

# 在FTD上配置并检验NAT

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## 简介

本文档介绍如何在Firepower威胁防御(FTD)上配置和验证基本网络地址转换(NAT)。

## 先决条件

### 要求

本文档没有任何特定的要求。

### 使用的组件

本文档中的信息基于以下软件和硬件版本：

- 运行FTD代码6.1.0-226的ASA5506X
- 运行6.1.0-226的FireSIGHT管理中心(FMC)
- 3台Windows 7主机
- 运行LAN到LAN (L2L) VPN的Cisco IOS® 3925路由器

实验完成时间：1小时

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您的网络处于活动状态，请确保您了解所有命令的潜在影响。

## 背景信息

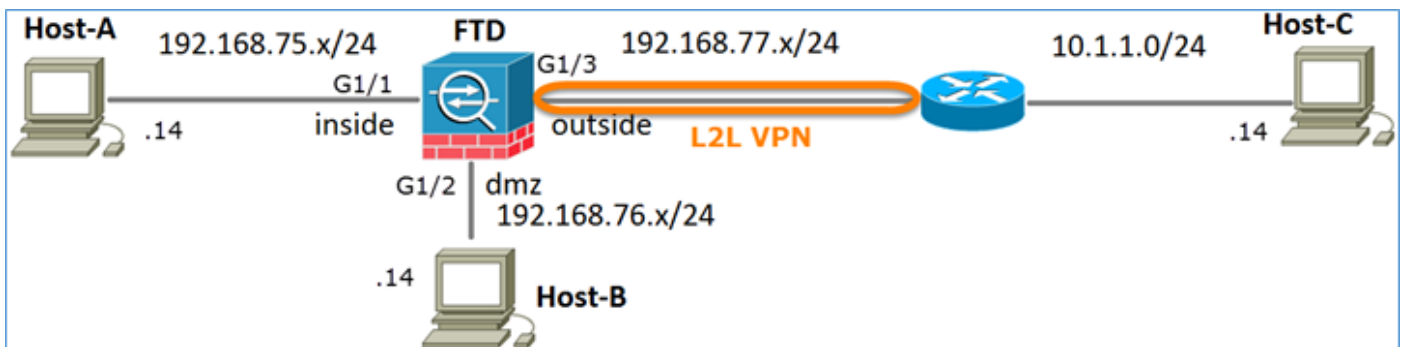
FTD支持与经典自适应安全设备(ASA)相同的NAT配置选项：

- 之前的NAT规则-这相当于传统ASA上的两次NAT ( 第1部分 )。
- 自动NAT规则-关于传统ASA的第2部分
- 之后NAT规则-这相当于在传统ASA上执行两次NAT ( 第3部分 )。

由于FTD配置在NAT配置时从FMC完成，因此必须熟悉FMC GUI和各种配置选项。

## 配置

### 网络图



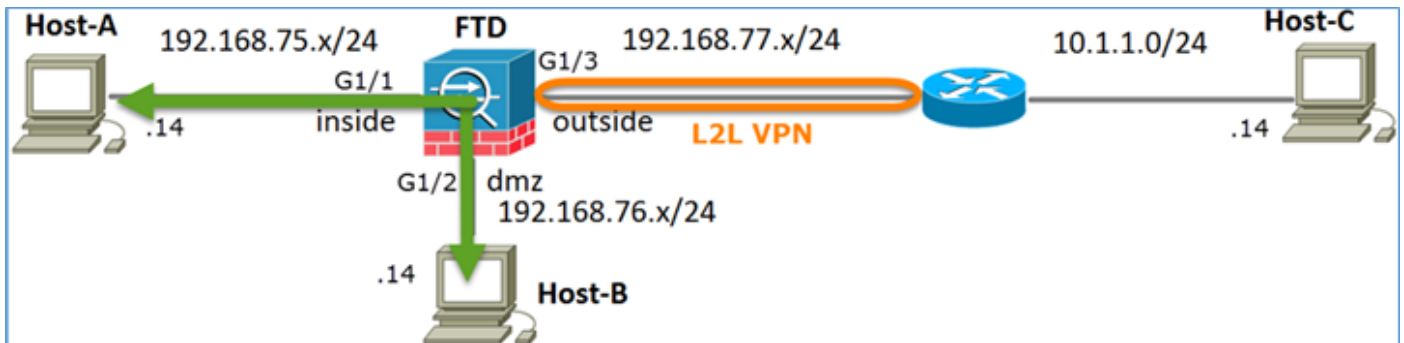
### 任务1.在FTD上配置静态NAT

根据以下要求配置NAT：

NAT策略名称	FTD设备的名称
NAT 规则	手动NAT规则
NAT类型	静态
插入	在第1部分
来源接口	内部*
目标接口	dmz*
原始源	192.168.75.14

转换后的源	192.168.76.100
-------	----------------

\* 为NAT规则使用安全区域



静态 NAT

解决方案：

在传统ASA上，必须在NAT规则中使用nameif。在FTD上，您需要使用安全区域或接口组。

步骤1:将接口分配给安全区域/接口组。

在本任务中，我们决定将用于NAT的FTD接口分配到安全区域。或者，您可以将其分配到接口组，如图所示。

### Edit Physical Interface

Mode:

Name:   Enabled  Management Only

Security Zone:

Description:

**General** | IPv4 | IPv6 | Advanced | Hardware Configuration

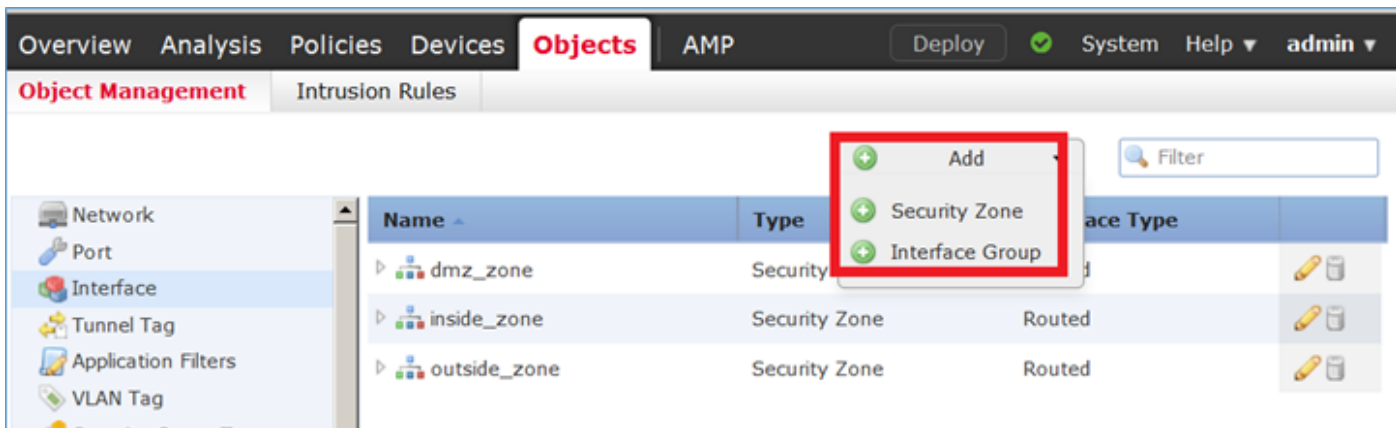
MTU:  (64 - 9198)

Interface ID:

第二步：结果如图所示。

Interface	Logical Name	Type	Interface Objects	Mac Address(Active/Standby)	IP Address
GigabitEthernet1/1	inside	Physical	inside_zone		192.168.75.6/24(Static)
GigabitEthernet1/2	dmz	Physical	dmz_zone		192.168.76.6/24(Static)
GigabitEthernet1/3	outside	Physical	outside_zone		192.168.77.6/24(Static)

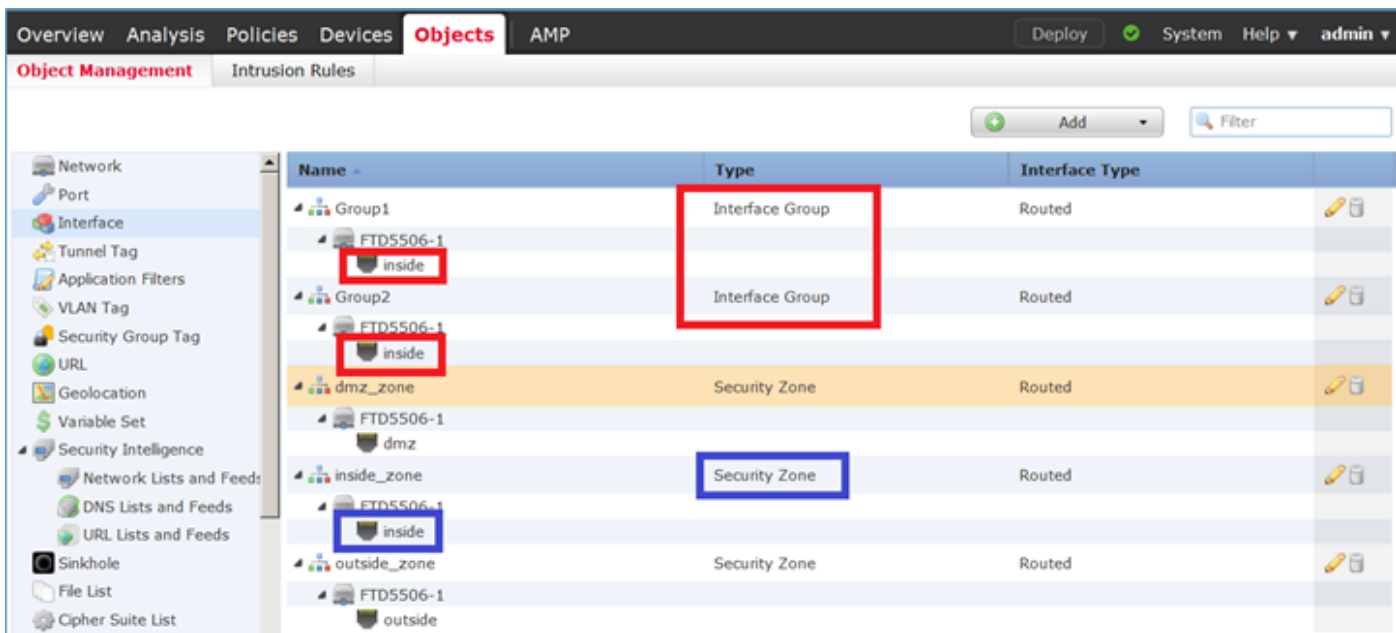
第三步：您可以从对象>对象管理页面创建/编辑接口组和安全区域，如图所示。



### 安全区域与接口组

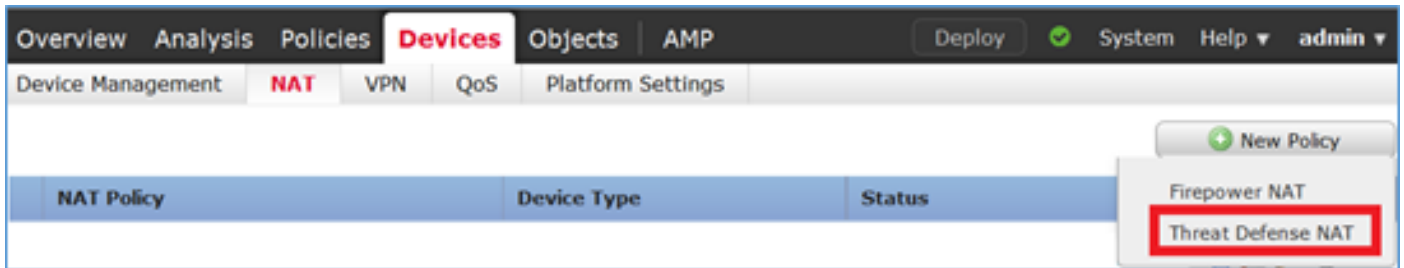
安全区域和接口组之间的主要区别在于，一个接口只能属于一个安全区域，但可以属于多个接口组。因此，实际上，接口组提供了更大的灵活性。

