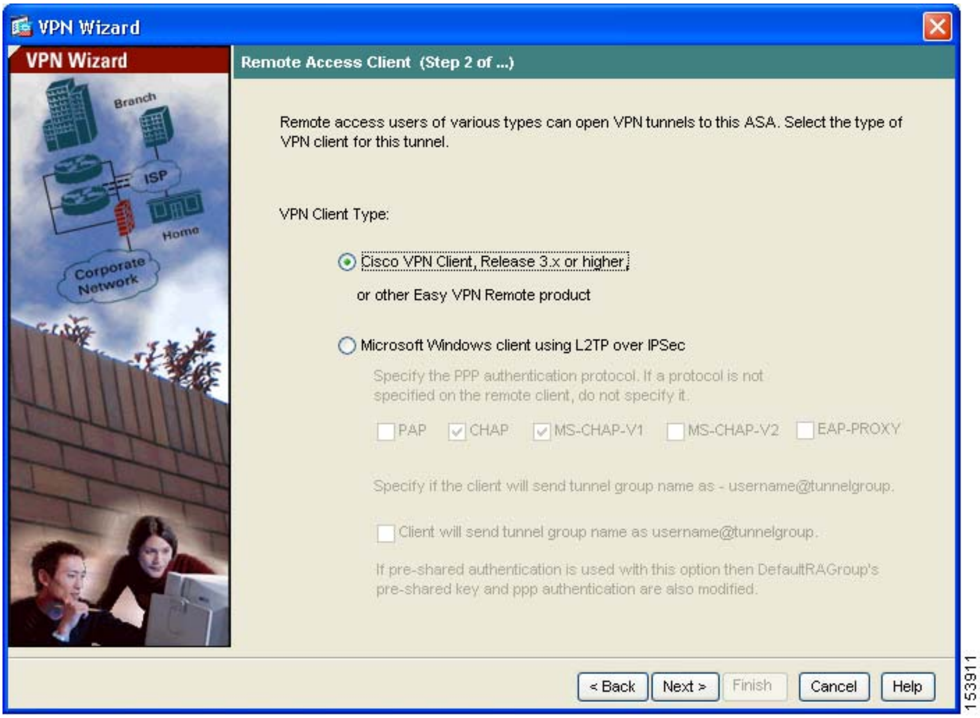
c. Click **Next** to continue.

Selecting VPN Client Types

In Step 2 of the VPN Wizard, perform the following steps:

Step 1 Specify the type of VPN client that will enable remote users to connect to this security appliance. For this scenario, click the **Cisco VPN Client** radio button.

You can also use any other Cisco Easy VPN remote product.



Remote access users of various types can open VPN tunnels to this ASA. Select the type of VPN client for this tunnel.

VPN Client Type:

● Cisco VPN Client, Release 3.x or higher,
or other Easy VPN Remote product

○ Microsoft Windows client using L2TP over IPSec

Specify the PPP authentication protocol. If a protocol is not specified on the remote client, do not specify it.

□ PAP ☑ CHAP ☑ MS-CHAP-V1 □ MS-CHAP-V2 □ EAP-PROXY

Specify if the client will send tunnel group name as - username@tunnelgroup.

□ Client will send tunnel group name as username@tunnelgroup.

If pre-shared authentication is used with this option then DefaultRAGroup's pre-shared key and ppp authentication are also modified.

Step 2 Click **Next** to continue.

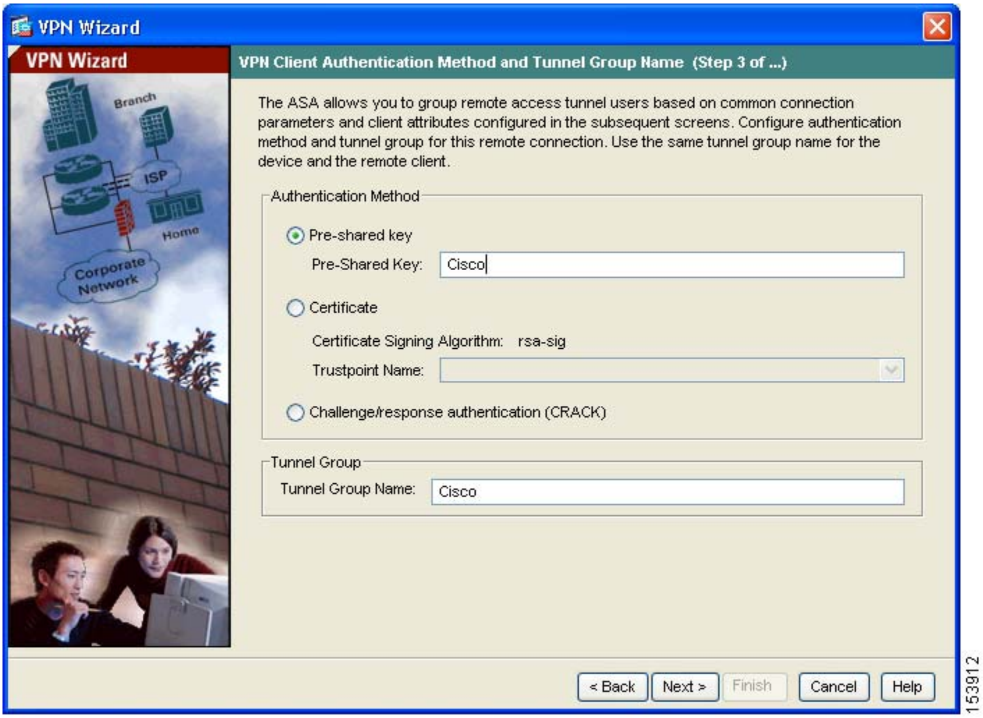
Specifying the VPN Tunnel Group Name and Authentication Method

In Step 3 of the VPN Wizard, perform the following steps:

Step 1 Specify the type of authentication that you want to use by performing one of the following steps:

- To use a static preshared key for authentication, click the **Pre-Shared Key** radio button and enter a preshared key (for example, “Cisco”). This key is used for IPsec negotiations between the security appliances.
- To use digital certificates for authentication, click the **Certificate** radio button, choose the Certificate Signing Algorithm from the drop-down list, and then choose a preconfigured trustpoint name from the drop-down list.

  If you want to use digital certificates for authentication but have not yet configured a trustpoint name, you can continue with the Wizard by using one of the other two options. You can revise the authentication configuration later using the standard ASDM screens.
- Click the **Challenge/Response Authentication** (**CRACK**) radio button to use that method of authentication.


VPN Wizard

VPN Client Authentication Method and Tunnel Group Name (Step 3 of ...)

The ASA allows you to group remote access tunnel users based on common connection parameters and client attributes configured in the subsequent screens. Configure authentication method and tunnel group for this remote connection. Use the same tunnel group name for the device and the remote client.

Authentication Method

● Pre-shared key

Pre-Shared Key: Cisco

○ Certificate

Certificate Signing Algorithm: rsa-sig

Trustpoint Name:

○ Challenge/response authentication (CRACK)

Tunnel Group

Tunnel Group Name: Cisco

Step 2 Enter a Tunnel Group Name (such as “Cisco”) for the set of users that use common connection parameters and client attributes to connect to this security appliance.

Step 3 Click **Next** to continue.

Specifying a User Authentication Method

Users can be authenticated either by a local authentication database or by using external authentication, authorization, and accounting (AAA) servers (RADIUS, TACACS+, SDI, NT, Kerberos, and LDAP).

