Section 4: Advanced Configuration

We have now covered the basic configuration and delved into AAA services on the ASA. In this section, we cover some of the more advanced features of the ASA that break it away from a traditional stateful firewall.

Modular Policy Framework

The Modular Policy Framework (MPF) is an advanced feature of the ASA that provides the security administrator with greater granularity and more flexibility when configuring network policies. The security administrator is able to do the following:

- Define flows of traffic
- Associate security policies to traffic flows
- Enable a set of security policies on an interface or globally

Modular policies consist of the following components:

- Class maps
- Policy maps
- Service policies

Class Maps

A class map is a configuration element that is used to match something. A class map is similar in operation to an access control list (ACL), but with class maps you can match other items that ACLs cannot match.

Class maps can define a class of traffic by matching via the follow command keywords:

- **access list**: An entry in an ACL.
- **any:** Any packet.
- **default inspection traffic**: The default TCP and UDP ports used by all applications that the security appliance can inspect. You can specify an ACL-based class along with the default inspection traffic class to narrow the matched traffic.
- **dscp**: A differentiated services code point (DSCP) value in the IP header defined by the Internet Engineering Task Force (IETF).
- **flow**: All traffic going to a unique IP destination address.
- **port**: Traffic using the TCP or UDP destination port or a contiguous range of ports.
- **precedence**: The precedence value represented by the Type of Service (ToS) byte in the IP header.
- **rtp:** Real-Time Transport Protocol (RTP) destination port.
- **tunnel-group**: VPN tunnel traffic. If you use this criterion, you can also configure the class to match a specific destination IP address within the tunnel group.

Class maps are assigned to policy maps.

Policy Maps

Class maps are assigned to policy maps. The class map determines what is matched, and the policy map associates one or more actions with a class of traffic.

The policy actions that can be configured are as follows:

- Forward the traffic flow to the Security Services Module (when present) for intrusion protection or content security and control services by creating an intrusion prevention system (IPS) or a content security and control (CSC) policy.
- Perform a specified protocol inspection or inspections by creating an inspection policy.
- Police the bandwidth used by the specified flow by creating a quality of service (QoS) police policy.
- Direct the flow to the low-latency queue by creating a QoS priority policy.
- Set connection parameters on the flows by creating a set connection policy.

Service Policies

The service policy activates a policy map on a targeted interface or globally on all interfaces. Service policies are represented as service policy rules in the ASDM.

To configure a service policy rule, you first need to navigate to **Firewall > Service Policy Rules**. You will see a screen that shows the default service policy rule (see Figure 39).

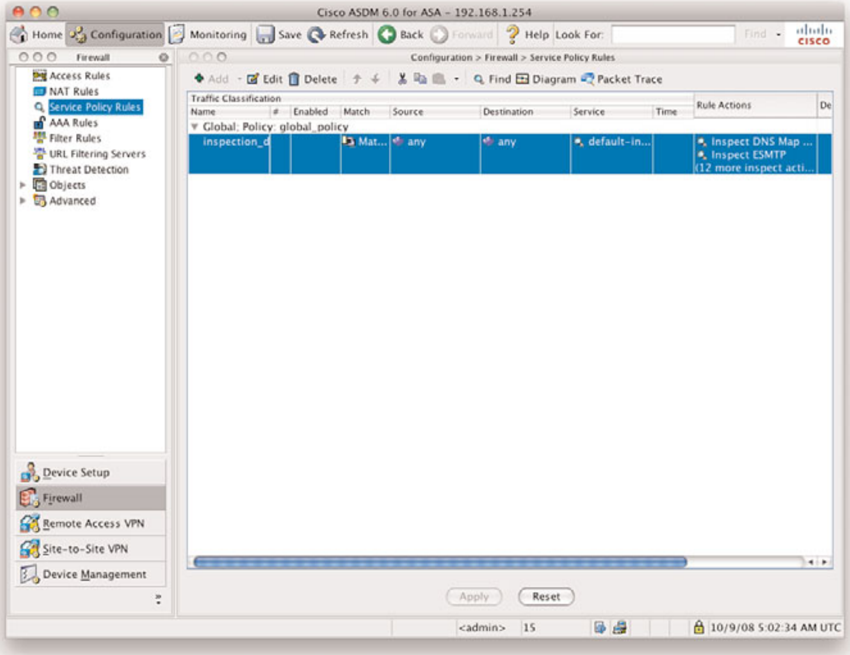
Clicking **Add** launches the Add Service Policy Rule Wizard. Three steps to this wizard configure a service policy rule:

Step 1: Configure a service policy.

Step 2: Configure the traffic classification criteria for the service policy rule.

Step 3: Configure actions on the traffic classified by the service policy rule.

FIGURE 39
Service Policy Rules

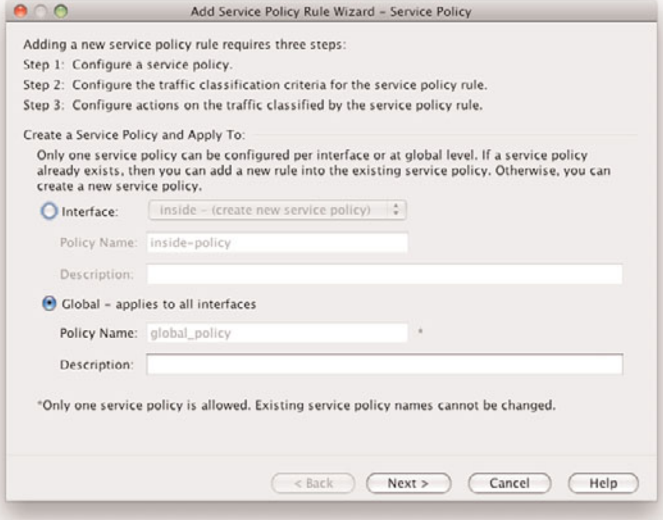


Traffic Classification								Rule Actions	De
Name	#	Enabled	Match	Source	Destination	Service	Time		
▼ Global; Policy: global_policy									
inspection_d			Mat...	any	any	default-in...		Inspect DNS Map ... Inspect ESMTP (12 more inspect acti...	

