

ASA 8.3(x) Dynamic PAT with Two Internal Networks and Internet Configuration Example

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[Introduction](#)

This document provides a sample configuration for dynamic PAT on a Cisco Adaptive Security Appliance (ASA) that runs software version 8.3(1). [Dynamic PAT](#) translates multiple real addresses to a single mapped IP address by translating the real source address and source port to the mapped address and unique mapped port. Each connection requires a separate translation session because the source port differs for each connection.

[Prerequisites](#)

[Requirements](#)

Ensure that you meet these requirements before you attempt this configuration:

- Make sure the internal network has two networks located on the inside of the ASA: 192.168.0.0/24—Network directly connected to the ASA. 192.168.1.0/24—Network on the inside of the ASA, but behind another device (for example, a router).
- Make sure the internal users get PAT as follows: Hosts on the 192.168.1.0/24 subnet will get PAT to a spare IP address given by the ISP (10.1.5.5). Any other host behind the inside of the ASA will get PAT to the outside interface IP address of the ASA (10.1.5.1).

Components Used

The information in this document is based on these software and hardware versions:

- Cisco Adaptive Security Appliance (ASA) with version 8.3(1)
- ASDM version 6.3(1)

Note: Refer to [Allowing HTTPS Access for ASDM](#) in order to allow the ASA to be configured by the ASDM.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

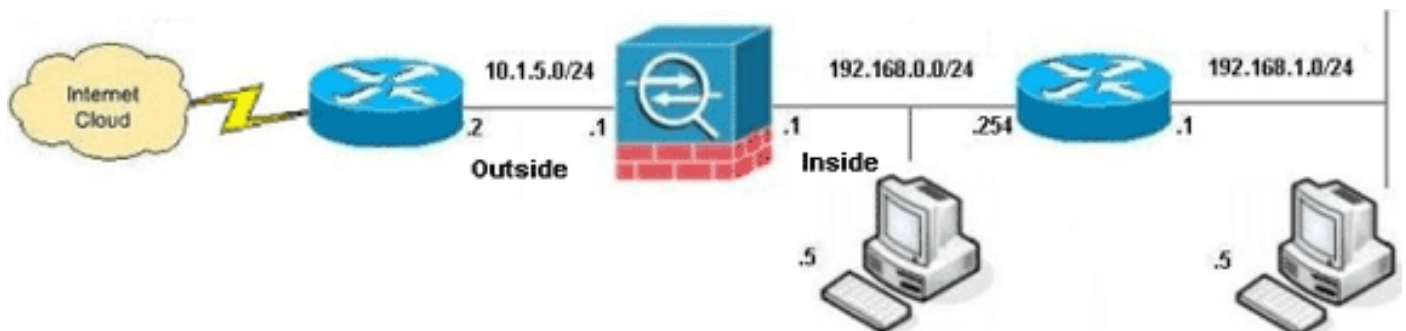
Conventions

Refer to the [Cisco Technical Tips Conventions](#) for information on document conventions.

Configuration

Network Diagram

This document uses this network setup:



Note: The IP addressing schemes used in this configuration are not legally routable on the Internet. They are [RFC 1918](#) addresses, which have been used in a lab environment.

- [ASA CLI Configuration](#)
- [ASDM Configuration](#)

ASA CLI Configuration

This document uses the configurations shown below.

ASA Dynamic PAT Configuration

```
ASA#configure terminal Enter configuration commands, one
per line. End with CNTL/Z. !--- Creates an object called
OBJ_GENERIC_ALL. !--- Any host IP not already matching
another configured !--- object will get PAT to the
outside interface IP !--- on the ASA (or 10.1.5.1), for
internet bound traffic. ASA(config)#object network
OBJ_GENERIC_ALL ASA(config-obj)#subnet 0.0.0.0 0.0.0.0
```

```

ASA(config-obj)#exit ASA(config)#nat (inside,outside)
source dynamic OBJ_GENERIC_ALL interface !--- The above
statements are the equivalent of the !--- nat/global
combination (as shown below) in v7.0(x), !--- v7.1(x),
v7.2(x), v8.0(x), v8.1(x) and v8.2(x) ASA code: nat
(inside) 1 0.0.0.0 0.0.0.0 global (outside) 1 interface
!--- Creates an object called OBJ_SPECIFIC_192-168-1-0.
!--- Any host IP facing the the 'inside' interface of
the ASA !--- with an address in the 192.168.1.0/24
subnet will get PAT !--- to the 10.1.5.5 address, for
internet bound traffic. ASA(config)#object network
OBJ_SPECIFIC_192-168-1-0 ASA(config-obj)#subnet
192.168.1.0 255.255.255.0 ASA(config-obj)#exit
ASA(config)#nat (inside,outside) source dynamic
OBJ_SPECIFIC_192-168-1-0 10.1.5.5 !--- The above
statements are the equivalent of the nat/global !---
combination (as shown below) in v7.0(x), v7.1(x),
v7.2(x), v8.0(x), !--- v8.1(x) and v8.2(x) ASA code: nat
(inside) 2 192.168.1.0 255.255.255.0 global (outside) 2
10.1.5.5

```

ASA 8.3(1) Running Config

```

ASA#show run : Saved : ASA Version 8.3(1) ! hostname ASA
enable password 8Ry2YjIyt7RRXU24 encrypted passwd
2KFQnbNIdI.2KYOU encrypted names ! !--- Configure the
outside interface. ! interface GigabitEthernet0/0 nameif
outside security-level 0 ip address 10.1.5.1
255.255.255.0 !--- Configure the inside interface. !
interface GigabitEthernet0/1 nameif inside security-
level 100 ip address 192.168.0.1 255.255.255.0 !
interface GigabitEthernet0/2 shutdown no nameif no
security-level no ip address ! interface
GigabitEthernet0/3 shutdown no nameif no security-level
no ip address ! interface Management0/0 shutdown no
nameif no security-level no ip address management-only !
boot system disk0:/asa831-k8.bin ftp mode passive object
network OBJ_SPECIFIC_192-168-1-0 subnet 192.168.1.0
255.255.255.0 object network OBJ_GENERIC_ALL subnet
0.0.0.0 0.0.0.0 pager lines 24 no failover icmp
unreachable rate-limit 1 burst-size 1 asdm image
disk0:/asdm-631.bin no asdm history enable arp timeout
14400 nat (inside,outside) source dynamic
OBJ_GENERIC_ALL interface nat (inside,outside) source
dynamic OBJ_SPECIFIC_192-168-1-0 10.1.5.5 route inside
192.168.1.0 255.255.255.0 192.168.0.254 1 route outside
0.0.0.0 0.0.0.0 10.1.5.2 timeout xlate 3:00:00 timeout
conn 1:00:00 half-closed 0:10:00 udp 0:02:00 icmp
0:00:02 timeout sunrpc 0:10:00 h323 0:05:00 h225 1:00:00
mgcp 0:05:00 mgcp-pat 0:05:00 timeout sip 0:30:00
sip_media 0:02:00 sip-invite 0:03:00 sip-disconnect
0:02:00 timeout sip-provisional-media 0:02:00 uauth
0:05:00 absolute timeout tcp-proxy-reassembly 0:01:00
dynamic-access-policy-record DfltAccessPolicy http
server enable http 192.168.0.0 255.255.254.0 inside no
snmp-server location no snmp-server contact snmp-server
enable traps snmp authentication linkup linkdown
coldstart crypto ipsec security-association lifetime
seconds 28800 crypto ipsec security-association lifetime
kilobytes 4608000 telnet timeout 5 ssh timeout 5 console
timeout 0 threat-detection basic-threat threat-detection
statistics access-list no threat-detection statistics
tcp-intercept ! class-map inspection_default match
default-inspection-traffic ! ! policy-map type inspect
dns preset_dns_map parameters message-length maximum