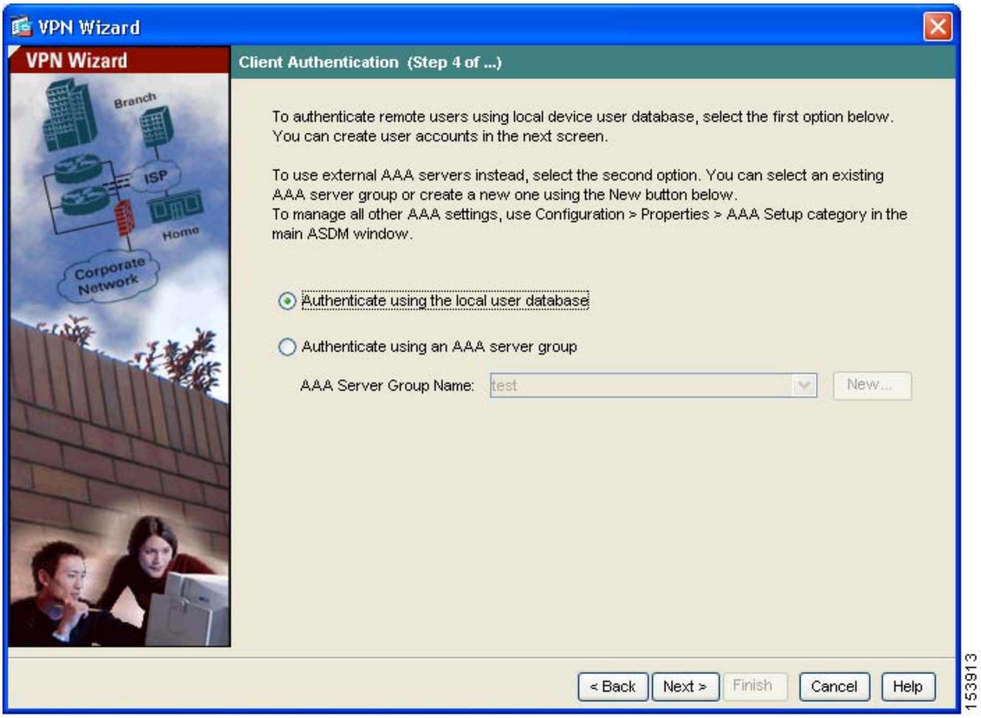
In Step 4 of the VPN Wizard, perform the following steps:

Step 1 If you want to authenticate users by creating a user database on the security appliance, click the **Authenticate Using the Local User Database** radio button.

Step 2 If you want to authenticate users with an external AAA server group:

a. Click the **Authenticate Using an AAA Server Group** radio button.

b. Choose a preconfigured server group from the drop-down list, or click **New** to add a new server group.



Client Authentication (Step 4 of ...)

To authenticate remote users using local device user database, select the first option below. You can create user accounts in the next screen.

To use external AAA servers instead, select the second option. You can select an existing AAA server group or create a new one using the New button below.
To manage all other AAA settings, use Configuration > Properties > AAA Setup category in the main ASDM window.

● Authenticate using the local user database

○ Authenticate using an AAA server group

AAA Server Group Name: test

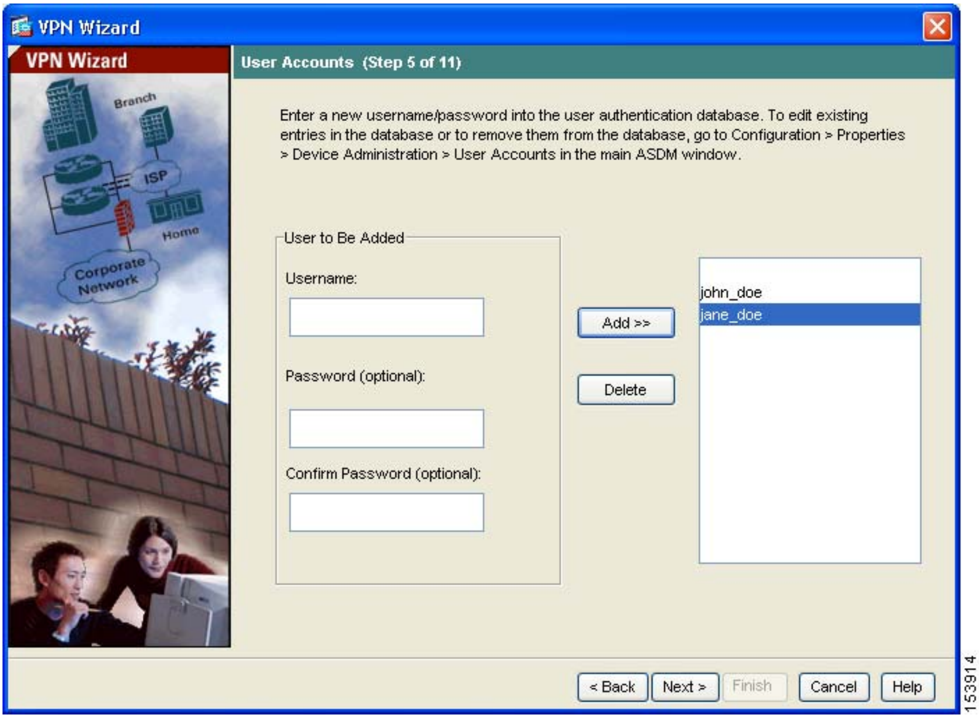
Step 3 Click **Next** to continue.

(Optional) Configuring User Accounts

If you have chosen to authenticate users with the local user database, you can create new user accounts here. You can also add users later using the ASDM configuration interface.

In Step 5 of the VPN Wizard, perform the following steps:

Step 1 To add a new user, enter a username and password, and then click **Add**.



VPN Wizard

User Accounts (Step 5 of 11)

Enter a new username/password into the user authentication database. To edit existing entries in the database or to remove them from the database, go to Configuration > Properties > Device Administration > User Accounts in the main ASDM window.

User to Be Added

Username:

Password (optional):

Confirm Password (optional):

john_doe
jane_doe

Step 2 When you have finished adding new users, click **Next** to continue.

Configuring Address Pools

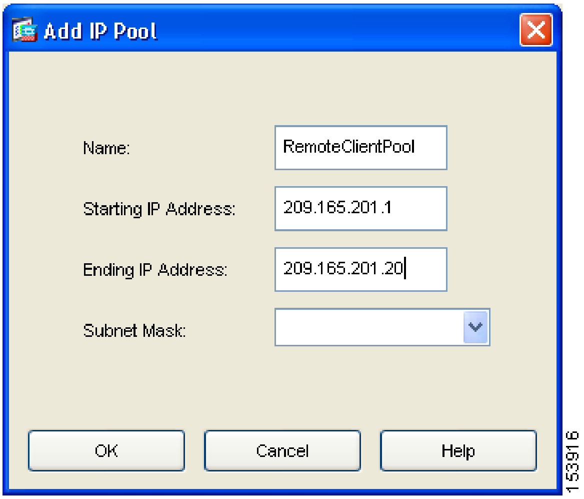
For remote clients to gain access to your network, you must configure a pool of IP addresses that can be assigned to remote VPN clients as they are successfully connected. In this scenario, the pool is configured to use the range of IP addresses 209.165.201.1–209.166.201.20.

In Step 6 of the VPN Wizard, perform the following steps:

Step 1 Enter a pool name or choose a preconfigured pool from the drop-down list.

Alternatively, click **New** to create a new address pool.

The Add IP Pool dialog box appears.



Name: RemoteClientPool

Starting IP Address: 209.165.201.1

Ending IP Address: 209.165.201.20

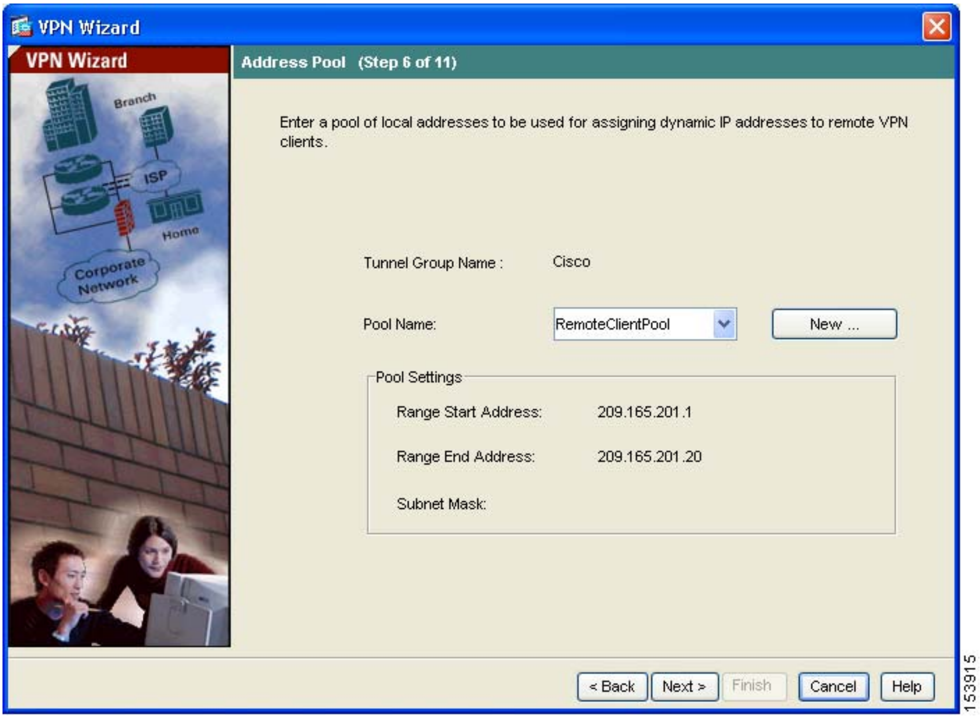
Subnet Mask:

Step 2 In the Add IP Pool dialog box:

a. Enter the Starting IP address and Ending IP address of the range.

b. (Optional) Enter the Netmask for the range of IP addresses.

c. Click **OK** to return to Step 6 of the VPN Wizard.