您可以看到内部接口属于两个不同的接口组，但只有一个安全区域，如图所示。

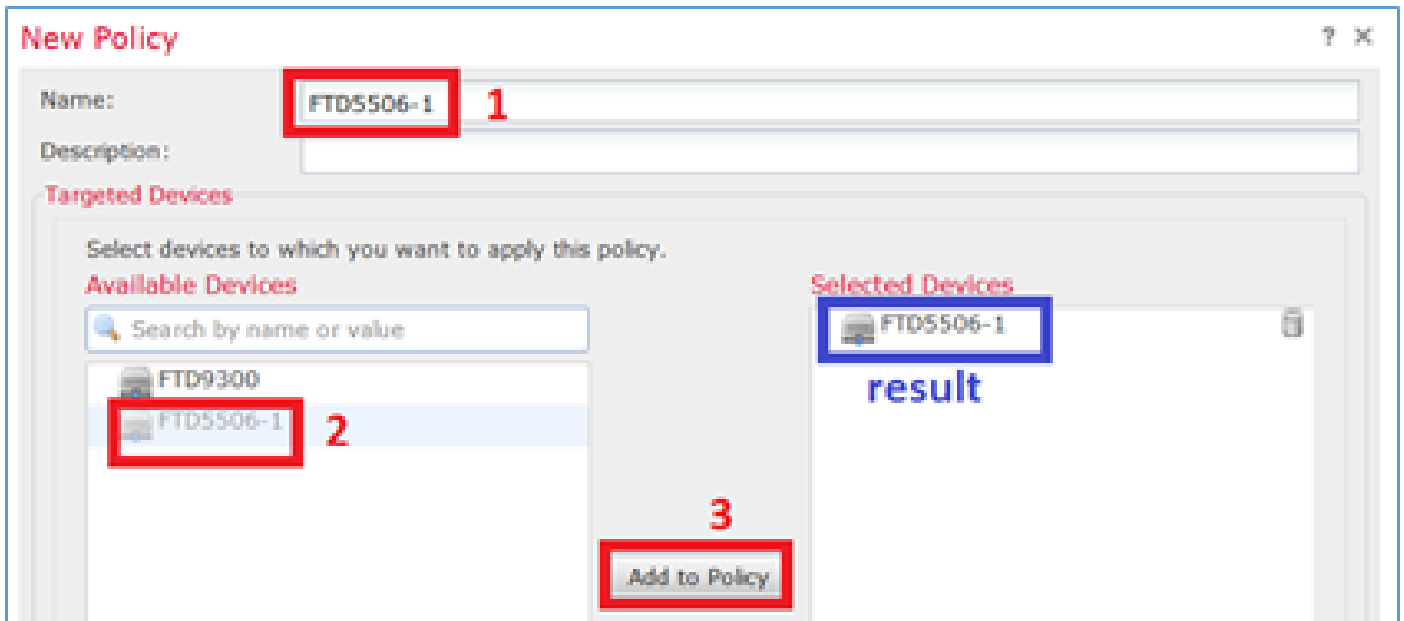


第四步：在FTD上配置静态NAT。

导航到设备> NAT并创建NAT策略。选择New Policy > Threat Defense NAT，如图所示。

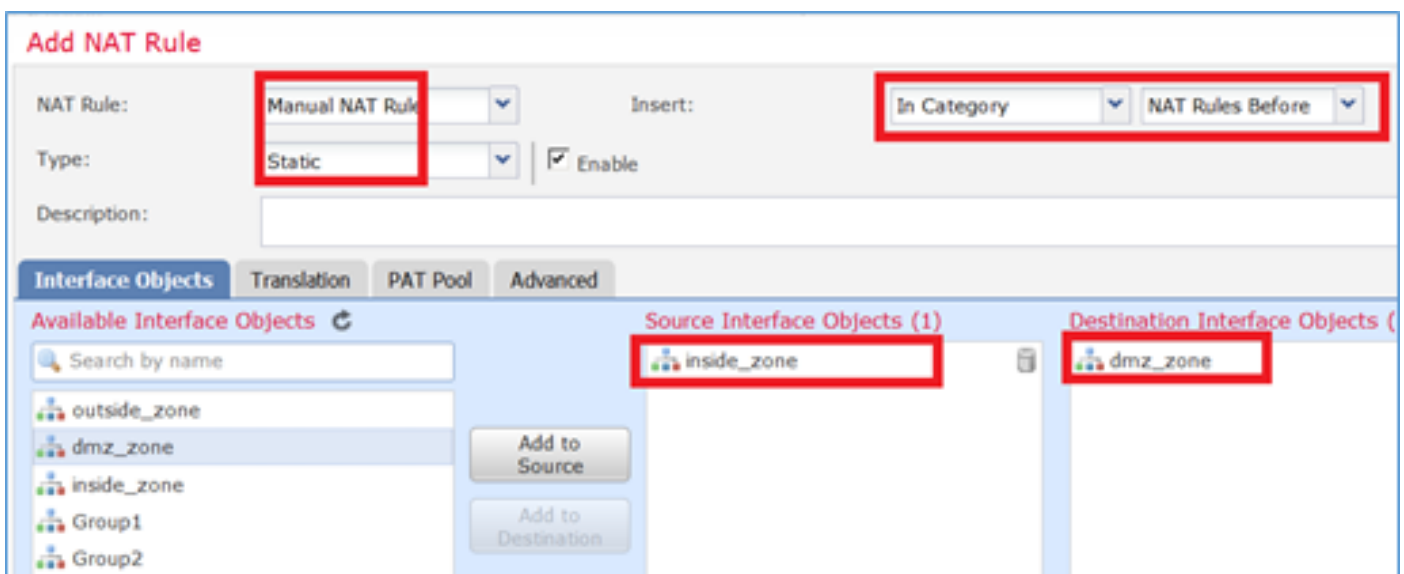


第五步：指定策略名称并将其分配到目标设备，如图所示。



第六步：将NAT规则添加到策略，请点击添加规则。

根据任务要求指定这些要求，如图所示。



主机A = 192.168.75.14

主机B = 192.168.76.100

<#root>

firepower#

show run object

```
object network Host-A
  host 192.168.75.14
object network Host-B
  host 192.168.76.100
```

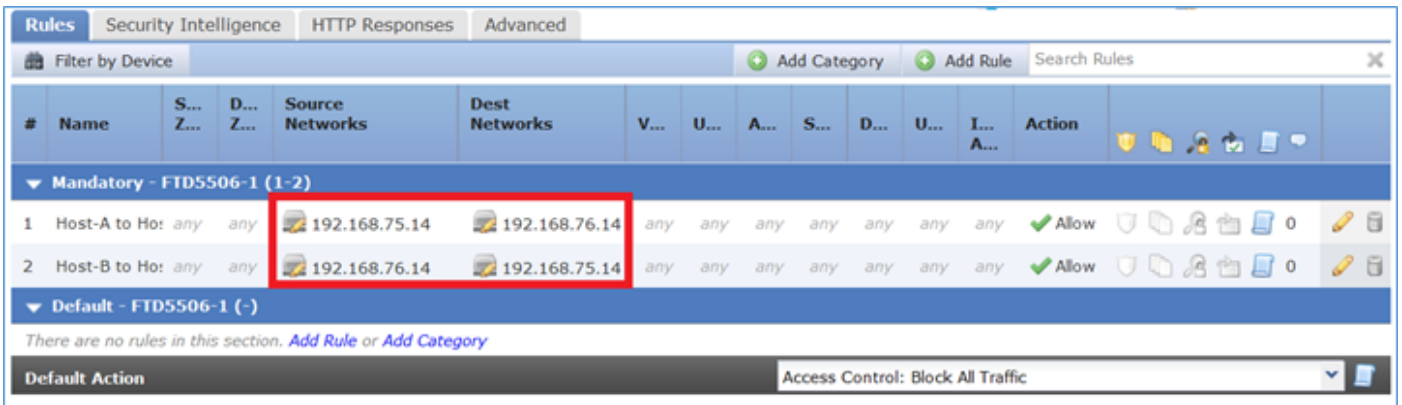
**警告：**如果配置静态NAT并将接口指定为转换源，则会重定向所有发往该接口IP地址的流量。用户无法访问映射接口上启用的任何服务。此类服务的示例包括路由协议，如OSPF和EIGRP。

步骤 7.结果如图所示。

#	Dire...	Typ	Original Packet			Translated Packet			Options
			Source Interface Obj...	Destination Interface Ob...	Original Sources	Original Destinatio...	Orig...	Translated Sources	
▼ NAT Rules Before									
1		Stat	inside_zone	dmz_zone	Host-A		Host-B		Dns:false
▼ Auto NAT Rules									
▼ NAT Rules After									

步骤 8确保存在允许主机B访问主机A的访问控制策略，反之亦然。请记住，静态NAT在默认情况下

是双向的。与传统ASA类似，请参阅实际IP的用法。这是预期结果，因为在本实验中，LINA运行9.6.1.x代码（如图所示）。



#	Name	S... Z...	D... Z...	Source Networks	Dest Networks	V...	U...	A...	S...	D...	U...	I... A...	Action	
Mandatory - FTD5506-1 (1-2)														
1	Host-A to Ho...	any	any	192.168.75.14	192.168.76.14	any	any	any	any	any	any	any	Allow	0
2	Host-B to Ho...	any	any	192.168.76.14	192.168.75.14	any	any	any	any	any	any	any	Allow	0
Default - FTD5506-1 (-)														

验证：

从LINA CLI：

```
<#root>
```

```
firepower#
```

```
show run nat
```

```
nat (inside,dmz) source static Host-A Host-B
```

按预期在第1部分插入NAT规则：

```
<#root>
```

```
firepower#
```


```
show nat
```

```
Manual NAT Policies
```

```
(Section 1)
```

```
1 (inside) to (dmz) source static Host-A Host-B
```

```
translate_hits = 0, untranslate_hits = 0
```

 注意：在后台创建的2个xlate。

```
<#root>
```

```
firepower#
```

```
show xlate
```

```
2 in use, 4 most used
```

Flags: D - DNS, e - extended,  
I - identity  
, i - dynamic, r - portmap,  
  
s - static, T - twice  
  
, N - net-to-net  
NAT from inside:192.168.75.14 to dmz:192.168.76.100  
flags sT idle 0:41:49 timeout 0:00:00  
NAT from dmz:0.0.0.0/0 to inside:0.0.0.0/0  
flags sIT idle 0:41:49 timeout 0:00:00

## ASP NAT表 :

<#root>

firepower#

show asp table classify domain nat

Input Table

in id=

0x7ff6036a9f50

, priority=6, domain=nat, deny=false  
hits=0, user\_data=0x7ff60314dbf0, cs\_id=0x0, flags=0x0, protocol=0

src ip/id=192.168.75.14

, mask=255.255.255.255, port=0, tag=any  
dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0  
input\_ifc=inside, output\_ifc=dmz

in id=

0x7ff603696860

, priority=6, domain=nat, deny=false  
hits=0, user\_data=0x7ff602be3f80, cs\_id=0x0, flags=0x0, protocol=0  
src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any

dst ip/id=192.168.76.100

, mask=255.255.255.255, port=0, tag=any, dscp=0x0  
input\_ifc=dmz, output\_ifc=inside

Output Table:

L2 - Output Table:

L2 - Input Table:

Last clearing of hits counters: Never



```
<#root>
```

```
firepower#
```

```
show asp table classify domain nat-reverse
```

```
Input Table
```

```
Output Table:
```

```
out id=
```

```
0x7ff603685350
```

```
, priority=6, domain=nat-reverse, deny=false  
  hits=0, user_data=0x7ff60314dbf0, cs_id=0x0, use_real_addr, flags=0x0, protocol=0  
  src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any
```

```
dst ip/id=192.168.75.14
```

```
, mask=255.255.255.255, port=0, tag=any, dscp=0x0  
  input_ifc=dmz, output_ifc=inside
```

```
out id=
```

```
0x7ff603638470
```

```
, priority=6, domain=nat-reverse, deny=false  
  hits=0, user_data=0x7ff602be3f80, cs_id=0x0, use_real_addr, flags=0x0, protocol=0
```

```
src ip/id=192.168.75.14
```

```
, mask=255.255.255.255, port=0, tag=any  
  dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0  
  input_ifc=inside, output_ifc=dmz
```

```
L2 - Output Table:
```

```
L2 - Input Table:
```

```
Last clearing of hits counters: Never
```