```

```

client auto message-length maximum 512 policy-map
global_policy class inspection_default inspect dns
preset_dns_map inspect ftp inspect h323 h225 inspect
h323 ras inspect rsh inspect rtsp inspect esmtp inspect
sqlnet inspect skinny inspect sunrpc inspect xdmcp
inspect sip inspect netbios inspect tftp inspect ip-
options ! service-policy global_policy global prompt
hostname context
Cryptochecksum:6ffffbd3dc9cb863fd71c71244a0ecc5f : end

```

ASDM Configuration

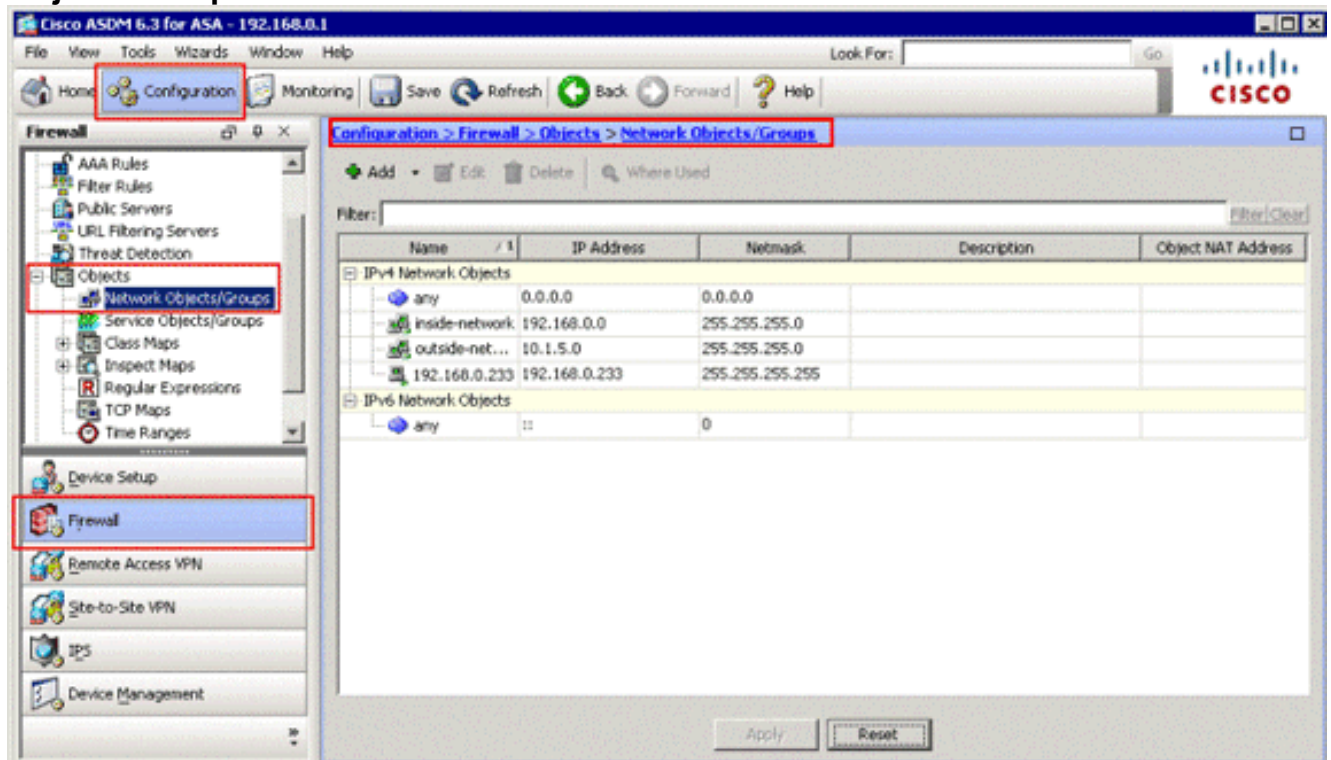
In order to complete this configuration through the ASDM interface, you must:

1. Add three network objects; this examples adds these network objects:OBJ_GENERIC_ALLOBJ_SPECIFIC_192-168-1-010.1.5.5
2. Create two NAT/PAT rules; this examples creates NAT rules for these network objects:OBJ_GENERIC_ALLOBJ_SPECIFIC_192-168-1-0

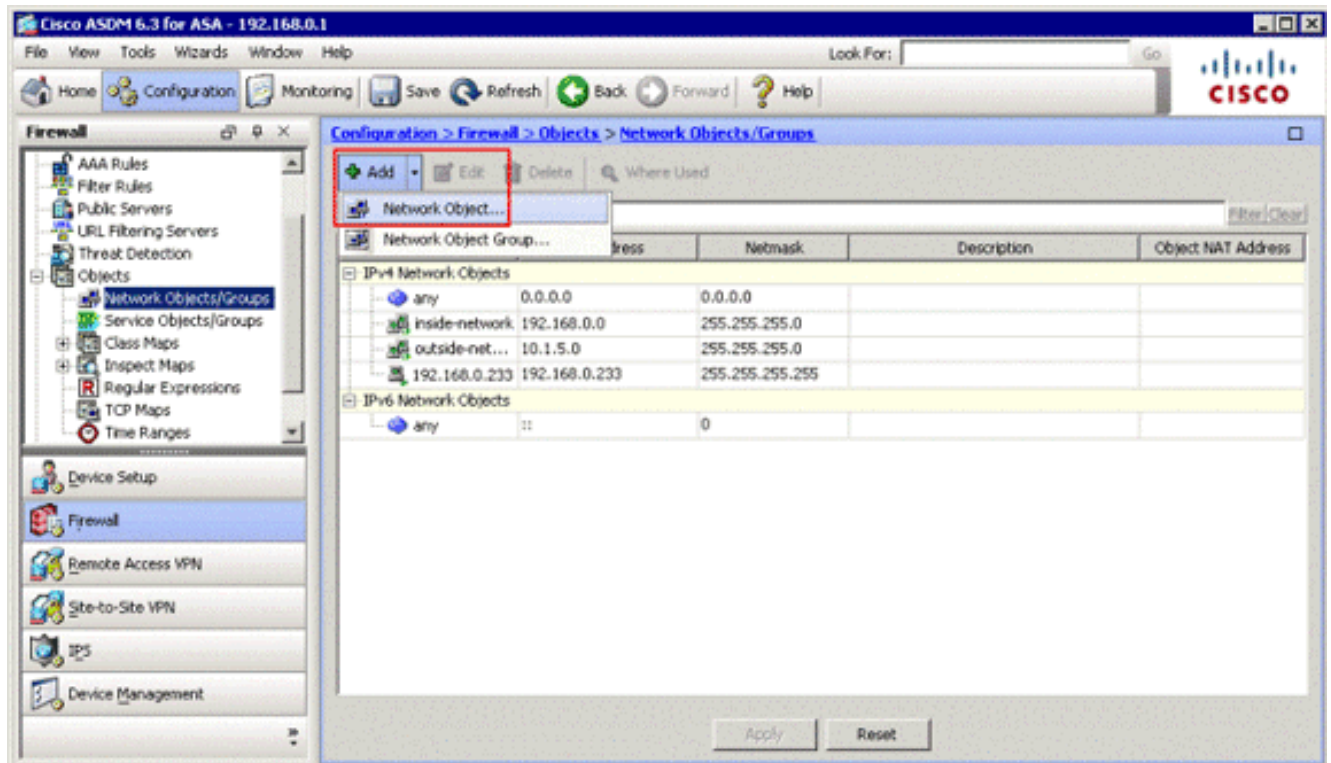
Add Network Objects

Complete these steps in order to add network objects:

1. Log in to ASDM, and choose **Configuration > Firewall > Objects > Network Objects/Groups**.



2. Choose **Add > Network Object** in order to add a network object.



The Add Network Object dialog box

Add Network Object

Name:

Type:

IP Address:

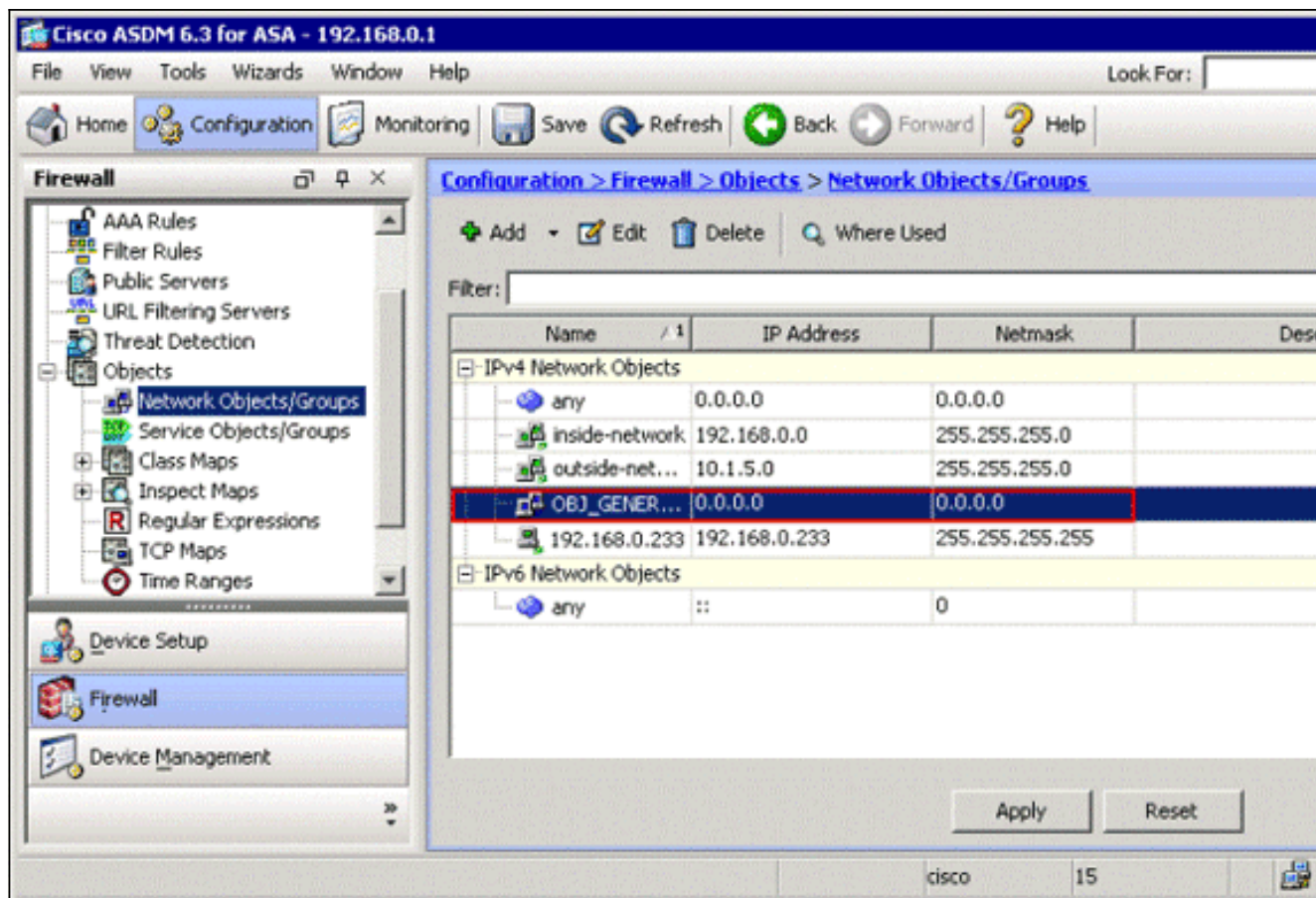
Netmask:

Description:

☐ NAT

appears.

- Enter this information in the Add Network Object dialog box: Name of the network object. (This example uses *OBJ_GENERIC_ALL*.) Type of network object. (This example uses *Network*.) IP address for the network object. (This example uses *0.0.0.0*.) Netmask for the network object. (This example uses *0.0.0.0*.)
- Click **OK**. The network object is created and appears in the Network Objects/Groups list, as shown in this image:



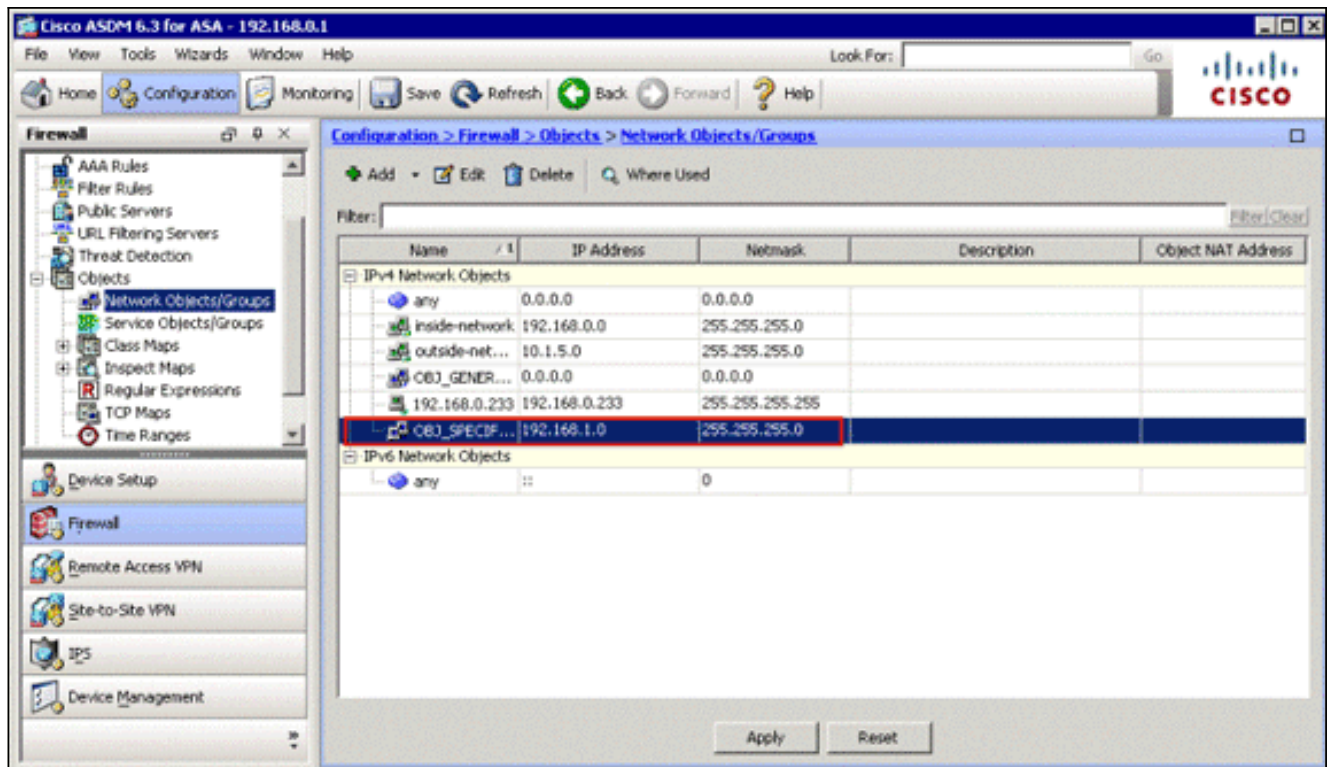
5. Repeat the previous steps in order to add a second network object, and click **OK**. This example uses these values: Name: *OBJ_SPECIFIC_192-168-1-0* Type: *Network* IP Address: *192.168.1.0* Netmask:

The 'Add Network Object' dialog box is shown with the following fields:

- Name: OBJ_SPECIFIC_192-168-1-0
- Type: Network
- IP Address: 192.168.1.0
- Netmask: 255.255.255.0
- Description: (empty)

The 'OK' button is highlighted with a red box.

255.255.255.0 The second object is created and appears in the Network Objects/Groups list, as shown in this image:



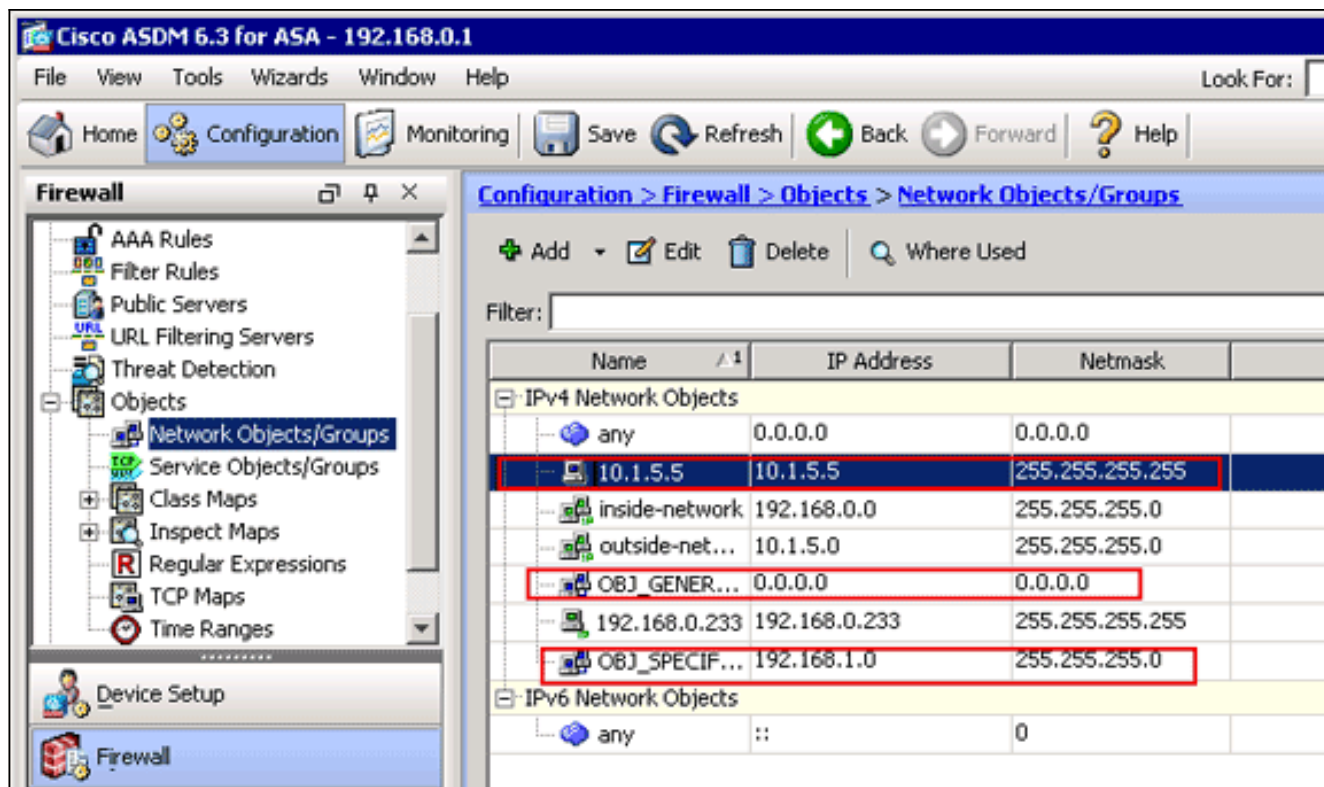
6. Repeat the previous steps in order to add a third network object, and click **OK**. This example uses these values: Name: 10.1.5.5 Type: Host IP Address: 10.1.5.5

The 'Add Network Object' dialog box is shown with the following fields:

- Name: 10.1.5.5
- Type: Host
- IP Address: 10.1.5.5
- Description: (empty)

The 'NAT' checkbox is checked. The 'OK' button is highlighted with a red box.