Address Pool (Step 6 of 11)

Enter a pool of local addresses to be used for assigning dynamic IP addresses to remote VPN clients.

Tunnel Group Name : Cisco

Pool Name: RemoteClientPool New ...

Pool Settings

Range Start Address: 209.165.201.1

Range End Address: 209.165.201.20

Subnet Mask:

Step 3 Click **Next** to continue.

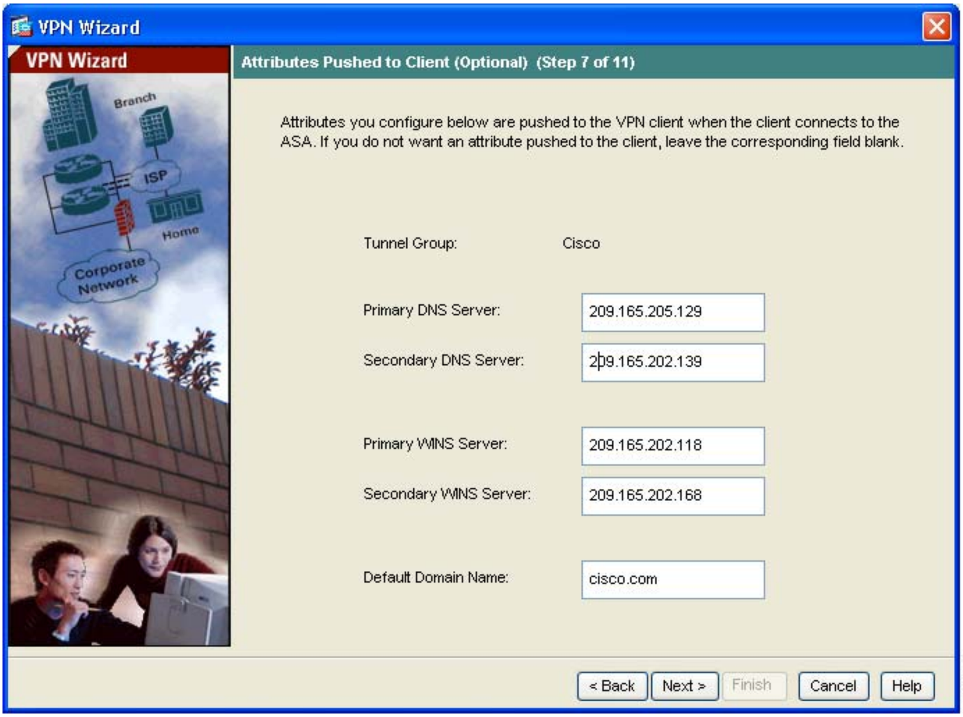
Configuring Client Attributes

To access your network, each remote access client needs basic network configuration information, such as which DNS and WINS servers to use and the default domain name. Rather than configuring each remote client individually, you can provide the client information to ASDM. The security appliance pushes this information to the remote client or Easy VPN hardware client when a connection is established.

Ensure that you specify the correct values, or remote clients will not be able to use DNS names for resolution or use Windows networking.

In Step 7 of the VPN Wizard, perform the following steps:

Step 1 Enter the network configuration information to be pushed to remote clients.



Attributes Pushed to Client (Optional) (Step 7 of 11)

Attributes you configure below are pushed to the VPN client when the client connects to the ASA. If you do not want an attribute pushed to the client, leave the corresponding field blank.

Tunnel Group: Cisco

Primary DNS Server: 209.165.205.129

Secondary DNS Server: 209.165.202.139

Primary WINS Server: 209.165.202.118

Secondary WINS Server: 209.165.202.168

Default Domain Name: cisco.com

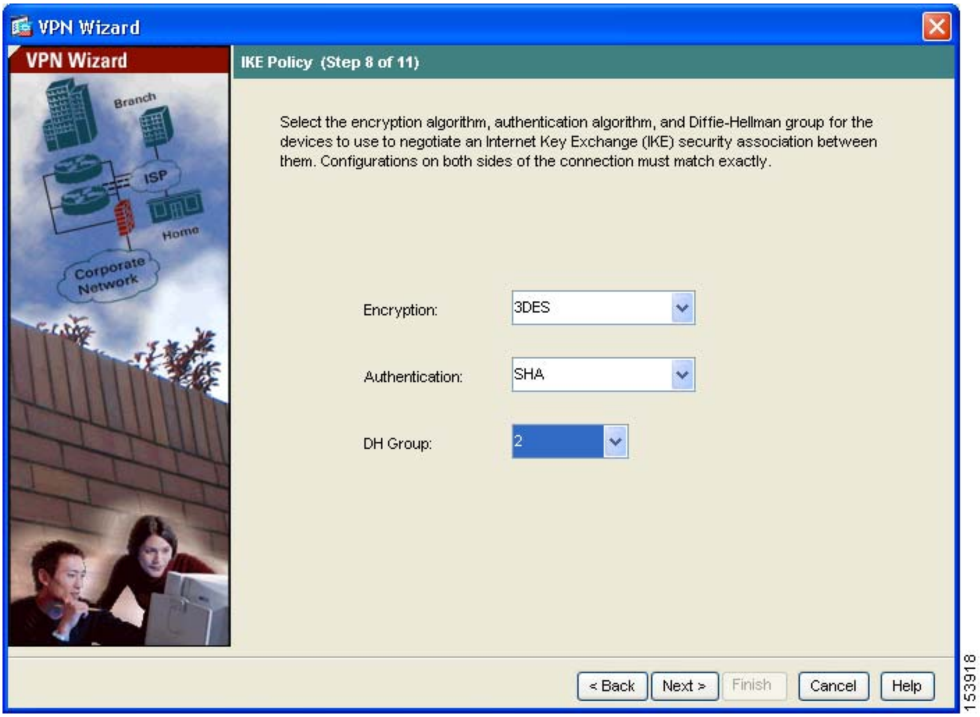
Step 2 Click **Next** to continue.

Configuring the IKE Policy

IKE is a negotiation protocol that includes an encryption method to protect data and ensure privacy; it is also an authentication method to ensure the identity of the peers. In most cases, the ASDM default values are sufficient to establish secure VPN tunnels.

To specify the IKE policy in Step 8 of the VPN Wizard, perform the following steps:

Step 1 Click the Encryption (DES/3DES/AES), authentication algorithms (MD5/SHA), and the Diffie-Hellman group (1/2/5/7) used by the security appliance during an IKE security association.



IKE Policy (Step 8 of 11)

Select the encryption algorithm, authentication algorithm, and Diffie-Hellman group for the devices to use to negotiate an Internet Key Exchange (IKE) security association between them. Configurations on both sides of the connection must match exactly.