Step 1: Configure a Service Policy

In Step 1, you have to give the service policy a name and either apply it to a specific interface or apply it globally, which applies the policy on all interfaces. You can also provide a description of the service policy. You can see the screen in Figure 40.

FIGURE 40
Service Policy Step 1



Add Service Policy Rule Wizard – Service Policy

Adding a new service policy rule requires three steps:
Step 1: Configure a service policy.
Step 2: Configure the traffic classification criteria for the service policy rule.
Step 3: Configure actions on the traffic classified by the service policy rule.

Create a Service Policy and Apply To:

Only one service policy can be configured per interface or at global level. If a service policy already exists, then you can add a new rule into the existing service policy. Otherwise, you can create a new service policy.

○ Interface: inside – (create new service policy)
Policy Name: inside-policy
Description:

● Global – applies to all interfaces
Policy Name: global_policy *
Description:

*Only one service policy is allowed. Existing service policy names cannot be changed.

Step 2: Configure the Traffic Classification Criteria for the Service Policy Rule

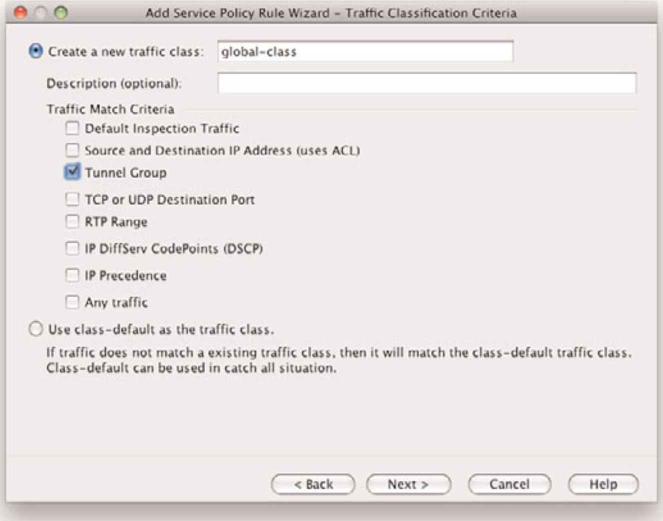
You are now asked to either create a new traffic class or use an existing traffic class.

When creating a new traffic class, you must enter the name for the new traffic class and supply a description. You have the option to match traffic against the criteria we covered earlier in this section about class maps.

This is shown in Figure 41.

When you select one of the traffic-match criteria, the next screen you are shown is the configuration screen for that criteria. We chose Tunnel Group as the traffic-match criteria, and Figure 42 shows that you have the option now to select a tunnel group to match.

FIGURE 41
Traffic Classification



Add Service Policy Rule Wizard - Traffic Classification Criteria

● Create a new traffic class: global-class

Description (optional):

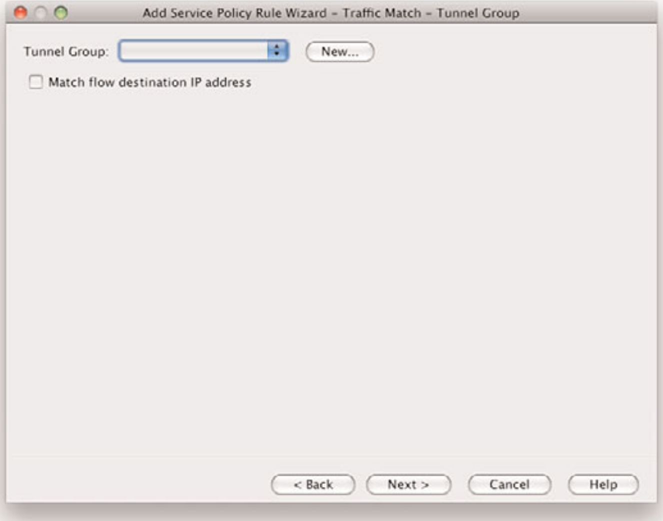
Traffic Match Criteria

- □ Default Inspection Traffic
- □ Source and Destination IP Address (uses ACL)
- ☑ Tunnel Group
- □ TCP or UDP Destination Port
- □ RTP Range
- □ IP DiffServ CodePoints (DSCP)
- □ IP Precedence
- □ Any traffic

○ Use class-default as the traffic class.

If traffic does not match a existing traffic class, then it will match the class-default traffic class. Class-default can be used in catch all situation.

FIGURE 42
Tunnel Group



Add Service Policy Rule Wizard - Traffic Match - Tunnel Group

Tunnel Group:

□ Match flow destination IP address

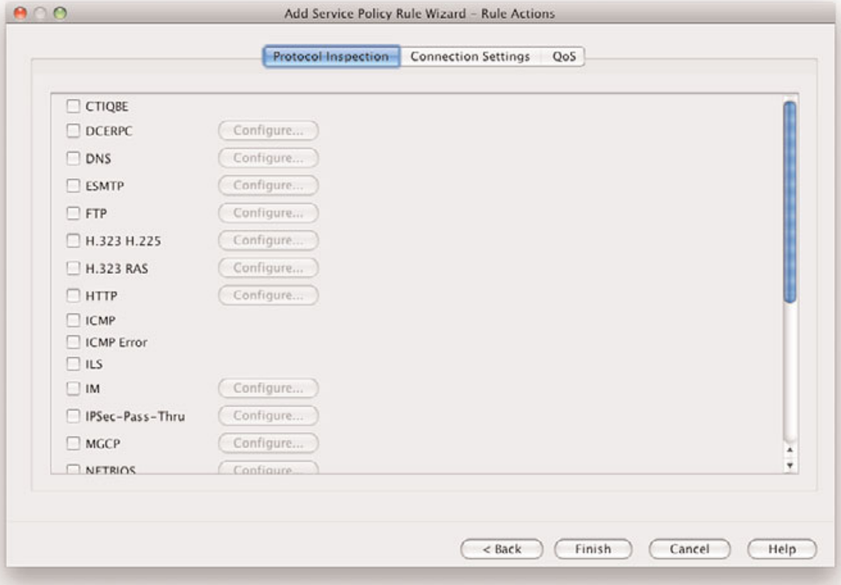
Step 3: Configure Actions on the Traffic Classified by the Service Policy Rule

The next screen is the Rule Actions screen. Three tabs display at the top of the screen:

- Protocol Inspection
- Connection Settings
- QoS

The Protocols Inspection tab enables you to configure protocol-specific inspections if the traffic-match criteria allow it. Figure 43 shows this screen.

