

# 使用ASA 5500的PIX/ASA 7.x Easy VPN作为服务器和PIX 506E作为客户端(NEM)配置示例

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## 简介

本文档提供了使用 EasyVPN 在 Cisco 自适应安全设备 (ASA) 5520 和 Cisco PIX 506E 之间配置 IPsec 的示例。ASA 5520 充当 EasyVPN 服务器，PIX 506E 充当 EasyVPN 远程客户端。尽管此配置使用了运行 ASA 软件版本 7.0(4) 的 ASA 5520 设备，但您也可以对运行 PIX 操作系统版本 7.0 及更高版本的 PIX 防火墙设备使用此配置。

有关将 Cisco 871 路由器用作 Easy VPN Remote 的类似方案的详细信息，请参阅[将 ASA 5500 用作服务器，将 Cisco 871 用作 Easy VPN Remote 的 PIX/ASA 7.x Easy VPN 配置示例](#)。

有关 Cisco VPN 3000 集中器充当 Easy VPN Server 的类似方案的详细信息，请参阅[使用 VPN 3000 集中器配置 PIX 501/506 系列安全设备上的 VPN 硬件客户端的示例](#)。

有关 Cisco IOS 路由器充当 Easy VPN Server 的类似方案的详细信息，请参阅[在网络扩展模式下使用扩展身份验证将 PIX 501/506 Easy VPN 远程客户端配置到 IOS® 路由器的示例](#)。

有关 PIX 506 6.x 充当 Easy VPN Server 的类似方案的详细信息，请参阅[PIX 到 PIX 6.x : Easy VPN \(NEM\) 配置示例](#)。

## 先决条件

## 要求

尝试进行此配置之前，请确保满足以下要求：

- 请确保您对 IPsec 以及 ASA/PIX 6.x 和 7.x 操作系统有基本了解。

## 使用的组件

本文档中的信息基于以下软件和硬件版本：

- EasyVPN 远程硬件客户端是运行 6.3(5) 版本的 PIX 506E。
- EasyVPN 服务器是运行 7.0(4) 版本的 ASA 5520。

**注意：**ASA 5500 系列版本 7.x 运行 PIX 版本 7.x 中可以看到同一软件。本文档中的配置适用于这两个产品系列。

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。如果您使用的是真实网络，请确保您已经了解所有命令的潜在影响。

## 规则

有关文档规则的详细信息，请参阅 [Cisco 技术提示规则](#)。

## 配置

本部分提供有关如何配置本文档所述功能的信息。

**注意：**使用 [命令查找工具](#)（[仅限注册用户](#)）可获取有关本部分所使用命令的详细信息。

## 网络图

本文档使用以下网络设置：

## 配置

本文档使用以下配置：

- [Easy VPN Server \(ASA 5520\)](#)
- [Easy VPN 远程硬件客户端](#)