Encryption: 3DES

Authentication: SHA

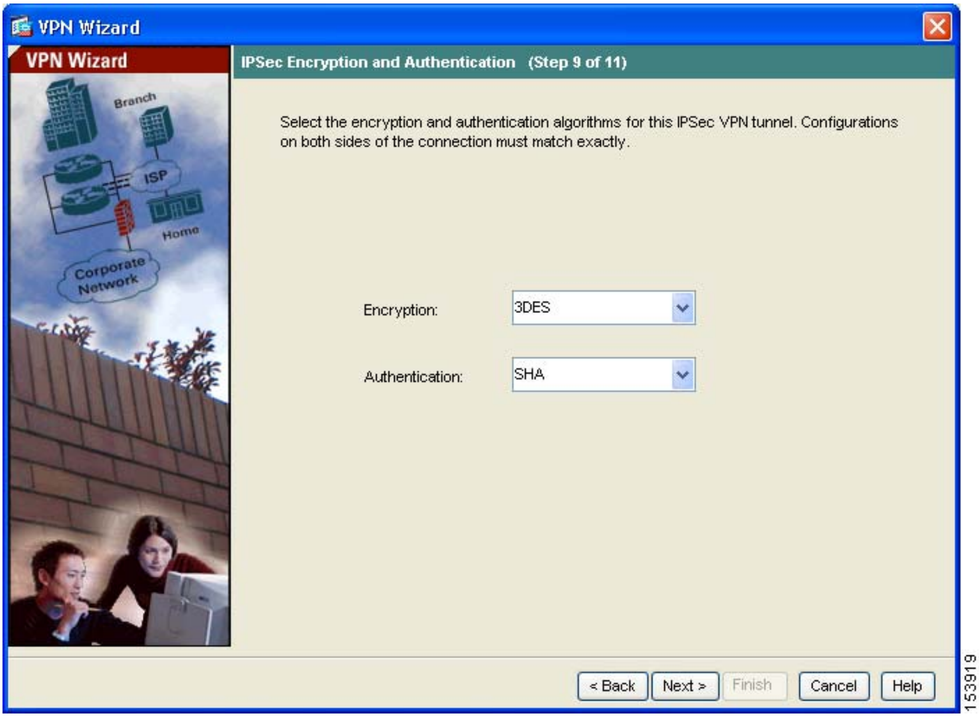
DH Group: 2

Step 2 Click **Next** to continue.

Configuring IPsec Encryption and Authentication Parameters

In Step 9 of the VPN Wizard, perform the following steps:

Step 1 Click the Encryption algorithm (DES/3DES/AES) and authentication algorithm (MD5/SHA).



VPN Wizard

IPSec Encryption and Authentication (Step 9 of 11)

Select the encryption and authentication algorithms for this IPSec VPN tunnel. Configurations on both sides of the connection must match exactly.

Encryption: 3DES

Authentication: SHA

Step 2 Click **Next** to continue.

Specifying Address Translation Exception and Split Tunneling

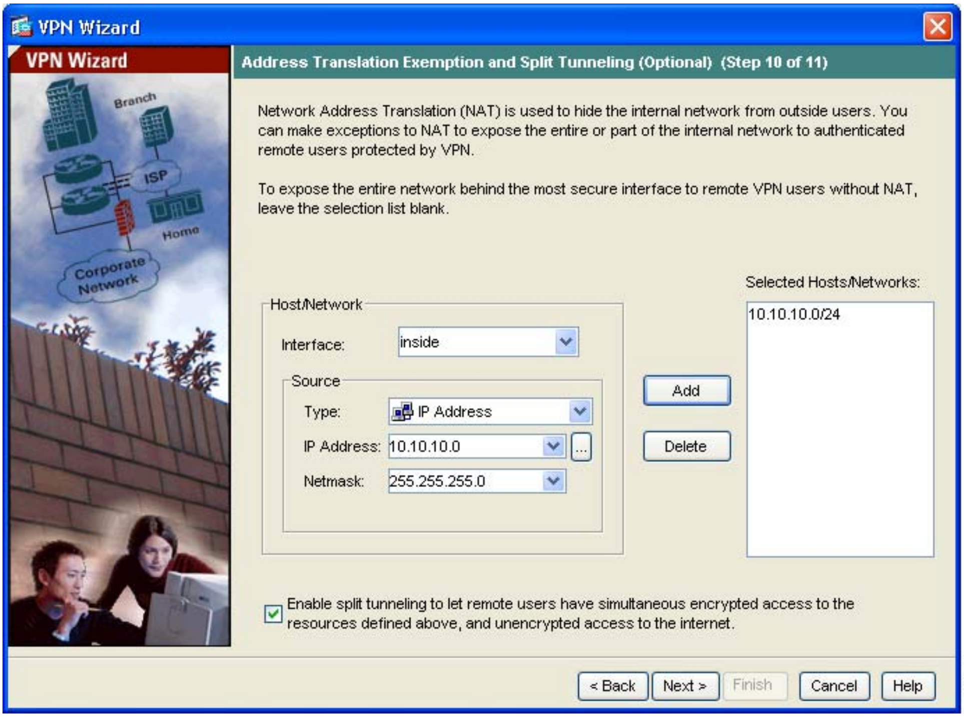
Split tunneling lets a remote-access IPsec client conditionally direct packets over an IPsec tunnel in encrypted form or to a network interface in clear text form.

The security appliance uses Network Address Translation (NAT) to prevent internal IP addresses from being exposed externally. You can make exceptions to this network protection by identifying local hosts and networks that should be made accessible to authenticated remote users. (In this scenario, the entire inside network 10.10.10.0 is exposed to all remote clients.)

In Step 10 of the VPN Wizard, perform the following steps:

Step 1 Specify hosts, groups, and networks that should be in the list of internal resources made accessible to authenticated remote users.

To add or remove hosts, groups, and networks dynamically from the Selected Hosts/Networks pane, click **Add** or **Delete**, respectively.


VPN Wizard

Address Translation Exemption and Split Tunneling (Optional) (Step 10 of 11)

Network Address Translation (NAT) is used to hide the internal network from outside users. You can make exceptions to NAT to expose the entire or part of the internal network to authenticated remote users protected by VPN.

To expose the entire network behind the most secure interface to remote VPN users without NAT, leave the selection list blank.

Host/Network

Interface: inside

Source

Type: IP Address

IP Address: 10.10.10.0

Netmask: 255.255.255.0

Selected Hosts/Networks: 10.10.10.0/24

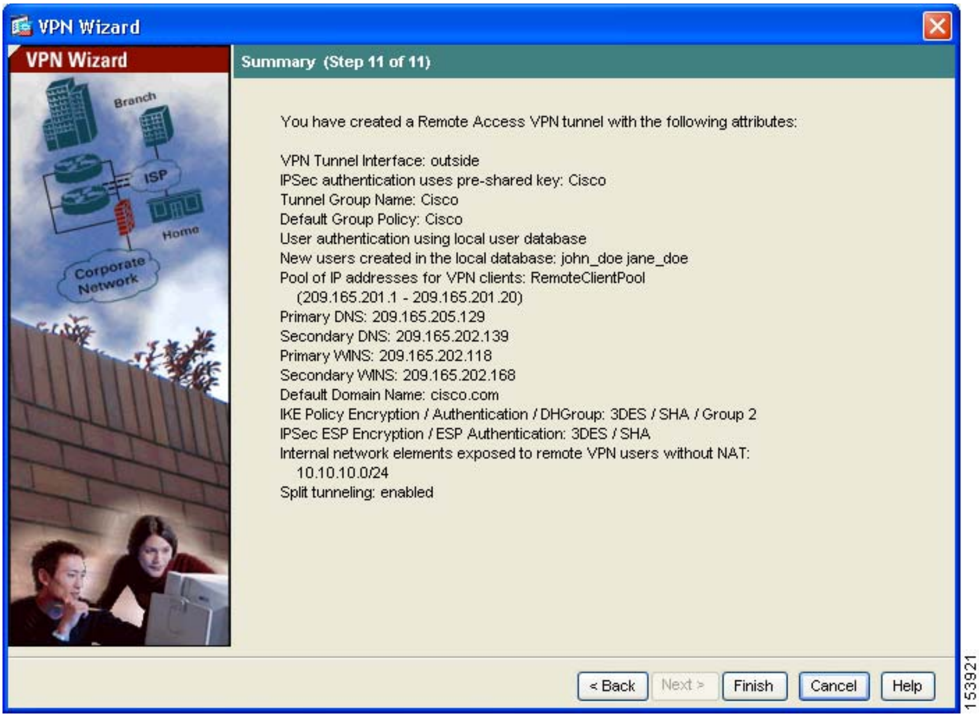
☑ Enable split tunneling to let remote users have simultaneous encrypted access to the resources defined above, and unencrypted access to the internet.

Note Enable split tunneling by checking the **Enable Split Tunneling** check box at the bottom of the screen. Split tunneling allows traffic outside the configured networks to be sent out directly to the Internet instead of over the encrypted VPN tunnel.