FIGURE 43
Protocol Inspection

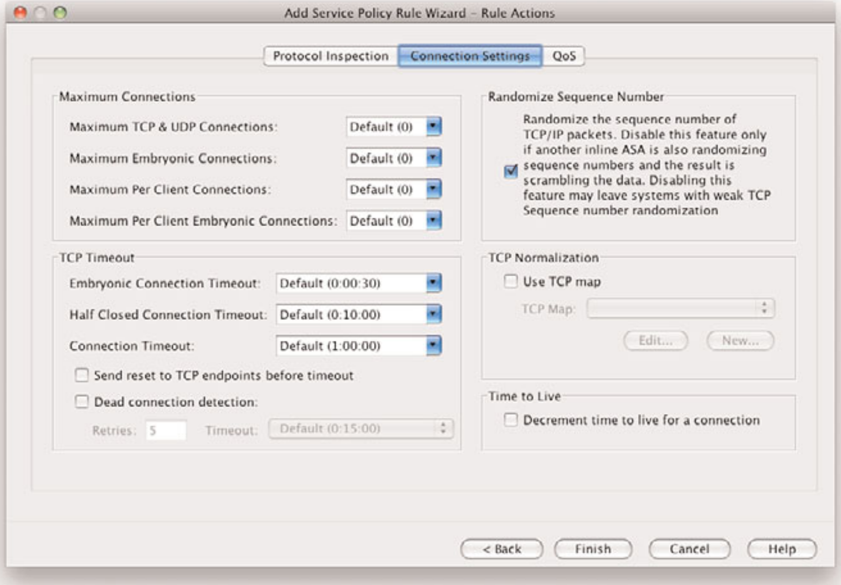


□ CTIQBE
□ DCERPC
□ DNS
□ ESMTP
□ FTP
□ H.323 H.225
□ H.323 RAS
□ HTTP
□ ICMP
□ ICMP Error
□ ILS
□ IM
□ IPSec-Pass-Thru
□ MGCP
□ NETBIOS

The Connection Settings tab enables you to set the maximum connections for TCP and UDP connections and the TCP timeout. You can also choose to randomize the TCP sequence number and enable TCP normalization.

Figure 44 shows this screen.

FIGURE 44
Connection Settings



Maximum Connections

Maximum TCP & UDP Connections: Default (0)
Maximum Embryonic Connections: Default (0)
Maximum Per Client Connections: Default (0)
Maximum Per Client Embryonic Connections: Default (0)

TCP Timeout

Embryonic Connection Timeout: Default (0:00:30)
Half Closed Connection Timeout: Default (0:10:00)
Connection Timeout: Default (1:00:00)
□ Send reset to TCP endpoints before timeout
□ Dead connection detection:
Retries: 5 Timeout: Default (0:15:00)

Randomize Sequence Number

☑ Randomize the sequence number of TCP/IP packets. Disable this feature only if another inline ASA is also randomizing sequence numbers and the result is scrambling the data. Disabling this feature may leave systems with weak TCP Sequence number randomization

TCP Normalization

□ Use TCP map
TCP Map:

Time to Live

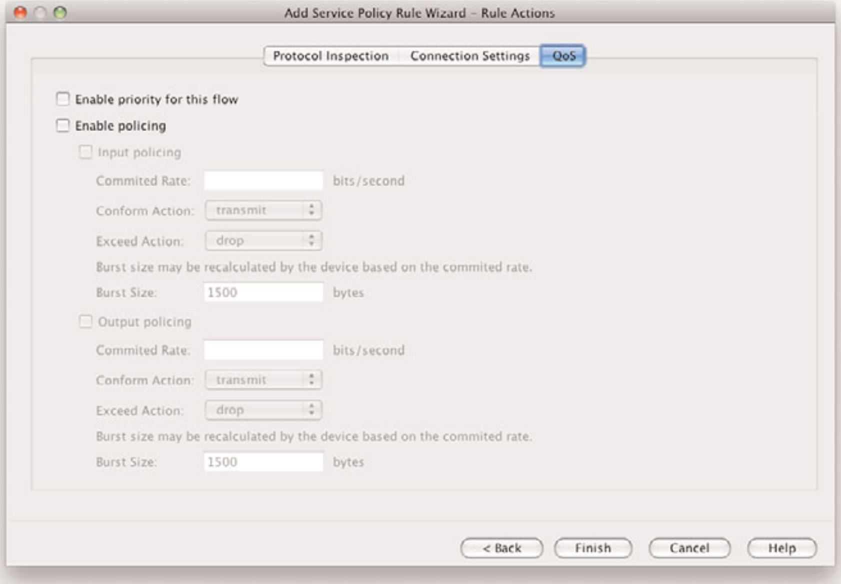
□ Decrement time to live for a connection

You can use the QoS tab to enable priority and policing for the traffic flow. When policing is selected, you can apply QoS settings to the flow to restrict the amount of bandwidth the flow is provided when traversing the interfaces of the firewall.

You can use this setting to reduce potential denial-of-service (DoS) attempts, because you can limit the amount of bandwidth allocated to a protocol.

Figure 45 shows this screen.

FIGURE 45
QoS



Add Service Policy Rule Wizard - Rule Actions

□ Enable priority for this flow

□ Enable policing

□ Input policing

Commited Rate: bits/second

Conform Action: transmit

Exceed Action: drop

Burst size may be recalculated by the device based on the commited rate.

Burst Size: 1500 bytes

□ Output policing

Commited Rate: bits/second

Conform Action: transmit

Exceed Action: drop

Burst size may be recalculated by the device based on the commited rate.

Burst Size: 1500 bytes

You click **Finish** to apply the service policy rule. It is added to the ASA when you click **Apply** from the main Service Policy Rules window on the ASDM.