10.1.5.5 The third network object is created and appears in the Network Objects/Groups list.

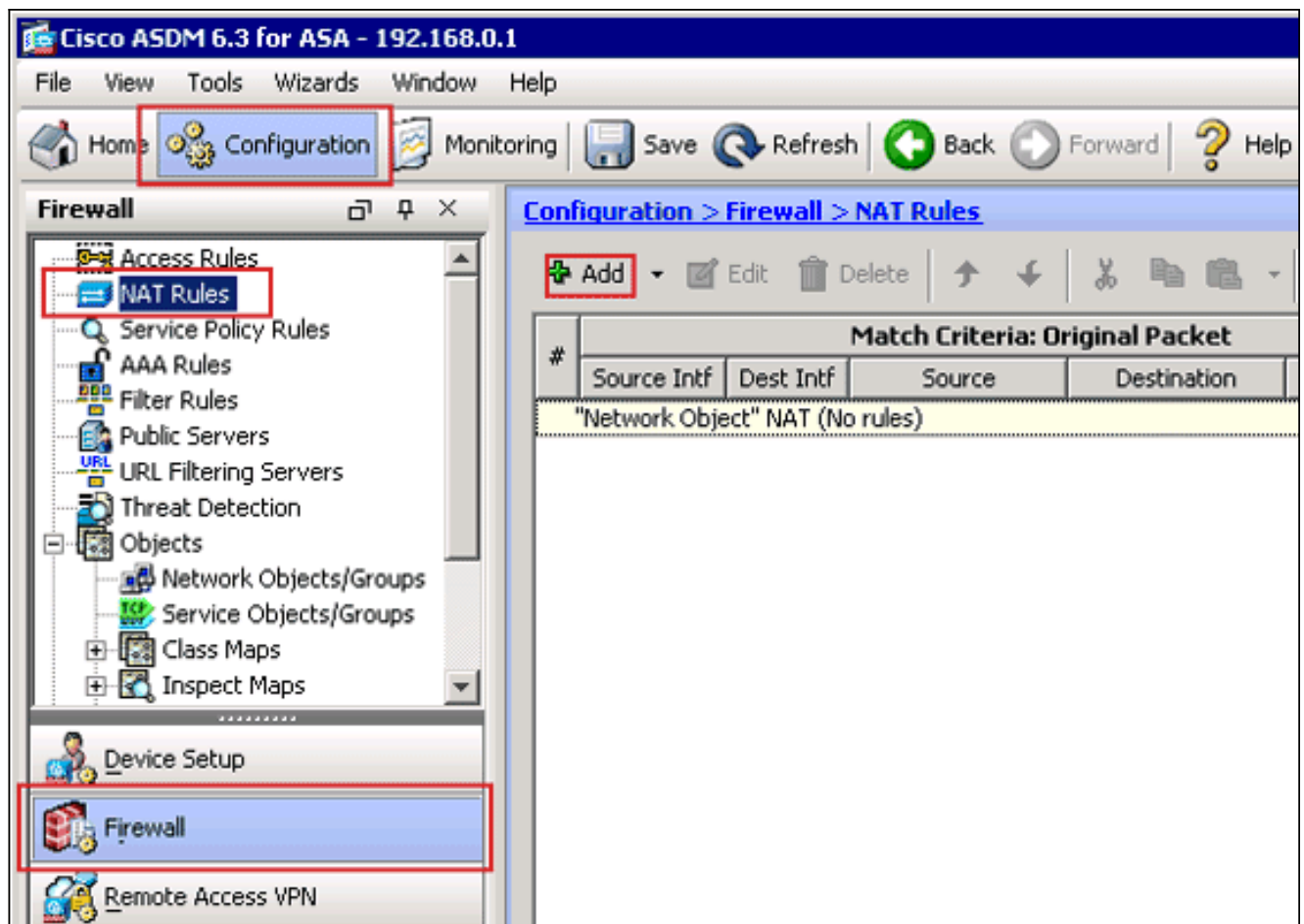


The Network Objects/Groups list should now include the three required objects necessary for the NAT rules to reference.

Create NAT/PAT Rules

Complete these steps in order to create NAT/PAT rules:

1. Create the first NAT/PAT rule: In ASDM, choose **Configuration > Firewall > NAT Rules**, and click **Add**.



The Add NAT Rule dialog box appears.

Add NAT Rule

Match Criteria: Original Packet

Source Interface: -- Any --
Destination Interface: -- Any --

Source Address: -- Any --
Destination Address: any

Service: any

Action: Translated Packet

Source NAT Type: Static

Source Address: -- Original --
Destination Address: -- Original --

☐ Fall through to interface PAT
Service: -- Original --

Options

☒ Enable rule

☐ Translate DNS replies that match this rule

Direction: Both

Description:

OK Cancel Help

inside

Name: inside
IP Address: 192.168.0.1 / 255.255.255.0
Security Level: 100
Port: GigabitEthernet0/0

In the Match Criteria: Original Packet area of the Add NAT Rule dialog box, choose **inside** from the Source Interface drop-down list.

Add NAT Rule

Match Criteria: Original Packet

Source Interface: inside Destination Interface: -- Any --

Source Address: any Destination Address: any

Service: any

Action: Translated Packet

Source NAT Type: Static

Source Address: -- Original -- Destination Address: -- Original --

☐ Fall through to interface PAT Service: -- Original --

Options

☒ Enable rule

☐ Translate DNS replies that match this rule

Direction: Both

Description:

OK Cancel Help

Click the browse (...) button located to the right of the Source Address text field. The Browse Original Source Address dialog box appears.

Browse Original Source Address

+ Add Edit Delete Where Used

Filter: Filter Clear

Name	IP Address	Netmask	Description	Object NAT Addr...
IPv4 Network Objects				
10.1.5.5	10.1.5.5	255.255.255.255		
OBJ_GE...	0.0.0.0	0.0.0.0		
OBJ_SP...	192.168.1.0	255.255.255.0		
any	0.0.0.0	0.0.0.0		

Selected Original Source Address

Original Source Address -> OBJ_GENERIC_ALL

OK Cancel

In the Browse Original Source Address dialog box, choose the first network object you

created. (For this example, choose **OBJ_GENERIC_ALL**.) Click **Original Source Address**, and click **OK**. The *OBJ_GENERIC_ALL* network object now appears in the Source Address field in the Match Criteria: Original Packet area of the Add NAT Rule dialog box.

Add NAT Rule

Match Criteria: Original Packet

Source Interface: **inside** Destination Interface: -- Any --

Source Address: **OBJ_GENERIC_ALL** Destination Address: any

Service: any

Action: Translated Packet

Source NAT Type: **Static**

Source Address: -- Original -- Destination Address: -- Original --

☐ Fall through to interface PAT Service: -- Original --

Options

☒ Enable rule

☐ Translate DNS replies that match this rule

Direction: **Both**

Description:

OK Cancel Help

In the Action: Translated Packet area of the Add NAT Rule dialog box, choose **Dynamic PAT (Hide)** from the Source NAT Type dialog box.

Add NAT Rule

Match Criteria: Original Packet

Source Interface: Destination Interface:

Source Address: Destination Address:

Service:

Action: Translated Packet

Source NAT Type:

Source Address:

Destination Address:

Service:

☐ Fall through to Dynamic

Options

☒ Enable rule

☐ Translate DNS replies that match this rule

Direction:

Description:

OK Cancel Help

Click the browse (...) button located to the right of the Source Address field.

Add NAT Rule

Match Criteria: Original Packet

Source Interface: Destination Interface:

Source Address: Destination Address:

Service:

Action: Translated Packet

Source NAT Type:

Source Address: Destination Address:

☐ Fall through to interface PAT Service:

Options

☒ Enable rule

☐ Translate DNS replies that match this rule

Direction:

Description:

The Browse Translated Source Address dialog box appears.

Browse Translated Source Address

Filter:

Name	IP Address	Netmask	Description	Object NAT Addr...
-- Original --				
IPv4 Network Objects				
10.1.5.5	10.1.5.5	255.255.255.255		
Interfaces				
inside				
outside				

Selected Translated Source Address

In the Browse Translated Source Address dialog box, choose the **outside** interface object. (This interface has already been created because it is part of the original configuration.) Click **Translated Source Address**, and click **OK**. The outside interface now appears in the Source

Address field in the Action: Translated Packet area on the Add NAT Rule dialog box.