### Easy VPN Server (ASA 5520)

```
ASA5520-704#write terminal
: Saved
:
ASA Version 7.0(4)
!
hostname ASA5520-704
enable password 8Ry2YjIyt7RRXU24 encrypted
names
!
```

```
!--- Configure the outside and inside interfaces.
interface GigabitEthernet0/0 nameif outside security-
level 0 ip address 10.20.20.1 255.255.255.0 ! interface
GigabitEthernet0/1 nameif inside security-level 100 ip
address 172.22.1.1 255.255.255.0 ! 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 ! passwd 2KFQnbNIdI.2KYOU encrypted ftp mode
passive !--- This access list is used for a nat zero
command that prevents !--- traffic which matches the
access list from undergoing !--- network address
translation (NAT).

access-list no-nat extended permit ip 172.22.1.0
255.255.255.0 172.16.1.0 255.255.255.0
!--- This access list is used to define the traffic !---
that should pass through the tunnel. !--- It is bound to
the group policy which defines !--- a dynamic crypto
map. access-list ezvpnl extended permit ip 172.22.1.0
255.255.255.0 172.16.1.0 255.255.255.0 pager lines 24
mtu outside 1500 mtu inside 1500 no failover icmp permit
any echo-reply outside icmp permit any inside no asdm
history enable arp timeout 14400 !--- Specify the NAT
configuration. !--- NAT 0 prevents NAT for the ACL
defined in this configuration. !--- The nat 1 command
specifies NAT for all other traffic.

global (outside) 1 interface
nat (inside) 0 access-list no-nat
nat (inside) 1 0.0.0.0 0.0.0.0
route outside 0.0.0.0 0.0.0.0 10.20.20.2 1
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
timeout mgcp-pat 0:05:00 sip 0:30:00 sip_media 0:02:00
timeout uauth 0:05:00 absolute

!--- This defines the group policy you use with EasyVPN.
!--- Specify the networks !--- that should pass through
the tunnel and that you want to !--- use network
extension mode. group-policy myGROUP internal group-
policy myGROUP attributes split-tunnel-policy
tunnelspecified split-tunnel-network-list value ezvpnl
nem enable webvpn !--- Here the username and password
associated with !--- this VPN connection are defined.
You !--- can also use AAA for this function. username
cisco password 3USUCOPFUIMCO4Jk encrypted no snmp-server
location no snmp-server contact snmp-server enable traps
snmp authentication linkup linkdown coldstart !--- PHASE
2 CONFIGURATION ---! !--- The encryption types for Phase
2 are defined here. !--- A single DES encryption with !-
-- the md5 hash algorithm is used. crypto ipsec
transform-set mySET esp-des esp-md5-hmac !--- Defines a
dynamic crypto map with !--- the specified encryption
settings. crypto dynamic-map myDYN-MAP 5 set transform-
set mySET !--- Binds the dynamic map to the IPsec/ISAKMP
process. crypto map myMAP 60 ipsec-isakmp dynamic myDYN-
MAP !--- Specifies the interface to be used with !---
the settings defined in this configuration. crypto map
```

```

myMAP interface outside !--- PHASE 1 CONFIGURATION ---!
!--- This configuration uses isakmp policy 1. !---
Policy 65535 is included in the default !---
configuration. The configuration commands here define
the Phase !--- 1 policies that are used. isakmp enable
outside isakmp policy 1 authentication pre-share isakmp
policy 1 encryption des isakmp policy 1 hash md5 isakmp
policy 1 group 2 isakmp policy 1 lifetime 86400 isakmp
policy 65535 authentication pre-share isakmp policy
65535 encryption 3des isakmp policy 65535 hash sha
isakmp policy 65535 group 2 isakmp policy 65535 lifetime
86400 !--- The tunnel-group commands bind the
configurations !--- defined in this configuration to the
tunnel that is !--- used for EasyVPN. This tunnel name
is the one specified on the remote side. tunnel-group
mytunnel type ipsec-ra tunnel-group mytunnel general-
attributes default-group-policy myGROUP tunnel-group
mytunnel ipsec-attributes !--- The pre-shared-key used
here is "cisco". pre-shared-key * telnet timeout 5 ssh
timeout 5 console timeout 0 ! class-map
inspection_default match default-inspection-traffic ! !
policy-map global_policy class inspection_default
inspect dns maximum-length 512 inspect ftp inspect h323
h225 inspect h323 ras inspect netbios inspect rsh
inspect rtsp inspect skinny inspect esmtp inspect sqlnet
inspect sunrpc inspect tftp inspect sip inspect xdmcp !
service-policy global_policy global
Cryptochecksum:42123a94a33d8d10ae6a1505fb4ba653 : end
[OK] ASA5520-704#

```

## Easy VPN 远程硬件客户端

```

pix506-635#write terminal
Building configuration...
: Saved
:
PIX Version 6.3(5)
!--- Brings the interfaces out of a shutdown state.
interface ethernet0 auto interface ethernet1 auto !---
Assign the interface names. nameif ethernet0 outside
security0 nameif ethernet1 inside security100 enable
password 8Ry2YjIyt7RRXU24 encrypted passwd
2KFQnbNIdI.2KYOU encrypted hostname pix506-635 domain-
name cisco.com fixup protocol dns maximum-length 512
fixup protocol ftp 21 fixup protocol h323 h225 1720
fixup protocol h323 ras 1718-1719 fixup protocol http 80
fixup protocol rsh 514 fixup protocol rtsp 554 fixup
protocol sip 5060 fixup protocol sip udp 5060 fixup
protocol skinny 2000 fixup protocol smtp 25 fixup
protocol sqlnet 1521 fixup protocol tftp 69 names pager
lines 24 icmp permit any outside mtu outside 1500 mtu
inside 1500 !--- Assign the interface IP addresses. ip
address outside 10.10.10.1 255.255.255.0 ip address
inside 172.16.1.1 255.255.255.0 ip audit info action
alarm ip audit attack action alarm pdm history enable
arp timeout 14400 !--- Set the standard NAT
configuration. !--- EasyVPN provides the NAT exceptions
needed. global (outside) 1 interface nat (inside) 1
0.0.0.0 0.0.0.0 0 0 !--- Specify the default route.
route outside 0.0.0.0 0.0.0.0 10.10.10.2 1 timeout xlate
3:00:00 timeout conn 1:00:00 half-closed 0:10:00 udp
0:02:00 rpc 0:10:00 h225 1:00:00 timeout h323 0:05:00
mgcp 0:05:00 sip 0:30:00 sip_media 0:02:00 timeout sip-