Threat Detection

Threat detection on the ASA is similar in operation to an IPS.

Two types of threat detection are available on the ASA:

- Basic threat detection
- Scanning threat detection

Basic threat detection is enabled by default. You can enable both basic and scanning threat detection independently of each other. One is not dependent on the other, and therefore you can have one, both, or neither configured on your ASA.

Basic Threat Detection

The security appliance basic threat detection feature provides threat-related drop statistics by monitoring the rate of dropped packets and security events per second (eps).

When the rate of dropped packets or security events exceeds established thresholds, basic threat detection generates a syslog message.

This enables you to detect activity that might be related to an attack, such as a DoS attack.

The ASA basic threat detection provides threat-related drop statistics by monitoring the following events:

- Access list denials
- Bad packet format
- Exceeded connection limits
- Detection of DoS attacks
- Failed basic firewall checks
- Detection of suspicious Internet Control Message Protocol (ICMP) packets
- Packets failing application inspection
- Interface overload
- Detection of scanning attacks
- Detection of incomplete sessions, such as TCP SYN attacks or no data UDP session attacks

NOTE
Basic threat detection is enabled by default on the ASA. There is a minimal impact on performance when there are drops or potential threats on the ASA.

The ASA tracks two types of rates for each monitored events: the average rate and burst rate.

The average rate is the average rate over a time interval, and the burst rate is the one-tenth of the average rate or 10 seconds, whichever is the highest.

Syslog messages are generated when either of the rates for the monitored events is exceeded.

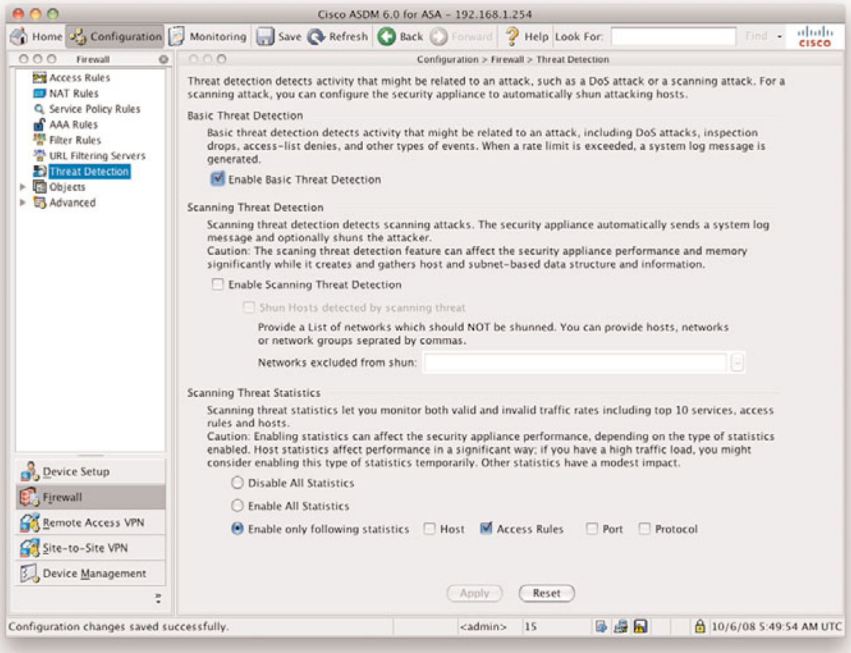
The following table shows the default threshold rates for basic threat detection.

Default Threshold Rates for Basic Threat Detection

Packet Drop Reason	Average Rate	Burst Rate
DoS attack detected Bad packet format Connection limits exceeded Suspicious ICMP packets	100 drops per second over the last 600 seconds	400 drops per second over the last 10-second period
Scanning attack detected	5 drops per second over the last 600 seconds	10 drops per second over the last 10-second period
Incomplete session	100 drops per second over the last 600 seconds	200 drops per second over the last 10-second period
Denial by access list	400 drops per second over the last 600 seconds	800 drops per second over the last 10-second period
Basic firewall checks failed Packet failed application inspection	400 drops per second over the last 600 seconds	1600 drops per second over the last 10-second period
Interface overload	2000 drops per second over the last 600 seconds	8000 drops per second over the last 10-second period

Basic threat detection is configured from the **Firewall > Threat Detection** screen. This is shown in Figure 46.

FIGURE 46
Threat Detection



Configuration > Firewall > Threat Detection

Threat detection detects activity that might be related to an attack, such as a DoS attack or a scanning attack. For a scanning attack, you can configure the security appliance to automatically shun attacking hosts.

Basic Threat Detection

Basic threat detection detects activity that might be related to an attack, including DoS attacks, inspection drops, access-list denies, and other types of events. When a rate limit is exceeded, a system log message is generated.

☑ Enable Basic Threat Detection

Scanning Threat Detection

Scanning threat detection detects scanning attacks. The security appliance automatically sends a system log message and optionally shuns the attacker.
Caution: The scaning threat detection feature can affect the security appliance performance and memory significantly while it creates and gathers host and subnet-based data structure and information.

□ Enable Scanning Threat Detection

□ Shun Hosts detected by scanning threat

Provide a List of networks which should NOT be shunned. You can provide hosts, networks or network groups seprated by commas.

Networks excluded from shun:

Scanning Threat Statistics

Scanning threat statistics let you monitor both valid and invalid traffic rates including top 10 services, access rules and hosts.
Caution: Enabling statistics can affect the security appliance performance, depending on the type of statistics enabled. Host statistics affect performance in a significant way; if you have a high traffic load, you might consider enabling this type of statistics temporarily. Other statistics have a modest impact.

○ Disable All Statistics
○ Enable All Statistics
● Enable only following statistics □ Host ☑ Access Rules □ Port □ Protocol

Configuration changes saved successfully. <admin> 15 10/6/08 5:49:54 AM UTC

You can see from Figure 46 that basic threat detection is enabled on this ASA. To disable it, uncheck the check box.

Tuning of the basic threat detection is performed in the CLI configuration with the **threat-detection** command. This is beyond the scope of the SNAF exam.