启用捕获并跟踪有关FTD的详细信息以及从Host-B ping主机A和如图所示。

```
<#root>
```

```
firepower#
```

```
capture DMZ interface dmz trace detail match ip host 192.168.76.14 host 192.168.76.100
```

```
firepower#
```

```
capture INSIDE interface inside trace detail match ip host 192.168.76.14 host 192.168.75.14
```

```

C:\Users\cisco>ping 192.168.76.100

Pinging 192.168.76.100 with 32 bytes of data:
Reply from 192.168.76.100: bytes=32 time=3ms TTL=128
Reply from 192.168.76.100: bytes=32 time=1ms TTL=128
Reply from 192.168.76.100: bytes=32 time=1ms TTL=128
Reply from 192.168.76.100: bytes=32 time=1ms TTL=128

Ping statistics for 192.168.76.100:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 3ms, Average = 1ms

C:\Users\cisco>_

```

命中计数在ASP表中：

```
<#root>
```

```
firepower#
```

```
show asp table classify domain nat
```

```
Input Table
```

```
in id=0x7ff6036a9f50, priority=6, domain=nat, deny=false
    hits=0, user_data=0x7ff60314dbf0, cs_id=0x0, flags=0x0, protocol=0
    src ip/id=192.168.75.14, mask=255.255.255.255, port=0, tag=any
    dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0
    input_ifc=inside, output_ifc=dmz
```

```
in id=
```

```
0x7ff603696860
```

```
, priority=6, domain=nat, deny=false
```

```
hits=4
```

```
, user_data=0x7ff602be3f80, cs_id=0x0, flags=0x0, protocol=0
    src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any
    dst ip/id=192.168.76.100, mask=255.255.255.255, port=0, tag=any, dscp=0x0
    input_ifc=dmz, output_ifc=inside
```

```
<#root>
```

```
firepower#
```

```
show asp table classify domain nat-reverse
```

```
Input Table
```

```
Output Table:
```

```
out id=
```

```
0x7ff603685350
```

```
, priority=6, domain=nat-reverse, deny=false
```

```
hits=4
```

```
, user_data=0x7ff60314dbf0, cs_id=0x0, use_real_addr, flags=0x0, protocol=0
  src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any
  dst ip/id=192.168.75.14, mask=255.255.255.255, port=0, tag=any, dscp=0x0
  input_ifc=dmz, output_ifc=inside
out id=0x7ff603638470, priority=6, domain=nat-reverse, deny=false
  hits=0, user_data=0x7ff602be3f80, cs_id=0x0, use_real_addr, flags=0x0, protocol=0
  src ip/id=192.168.75.14, mask=255.255.255.255, port=0, tag=any
  dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0
  input_ifc=inside, output_ifc=dmz
```

数据包捕获显示：

```
<#root>
```

```
firepower#
```

```
show capture DMZ
```

```
8 packets captured
```

```
1: 17:38:26.324812      192.168.76.14 > 192.168.76.100: icmp: echo request
2: 17:38:26.326505      192.168.76.100 > 192.168.76.14: icmp: echo reply
3: 17:38:27.317991      192.168.76.14 > 192.168.76.100: icmp: echo request
4: 17:38:27.319456      192.168.76.100 > 192.168.76.14: icmp: echo reply
5: 17:38:28.316344      192.168.76.14 > 192.168.76.100: icmp: echo request
6: 17:38:28.317824      192.168.76.100 > 192.168.76.14: icmp: echo reply
7: 17:38:29.330518      192.168.76.14 > 192.168.76.100: icmp: echo request
8: 17:38:29.331983      192.168.76.100 > 192.168.76.14: icmp: echo reply
```

```
8 packets shown
```

数据包的踪迹（重要点突出显示）。



注意：NAT规则的ID及其与ASP表的关联。

```
<#root>
```

```
firepower#
```

```
show capture DMZ packet-number 3 trace detail
```

```
8 packets captured
```

```
3: 17:38:27.317991 000c.2998.3fec d8b1.90b7.32e0 0x0800 Length: 74
  192.168.76.14 > 192.168.76.100: icmp: echo request (ttl 128, id 9975)
```

```
Phase: 1
```

```
Type: CAPTURE
```

```
Subtype:
```

```
Result: ALLOW
```

Config:

Additional Information:

Forward Flow based lookup yields rule:

```
in id=0x7ff602c72be0, priority=13, domain=capture, deny=false
  hits=55, user_data=0x7ff602b74a50, cs_id=0x0, l3_type=0x0
  src mac=0000.0000.0000, mask=0000.0000.0000
  dst mac=0000.0000.0000, mask=0000.0000.0000
  input_ifc=dmz, output_ifc=any
```

Phase: 2

Type: ACCESS-LIST

Subtype:

Result: ALLOW

Config:

Implicit Rule

Additional Information:

Forward Flow based lookup yields rule:

```
in id=0x7ff603612200, priority=1, domain=permit, deny=false
  hits=1, user_data=0x0, cs_id=0x0, l3_type=0x8
  src mac=0000.0000.0000, mask=0000.0000.0000
  dst mac=0000.0000.0000, mask=0100.0000.0000
  input_ifc=dmz, output_ifc=any
```

Phase: 3

Type: UN-NAT

Subtype: static

Result: ALLOW

Config:

```
nat (inside,dmz) source static Host-A Host-B
```

Additional Information:

NAT divert to egress interface inside

Untranslate 192.168.76.100/0 to 192.168.75.14/0

Phase: 4

Type: ACCESS-LIST

Subtype: log

Result: ALLOW

Config:

```
access-group CSM_FW_ACL_ global
```

```
access-list CSM_FW_ACL_ advanced permit ip host 192.168.76.14 host 192.168.75.14 rule-id 268434440
```

```
access-list CSM_FW_ACL_ remark rule-id 268434440: ACCESS POLICY: FTD5506-1 - Mandatory/2
```

```
access-list CSM_FW_ACL_ remark rule-id 268434440: L4 RULE: Host-B to Host-A
```

Additional Information:

This packet will be sent to snort for additional processing where a verdict will be reached

Forward Flow based lookup yields rule:

```
in id=0x7ff602b72610, priority=12, domain=permit, deny=false
  hits=1, user_data=0x7ff5fa9d0180, cs_id=0x0, use_real_addr, flags=0x0, protocol=0
  src ip/id=192.168.76.14, mask=255.255.255.255, port=0, tag=any, ifc=any
```

```
dst ip/id=192.168.75.14
```

```
, mask=255.255.255.255, port=0, tag=any, ifc=any, vlan=0, dscp=0x0
```

```
input_ifc=any, output_ifc=any
```

Phase: 5

Type: CONN-SETTINGS

Subtype:

Result: ALLOW

Config:

```
class-map class-default
```

```
match any
policy-map global_policy
class class-default
set connection advanced-options UM_STATIC_TCP_MAP
service-policy global_policy global
```

Additional Information:

Forward Flow based lookup yields rule:

```
in id=0x7ff60367cf80, priority=7, domain=conn-set, deny=false
hits=1, user_data=0x7ff603677080, cs_id=0x0, use_real_addr, flags=0x0, protocol=0
src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any
dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0
input_ifc=dmz, output_ifc=any
```

Phase: 6

Type: NAT

Subtype:

Result: ALLOW

Config:

```
nat (inside,dmz) source static Host-A Host-B
```

Additional Information:

Static translate 192.168.76.14/1 to 192.168.76.14/1

Forward Flow based lookup yields rule:

```
in
```

```
id=0x7ff603696860
```

```
, priority=6, domain=nat, deny=false
```

```
hits=1
```

```
, user_data=0x7ff602be3f80, cs_id=0x0, flags=0x0, protocol=0
src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any
dst ip/id=192.168.76.100, mask=255.255.255.255, port=0, tag=any, dscp=0x0
input_ifc=dmz, output_ifc=inside
```

Phase: 7

Type: NAT

Subtype: per-session

Result: ALLOW

Config:

Additional Information:

Forward Flow based lookup yields rule:

```
in id=0x7ff602220020, priority=0, domain=nat-per-session, deny=true
hits=2, user_data=0x0, cs_id=0x0, reverse, use_real_addr, flags=0x0, protocol=0
src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any
dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0
input_ifc=any, output_ifc=any
```

Phase: 8

Type: IP-OPTIONS

Subtype:

Result: ALLOW

Config:

Additional Information:

Forward Flow based lookup yields rule:

```
in id=0x7ff6035c0af0, priority=0, domain=inspect-ip-options, deny=true
hits=1, user_data=0x0, cs_id=0x0, reverse, flags=0x0, protocol=0
src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any
dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0
input_ifc=dmz, output_ifc=any
```

Phase: 9

Type: INSPECT  
Subtype: np-inspect  
Result: ALLOW  
Config:  
class-map inspection\_default  
  match default-inspection-traffic  
policy-map global\_policy  
  class inspection\_default  
    inspect icmp  
service-policy global\_policy global  
Additional Information:  
Forward Flow based lookup yields rule:  
  in id=0x7ff602b5f020, priority=70, domain=inspect-icmp, deny=false  
      hits=2, user\_data=0x7ff602be7460, cs\_id=0x0, use\_real\_addr, flags=0x0, protocol=1  
      src ip/id=0.0.0.0, mask=0.0.0.0, icmp-type=0, tag=any  
      dst ip/id=0.0.0.0, mask=0.0.0.0, icmp-code=0, tag=any, dscp=0x0  
      input\_ifc=dmz, output\_ifc=any

Phase: 10  
Type: INSPECT  
Subtype: np-inspect  
Result: ALLOW  
Config:  
Additional Information:  
Forward Flow based lookup yields rule:  
  in id=0x7ff602b3a6d0, priority=70, domain=inspect-icmp-error, deny=false  
      hits=2, user\_data=0x7ff603672ec0, cs\_id=0x0, use\_real\_addr, flags=0x0, protocol=1  
      src ip/id=0.0.0.0, mask=0.0.0.0, icmp-type=0, tag=any  
      dst ip/id=0.0.0.0, mask=0.0.0.0, icmp-code=0, tag=any, dscp=0x0  
      input\_ifc=dmz, output\_ifc=any

Phase: 11  
Type: NAT  
Subtype: rpf-check  
Result: ALLOW  
Config:  
nat (inside,dmz) source static Host-A Host-B  
Additional Information:  
Forward Flow based lookup yields rule:  
  out

id=0x7ff603685350

, priority=6, domain=nat-reverse, deny=false

hits=2

, user\_data=0x7ff60314dbf0, cs\_id=0x0, use\_real\_addr, flags=0x0, protocol=0  
  src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any  
  dst ip/id=192.168.75.14, mask=255.255.255.255, port=0, tag=any, dscp=0x0  
  input\_ifc=dmz, output\_ifc=inside

Phase: 12  
Type: NAT  
Subtype: per-session  
Result: ALLOW  
Config:  
Additional Information:  
Reverse Flow based lookup yields rule:  
  in id=0x7ff602220020, priority=0, domain=nat-per-session, deny=true  
      hits=4, user\_data=0x0, cs\_id=0x0, reverse, use\_real\_addr, flags=0x0, protocol=0  
      src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any

dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0  
input\_ifc=any, output\_ifc=any

Phase: 13

Type: IP-OPTIONS

Subtype:

Result: ALLOW

Config:

Additional Information:

Reverse Flow based lookup yields rule:

in id=0x7ff602c56d10, priority=0, domain=inspect-ip-options, deny=true  
hits=2, user\_data=0x0, cs\_id=0x0, reverse, flags=0x0, protocol=0  
src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any  
dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0  
input\_ifc=inside, output\_ifc=any

Phase: 14

Type: FLOW-CREATION

Subtype:

Result: ALLOW

Config:

Additional Information:

New flow created with id 5084, packet dispatched to next module

Module information for forward flow ...

snp\_fp\_inspect\_ip\_options

snp\_fp\_snort

snp\_fp\_inspect\_icmp

snp\_fp\_translate

snp\_fp\_adjacency

snp\_fp\_fragment

snp\_ifc\_stat

Module information for reverse flow ...

snp\_fp\_inspect\_ip\_options

snp\_fp\_translate

snp\_fp\_inspect\_icmp

snp\_fp\_snort

snp\_fp\_adjacency

snp\_fp\_fragment

snp\_ifc\_stat

Phase: 15

Type: EXTERNAL-INSPECT

Subtype:

Result: ALLOW

Config:

Additional Information:

Application: 'SNORT Inspect'

Phase: 16

Type: SNORT

Subtype:

Result: ALLOW

Config:

Additional Information:

Snort Verdict: (pass-packet) allow this packet

Phase: 17

Type: ROUTE-LOOKUP

Subtype: Resolve Egress Interface

Result: ALLOW

Config:

Additional Information:

found next-hop 192.168.75.14 using egress ifc inside

Phase: 18  
Type: ADJACENCY-LOOKUP  
Subtype: next-hop and adjacency  
Result: ALLOW  
Config:  
Additional Information:  
adjacency Active  
next-hop mac address 000c.2930.2b78 hits 140694538708414

Phase: 19  
Type: CAPTURE  
Subtype:  
Result: ALLOW  
Config:  
Additional Information:  
Forward Flow based lookup yields rule:  
out id=0x7ff6036a94e0, priority=13, domain=capture, deny=false  
hits=14, user\_data=0x7ff6024aff90, cs\_id=0x0, l3\_type=0x0  
src mac=0000.0000.0000, mask=0000.0000.0000  
dst mac=0000.0000.0000, mask=0000.0000.0000  
input\_ifc=inside, output\_ifc=any

Result:  
input-interface: inside  
input-status: up  
input-line-status: up  
output-interface: inside  
output-status: up  
output-line-status: up  
Action: allow  
1 packet shown

## 任务2.在FTD上配置端口地址转换(PAT)

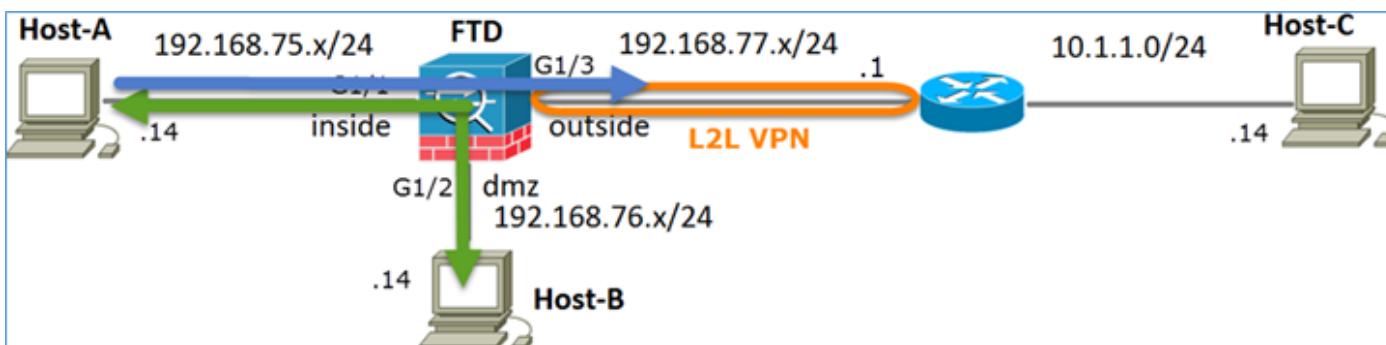
根据以下要求配置NAT：

NAT 规则	手动NAT规则
NAT类型	动态
插入	在第1部分
来源接口	内部*



目标接口	外部*
原始源	192.168.75.0/24
转换后的源	外部接口(PAT)

\* 为NAT规则使用安全区域

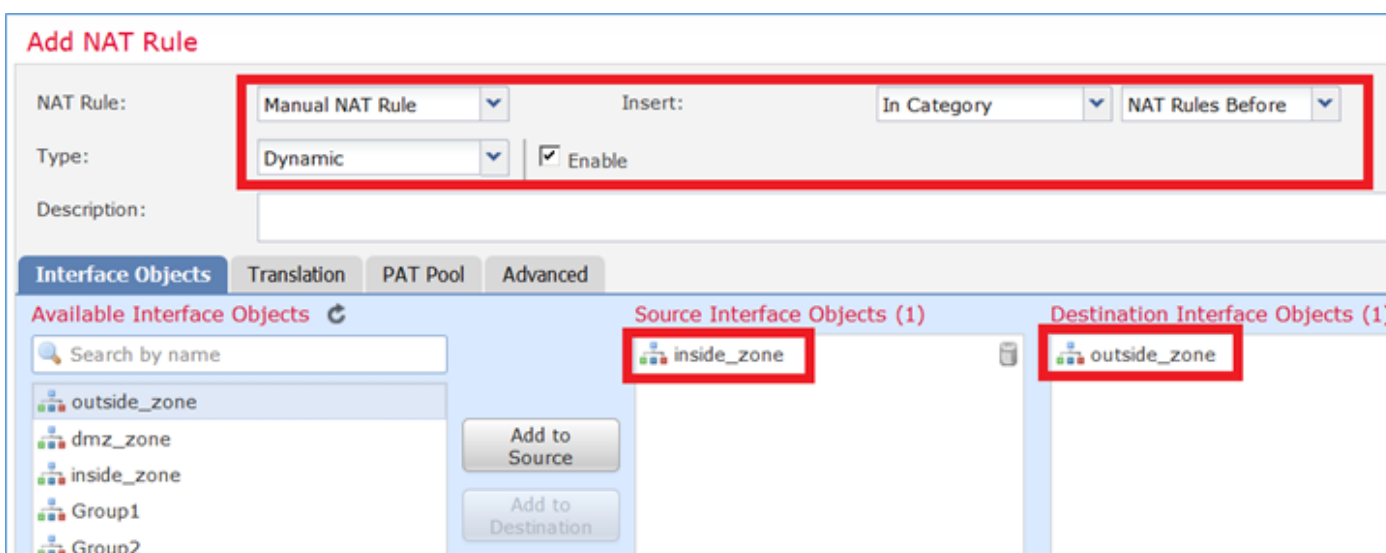


静态 NAT

PAT

解决方案：

步骤1:添加第二个NAT规则并根据任务要求进行配置，如图所示。



第二步：以下是PAT的配置方式（如图所示）。

**Add NAT Rule** ?

NAT Rule:  Insert:

Type:   Enable

Description:

Interface Objects **Translation** PAT Pool Advanced

**Original Packet**

Original Source: \*  +

Original Destination:  +

Original Source Port:  +

Original Destination Port:  +

**Translated Packet**

Translated Source:  +  
The values selected for Destination Interface Objects in 'Interface Objects' tab will be used

Translated Destination:  +

Translated Source Port:  +

Translated Destination Port:  +

第三步：结果如图所示。

Rules											
Filter by Device											
Original Packet											
Translated Packet											
#	Direction	T...	Source Interface Objects	Destination Interface Objects	Original Sources	Original Destinations	Original Services	Translated Sources	Translated Destinations	Translated Services	Options
▼ NAT Rules Before											
1	St...		inside_zone	dmz_zone	Host-A			Host-B			Dns:false
2	D...		inside_zone	outside_zone	Net_192.168.75.0_24bits			Interface			Dns:false
▼ Auto NAT Rules											
▼ NAT Rules After											

第四步：在本实验的其余部分，将访问控制策略配置为允许所有流量通过。

验证：

NAT 配置:

<#root>

firepower#

show nat

Manual NAT Policies (Section 1)

1 (inside) to (dmz) source static Host-A Host-B  
 translate\_hits = 26, untranslate\_hits = 26

2 (inside) to (outside) source dynamic Net\_192.168.75.0\_24bits interface  
 translate\_hits = 0, untranslate\_hits = 0

在LINA CLI中记下新条目：

<#root>

firepower#

```
show xlate
```

```
3 in use, 19 most used
Flags: D - DNS, e - extended, I - identity, i - dynamic, r - portmap,
      s - static, T - twice, N - net-to-net
NAT from inside:192.168.75.14 to dmz:192.168.76.100
    flags sT idle 1:15:14 timeout 0:00:00
NAT from dmz:0.0.0.0/0 to inside:0.0.0.0/0
    flags sIT idle 1:15:14 timeout 0:00:00

NAT from outside:0.0.0.0/0 to inside:0.0.0.0/0
    flags sIT idle 0:04:02 timeout 0:00:00
```

在内部和外部接口上启用捕获。在内部捕获上启用跟踪：

```
<#root>
```

```
firepower#
```

```
capture CAPI trace interface inside match ip host 192.168.75.14 host 192.168.77.1
```

```
firepower#
```

```
capture CAPO interface outside match ip any host 192.168.77.1
```

从Host-A (192.168.75.14)对IP 192.168.77.1执行ping操作，如图所示。

```
C:\Windows\system32>ping 192.168.77.1

Pinging 192.168.77.1 with 32 bytes of data:
Reply from 192.168.77.1: bytes=32 time=1ms TTL=255
Reply from 192.168.77.1: bytes=32 time=1ms TTL=255
Reply from 192.168.77.1: bytes=32 time=1ms TTL=255
Reply from 192.168.77.1: bytes=32 time=1ms TTL=255

Ping statistics for 192.168.77.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms
```

在LINA捕获中，您可以看到PAT转换：

```
<#root>
```

```
firepower#
```

```
show cap CAPI
```

```
8 packets captured
```

```
1: 18:54:43.658001
```

```
192.168.75.14 > 192.168.77.1
```

```
: icmp: echo request
```

```
2: 18:54:43.659099      192.168.77.1 > 192.168.75.14: icmp: echo reply
3: 18:54:44.668544      192.168.75.14 > 192.168.77.1: icmp: echo request
4: 18:54:44.669505      192.168.77.1 > 192.168.75.14: icmp: echo reply
5: 18:54:45.682368      192.168.75.14 > 192.168.77.1: icmp: echo request
6: 18:54:45.683421      192.168.77.1 > 192.168.75.14: icmp: echo reply
7: 18:54:46.696436      192.168.75.14 > 192.168.77.1: icmp: echo request
8: 18:54:46.697412      192.168.77.1 > 192.168.75.14: icmp: echo reply
```

<#root>

firepower#

show cap CAPO

8 packets captured

1: 18:54:43.658672

192.168.77.6 > 192.168.77.1

: icmp: echo request

```
2: 18:54:43.658962      192.168.77.1 > 192.168.77.6: icmp: echo reply
3: 18:54:44.669109      192.168.77.6 > 192.168.77.1: icmp: echo request
4: 18:54:44.669337      192.168.77.1 > 192.168.77.6: icmp: echo reply
5: 18:54:45.682932      192.168.77.6 > 192.168.77.1: icmp: echo request
6: 18:54:45.683207      192.168.77.1 > 192.168.77.6: icmp: echo reply
7: 18:54:46.697031      192.168.77.6 > 192.168.77.1: icmp: echo request
8: 18:54:46.697275      192.168.77.1 > 192.168.77.6: icmp: echo reply
```

突出显示了重要部分的数据包的踪迹：

<#root>

firepower#

show cap CAPI packet-number 1 trace

8 packets captured

1: 18:54:43.658001 192.168.75.14 > 192.168.77.1: icmp: echo request

Phase: 1

Type: CAPTURE

Subtype:

Result: ALLOW

Config:

Additional Information:

MAC Access list

Phase: 2

Type: ACCESS-LIST

Subtype:

Result: ALLOW

Config:

Implicit Rule

Additional Information:

MAC Access list

Phase: 3  
Type: ROUTE-LOOKUP  
Subtype: Resolve Egress Interface  
Result: ALLOW  
Config:  
Additional Information:  
  
found next-hop 192.168.77.1 using egress ifc outside

Phase: 4  
Type: ACCESS-LIST  
Subtype: log  
Result: ALLOW  
Config:  
access-group CSM\_FW\_ACL\_ global  
access-list CSM\_FW\_ACL\_ advanced permit ip any any rule-id 268434434  
access-list CSM\_FW\_ACL\_ remark rule-id 268434434: ACCESS POLICY: FTD5506-1 - Default/1  
access-list CSM\_FW\_ACL\_ remark rule-id 268434434: L4 RULE: DEFAULT ACTION RULE  
Additional Information:  
This packet will be sent to snort for additional processing where a verdict will be reached

Phase: 5  
Type: CONN-SETTINGS  
Subtype:  
Result: ALLOW  
Config:  
class-map class-default  
match any  
policy-map global\_policy  
class class-default  
set connection advanced-options UM\_STATIC\_TCP\_MAP  
service-policy global\_policy global  
Additional Information:

Phase: 6  
Type: NAT  
Subtype:  
Result: ALLOW  
Config:  
nat (inside,outside) source dynamic Net\_192.168.75.0\_24bits interface  
Additional Information:  
Dynamic translate 192.168.75.14/1 to 192.168.77.6/1