Step 2 Click **Next** to continue.

Verifying the Remote-Access VPN Configuration

In Step 11 of the VPN Wizard, review the configuration attributes for the VPN tunnel you just created. The displayed configuration should be similar to the following:



You have created a Remote Access VPN tunnel with the following attributes:

VPN Tunnel Interface: outside
IPSec authentication uses pre-shared key: Cisco
Tunnel Group Name: Cisco
Default Group Policy: Cisco
User authentication using local user database
New users created in the local database: john_doe jane_doe
Pool of IP addresses for VPN clients: RemoteClientPool
(209.165.201.1 - 209.165.201.20)
Primary DNS: 209.165.205.129
Secondary DNS: 209.165.202.139
Primary WINS: 209.165.202.118
Secondary WINS: 209.165.202.168
Default Domain Name: cisco.com
IKE Policy Encryption / Authentication / DHGroup: 3DES / SHA / Group 2
IPSec ESP Encryption / ESP Authentication: 3DES / SHA
Internal network elements exposed to remote VPN users without NAT:
10.10.10.0/24
Split tunneling: enabled

If you are satisfied with the configuration, click **Finish** to apply the changes to the security appliance.

If you want the configuration changes to be saved to the startup configuration so that they are applied the next time the device starts, from the File menu, click **Save**. Alternatively, ASDM prompts you to save the configuration changes permanently when you exit ASDM.

If you do not save the configuration changes, the old configuration takes effect the next time the device starts.

What to Do Next

If you are deploying the security appliance solely in a remote-access VPN environment, you have completed the initial configuration. In addition, you may want to consider performing some of the following steps:

To Do This ...	See ...
Refine configuration and configure optional and advanced features	*Cisco Security Appliance Command Line Configuration Guide*
Learn about daily operations	*Cisco Security Appliance Command Reference* *Cisco Security Appliance Logging Configuration and System Log Messages*

You can configure the security appliance for more than one application. The following sections provide configuration procedures for other common applications of the security appliance.

To Do This ...	See ...
Configure the security appliance to protect a Web server in a DMZ	Chapter 2, "Scenario: DMZ Configuration"
Configure a site-to-site VPN	Chapter 4, "Scenario: Site-to-Site VPN Configuration"

Scenario: Site-to-Site VPN Configuration

This chapter describes how to use the security appliance to create a site-to-site VPN.

Site-to-site VPN features provided by the security appliance enable businesses to extend their networks across low-cost public Internet connections to business partners and remote offices worldwide while maintaining their network security. A VPN connection enables you to send data from one location to another over a secure connection, or tunnel, first by authenticating both ends of the connection, and then by automatically encrypting all data sent between the two sites.

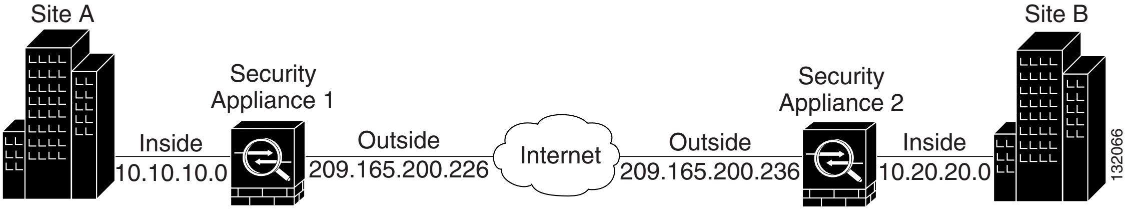
This chapter includes the following sections:

- Example Site-to-Site VPN Network Topology, page 4-1
- Implementing the Site-to-Site Scenario, page 4-2
- Configuring the Other Side of the VPN Connection, page 4-13
- What to Do Next, page 4-13

Example Site-to-Site VPN Network Topology

Figure 4-1 shows an example VPN tunnel between two security appliances.

Figure 4-1 Network Layout for Site-to-Site VPN Configuration Scenario



Creating a VPN site-to-site deployment such as the one in Figure 4-1 requires you to configure two security appliances, one on each side of the connection.

Implementing the Site-to-Site Scenario

This section describes how to configure the security appliance in a site-to-site VPN deployment, using example parameters from the remote-access scenario shown in Figure 4-1.

This section includes the following sections:

- Information to Have Available, page 4-2
- Configuring the Site-to-Site VPN, page 4-3

Information to Have Available

Before you begin the configuration procedure, gather the following information:

- IP address of the remote security appliance peer
- IP addresses of local hosts and networks permitted to use the tunnel to communicate with resources on the remote site
- IP addresses of remote hosts and networks permitted to use the tunnel to communicate with local resources

Configuring the Site-to-Site VPN

This section describes how to use the ASDM VPN Wizard to configure the security appliance for a site-to-site VPN.

This section includes the following topics:

- Starting ASDM, page 4-3
- Configuring the Security Appliance at the Local Site, page 4-4
- Providing Information About the Remote VPN Peer, page 4-6
- Configuring the IKE Policy, page 4-7
- Configuring IPsec Encryption and Authentication Parameters, page 4-9
- Specifying Hosts and Networks, page 4-10
- Viewing VPN Attributes and Completing the Wizard, page 4-11

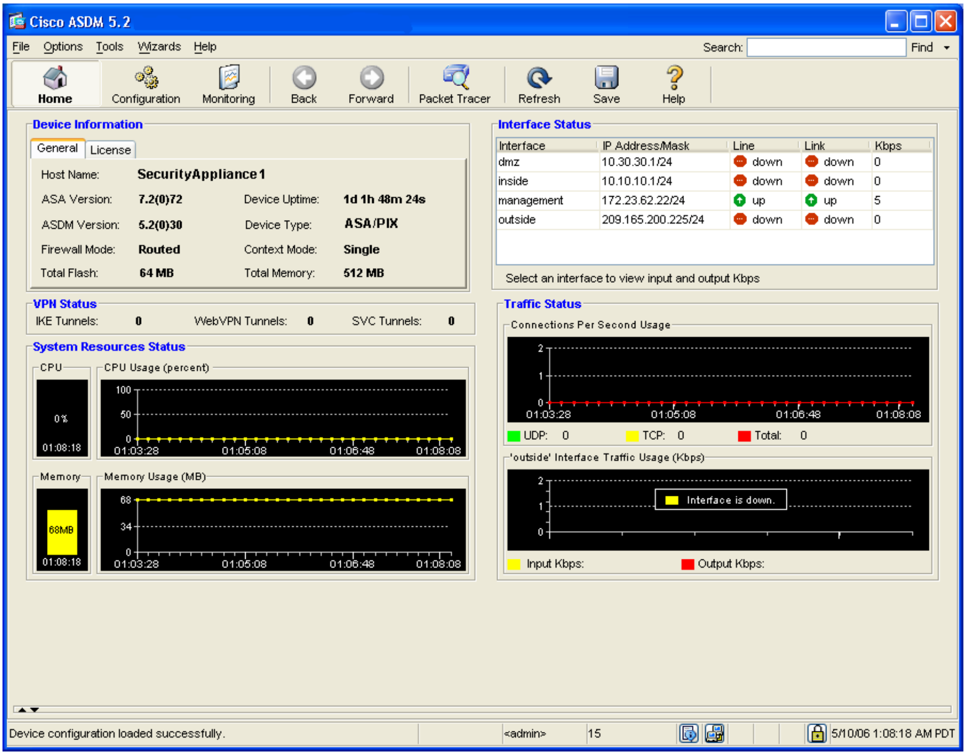
The following sections provide detailed instructions for how to perform each configuration step.

Starting ASDM

To run ASDM in a web browser, enter the factory default IP address in the address field: **https://192.168.1.1/admin/**.

Note Remember to add the "**s**" in "**https**" or the connection fails. HTTPS (HTTP over SSL) provides a secure connection between your browser and the security appliance.

The Main ASDM window appears.