Scanning Threat Detection

The scanning threat detection feature of the ASA is concerned with hosts performing network scans against networks protected by the ASA.

Network reconnaissance scans, or port scans as they are commonly known, are normally a precursor to an attacker launching a full-blown attack on a system. The first step is normally to identify which ports and services are available on a system before enumerating and fingerprinting these ports to check for known vulnerabilities. A known vulnerability is always the preferred route in for attackers because they can use simple attack scripts to gain access and then escalate privileges.

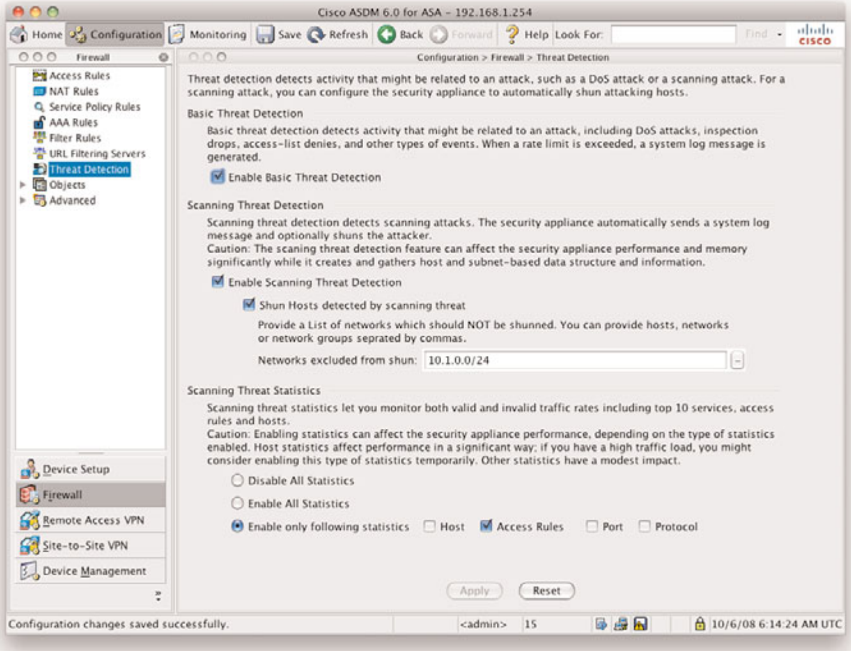
When performing scanning threat detection, the ASA utilizes an extensive database of host statistics to generate syslog messages when a host is identified as either an attacker, or a target.

As with basic threat detection, scanning threat detection is configured from the **Firewall > Threat Detection** screen.

We have now enabled scanning threat detection and selected to shun hosts detected by scanning threat.

Figure 47 shows the Threat Detection configuration window with both basic threat detection and scanning threat detection enabled.

NOTE
The scanning threat detection feature can significantly affect the performance and memory use of the ASA while it creates and gathers the host- and subnet-based data structure and information. Performance impact varies depending on the ASA platform.



Threat detection detects activity that might be related to an attack, such as a DoS attack or a scanning attack. For a scanning attack, you can configure the security appliance to automatically shun attacking hosts.

Basic Threat Detection

Basic threat detection detects activity that might be related to an attack, including DoS attacks, inspection drops, access-list denies, and other types of events. When a rate limit is exceeded, a system log message is generated.

☑ Enable Basic Threat Detection

Scanning Threat Detection

Scanning threat detection detects scanning attacks. The security appliance automatically sends a system log message and optionally shuns the attacker.
Caution: The scaning threat detection feature can affect the security appliance performance and memory significantly while it creates and gathers host and subnet-based data structure and information.

☑ Enable Scanning Threat Detection

☑ Shun Hosts detected by scanning threat

Provide a List of networks which should NOT be shunned. You can provide hosts, networks or network groups seprated by commas.

Networks excluded from shun: 10.1.0.0/24

Scanning Threat Statistics

Scanning threat statistics let you monitor both valid and invalid traffic rates including top 10 services, access rules and hosts.
Caution: Enabling statistics can affect the security appliance performance, depending on the type of statistics enabled. Host statistics affect performance in a significant way; if you have a high traffic load, you might consider enabling this type of statistics temporarily. Other statistics have a modest impact.

○ Disable All Statistics

○ Enable All Statistics

● Enable only following statistics □ Host ☑ Access Rules □ Port □ Protocol

Configuration changes saved successfully. <admin> 15 10/6/08 6:14:24 AM UTC

FIGURE 47
Threat Detection: Basic and Scanning

When a shun is activated, all current connections from the malicious host are dropped, and all future connections are blocked at the outside interface of the ASA. Shuns are dynamic in nature, and are not stored as a part of the configuration. If the security appliance loses power or reloads, any active shuns are lost.

You can specify a network, or network object, that will *not* be shunned. In the example, we have set that 10.1.0.0/24 will not be shunned. This setting is useful for entering networks that should never be blocked, such as testing partners or third-party support organizations.

Transparent Firewalling

In Section 2, we mentioned the two modes of operation for the Cisco ASA: routed and transparent.

Routed mode is the default mode, and this is where the ASA acts as a Layer 3 device, requiring an IP address on each interface that is from a different Layer 3 subnet. The ASA operates like a router.

Transparent mode is where the ASA acts like a Layer 2 bridge. The ASA is based on MAC addresses, and it will no longer sit on the perimeter between subnets; instead, it will act as a transparent bridge. An ASA running in transparent mode differs from routed mode in the following ways:

- Supports only two interfaces
- Requires only one IP address
- Bridges packets from one interface/VLAN to the other
- Performs MAC address lookups rather than routing table lookups
- Can pass traffic that cannot be passed by a security appliance in routed mode

The following are limitations that you must consider when implementing an ASA in transparent mode:

- Dynamic DNS is not supported.
- Dynamic routing protocols are not supported.
- IPv6 is not supported.
- DHCP Relay is not supported.
- QoS is not supported.
- Multicast is not supported.
- Virtual private network (VPN) termination is not supported.

One of the main advantages of using an ASA in transparent mode is that you can place the ASA in the network without re-addressing. This makes the firewall a viable solution where the infrastructure already exists and re-addressing would prove troublesome.