```

```
disconnect 0:02:00 sip-invite 0:03:00 timeout uauth
0:05:00 absolute aaa-server TACACS+ protocol tacacs+
aaa-server TACACS+ max-failed-attempts 3 aaa-server
TACACS+ deadtime 10 aaa-server RADIUS protocol radius
aaa-server RADIUS max-failed-attempts 3 aaa-server
RADIUS deadtime 10 aaa-server LOCAL protocol local no
snmp-server location no snmp-server contact snmp-server
community public no snmp-server enable traps floodguard
enable telnet timeout 5 ssh timeout 5 console timeout 0
!--- EasyVPN Client Configuration ---! !--- Specify the
IP address of the VPN server. vpnclient server
10.20.20.1 !--- This example uses network extension
mode. vpnclient mode network-extension-mode !--- Specify
the group name and the pre-shared key. vpnclient
vpngroup mytunnel password ***** !--- Specify the
authentication username and password. vpnclient username
cisco password ***** !---- After you issue this
command, the tunnel is established. vpnclient enable
terminal width 80
Cryptochecksum:1564fd62a9e4312020f51846bd1b3534 : end
[OK] pix506-635#
```

## 验证

使用本部分可确认配置能否正常运行。

[命令输出解释程序 \( 仅限注册用户 \)](#) (OIT) 支持某些 **show** 命令。使用 OIT 可查看对 show 命令输出的分析。

- [PIX EasyVPN 服务器 show 命令和示例输出](#)
- [PIX EasyVPN 远程硬件客户端 show 命令和示例输出](#)

## PIX EasyVPN 服务器 show 命令和示例输出

- **show crypto isakmp sa** - 显示对等体上的所有当前 Internet 密钥交换 (IKE) 安全关联 (SA)。

```
ASA5520-704#show crypto isakmp sa
```

```
Active SA: 1
```

```
Rekey SA: 0 (A tunnel will report 1 Active and 1 Rekey SA during rekey)
```

```
Total IKE SA: 1
```

```
1 IKE Peer: 10.10.10.1
```

```
Type : user Role : responder
```

```
Rekey : no State : AM_ACTIVE
```

```
ASA5520-704#
```

- **show crypto ipsec sa** - 显示对等体之间构建的 IPSec SA。

```
ASA5520-704#show crypto ipsec sa
```

```
interface: outside
```

```
    Crypto map tag: myDYN-MAP, seq num: 5, local addr: 10.20.20.1
```

```
local ident (addr/mask/prot/port): (172.22.1.0/255.255.255.0/0/0)
```

```
remote ident (addr/mask/prot/port): (172.16.1.0/255.255.255.0/0/0)
```

```
current_peer: 10.10.10.1, username: cisco
```

```
dynamic allocated peer ip: 0.0.0.0
```

```
#pkts encaps: 655, #pkts encrypt: 655, #pkts digest: 655
```

```
#pkts decaps: 706, #pkts decrypt: 706, #pkts verify: 706
```

```
#pkts compressed: 0, #pkts decompressed: 0
```

```
#pkts not compressed: 655, #pkts comp failed: 0, #pkts decomp failed: 0
#send errors: 0, #recv errors: 0
```

```
local crypto endpt.: 10.20.20.1, remote crypto endpt.: 10.10.10.1
```

```
path mtu 1500, ipsec overhead 60, media mtu 1500
current outbound spi: 3EA12BBE
```

```
inbound esp sas:
spi: 0x9B94D824 (2610223140)
transform: esp-des esp-md5-hmac
in use settings ={RA, Tunnel, }
slot: 0, conn_id: 4, crypto-map: myDYN-MAP
sa timing: remaining key lifetime (sec): 25015
IV size: 8 bytes
replay detection support: Y
outbound esp sas:
spi: 0x3EA12BBE (1050749886)
transform: esp-des esp-md5-hmac
in use settings ={RA, Tunnel, }
slot: 0, conn_id: 4, crypto-map: myDYN-MAP
sa timing: remaining key lifetime (sec): 25011
IV size: 8 bytes
replay detection support: Y
```

```
ASA5520-704#
```

## [PIX EasyVPN 远程硬件客户端 show 命令和示例输出](#)

- **vpnclient enable** - 启用 EasyVPN 远程连接。在网络扩展模式 (NEM) 下，即使没有要与前端 EasyVPN 服务器进行交换的相关数据流，隧道也会处于打开状态。

```
pix506-635(config)#vpnclient enable
```