Cisco ASDM 5.2
File Options Tools Wizards Help
Search: Find
Home Configuration Monitoring Back Forward Packet Tracer Refresh Save Help

Device Information

General | License

Host Name:	SecurityAppliance1		
ASA Version:	7.2(0)72	Device Uptime:	1d 1h 48m 24s
ASDM Version:	5.2(0)30	Device Type:	ASA/PIX
Firewall Mode:	Routed	Context Mode:	Single
Total Flash:	64 MB	Total Memory:	512 MB

Interface Status

Interface	IP Address/Mask	Line	Link	Kbps
dmz	10.30.30.1/24	down	down	0
inside	10.10.10.1/24	down	down	0
management	172.23.62.22/24	up	up	5
outside	209.165.200.225/24	down	down	0

Select an interface to view input and output Kbps

VPN Status

IKE Tunnels: 0 WebVPN Tunnels: 0 SVC Tunnels: 0

System Resources Status

Traffic Status

🟩 UDP: 0 🟨 TCP: 0 🟥 Total: 0

🟨 Input Kbps: 🟥 Output Kbps:

Device configuration loaded successfully. <admin> 15 5/10/06 1:08:18 AM PDT

153891

Configuring the Security Appliance at the Local Site

Note The security appliance at the first site is referred to as Security Appliance 1 from this point forward.

To configure the Security Appliance 1, perform the following steps:

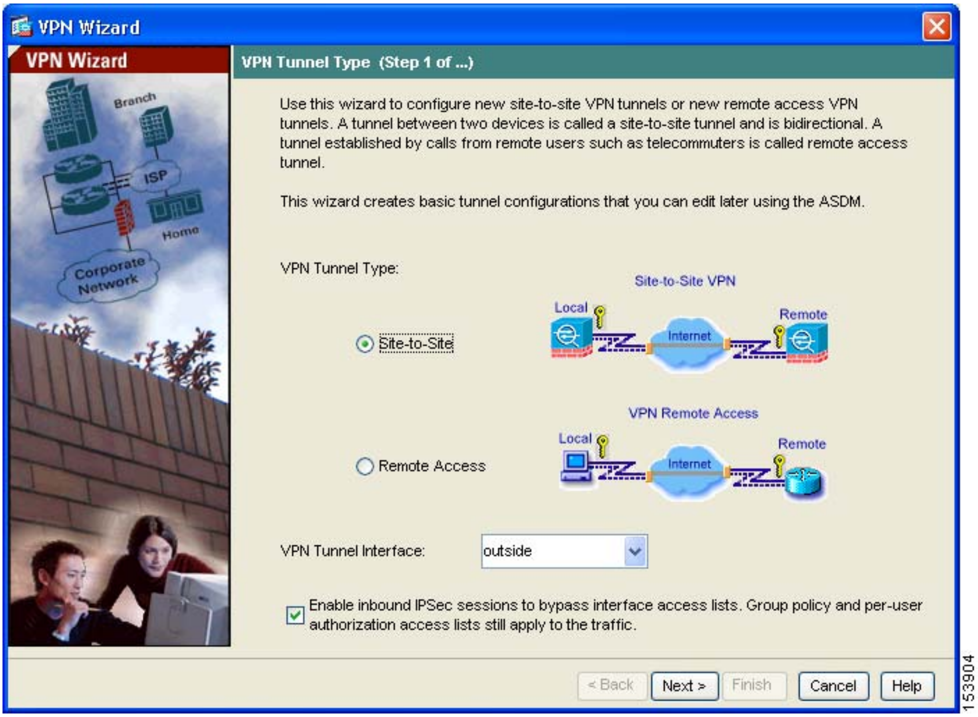
Step 1 In the main ASDM window, choose the VPN Wizard option from the Wizards drop-down menu. ASDM opens the first VPN Wizard screen.

In Step 1 of the VPN Wizard, perform the following steps:

a. Click the **Site-to-Site VPN** radio button.

Note The Site-to-Site VPN option connects two IPsec security gateways, which can include security appliances, VPN concentrators, or other devices that support site-to-site IPsec connectivity.

b. From the drop-down list, choose Outside as the enabled interface for the current VPN tunnel.



VPN Wizard

VPN Tunnel Type (Step 1 of ...)

Use this wizard to configure new site-to-site VPN tunnels or new remote access VPN tunnels. A tunnel between two devices is called a site-to-site tunnel and is bidirectional. A tunnel established by calls from remote users such as telecommuters is called remote access tunnel.

This wizard creates basic tunnel configurations that you can edit later using the ASDM.

VPN Tunnel Type:

● Site-to-Site

○ Remote Access

VPN Tunnel Interface: outside

☑ Enable inbound IPSec sessions to bypass interface access lists. Group policy and per-user authorization access lists still apply to the traffic.

c. Click **Next** to continue.

Providing Information About the Remote VPN Peer

The VPN peer is the system on the other end of the connection that you are configuring, usually at a remote site.

Note In this scenario, the remote VPN peer is referred to as Security Appliance 2 from this point forward.

In Step 2 of the VPN Wizard, perform the following steps:

Step 1 Enter the Peer IP Address (the IP address of Security Appliance 2, in this scenario 209.165.200.236) and a Tunnel Group Name (for example "Cisco").

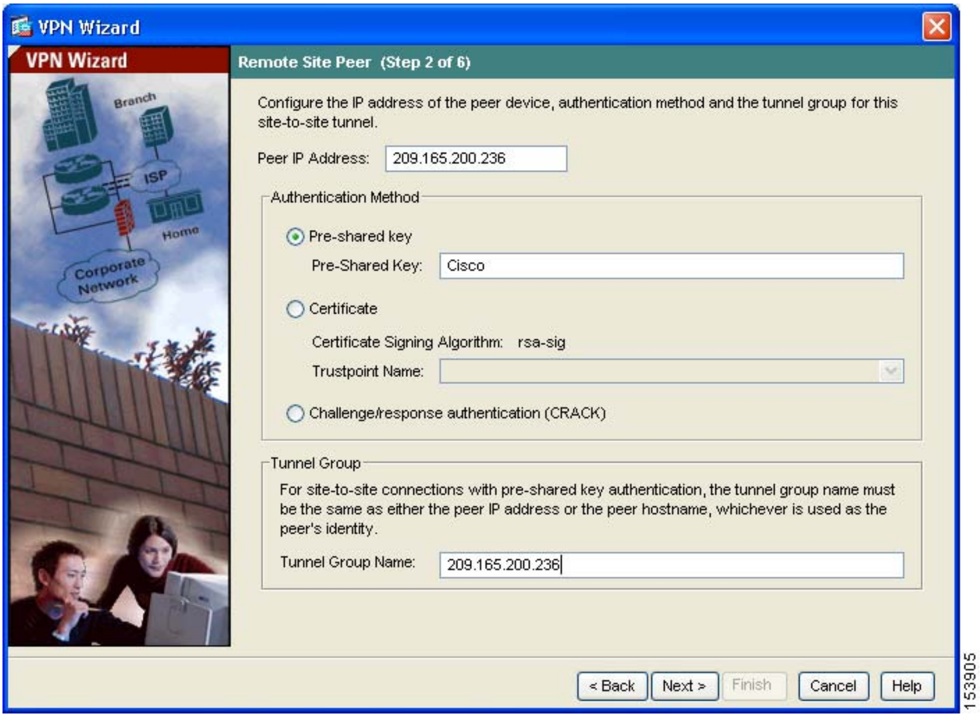
Step 2 Specify the type of authentication that you want to use by performing one of the following steps:

- To use a static preshared key for authentication, click the **Pre-Shared Key** radio button and enter a preshared key (for example, "Cisco"). This key is used for IPsec negotiations between the security appliances.

  Note When you configure Security Appliance 2 at the remote site, the VPN peer is Security Appliance 1. Be sure to enter the same preshared key (Cisco) that you use here.

- Click the **Challenge/Response Authentication** radio button to use that method of authentication.
- To use digital certificates for authentication, click the **Certificate** radio button, choose the Certificate Signing Algorithm from the drop-down list, and then choose a preconfigured trustpoint name from the drop-down list.

  If you want to use digital certificates for authentication but have not yet configured a trustpoint name, you can continue with the Wizard by using one of the other two options. You can revise the authentication configuration later using the standard ASDM screens.



Remote Site Peer (Step 2 of 6)

Configure the IP address of the peer device, authentication method and the tunnel group for this site-to-site tunnel.

Peer IP Address: 209.165.200.236

Authentication Method

● Pre-shared key

Pre-Shared Key: Cisco

○ Certificate

Certificate Signing Algorithm: rsa-sig

Trustpoint Name:

○ Challenge/response authentication (CRACK)

Tunnel Group

For site-to-site connections with pre-shared key authentication, the tunnel group name must be the same as either the peer IP address or the peer hostname, whichever is used as the peer's identity.