We will now look at how to configure the ASA as a transparent firewall using both the CLI and the ASDM.

Transparent Firewall Configuration: CLI

From the command line, you can verify what the current firewall mode is with the **show firewall** command:

```
ciscoasa#show firewall
Firewall mode: Router
```

This shows that the current firewall is in routed mode. We can switch the ASA to transparent mode with the following command:

```
ciscoasa(config)#firewall transparent
```

NOTE

When switching modes between routed and transparent, the ASA will clear the configuration. Therefore, it is important that you have a backup of the current configuration. The ASA provides no warning or no confirmation, so this command can be very dangerous if used incorrectly. So, you should also change the mode while connected via the console cable. A Secure Shell (SSH) or Telnet connection to the ASA will result in a loss of connection if the firewall mode is changed.

Checking the current firewall mode now shows the following:

```
ciscoasa#show firewall
Firewall mode: Transparent
```

The ASA is now in transparent mode. If you now check the running configuration, you will see that all the interfaces will be in a shutdown state, with the entire VLAN, interface, and IP configuration that we have previously entered absent.

The first configuration step with transparent mode is to assign the management IP address. Because the ASA does not now participate in IP routing, we have to give the ASA an IP address so that we can access it via SSH and the ASDM for management.

Let's use the same IP address as before, 192.168.1.254, but this time it will be as the management IP address. We configure this with the following command.

```
ciscoasa(config)#ip address 192.168.1.254 255.255.255.0
```

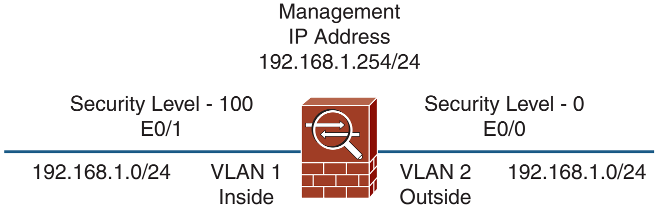
This sets the management IP address to be 192.168.1.254/24. We can use the **show ip address** command to verify this:

```
ciscoasa#show ip address
Management System IP Address:
        ip address 192.168.1.254 255.255.255.0
Management Current IP Address:
        ip address 192.168.1.254 255.255.255.0
```

We now need to configure the two interfaces that we are going to use with the ASA. For ease of use, we will call these the default inside and outside interfaces, as covered in Section 2.

Note that although the inside and outside interfaces are on the same subnet, they have to be on different VLANs; otherwise, the ASA will not pass traffic. Figure 48 shows the change to the topology that we are using so that the ASA in our example will be used in transparent mode.

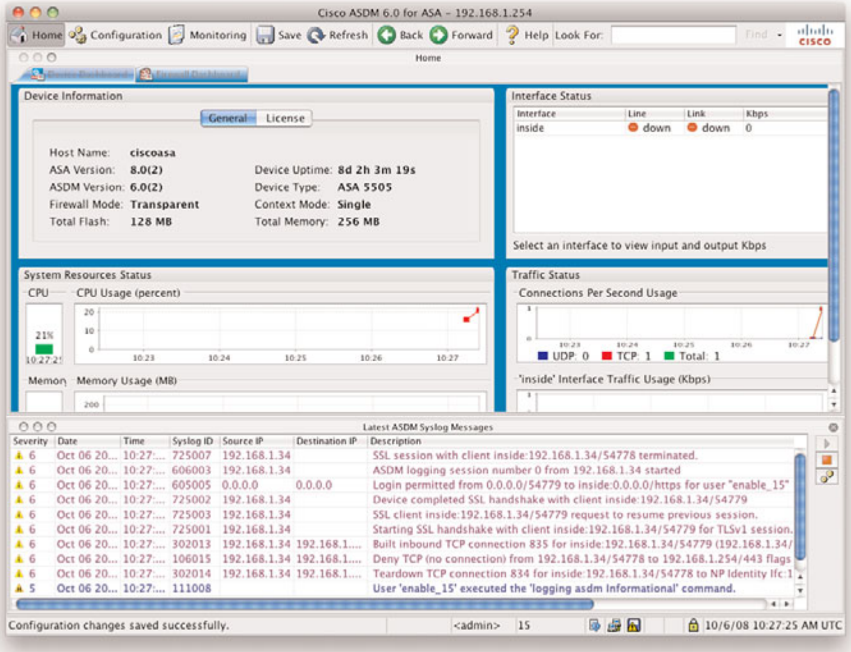
FIGURE 48
Transparent Mode Topology



We now have to follow the steps outlined in Section 2 to set up the ASA so that we can access ASDM. In brief, we need to enable and configure an interface and enable the HTTP server on the ASA. When that is completed, you will be able to connect to the ASDM using the 192.168.1.254 management address that we configured.

Figure 49 shows us connected again to the ASDM. Notice that the firewall mode is shown as transparent.

FIGURE 49
ASDM: Transparent Mode



```
Host Name:      ciscoasa
ASA Version:    8.0(2)          Device Uptime:  8d 2h 3m 19s
ASDM Version:   6.0(2)          Device Type:    ASA 5505
Firewall Mode:  Transparent     Context Mode:   Single
Total Flash:    128 MB          Total Memory:   256 MB
```