Add NAT Rule

Match Criteria: Original Packet

Source Interface: inside Destination Interface: outside

Source Address: OBJ_GENERIC_ALL Destination Address: any

Service: any

Action: Translated Packet

Source NAT Type: Dynamic PAT (Hide)

Source Address: outside Destination Address: -- Original --

☐ Fall through to interface PAT Service: -- Original --

Options

☒ Enable rule

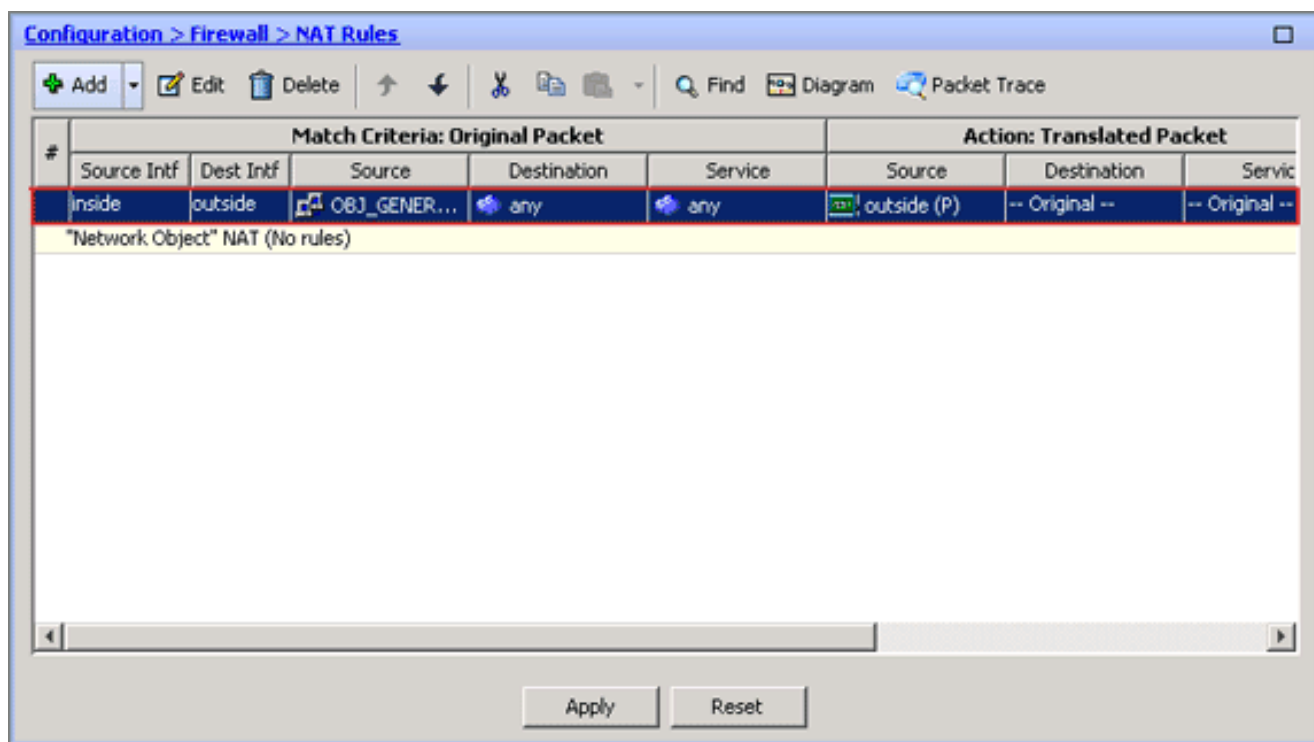
☐ Translate DNS replies that match this rule

Direction: Both

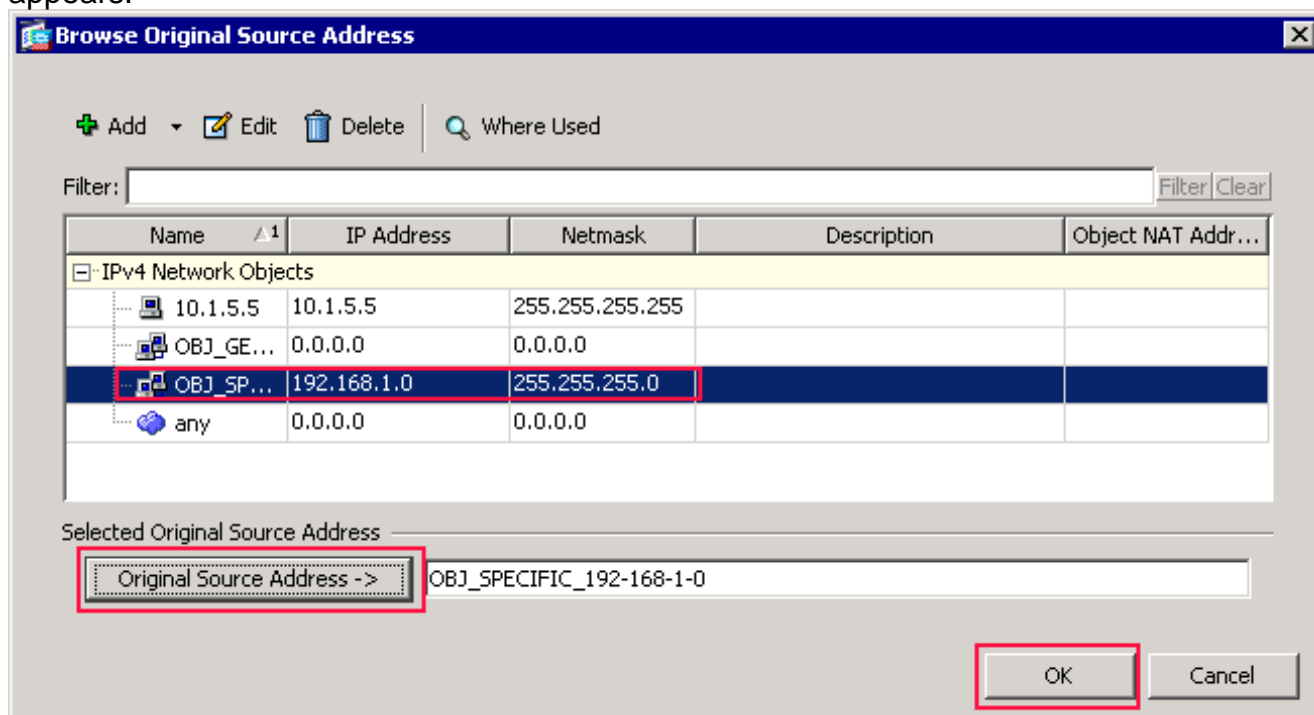
Description:

OK Cancel Help

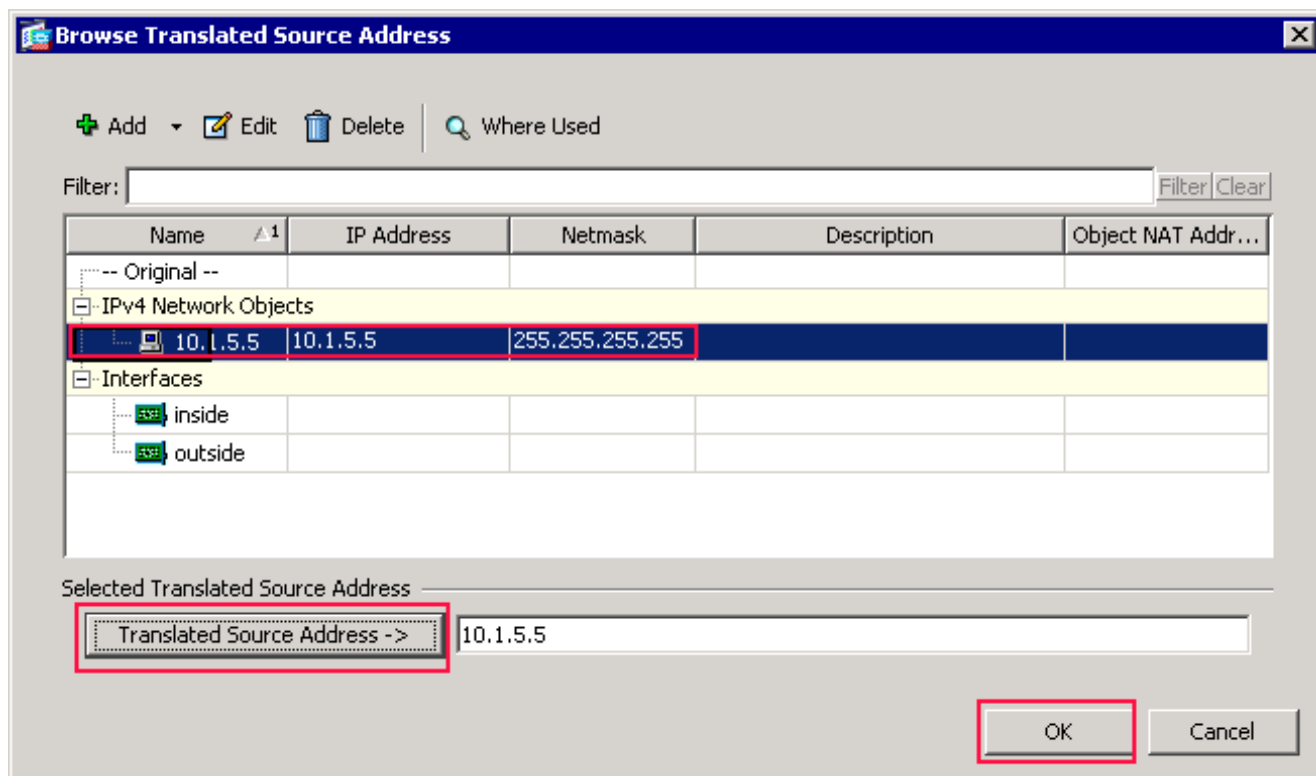
Note: The *Destination Interface* field also changes to the outside interface. Verify that the first completed PAT Rule appears as follows: In the Match Criteria: Original Packet area, verify these values: Source Interface = inside Source Address = OBJ_GENERIC_ALL Destination Address = any Service = any In the Action: Translated Packet area, verify these values: Source NAT Type = Dynamic PAT (Hide) Source Address = outside Destination Address = Original Service = Original Click **OK**. The first NAT rule appears in ASDM, as shown in this image:



2. Create the second NAT/PAT rule: In ASDM, choose **Configuration > Firewall > NAT Rules**, and click **Add**. In the Match Criteria: Original Packet area of the Add NAT Rule dialog box, choose **inside** from the Source Interface drop-down list. Click the browse (...) button located to the right of the Source Address field. The Browse Original Source Address dialog box appears.



In the Browse Original Source Address dialog box, choose the second object you created. (For this example, choose **OBJ_SPECIFIC_192-168-1-0**.) Click **Original Source Address**, and click **OK**. The **OBJ_SPECIFIC_192-168-1-0** network object appears in the Source Address field in the Match Criteria: Original Packet area of the Add NAT Rule dialog box. In the Action: Translated Packet area of the Add NAT Rule dialog box, choose **Dynamic PAT (Hide)** from the Source NAT Type dialog box. Click the ... button located to the right of the Source Address field. The Browse Translated Source Address dialog box appears.



In the Browse Translated Source Address dialog box, choose the **10.1.5.5** object. (This interface has already been created because it is part of the original configuration). Click **Translated Source Address**, and then click **OK**. The **10.1.5.5** network object appears in the Source Address field in the Action: Translated Packet area of the Add NAT Rule dialog box. In the Match Criteria: Original Packet area, choose **outside** from the Destination Interface drop-down list. **Note:** If you do not choose *outside* for this option, the destination interface will reference *Any*.

Edit NAT Rule

Match Criteria: Original Packet

Source Interface: Destination Interface:

Source Address: Destination Address:

Service:

Action: Translated Packet

Source NAT Type:

Source Address: Destination Address:

☐ Fall through to interface PAT Service:

Options

☒ Enable rule

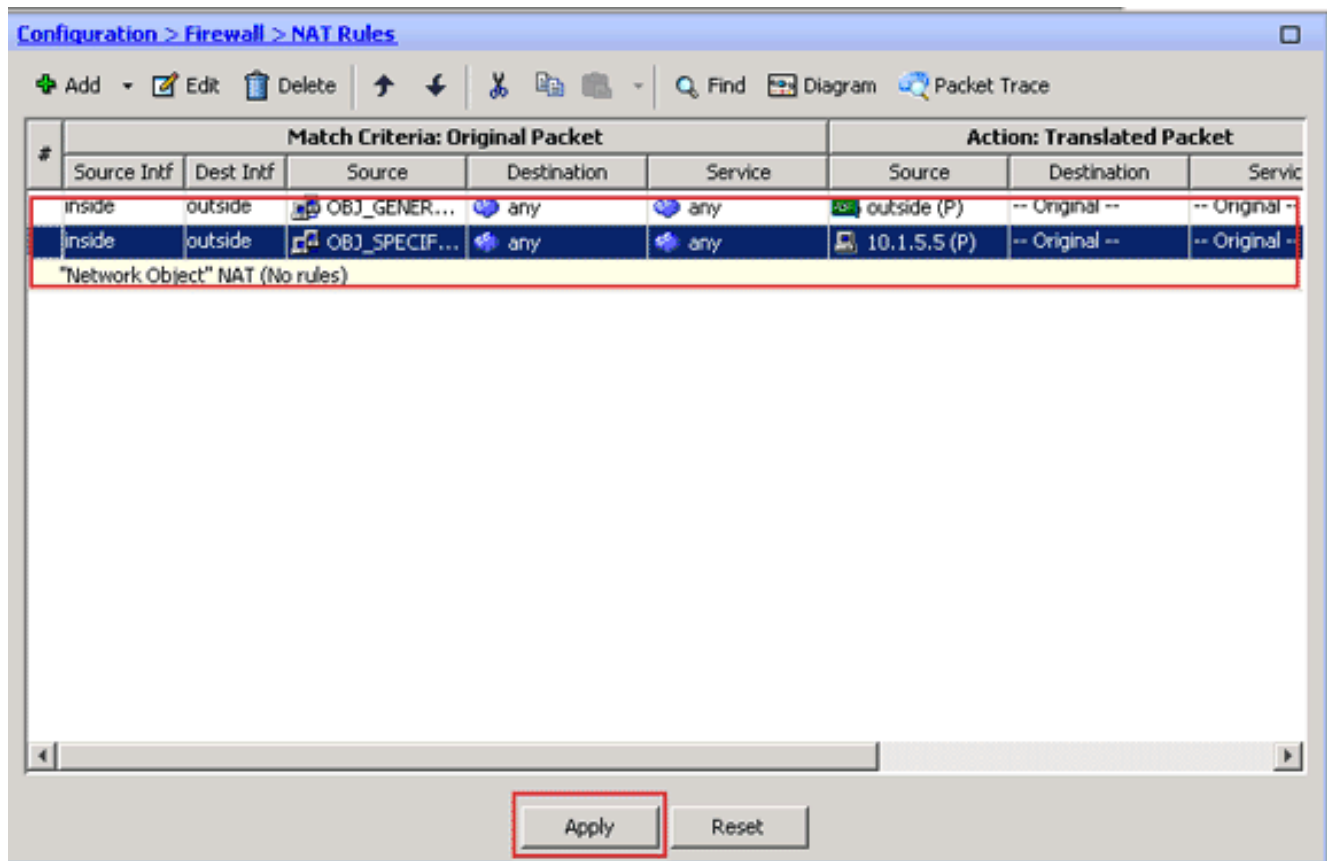
☐ Translate DNS replies that match this rule