Tunnel Group Name: 209.165.200.236

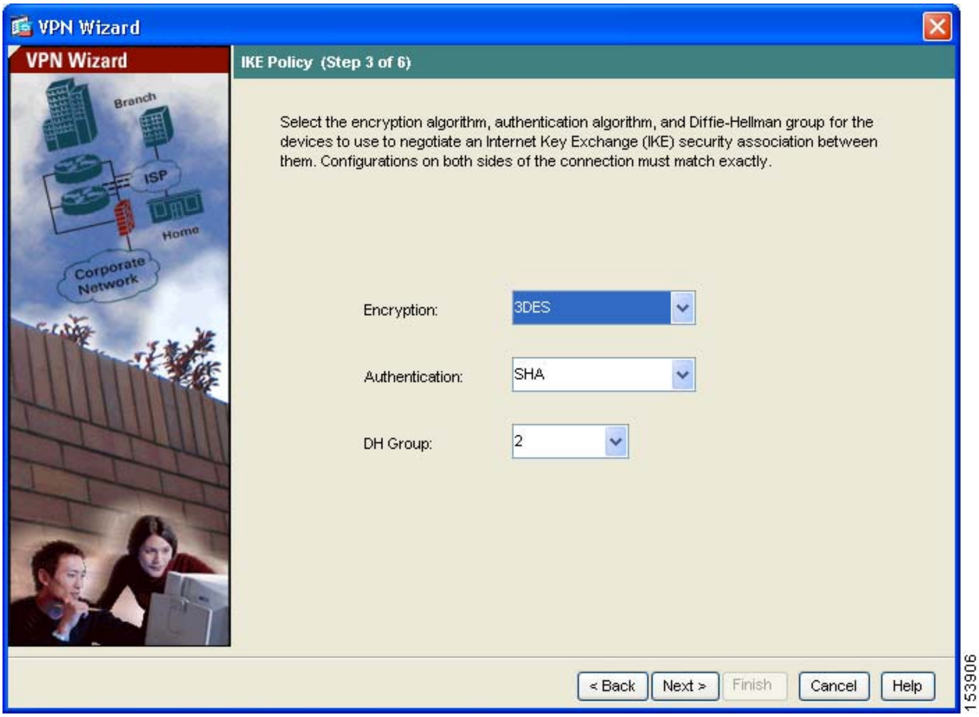
Step 3 Click **Next** to continue.

Configuring the IKE Policy

IKE is a negotiation protocol that includes an encryption method to protect data and ensure privacy; it is also an authentication method to ensure the identity of the peers. In most cases, the ASDM default values are sufficient to establish secure VPN tunnels between two peers.

In Step 3 of the VPN Wizard, perform the following steps:

Step 1 Click the Encryption (DES/3DES/AES), authentication algorithms (MD5/SHA), and the Diffie-Hellman group (1/2/5) used by the security appliance during an IKE security association.



IKE Policy (Step 3 of 6)

Select the encryption algorithm, authentication algorithm, and Diffie-Hellman group for the devices to use to negotiate an Internet Key Exchange (IKE) security association between them. Configurations on both sides of the connection must match exactly.

Encryption: 3DES

Authentication: SHA

DH Group: 2

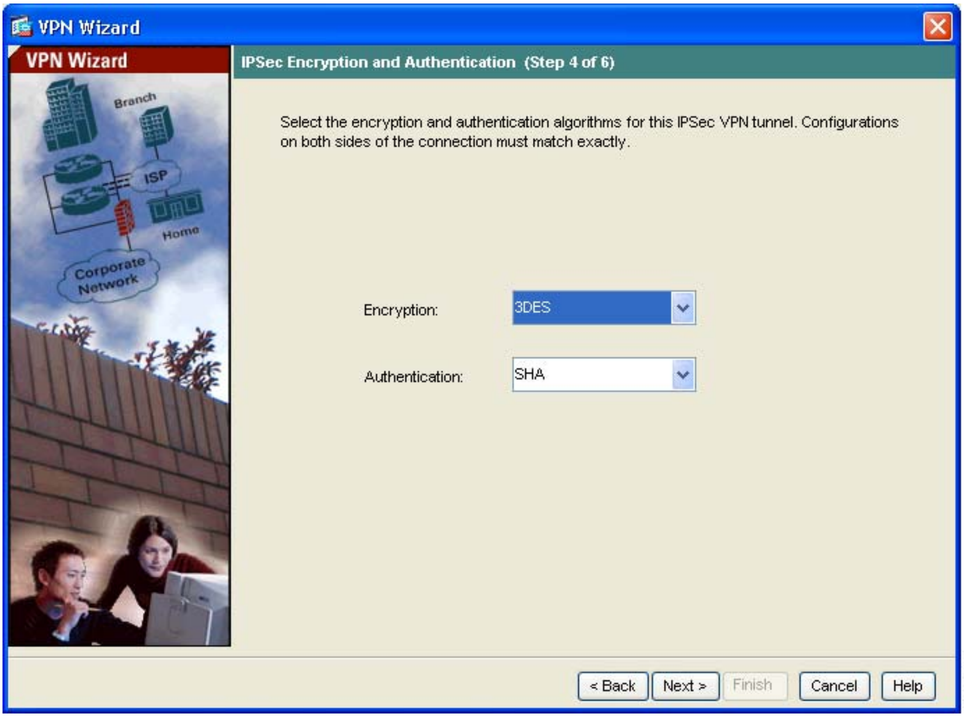
Note When configuring Security Appliance 2, enter the exact values for each of the options that you chose for Security Appliance 1. Encryption mismatches are a common cause of VPN tunnel failures and can slow down the process.

Step 2 Click **Next** to continue.

Configuring IPsec Encryption and Authentication Parameters

In Step 4 of the VPN Wizard, perform the following steps:

Step 1 Choose the Encryption algorithm (DES/3DES/AES) and authentication algorithm (MD5/SHA) from the drop-down lists.



IPSec Encryption and Authentication (Step 4 of 6)

Select the encryption and authentication algorithms for this IPSec VPN tunnel. Configurations on both sides of the connection must match exactly.

Encryption: 3DES

Authentication: SHA

Step 2 Click **Next** to continue.

Specifying Hosts and Networks

Identify hosts and networks at the local site that are permitted to use this IPsec tunnel to communicate with the remote-site peer. Add or remove hosts and networks dynamically by clicking **Add** or **Delete**, respectively. In the current scenario, traffic from Network A (10.10.10.0) is encrypted by Security Appliance 1 and transmitted through the VPN tunnel.

In addition, identify hosts and networks at the remote site to be allowed to use this IPsec tunnel to access local hosts and networks. Add or remove hosts and networks dynamically by clicking **Add** or **Delete** respectively. In this scenario, for Security Appliance 1, the remote network is Network B (10.20.20.0), so traffic encrypted from this network is permitted through the tunnel.

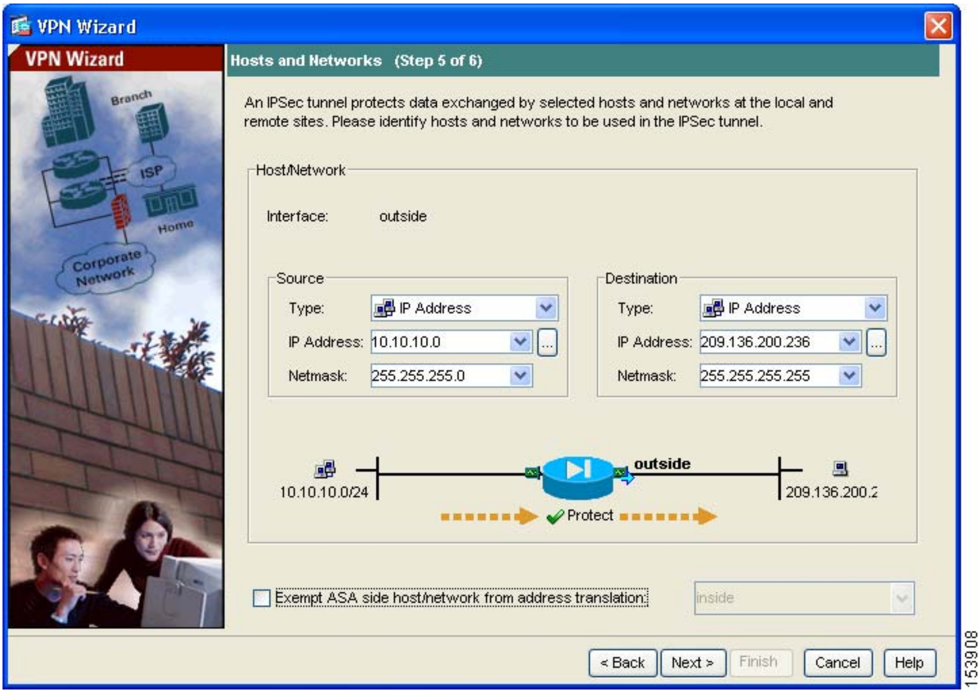
In Step 5 of the VPN Wizard, perform the following steps:

Step 1 In the Source area, choose IP Address from the Type drop-down list.