Interface	Line	Link	Kbps
inside	● down	● down	0

Select an interface to view input and output Kbps

UDP: 0 TCP: 1 Total: 1

```
Severity  Date         Time       Syslog ID  Source IP     Destination IP  Description
6         Oct 06 20... 10:27:...  725007     192.168.1.34                  SSL session with client inside:192.168.1.34/54778 terminated.
6         Oct 06 20... 10:27:...  606003     192.168.1.34                  ASDM logging session number 0 from 192.168.1.34 started
6         Oct 06 20... 10:27:...  605005     0.0.0.0       0.0.0.0         Login permitted from 0.0.0.0/54779 to inside:0.0.0.0/https for user "enable_15"
6         Oct 06 20... 10:27:...  725002     192.168.1.34                  Device completed SSL handshake with client inside:192.168.1.34/54779
6         Oct 06 20... 10:27:...  725003     192.168.1.34                  SSL client inside:192.168.1.34/54779 request to resume previous session.
6         Oct 06 20... 10:27:...  725001     192.168.1.34                  Starting SSL handshake with client inside:192.168.1.34/54779 for TLSv1 session.
6         Oct 06 20... 10:27:...  302013     192.168.1.34  192.168.1....   Built inbound TCP connection 835 for inside:192.168.1.34/54779 (192.168.1.34/
6         Oct 06 20... 10:27:...  106015     192.168.1.34  192.168.1....   Deny TCP (no connection) from 192.168.1.34/54778 to 192.168.1.254/443 flags
6         Oct 06 20... 10:27:...  302014     192.168.1.34  192.168.1....   Teardown TCP connection 834 for inside:192.168.1.34/54778 to NP Identity Ifc:1
5         Oct 06 20... 10:27:...  111008                                   User 'enable_15' executed the 'logging asdm informational' command.
```

Configuration changes saved successfully.   <admin>   15   10/6/08 10:27:25 AM UTC

We are now going to configure the transparent firewall in ADSM.

If you need to switch back to router mode, you must use the **no firewall transparent** command to return to the original routed mode of the ASA:

```
ciscoasa(config)#no firewall transparent
```

Checking the current firewall mode now shows the following:

```
ciscoasa#show firewall
Firewall mode: Router
```

Transparent Firewall Configuration: ASDM

Once you are connected to the ASDM, you will notice that some of the configuration options available when the ASA was in routed mode are not available any more. When the ASA is in transparent mode, there is limited functionality and new functionality such as the ability to create Ethertype rules.

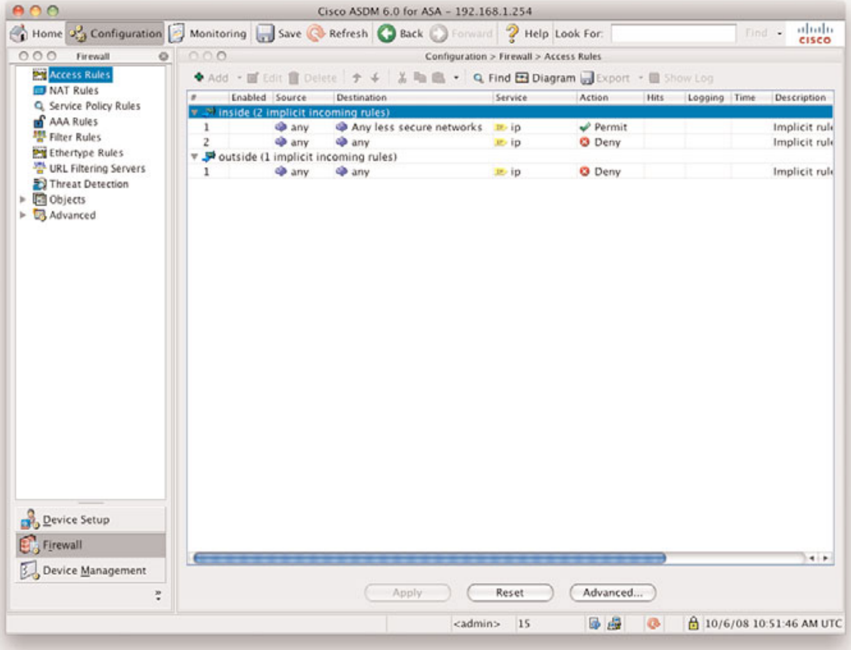
Adding an access rule on a transparent firewall is the same as adding an access rule on a routed firewall. You do it from the **Firewall > Access Rules** screen, and the format is the same for a transparent ASA as for a routed ASA.

Figure 50 shows the default access rules for the ASA in transparent mode.

Note that these default rules are the same as with a routed ASA. Therefore, the Adaptive Security Algorithm still applies to the security level, allowing traffic only to flow in one direction by default (without the addition of access rules to permit it).

We are now going to look at two functions that you can perform with the ASA in transparent mode that you cannot do in routed mode. These are permitting multicast and broadcast traffic through the ASA and configuring an Ethertype ACL.

FIGURE 50
Access Rules:
Transparent Mode



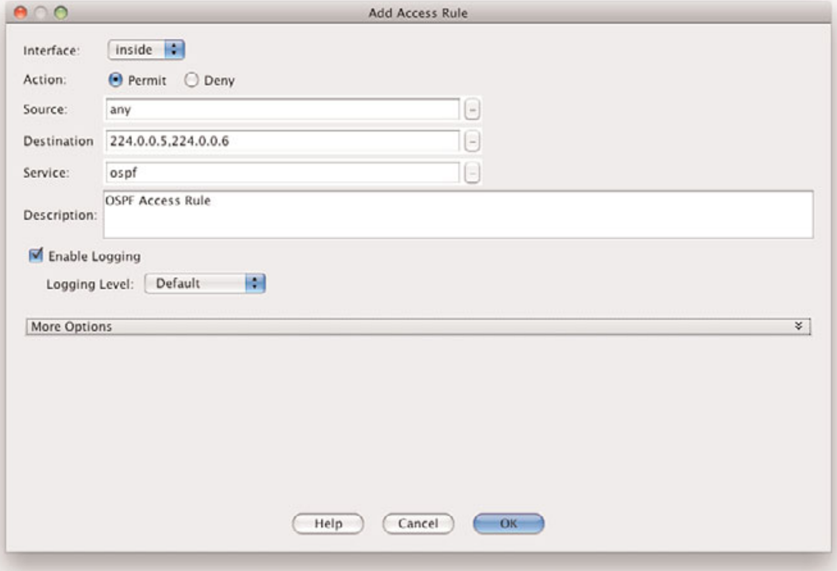
#	Enabled	Source	Destination	Service	Action	Hits	Logging	Time	Description
inside (2 implicit incoming rules)									
1		any	Any less secure networks	ip	✓ Permit				Implicit rul
2		any	any	ip	Deny				Implicit rul
outside (1 implicit incoming rules)									
1		any	any	ip	Deny				Implicit rul

Permitting Multicast and Broadcast Traffic

Because the ASA is now operating as a bridge, it is possible to pass multicast and broadcast traffic through it. This is good for passing traffic such as dynamic routing protocols, DHCP, and multicast streams, all of which cannot pass through a traditional routed ASA.