Direction:

Description:

OK Cancel Help

Verify that the second completed NAT/PAT rule appears as follows: In the Match Criteria: Original Packet area, verify these values: Source Interface = inside Source Address = OBJ_SPECIFIC_192-168-1-0 Destination Address = outside Service = any In the Action: Translated Packet area, verify these values: Source NAT Type = Dynamic PAT (Hide) Source Address = 10.1.5.5 Destination Address = Original Service = Original Click **OK**. The completed NAT configuration appears in ASDM, as shown in this image:



3. Click the **Apply** button in order to apply the changes to the running configuration. This completes the configuration of dynamic PAT on a Cisco Adaptive Security Appliance (ASA).

Verify

Use this section to confirm that your configuration works properly.

The [Output Interpreter Tool](#) ([registered](#) customers only) (OIT) supports certain **show** commands. Use the OIT to view an analysis of **show** command output.

Verifying Generic PAT Rule

- **[show local-host](#)** —Shows the network states of local hosts. `ASA#show local-host` Interface outside: 1 active, 2 maximum active, 0 denied local host: <125.252.196.170>, TCP flow count/limit = 2/unlimited TCP embryonic count to host = 0 TCP intercept watermark = unlimited UDP flow count/limit = 0/unlimited *!--- The TCP connection outside address corresponds !--- to the actual destination of 125.255.196.170:80* Conn: **TCP outside 125.252.196.170:80 inside 192.168.0.5:1051**, idle 0:00:03, bytes 13758, flags UIO TCP outside 125.252.196.170:80 inside 192.168.0.5:1050, idle 0:00:04, bytes 11896, flags UIO Interface inside: 1 active, 1 maximum active, 0 denied local host: <192.168.0.5>, TCP flow count/limit = 2/unlimited TCP embryonic count to host = 0 TCP intercept watermark = unlimited UDP flow count/limit = 0/unlimited *!--- The TCP PAT outside address corresponds to the !--- outside IP address of the ASA - 10.1.5.1*. Xlate: **TCP PAT from inside:192.168.0.5/1051 to outside:10.1.5.1/32988** flags ri idle 0:00:17 timeout 0:00:30 TCP PAT from inside:192.168.0.5/1050 to outside:10.1.5.1/17058 flags ri idle 0:00:17 timeout 0:00:30 Conn: TCP outside 125.252.196.170:80 inside 192.168.0.5:1051, idle 0:00:03, bytes 13758, flags UIO TCP outside 125.252.196.170:80 inside 192.168.0.5:1050, idle 0:00:04, bytes 11896, flags UIO
- **[show conn](#)** —Shows the connection state for the designated connection type. `ASA#show conn` 2 in use, 3 most used TCP outside 125.252.196.170:80 inside 192.168.0.5:1051, idle 0:00:06, bytes 13758, flags UIO TCP outside 125.252.196.170:80 inside 192.168.0.5:1050, idle 0:00:01,

bytes 13526, flags UIO

- [show xlate](#) —Shows the information about the translation slots.ASA#**show xlate** 4 in use, 7 most used Flags: D - DNS, I - dynamic, r - portmap, s - static, I - identity, T - twice TCP PAT from inside:192.168.0.5/1051 to outside:10.1.5.1/32988 flags ri idle 0:00:23 timeout 0:00:30 TCP PAT from inside:192.168.0.5/1050 to outside:10.1.5.1/17058 flags ri idle 0:00:23 timeout 0:00:30


Verifying Specific PAT Rule

- [show local-host](#) —Shows the network states of local hosts.ASA#**show local-host** Interface outside: 1 active, 2 maximum active, 0 denied local host: <125.252.196.170>, TCP flow count/limit = 2/unlimited TCP embryonic count to host = 0 TCP intercept watermark = unlimited UDP flow count/limit = 0/unlimited *!--- The TCP connection outside address corresponds to !--- the actual destination of 125.255.196.170:80.* Conn: **TCP outside 125.252.196.170:80 inside 192.168.1.5:1067**, idle 0:00:07, bytes 13758, flags UIO TCP outside 125.252.196.170:80 inside 192.168.1.5:1066, idle 0:00:03, bytes 11896, flags UIO Interface inside: 1 active, 1 maximum active, 0 denied local host: <192.168.0.5>, TCP flow count/limit = 2/unlimited TCP embryonic count to host = 0 TCP intercept watermark = unlimited UDP flow count/limit = 0/unlimited *!--- The TCP PAT outside address corresponds to an !--- outside IP address of 10.1.5.5.* Xlate: **TCP PAT from inside:192.168.1.5/1067 to outside:10.1.5.5/35961** flags ri idle 0:00:17 timeout 0:00:30 TCP PAT from inside:192.168.1.5/1066 to outside:10.1.5.5/23673 flags ri idle 0:00:17 timeout 0:00:30 Conn: TCP outside 125.252.196.170:80 inside 192.168.1.5:1067, idle 0:00:07, bytes 13758, flags UIO TCP outside 125.252.196.170:80 inside 192.168.1.5:1066, idle 0:00:03, bytes 11896, flags UIO
- [show conn](#) —Shows the connection state for the designated connection type.ASA#**show conn** 2 in use, 3 most used TCP outside 125.252.196.170:80 inside 192.168.1.5:1067, idle 0:00:07, bytes 13653, flags UIO TCP outside 125.252.196.170:80 inside 192.168.1.5:1066, idle 0:00:03, bytes 13349, flags UIO
- [show xlate](#) —Shows the information about the translation slots.ASA#**show xlate** 3 in use, 9 most used Flags: D - DNS, I - dynamic, r - portmap, s - static, I - identity, T - twice TCP PAT from inside:192.168.1.5/1067 to outside:10.1.5.5/35961 flags ri idle 0:00:23 timeout 0:00:30 TCP PAT from inside:192.168.1.5/1066 to outside:10.1.5.5/29673 flags ri idle 0:00:23 timeout 0:00:30

Troubleshoot

There is currently no specific troubleshooting information available for this configuration.

Related Information

- [Cisco Adaptive Security Device Manager](#)
- [Cisco ASA 5500 Series Adaptive Security Appliances](#)
- [Requests for Comments \(RFCs\)](#) 
- [Technical Support & Documentation - Cisco Systems](#)