Phase: 7  
Type: NAT  
Subtype: per-session  
Result: ALLOW  
Config:  
Additional Information:

Phase: 8  
Type: IP-OPTIONS  
Subtype:  
Result: ALLOW  
Config:  
Additional Information:

Phase: 9  
Type: INSPECT  
Subtype: np-inspect  
Result: ALLOW

Config:  
class-map inspection\_default  
  match default-inspection-traffic  
policy-map global\_policy  
  class inspection\_default  
    inspect icmp  
service-policy global\_policy global  
Additional Information:

Phase: 10  
Type: INSPECT  
Subtype: np-inspect  
Result: ALLOW  
Config:  
Additional Information:

Phase: 11  
Type: NAT  
Subtype: rpf-check  
Result: ALLOW  
Config:  
nat (inside,outside) source dynamic Net\_192.168.75.0\_24bits interface  
Additional Information:

Phase: 12  
Type: NAT  
Subtype: per-session  
Result: ALLOW  
Config:  
Additional Information:

Phase: 13  
Type: IP-OPTIONS  
Subtype:  
Result: ALLOW  
Config:  
Additional Information:

Phase: 14  
Type: FLOW-CREATION  
Subtype:  
Result: ALLOW  
Config:  
Additional Information:  
New flow created with id 6981, packet dispatched to next module

Phase: 15  
Type: EXTERNAL-INSPECT  
Subtype:  
Result: ALLOW  
Config:  
Additional Information:  
Application: 'SNORT Inspect'

Phase: 16  
Type: SNORT  
Subtype:  
Result: ALLOW  
Config:  
Additional Information:  
Snort Verdict: (pass-packet) allow this packet

Phase: 17  
Type: ROUTE-LOOKUP  
Subtype: Resolve Egress Interface  
Result: ALLOW  
Config:  
Additional Information:  
found next-hop 192.168.77.1 using egress ifc outside

Phase: 18  
Type: ADJACENCY-LOOKUP  
Subtype: next-hop and adjacency  
Result: ALLOW  
Config:  
Additional Information:  
adjacency Active  
next-hop mac address c84c.758d.4980 hits 140694538709114

Phase: 19  
Type: CAPTURE  
Subtype:  
Result: ALLOW  
Config:  
Additional Information:  
MAC Access list

Result:  
input-interface: outside  
input-status: up  
input-line-status: up  
output-interface: outside  
output-status: up  
output-line-status: up  
Action: allow  
1 packet shown

动态xlate已创建 ( 请注意ri标志 ) :

<#root>

firepower#

show xlate

4 in use, 19 most used

Flags: D - DNS, e - extended, I - identity,

i - dynamic, r - portmap,

s - static, T - twice, N - net-to-net

NAT from inside:192.168.75.14 to dmz:192.168.76.100

flags sT idle 1:16:47 timeout 0:00:00

NAT from dmz:0.0.0.0/0 to inside:0.0.0.0/0

flags sIT idle 1:16:47 timeout 0:00:00

NAT from outside:0.0.0.0/0 to inside:0.0.0.0/0

flags sIT idle 0:05:35 timeout 0:00:00

ICMP PAT from inside:192.168.75.14/1 to outside:192.168.77.6/1 flags ri idle 0:00:30 timeout 0:00:30

在LINA日志中，您可以看到：

```
<#root>
```

```
firepower#
```

```
show log
```

```
May 31 2016 18:54:43: %ASA-7-609001: Built local-host inside:192.168.75.14
```

```
May 31 2016 18:54:43: %ASA-6-305011: Built dynamic ICMP translation from inside:192.168.75.14/1 to outside:192.168.77.1
```

```
May 31 2016 18:54:43: %ASA-7-609001: Built local-host outside:192.168.77.1
```

```
May 31 2016 18:54:43: %ASA-6-302020: Built inbound ICMP connection for faddr 192.168.75.14/1 gaddr 192.168.77.1
```

```
May 31 2016 18:54:43: %ASA-6-302021: Teardown ICMP connection for faddr 192.168.75.14/1 gaddr 192.168.77.1
```

```
May 31 2016 18:54:43: %ASA-7-609002: Teardown local-host outside:192.168.77.1 duration 0:00:00
```

```
May 31 2016 18:55:17: %ASA-6-305012: Teardown dynamic ICMP translation from inside:192.168.75.14/1 to outside:192.168.77.1
```

NAT部分：

```
<#root>
```

```
firepower#
```

```
show nat
```

```
Manual NAT Policies (Section 1)
```

```
1 (inside) to (dmz) source static Host-A Host-B  
   translate_hits = 26, untranslate_hits = 26
```

```
2 (inside) to (outside) source dynamic Net_192.168.75.0_24bits interface  
   translate_hits = 94, untranslate_hits = 138
```

ASP表显示：

```
<#root>
```

```
firepower#
```

```
show asp table classify domain nat
```

```
Input Table
```

```
in id=0x7ff6036a9f50, priority=6, domain=nat, deny=false  
   hits=0, user_data=0x7ff60314dbf0, cs_id=0x0, flags=0x0, protocol=0  
   src ip/id=192.168.75.14, mask=255.255.255.255, port=0, tag=any  
   dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0  
   input_ifc=inside, output_ifc=dmz
```

```
in id=0x7ff603696860, priority=6, domain=nat, deny=false  
   hits=4, user_data=0x7ff602be3f80, cs_id=0x0, flags=0x0, protocol=0  
   src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any  
   dst ip/id=192.168.76.100, mask=255.255.255.255, port=0, tag=any, dscp=0x0  
   input_ifc=dmz, output_ifc=inside
```

```
in id=0x7ff602c75f00, priority=6, domain=nat, deny=false
```



```

hits=94, user_data=0x7ff6036609a0, cs_id=0x0, flags=0x0, protocol=0
src ip/id=192.168.75.0, mask=255.255.255.0, port=0, tag=any
dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0
input_ifc=inside, output_ifc=outside
in id=0x7ff603681fb0, priority=6, domain=nat, deny=false
hits=276, user_data=0x7ff60249f370, cs_id=0x0, flags=0x0, protocol=0
src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any
dst ip/id=192.168.77.6, mask=255.255.255.255, port=0, tag=any, dscp=0x0
input_ifc=outside, output_ifc=inside

```

<#root>

firepower#

show asp table classify domain nat-reverse

Input Table

Output Table:

```

out id=0x7ff603685350, priority=6, domain=nat-reverse, deny=false
  hits=4, user_data=0x7ff60314dbf0, cs_id=0x0, use_real_addr, flags=0x0, protocol=0
  src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any
  dst ip/id=192.168.75.14, mask=255.255.255.255, port=0, tag=any, dscp=0x0
  input_ifc=dmz, output_ifc=inside
out id=0x7ff603638470, priority=6, domain=nat-reverse, deny=false
  hits=0, user_data=0x7ff602be3f80, cs_id=0x0, use_real_addr, flags=0x0, protocol=0
  src ip/id=192.168.75.14, mask=255.255.255.255, port=0, tag=any
  dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0
  input_ifc=inside, output_ifc=dmz
out id=0x7ff60361bda0, priority=6, domain=nat-reverse, deny=false
  hits=138, user_data=0x7ff6036609a0, cs_id=0x0, use_real_addr, flags=0x0, protocol=0
  src ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any
  dst ip/id=192.168.75.0, mask=255.255.255.0, port=0, tag=any, dscp=0x0
  input_ifc=outside, output_ifc=inside
out id=0x7ff60361c180, priority=6, domain=nat-reverse, deny=false
  hits=94, user_data=0x7ff60249f370, cs_id=0x0, use_real_addr, flags=0x0, protocol=0
  src ip/id=192.168.75.0, mask=255.255.255.0, port=0, tag=any
  dst ip/id=0.0.0.0, mask=0.0.0.0, port=0, tag=any, dscp=0x0
  input_ifc=inside, output_ifc=outside

```

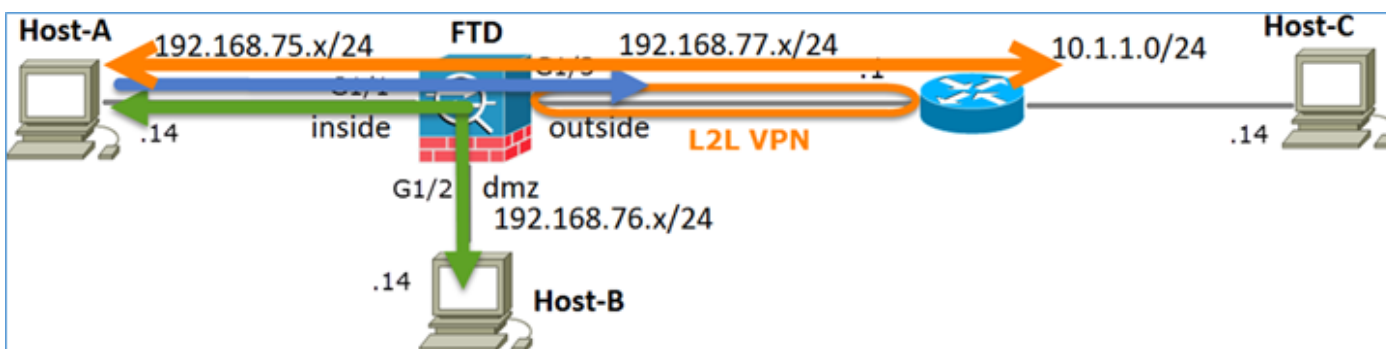
### 任务3.在FTD上配置NAT免除

根据以下要求配置NAT：

NAT 规则	手动NAT规则
NAT类型	静态
插入	在第1部分，所有现有规则

来源接口	内部*
目标接口	外部*
原始源	192.168.75.0/24
转换后的源	192.168.75.0/24
原始目标	10.1.1.0/24
转换后的目标	10.1.1.0/24

\* 为NAT规则使用安全区域



静态 NAT

PAT


NAT免除

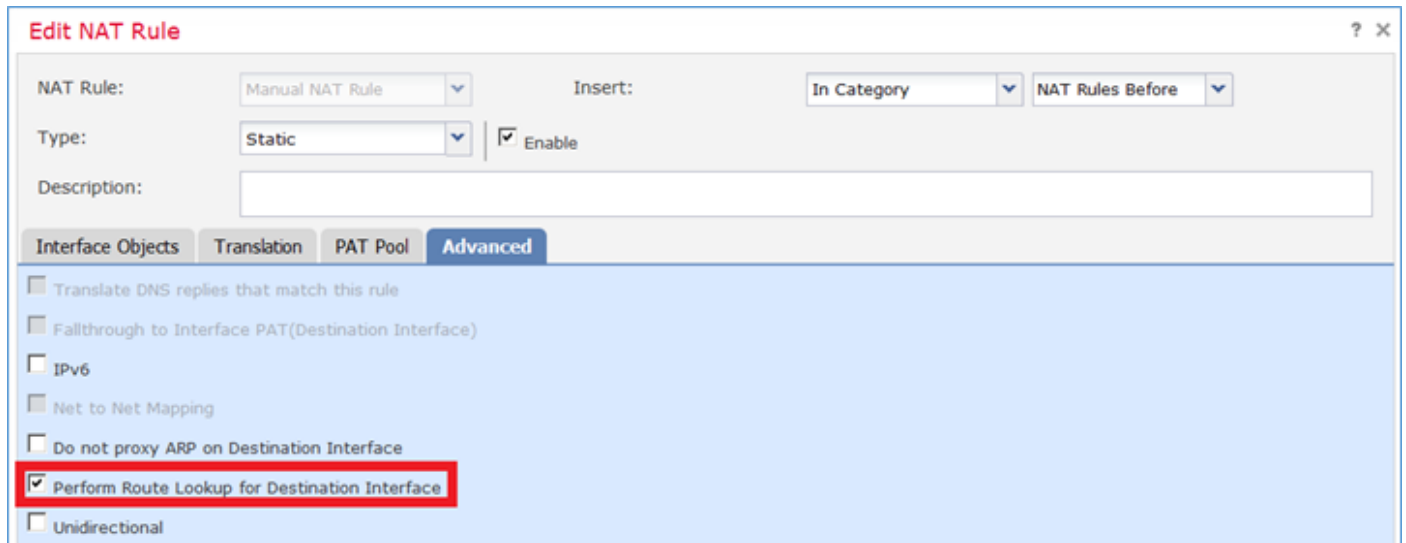
解决方案：

步骤1:添加第三条NAT规则并按任务要求进行配置，如图所示。

Rules										
Filter by Device										
#	Direction	Ty...	Source Interface O...	Destination Interface Obj...	Original Packet			Translated Packet		
					Original Sources	Original Destinations	Original Services	Translated Sources	Translated Destinations	Translated Services
▼ NAT Rules Before										
1	→	Sta...	inside_zone	outside_zone	Net_192.168.75.0_24bits	net_10.1.1.0_24bits		Net_192.168.75.0_24b	net_10.1.1.0_24bits	
2	→	Sta...	inside_zone	dmz_zone	Host-A			Host-B		
3	→	Dy...	inside_zone	outside_zone	Net_192.168.75.0_24bits			Interface		
▼ Auto NAT Rules										
▼ NAT Rules After										

第二步：执行路由查找以确定出口接口。

 注意：对于身份NAT规则（如您添加的规则），您可以更改确定出口接口的方式并使用常规路由查找（如图所示）。



The screenshot shows the 'Edit NAT Rule' configuration window. The 'Advanced' tab is selected, and the checkbox 'Perform Route Lookup for Destination Interface' is checked and highlighted with a red box. Other options include 'Translate DNS replies that match this rule', 'Fallthrough to Interface PAT(Destination Interface)', 'IPv6', 'Net to Net Mapping', 'Do not proxy ARP on Destination Interface', and 'Unidirectional'.