Let’s create an access rule to permit Open Shortest Path First (OSPF) Protocol traffic through the ASA in both directions. OSPF uses multicast addresses to communicate with its neighbors and to send routing updates. Figure 51 shows an access rule that will allow any traffic destined for the multicast address 224.0.0.5 or 224.0.0.6.

FIGURE 51
OSPF Access Rule



Add Access Rule

Interface: inside

Action: ● Permit ○ Deny

Source: any

Destination 224.0.0.5,224.0.0.6

Service: ospf

Description: OSPF Access Rule

☑ Enable Logging

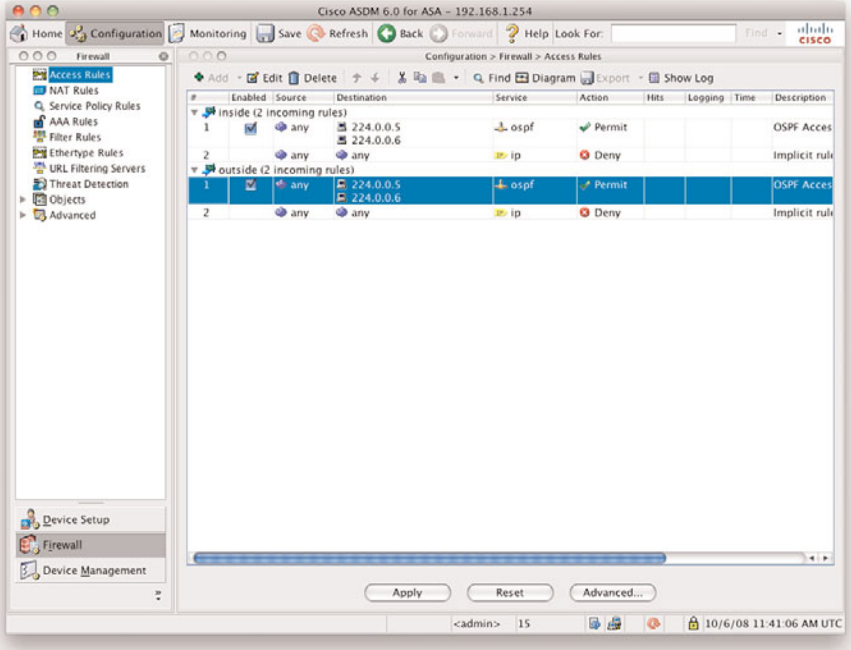
Logging Level: Default

We then create a rule on the outside interface to allow OSPF to be allowed from the outside in. When this is applied, we are presented with the Access Rules screen, as shown in Figure 52.

Configuring an Ethertype ACL

When the Cisco ASA is in transparent mode, it can also allow non-IP traffic through the firewall, something that the ASA in routed mode would not be able to do. This is achieved by creating what is called an Ethertype ACL.

Layer 2 traffic has an Ethertype that can be seen in the Layer 2 headers of the frame. These Ethertypes are assigned by the Internet Assigned Numbers Authority (IANA), and the list of assigned Ethertypes can be downloaded from http://www.iana.org/assignments/ethernet-numbers.

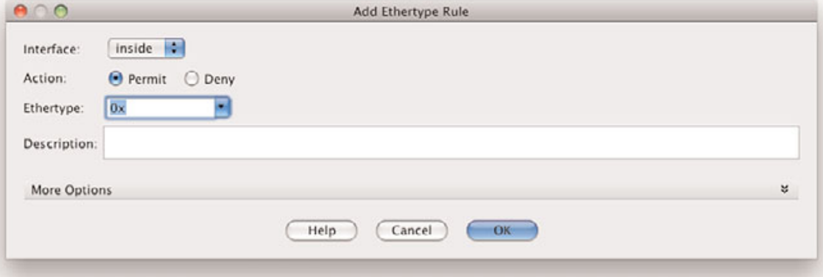


#	Enabled	Source	Destination	Service	Action	Hits	Logging	Time	Description
inside (2 incoming rules)									
1	☑	any	224.0.0.5 224.0.0.6	ospf	Permit				OSPF Acces
2		any	any	ip	Deny				Implicit rul
outside (2 incoming rules)									
1	☑	any	224.0.0.5 224.0.0.6	ospf	Permit				OSPF Acces
2		any	any	ip	Deny				Implicit rul

FIGURE 52
Access Rules Screen Showing OSPF

To configure an Ethertype rule, navigate to **Firewall > Ethertype Rules**. From here, you can add a new rule.

Figure 53 shows the Add Ethertype Rule window. From here, you can select the interface, action, and Ethertype to permit or deny.



Interface: inside
Action: ● Permit ○ Deny
Ethertype: 0x
Description:

FIGURE 53
Ethertype Rules

The common supported Ethertypes on the ASA are as follows:

- BPDU
- IPX
- MPLS-Multicast
- MPLS-Unicast

In addition to these built-in Ethertypes, you can enter any value for any Ethertype, as outlined in the IANA Ethertype assignments. The value has to be entered in hexadecimal format. For example, ARP would be 0x0806.

Verifying the Transparent Firewall

From the CLI, you can use a few commands to verify the transparent firewall. Some of the main ones are listed here:

- **show firewall**: Displays the mode the firewall is in.
- **show access-list**: Displays the currently configured access lists.
- **show mac-address-table**: Displays the bridging MAC address table.
- **show arp**: Displays the Address Resolution Protocol (ARP) table of the ASA.

Summary

In this section, we have progressed and looked at some of the more advanced features of the ASA, including the Modular Policy Framework, threat detection, and transparent firewalling. This section provided a background on the technologies and configuration guidelines for each technology.

In the next section, we cover VPNs on the Cisco ASA. We look at the difference between site-to-site and remote-access VPNs before describing how to configure each type of VPN using ASDM's built-in wizards.