Step 2 Enter the local IP address and netmask in the IP Address and Netmask fields.

Step 3 In the Destination area, choose IP Address from the Type drop-down list.

Step 4 Enter the IP address and Netmask for the remote host or network.



VPN Wizard

Hosts and Networks (Step 5 of 6)

An IPSec tunnel protects data exchanged by selected hosts and networks at the local and remote sites. Please identify hosts and networks to be used in the IPSec tunnel.

Host/Network

Interface: outside

Source
Type: IP Address
IP Address: 10.10.10.0
Netmask: 255.255.255.0

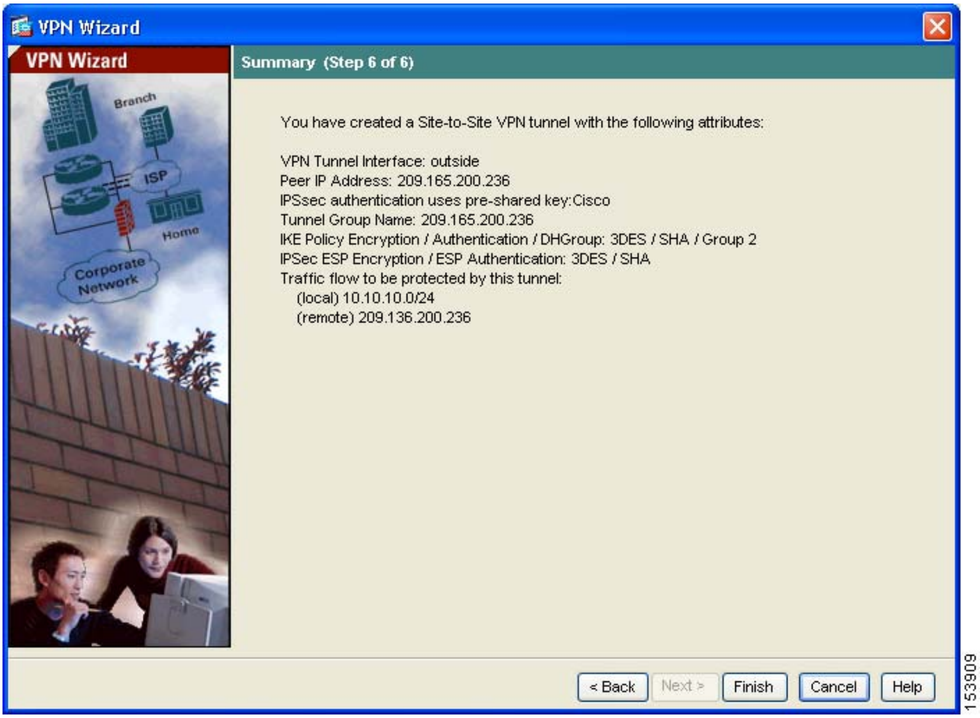
Destination
Type: IP Address
IP Address: 209.136.200.236
Netmask: 255.255.255.255

□ Exempt ASA side host/network from address translation: inside

Step 5 Click **Next** to continue.

Viewing VPN Attributes and Completing the Wizard

In Step 6 of the VPN Wizard, review the configuration list for the VPN tunnel you just created. If you are satisfied with the configuration, click **Finish** to apply the changes to the security appliance.



Summary (Step 6 of 6)

You have created a Site-to-Site VPN tunnel with the following attributes:

VPN Tunnel Interface: outside
Peer IP Address: 209.165.200.236
IPSsec authentication uses pre-shared key:Cisco
Tunnel Group Name: 209.165.200.236
IKE Policy Encryption / Authentication / DHGroup: 3DES / SHA / Group 2
IPSec ESP Encryption / ESP Authentication: 3DES / SHA
Traffic flow to be protected by this tunnel:
(local) 10.10.10.0/24
(remote) 209.136.200.236

Step 6 If you want the configuration changes to be saved to the startup configuration so that they are applied the next time the device starts, from the File menu, click **Save**.

Alternatively, ASDM prompts you to save the configuration changes permanently when you exit ASDM.

If you do not save the configuration changes, the old configuration takes effect the next time the device starts.

This concludes the configuration process for Security Appliance 1.

Configuring the Other Side of the VPN Connection

You have just configured the local security appliance. Now you need to configure the security appliance at the remote site.

At the remote site, configure the second security appliance to serve as a VPN peer. Use the procedure you used to configure the local security appliance, starting with the "Configuring the Security Appliance at the Local Site" section on page 4-4 and finishing with the "Viewing VPN Attributes and Completing the Wizard" section on page 4-11.

Note When configuring Security Appliance 2, enter the exact same values for each of the options that you selected for Security Appliance 1. Mismatches are a common cause of VPN configuration failures.

What to Do Next

If you are deploying the security appliance solely in a site-to-site VPN environment, you have completed the initial configuration. In addition, you may want to consider performing some of the following steps:

To Do This ...	See ...
Refine configuration and configure optional and advanced features	*Cisco Security Appliance Command Line Configuration Guide*
Learn about daily operations	*Cisco Security Appliance Command Reference* *Cisco Security Appliance Logging Configuration and System Log Messages*

You can configure the security appliance for more than one application. The following sections provide configuration procedures for other common applications of the security appliance.

To Do This ...	See ...
Configure the security appliance to protect a web server in a DMZ	Chapter 2, "Scenario: DMZ Configuration"
Configure a remote-access VPN	Chapter 3, "Scenario: IPsec Remote-Access VPN Configuration"

Obtaining a DES License or a 3DES-AES License

The Cisco PIX 515E security appliance is available either with a DES or 3DES-ASE license that provides encryption technology to enable specific features, such as secure remote management (SSH, ASDM, and so on), site-to-site VPN, and remote access VPN. The license is enabled through an encryption license key.

If you ordered your security appliance with a DES or 3DES-AES license, the encryption license key comes with the adaptive security appliance.

If you are a registered user of Cisco.com and would like to obtain a 3DES/AES encryption license, go to the following website:

http://www.cisco.com/go/license

If you are not a registered user of Cisco.com, go to the following website:

https://tools.cisco.com/SWIFT/Licensing/RegistrationServlet

Provide your name, e-mail address, and the serial number for the security appliance as it appears in the show version command output.

Note You will receive the new activation key for your security appliance within two hours of requesting the license upgrade.

For more information on activation key examples or upgrading software, see the *Cisco Security Appliance Command Line Configuration Guide*.

To use the activation key, perform the following steps:

	Command	Purpose
Step 1	`hostname#` **`show version`**	Shows the software release, hardware configuration, license key, and related uptime data.
Step 2	`hostname#` **`configure terminal`**	Enters global configuration mode.
Step 3	`hostname(config)#` **`activation-key`** *`activation-5-tuple-key`*	Updates the encryption activation key by replacing the *activation-4-tuple-key* variable with the activation key obtained with your new license. The *activation-5-tuple-key* variable is a five-element hexadecimal string with one space between each element. An example is 0xe02888da 0x4ba7bed6 0xf1c123ae 0xffd8624e. The “0x” is optional; all values are assumed to be hexadecimal.
Step 4	`hostname(config)#` **`exit`**	Exits global configuration mode.
Step 5	`hostname#` **`copy running-config startup-config`**	Saves the configuration.
Step 6	`hostname#` **`reload`**	Reboots the security appliance and reloads the configuration.