验证：

<#root>

firepower#

show run nat

```
nat (inside,outside) source static Net_192.168.75.0_24bits Net_192.168.75.0_24bits destination static ne
```

```
nat (inside,dmz) source static Host-A Host-B
```

```
nat (inside,outside) source dynamic Net_192.168.75.0_24bits interface
```

<#root>

firepower#

show nat

Manual NAT Policies (Section 1)

```
1 (inside) to (outside) source static Net_192.168.75.0_24bits Net_192.168.75.0_24bits destination stati
   translate_hits = 0, untranslate_hits = 0
```

```
2 (inside) to (dmz) source static Host-A Host-B
   translate_hits = 26, untranslate_hits = 26
```

```
3 (inside) to (outside) source dynamic Net_192.168.75.0_24bits interface
   translate_hits = 96, untranslate_hits = 138
```

对源自内部网络的非VPN流量运行Packet Tracer。PAT规则按预期使用：

<#root>

firepower#

packet-tracer input inside tcp 192.168.75.14 1111 192.168.77.1 80

Phase: 1  
Type: CAPTURE  
Subtype:  
Result: ALLOW  
Config:  
Additional Information:  
MAC Access list

Phase: 2  
Type: ACCESS-LIST  
Subtype:  
Result: ALLOW  
Config:  
Implicit Rule  
Additional Information:  
MAC Access list

Phase: 3  
Type: ROUTE-LOOKUP  
Subtype: Resolve Egress Interface  
Result: ALLOW  
Config:  
Additional Information:  
found next-hop 192.168.77.1 using egress ifc outside

Phase: 4  
Type: ACCESS-LIST  
Subtype: log  
Result: ALLOW  
Config:  
access-group CSM\_FW\_ACL\_ global  
access-list CSM\_FW\_ACL\_ advanced permit ip any any rule-id 268434434  
access-list CSM\_FW\_ACL\_ remark rule-id 268434434: ACCESS POLICY: FTD5506-1 - Default/1  
access-list CSM\_FW\_ACL\_ remark rule-id 268434434: L4 RULE: DEFAULT ACTION RULE  
Additional Information:  
This packet will be sent to snort for additional processing where a verdict will be reached

Phase: 5  
Type: CONN-SETTINGS  
Subtype:  
Result: ALLOW  
Config:  
class-map class-default  
match any  
policy-map global\_policy  
class class-default  
set connection advanced-options UM\_STATIC\_TCP\_MAP  
service-policy global\_policy global  
Additional Information:

Phase: 6  
Type: NAT  
Subtype:  
Result: ALLOW  
Config:  
nat (inside,outside) source dynamic Net\_192.168.75.0\_24bits interface  
Additional Information:

```
Dynamic translate 192.168.75.14/1111 to 192.168.77.6/1111
Phase: 7
Type: NAT
Subtype: per-session
Result: ALLOW
Config:
Additional Information:

Phase: 8
Type: IP-OPTIONS
Subtype:
Result: ALLOW
Config:
Additional Information:

Phase: 9
Type: NAT
Subtype: rpf-check
Result: ALLOW
Config:
nat (inside,outside) source dynamic Net_192.168.75.0_24bits interface
Additional Information:

Phase: 10
Type: NAT
Subtype: per-session
Result: ALLOW
Config:
Additional Information:


Phase: 11
Type: IP-OPTIONS
Subtype:
Result: ALLOW
Config:
Additional Information:

Phase: 12
Type: FLOW-CREATION
Subtype:
Result: ALLOW
Config:
Additional Information:
New flow created with id 7227, packet dispatched to next module

Result:
input-interface: inside
input-status: up
input-line-status: up
output-interface: outside
output-status: up
output-line-status: up
Action: allow
```

对必须通过VPN隧道的流量运行Packet Tracer ( 由于第一次尝试会开启VPN隧道，因此请运行两次 )。

---

 注意：您必须选择NAT免除规则。

---

第一次Packet Tracer尝试：

<#root>

firepower#

```
packet-tracer input inside tcp 192.168.75.14 1111 10.1.1.1 80
```

Phase: 1

Type: CAPTURE

Subtype:

Result: ALLOW

Config:

Additional Information:

MAC Access list

Phase: 2

Type: ACCESS-LIST

Subtype:

Result: ALLOW

Config:

Implicit Rule

Additional Information:

MAC Access list

Phase: 3

Type: UN-NAT

Subtype: static

Result: ALLOW

Config:

```
nat (inside,outside) source static Net_192.168.75.0_24bits Net_192.168.75.0_24bits destination static ne
```

Additional Information:

NAT divert to egress interface outside

Untranslate 10.1.1.1/80 to 10.1.1.1/80

Phase: 4

Type: ACCESS-LIST

Subtype: log

Result: ALLOW

Config:

```
access-group CSM_FW_ACL_ global
```

```
access-list CSM_FW_ACL_ advanced permit ip any any rule-id 268434434
```

```
access-list CSM_FW_ACL_ remark rule-id 268434434: ACCESS POLICY: FTD5506-1 - Default/1
```

```
access-list CSM_FW_ACL_ remark rule-id 268434434: L4 RULE: DEFAULT ACTION RULE
```

Additional Information:

This packet will be sent to snort for additional processing where a verdict will be reached

Phase: 5

Type: CONN-SETTINGS

Subtype:

Result: ALLOW

Config:

```
class-map class-default
```

```
match any
```

```
policy-map global_policy
```

```
class class-default
  set connection advanced-options UM_STATIC_TCP_MAP
service-policy global_policy global
Additional Information:
```

```
Phase: 6
Type: NAT
Subtype:
Result: ALLOW
Config:
nat (inside,outside) source static Net_192.168.75.0_24bits Net_192.168.75.0_24bits destination static ne
Additional Information:
Static translate 192.168.75.14/1111 to 192.168.75.14/1111
```

```
Phase: 7
Type: NAT
Subtype: per-session
Result: ALLOW
Config:
Additional Information:
```

```
Phase: 8
Type: IP-OPTIONS
Subtype:
Result: ALLOW
Config:
Additional Information:
```

```
Phase: 9
Type: VPN
Subtype: encrypt
Result: DROP
Config:
Additional Information:
```

```
Result:
input-interface: inside
input-status: up
input-line-status: up
output-interface: outside
output-status: up
output-line-status: up
Action: drop
Drop-reason: (acl-drop) Flow is denied by configured rule
```

第二次Packet Tracer尝试 :

```
<#root>
```

```
firepower#
```

```
packet-tracer input inside tcp 192.168.75.14 1111 10.1.1.1 80
```

```
Phase: 1
Type: CAPTURE
```

Subtype:  
Result: ALLOW  
Config:  
Additional Information:  
MAC Access list

Phase: 2  
Type: ACCESS-LIST  
Subtype:  
Result: ALLOW  
Config:  
Implicit Rule  
Additional Information:  
MAC Access list

Phase: 3  
Type: UN-NAT  
Subtype: static  
Result: ALLOW  
Config:  
nat (inside,outside) source static Net\_192.168.75.0\_24bits Net\_192.168.75.0\_24bits destination static ne  
Additional Information:  
NAT divert to egress interface outside  
Untranslate 10.1.1.1/80 to 10.1.1.1/80

Phase: 4  
Type: ACCESS-LIST  
Subtype: log  
Result: ALLOW  
Config:  
access-group CSM\_FW\_ACL\_ global  
access-list CSM\_FW\_ACL\_ advanced permit ip any any rule-id 268434434  
access-list CSM\_FW\_ACL\_ remark rule-id 268434434: ACCESS POLICY: FTD5506-1 - Default/1  
access-list CSM\_FW\_ACL\_ remark rule-id 268434434: L4 RULE: DEFAULT ACTION RULE  
Additional Information:  
This packet will be sent to snort for additional processing where a verdict will be reached

Phase: 5  
Type: CONN-SETTINGS  
Subtype:  
Result: ALLOW  
Config:  
class-map class-default  
match any  
policy-map global\_policy  
class class-default  
set connection advanced-options UM\_STATIC\_TCP\_MAP  
service-policy global\_policy global  
Additional Information:

Phase: 6  
Type: NAT  
Subtype:  
Result: ALLOW  
Config:  
nat (inside,outside) source static Net\_192.168.75.0\_24bits Net\_192.168.75.0\_24bits destination static ne  
Additional Information:  
Static translate 192.168.75.14/1111 to 192.168.75.14/1111

Phase: 7



Type: NAT  
Subtype: per-session  
Result: ALLOW  
Config:  
Additional Information:

Phase: 8  
Type: IP-OPTIONS  
Subtype:  
Result: ALLOW  
Config:  
Additional Information:

Phase: 9  
Type: VPN  
Subtype: encrypt  
Result: ALLOW  
Config:  
Additional Information:

Phase: 10  
Type: NAT  
Subtype: rpf-check  
Result: ALLOW  
Config:  
nat (inside,outside) source static Net\_192.168.75.0\_24bits Net\_192.168.75.0\_24bits destination static n  
Additional Information:

Phase: 11  
Type: VPN  
Subtype: ipsec-tunnel-flow  
Result: ALLOW  
Config:  
Additional Information:

Phase: 12  
Type: NAT  
Subtype: per-session  
Result: ALLOW  
Config:  
Additional Information:

Phase: 13  
Type: IP-OPTIONS  
Subtype:  
Result: ALLOW  
Config:  
Additional Information:

Phase: 14  
Type: FLOW-CREATION  
Subtype:  
Result: ALLOW  
Config:  
Additional Information:  
New flow created with id 7226, packet dispatched to next module

Result:  
input-interface: inside  
input-status: up  
input-line-status: up  
output-interface: outside

output-status: up  
output-line-status: up  
Action: allow

NAT命中计数验证：

<#root>

firepower#

show nat

Manual NAT Policies (Section 1)

1 (inside) to (outside) source static Net\_192.168.75.0\_24bits Net\_192.168.75.0\_24bits destination static  
translate\_hits = 9, untranslate\_hits = 9

2 (inside) to (dmz) source static Host-A Host-B  
translate\_hits = 26, untranslate\_hits = 26

3 (inside) to (outside) source dynamic Net\_192.168.75.0\_24bits interface  
translate\_hits = 98, untranslate\_hits = 138

#### 任务4.在FTD上配置对象NAT

根据以下要求配置NAT：

NAT 规则	自动NAT规则
NAT类型	静态
插入	在第2部分
来源接口	内部*
目标接口	dmz*
原始源	192.168.75.99
转换后的源	192.168.76.99

转换与此规则匹配的DNS回复

启用

\* 为NAT规则使用安全区域

解决方案：

步骤1:根据任务要求配置规则，如图所示。

**Add NAT Rule**

NAT Rule: Auto NAT Rule  
Type: Static  Enable

**Interface Objects** Translation PAT Pool Advanced

Available Interface Objects

- outside\_zone
- dmz\_zone
- inside\_zone
- Group1
- Group2

Source Interface Objects (1): inside\_zone

Destination Interface Objects (1): dmz\_zone

Buttons: Add to Source, Add to Destination

**Add NAT Rule** ? x

NAT Rule: Auto NAT Rule  
Type: Static  Enable

**Interface Objects** Translation PAT Pool Advanced

**Original Packet**

Original Source:\* obj-192.168.75.99

Original Port: TCP

**Translated Packet**

Translated Source: obj-192.168.76.99

Translated Port:

## Add NAT Rule

NAT Rule:

Auto NAT Rule

Type:

Static

Enable

Interface Objects

Translation

PAT Pool

Advanced

Translate DNS replies that match this rule

Falthrough to Interface PAT(Destination Interface)

IPv6

Net to Net Mapping

Do not proxy ARP on Destination Interface

Perform Route Lookup for Destination Interface

第二步：结果如图所示。

Rules										
Filter by Device										
#	Direction	Type	Original Packet				Translated Packet			
			Source Interface O...	Destination Interface Obj...	Original Sources	Original Destinations	Original Services	Translated Sources	Translated Destinations	Translated Services
▼ NAT Rules Before										
1		Sta...	inside_zone	outside_zone	Net_192.168.75.0_24bits	net_10.1.1.0_24bits		Net_192.168.75.0_24b	net_10.1.1.0_24bits	
2		Sta...	inside_zone	dmz_zone	Host-A			Host-B		
3		Dy...	inside_zone	outside_zone	Net_192.168.75.0_24bits			Interface		
▼ Auto NAT Rules										
#		Sta...	inside_zone	dmz_zone	obj-192.168.75.99			obj-192.168.76.99		
▼ NAT Rules After										

验证：

```
<#root>
```

```
firepower#
```

```
show run nat
```

```
nat (inside,outside) source static Net_192.168.75.0_24bits Net_192.168.75.0_24bits destination static n
```

```
nat (inside,dmz) source static Host-A Host-B
```

```
nat (inside,outside) source dynamic Net_192.168.75.0_24bits interface
```

```
!
```

```
object network obj-192.168.75.99
```

```
nat (inside,dmz) static obj-192.168.76.99 dns
```

```
<#root>
```

```
firepower#
```

```
show nat
```

```
Manual NAT Policies (Section 1)
```

```
1 (inside) to (outside) source static Net_192.168.75.0_24bits Net_192.168.75.0_24bits destination static
  translate_hits = 9, untranslate_hits = 9
2 (inside) to (dmz) source static Host-A Host-B
  translate_hits = 26, untranslate_hits = 26
3 (inside) to (outside) source dynamic Net_192.168.75.0_24bits interface
  translate_hits = 98, untranslate_hits = 138
```

```
Auto NAT Policies (Section 2)
```

```
1 (inside) to (dmz) source static obj-192.168.75.99 obj-192.168.76.99 dns
  translate_hits = 0, untranslate_hits = 0
```

使用packet-tracer进行验证：

```
<#root>
```

```
firepower#
```

```
packet-tracer input inside tcp 192.168.75.99 1111 192.168.76.100 80
```

```
Phase: 1
```

```
Type: CAPTURE
```

```
Subtype:
```

```
Result: ALLOW
```

```
Config:
```

```
Additional Information:
```

```
MAC Access list
```

```
Phase: 2
```

```
Type: ACCESS-LIST
```

```
Subtype:
```

```
Result: ALLOW
```

```
Config:
```

```
Implicit Rule
```

```
Additional Information:
```

```
MAC Access list
```

```
Phase: 3
```

```
Type: ROUTE-LOOKUP
```

```
Subtype: Resolve Egress Interface
```

```
Result: ALLOW
```

```
Config:
```

```
Additional Information:
```

```
found next-hop 192.168.76.100 using egress ifc dmz
```

```
Phase: 4
```

```
Type: ACCESS-LIST
```

```
Subtype: log
```

```
Result: ALLOW
```

```
Config:
```

```
access-group CSM_FW_ACL_ global
```

access-list CSM\_FW\_ACL\_ advanced permit ip any any rule-id 268434434  
access-list CSM\_FW\_ACL\_ remark rule-id 268434434: ACCESS POLICY: FTD5506-1 - Default/1  
access-list CSM\_FW\_ACL\_ remark rule-id 268434434: L4 RULE: DEFAULT ACTION RULE

Additional Information:

This packet will be sent to snort for additional processing where a verdict will be reached

Phase: 5

Type: CONN-SETTINGS

Subtype:

Result: ALLOW

Config:

class-map class-default

match any

policy-map global\_policy

class class-default

set connection advanced-options UM\_STATIC\_TCP\_MAP

service-policy global\_policy global

Additional Information:

Phase: 6

Type: NAT

Subtype:

Result: ALLOW

Config:

object network obj-192.168.75.99

nat (inside,dmz) static obj-192.168.76.99 dns

Additional Information:

Static translate 192.168.75.99/1111 to 192.168.76.99/1111

Phase: 7

Type: NAT

Subtype: per-session

Result: ALLOW

Config:

Additional Information:

Phase: 8

Type: IP-OPTIONS

Subtype:

Result: ALLOW

Config:

Additional Information:

Phase: 9

Type: NAT

Subtype: per-session

Result: ALLOW

Config:

Additional Information:

Phase: 10

Type: IP-OPTIONS

Subtype:

Result: ALLOW

Config:

Additional Information:

Phase: 11

Type: FLOW-CREATION

Subtype:

Result: ALLOW

Config:

Additional Information:

New flow created with id 7245, packet dispatched to next module

Result:

input-interface: inside

input-status: up

input-line-status: up

output-interface: dmz

output-status: up

output-line-status: up

Action: allow

## 任务5.在FTD上配置PAT池

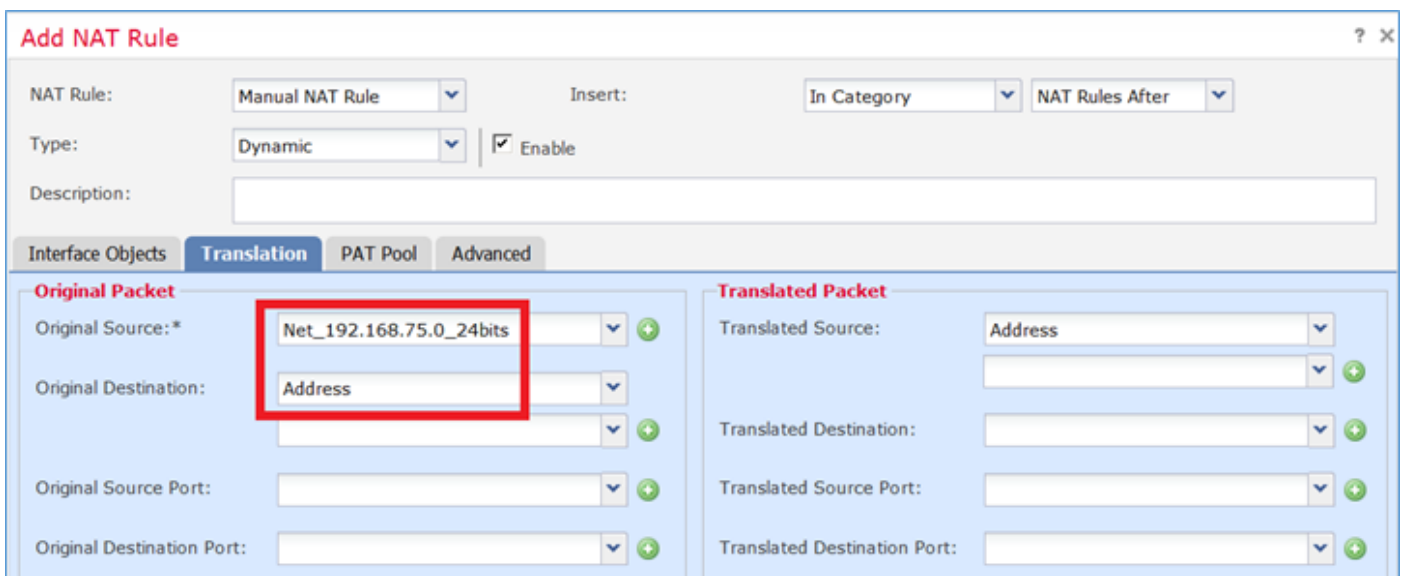
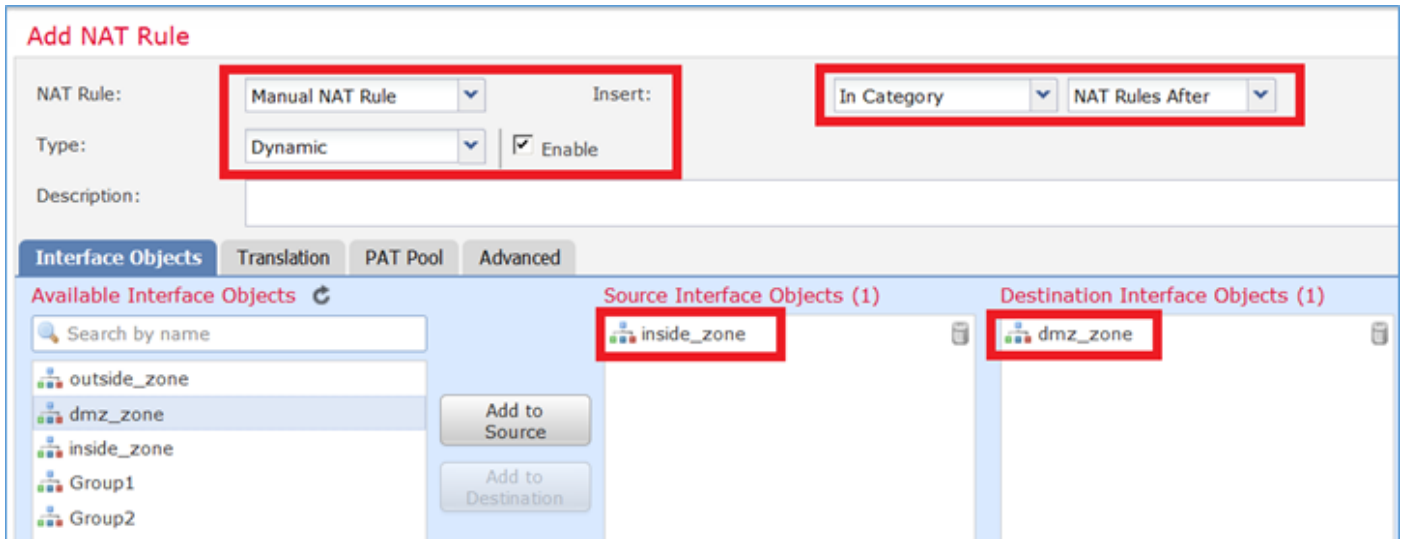
根据以下要求配置NAT：

NAT 规则	手动NAT规则
NAT类型	动态
插入	在第3部分
来源接口	内部*
目标接口	dmz*
原始源	192.168.75.0/24
转换后的源	192.168.76.20-22
使用整个范围(1-65535)	启用

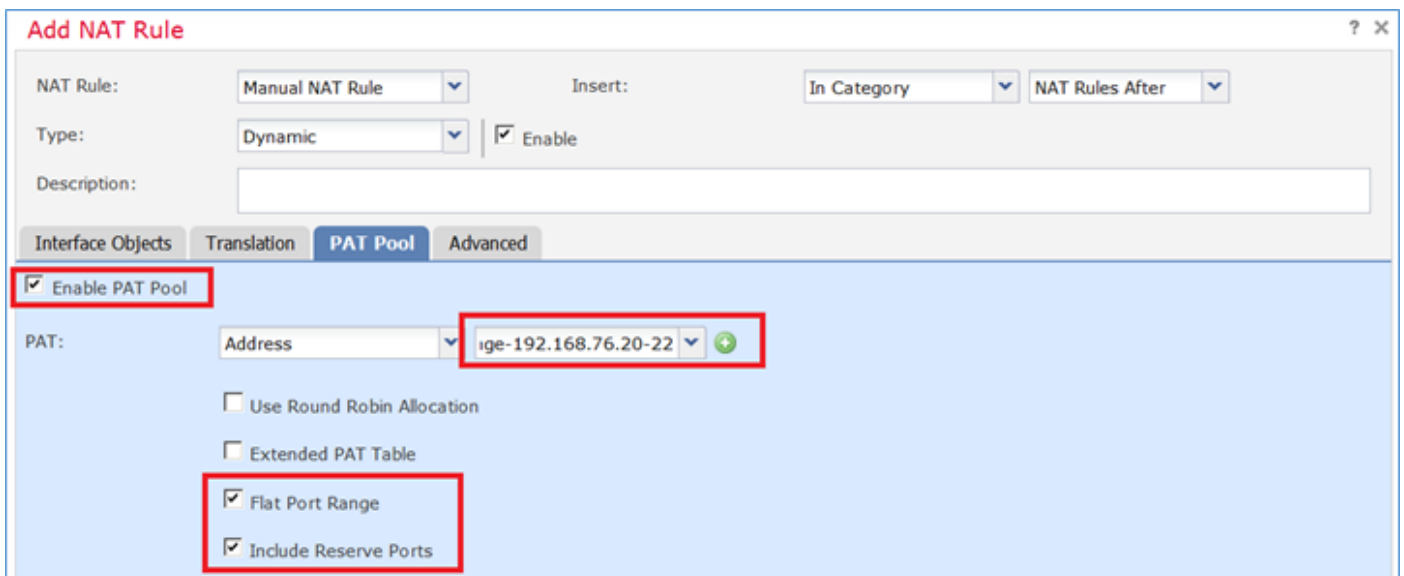
\* 为NAT规则使用安全区域

解决方案：

步骤1:根据任务要求配置规则，如图所示。



第二步：使用Include Reserver Ports 启用Flat Port Range ，允许使用整个范围(1-65535)（如图所示）。



第三步：结果如图所示。



#	Direction	T...	Source Interface ...	Destination Interface Ob...	Original Packet		Translated Packet			Options
					Original Sources	Original Destinations	Translated Sources	Translated Destinations	Translated Services	
▼ NAT Rules Before										
1	St...		inside_zone	outside_zone	Net_192.168.75.0_24bits	net_10.1.1.0_24bits	Net_192.168.75.0_24bits	net_10.1.1.0_24bi		Dns:false
2	St...		inside_zone	dmz_zone	Host-A		Host-B			Dns:false
3	Dy...		inside_zone	outside_zone	Net_192.168.75.0_24bits		Interface			Dns:false
▼ Auto NAT Rules										
#	St...		inside_zone	dmz_zone	obj-192.168.75.99		obj-192.168.76.99			Dns:true
▼ NAT Rules After										
4	Dy...		inside_zone	dmz_zone	Net_192.168.75.0_24bits		range-192.168.76.20-22			Dns:false flat include-reserve

验证：

```
<#root>
```

```
firepower#
```

```
show run nat
```

```
nat (inside,outside) source static Net_192.168.75.0_24bits Net_192.168.75.0_24bits destination static n
```

```
nat (inside,dmz) source static Host-A Host-B
```

```
nat (inside,outside) source dynamic Net_192.168.75.0_24bits interface
```

```
!
```

```
object network obj-192.168.75.99
```

```
  nat (inside,dmz) static obj-192.168.76.99 dns
```

```
!
```

```
nat (inside,dmz) after-auto source dynamic Net_192.168.75.0_24bits pat-pool range-192.168.76.20-22 flat
```

规则在第3部分：

```
<#root>
```

```
firepower#
```

```
show nat
```

```
Manual NAT Policies (Section 1)
```

```
1 (inside) to (outside) source static Net_192.168.75.0_24bits Net_192.168.75.0_24bits destination stat
  translate_hits = 9, untranslate_hits = 9
```

```
2 (inside) to (dmz) source static Host-A Host-B
  translate_hits = 26, untranslate_hits = 26
```

```
3 (inside) to (outside) source dynamic Net_192.168.75.0_24bits interface
  translate_hits = 98, untranslate_hits = 138
```

```
Auto NAT Policies (Section 2)
```

```
1 (inside) to (dmz) source static obj-192.168.75.99 obj-192.168.76.99 dns
  translate_hits = 1, untranslate_hits = 0
```

```
Manual NAT Policies (Section 3)
```

```
1 (inside) to (dmz) source dynamic Net_192.168.75.0_24bits pat-pool range-192.168.76.20-22 flat include-
  translate_hits = 0, untranslate_hits = 0
```

Packet-tracer验证：

<#root>

firepower#

packet-tracer input inside icmp 192.168.75.15 8 0 192.168.76.5

Phase: 1

Type: CAPTURE

Subtype:

Result: ALLOW

Config:

Additional Information:

MAC Access list

Phase: 2

Type: ACCESS-LIST

Subtype:

Result: ALLOW

Config:

Implicit Rule

Additional Information:

MAC Access list

Phase: 3

Type: ROUTE-LOOKUP

Subtype: Resolve Egress Interface

Result: ALLOW

Config:

Additional Information:

found next-hop 192.168.76.5 using egress ifc dmz

Phase: 4

Type: ACCESS-LIST

Subtype: log

Result: ALLOW

Config:

access-group CSM\_FW\_ACL\_ global

access-list CSM\_FW\_ACL\_ advanced permit ip any any rule-id 268434434

access-list CSM\_FW\_ACL\_ remark rule-id 268434434: ACCESS POLICY: FTD5506-1 - Default/1

access-list CSM\_FW\_ACL\_ remark rule-id 268434434: L4 RULE: DEFAULT ACTION RULE

Additional Information:

This packet will be sent to snort for additional processing where a verdict will be reached

Phase: 5

Type: CONN-SETTINGS

Subtype:

Result: ALLOW

Config:

class-map class-default

match any

policy-map global\_policy

class class-default

set connection advanced-options UM\_STATIC\_TCP\_MAP

service-policy global\_policy global

Additional Information:

Phase: 6

Type: NAT

Subtype:

Result: ALLOW

Config:

```
nat (inside,dmz) after-auto source dynamic Net_192.168.75.0_24bits pat-pool range-192.168.76.20-22 flat
```

Additional Information:

```
Dynamic translate 192.168.75.15/0 to 192.168.76.20/11654
```

Phase: 7

Type: NAT

Subtype: per-session

Result: ALLOW

Config:

Additional Information:

Phase: 8

Type: IP-OPTIONS

Subtype:

Result: ALLOW

Config:

Additional Information:

Phase: 9

Type: INSPECT

Subtype: np-inspect

Result: ALLOW

Config:

```
class-map inspection_default
```

```
  match default-inspection-traffic
```

```
policy-map global_policy
```

```
  class inspection_default
```

```
    inspect icmp
```

```
service-policy global_policy global
```

Additional Information:

Phase: 10

Type: INSPECT

Subtype: np-inspect

Result: ALLOW

Config:

Additional Information:

Phase: 11

Type: NAT

Subtype: rpf-check

Result: ALLOW

Config:

```
nat (inside,dmz) after-auto source dynamic Net_192.168.75.0_24bits pat-pool range-192.168.76.20-22 flat
```

Additional Information:

Phase: 12

Type: NAT

Subtype: per-session

Result: ALLOW

Config:

Additional Information:

Phase: 13

Type: IP-OPTIONS

Subtype:

Result: ALLOW

Config:

Additional Information:

Phase: 14

Type: FLOW-CREATION

Subtype:

Result: ALLOW

Config:

Additional Information:

New flow created with id 7289, packet dispatched to next module

Result:

input-interface: inside

input-status: up

input-line-status: up

output-interface: dmz

output-status: up

output-line-status: up

Action: allow

## 验证

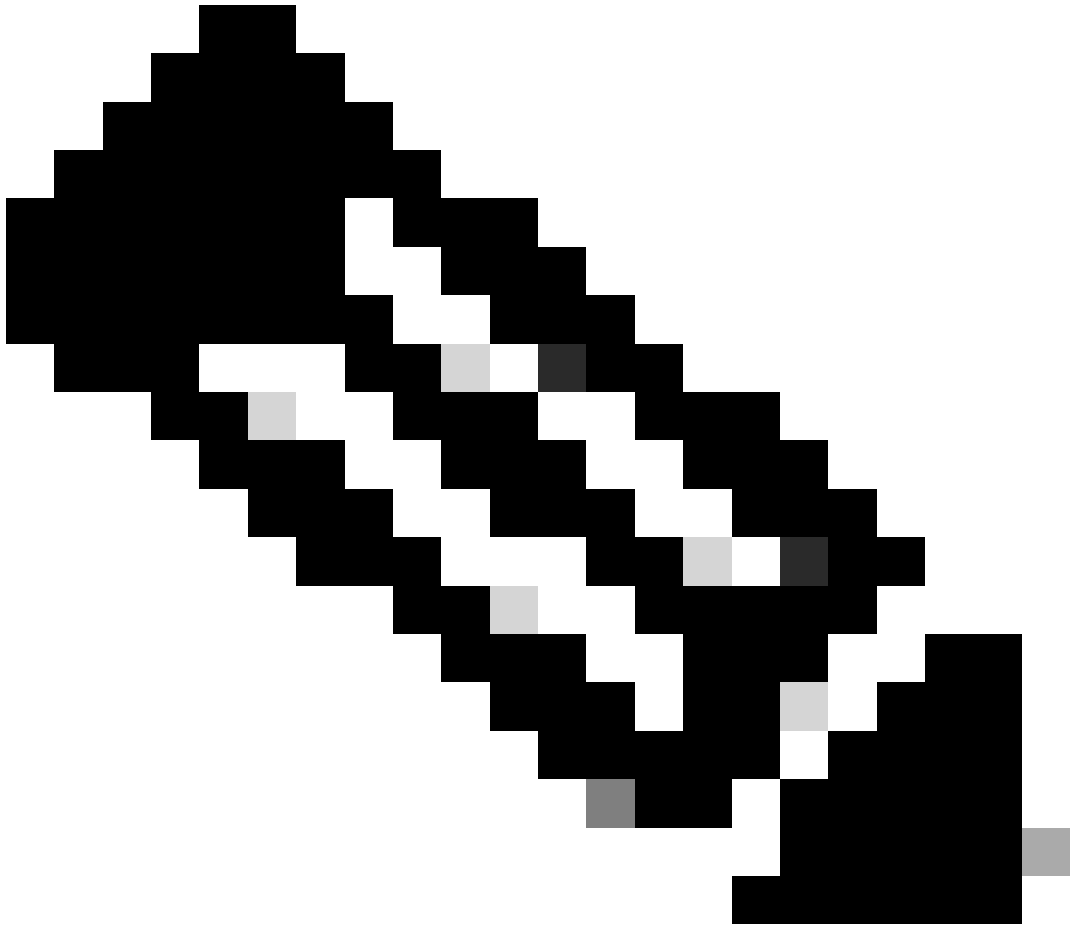
使用本部分可确认配置能否正常运行。

验证已在各个任务部分中说明。

## 故障排除

本部分提供了可用于对配置进行故障排除的信息。

打开FMC上的高级故障排除页面，运行Packet Tracer，然后运行show nat pool命令。



注意：使用整个范围的条目，如图所示。

---

Overview Analysis Policies Devices Objects AMP Deploy System

Configuration Users Domains Integration Updates Licenses Health Monitor

## Advanced Troubleshooting

FTD5506-1

File Download ASA CLI

Command show Parameter nat pool **1**

Output

```
UDP PAT pool inside, address 192.168.75.6, range 1-511, allocated 2
UDP PAT pool inside, address 192.168.75.6, range 512-1023, allocated 1
UDP PAT pool inside, address 192.168.75.6, range 1024-65535, allocated 2
ICMP PAT pool dmz:range-192.168.76.20-22, address 192.168.76.20, range 1-65535, allocated 1
UDP PAT pool outside, address 192.168.77.6, range 1-511, allocated 3
UDP PAT pool outside, address 192.168.77.6, range 512-1023, allocated 0
UDP PAT pool outside, address 192.168.77.6, range 1024-65535, allocated 3
```

**2** Execute Back

## 相关信息

- 可以在此处找到所有版本的思科 Firepower 管理中心 (FMC) 配置指南:

### [思科安全防火墙威胁防御文档导航](#)

- 思科全球技术支持中心(TAC)强烈推荐此可视化指南，以了解有关Cisco Firepower下一代安全技术的深入实践知识，其中包括本文中提到的内容：

### [思科出版社- Firepower威胁防御](#)

- 有关Firepower技术的所有配置和故障排除技术说明：

### [思科安全防火墙管理中心](#)

- [技术支持和文档 - Cisco Systems](#)

## 关于此翻译

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请注意：即使是最好的机器翻译，其准确度也不及专业翻译人员的水平。

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