- **show crypto isakmp policy** - 显示适用于每个 IKE 策略的参数。

```
pix506-635#show crypto isakmp policy
```

```
Default protection suite
  encryption algorithm:  DES - Data Encryption Standard (56 bit keys).
  hash algorithm:        Secure Hash Standard
  authentication method: Rivest-Shamir-Adleman Signature
  Diffie-Hellman group:  #1 (768 bit)
  lifetime:              86400 seconds, no volume limit
```

在启用硬件客户端之后，此输出会显示 **show crypto isakmp policy** 命令。

```
pix506-635(config)#show crypto isakmp policy
```

```
Protection suite of priority 65001
  encryption algorithm:  AES - Advanced Encryption Standard (256 bit keys).
  hash algorithm:        Secure Hash Standard
  authentication method: Pre-Shared Key with XAUTH
  Diffie-Hellman group:  #2 (1024 bit)
  lifetime:              86400 seconds, no volume limit
```

```
Protection suite of priority 65002
  encryption algorithm:  AES - Advanced Encryption Standard (256 bit keys).
  hash algorithm:        Message Digest 5
  authentication method: Pre-Shared Key with XAUTH
  Diffie-Hellman group:  #2 (1024 bit)
  lifetime:              86400 seconds, no volume limit
```

```
Protection suite of priority 65003
  encryption algorithm:  AES - Advanced Encryption Standard (192 bit keys).
  hash algorithm:        Secure Hash Standard
  authentication method: Pre-Shared Key with XAUTH
```

Diffie-Hellman group: #2 (1024 bit)  
lifetime: 86400 seconds, no volume limit  
Protection suite of priority 65004  
encryption algorithm: AES - Advanced Encryption Standard (192 bit keys).  
hash algorithm: Message Digest 5  
authentication method: Pre-Shared Key with XAUTH  
Diffie-Hellman group: #2 (1024 bit)  
lifetime: 86400 seconds, no volume limit  
Protection suite of priority 65005  
encryption algorithm: AES - Advanced Encryption Standard (128 bit keys).  
hash algorithm: Secure Hash Standard  
authentication method: Pre-Shared Key with XAUTH  
Diffie-Hellman group: #2 (1024 bit)  
lifetime: 86400 seconds, no volume limit  
Protection suite of priority 65006  
encryption algorithm: AES - Advanced Encryption Standard (128 bit keys).  
hash algorithm: Message Digest 5  
authentication method: Pre-Shared Key with XAUTH  
Diffie-Hellman group: #2 (1024 bit)  
lifetime: 86400 seconds, no volume limit  
Protection suite of priority 65007  
encryption algorithm: Three key triple DES  
hash algorithm: Secure Hash Standard  
authentication method: Pre-Shared Key with XAUTH  
Diffie-Hellman group: #2 (1024 bit)  
lifetime: 86400 seconds, no volume limit  
Protection suite of priority 65008  
encryption algorithm: Three key triple DES  
hash algorithm: Message Digest 5  
authentication method: Pre-Shared Key with XAUTH  
Diffie-Hellman group: #2 (1024 bit)  
lifetime: 86400 seconds, no volume limit  
Protection suite of priority 65009  
encryption algorithm: DES - Data Encryption Standard (56 bit keys).  
hash algorithm: Message Digest 5  
authentication method: Pre-Shared Key with XAUTH  
Diffie-Hellman group: #2 (1024 bit)  
lifetime: 86400 seconds, no volume limit  
Protection suite of priority 65010  
encryption algorithm: AES - Advanced Encryption Standard (256 bit keys).  
hash algorithm: Secure Hash Standard  
authentication method: Pre-Shared Key  
Diffie-Hellman group: #2 (1024 bit)  
lifetime: 86400 seconds, no volume limit  
Protection suite of priority 65011  
encryption algorithm: AES - Advanced Encryption Standard (256 bit keys).  
hash algorithm: Message Digest 5  
authentication method: Pre-Shared Key  
Diffie-Hellman group: #2 (1024 bit)  
lifetime: 86400 seconds, no volume limit  
Protection suite of priority 65012  
encryption algorithm: AES - Advanced Encryption Standard (192 bit keys).  
hash algorithm: Secure Hash Standard  
authentication method: Pre-Shared Key  
Diffie-Hellman group: #2 (1024 bit)  
lifetime: 86400 seconds, no volume limit  
Protection suite of priority 65013  
encryption algorithm: AES - Advanced Encryption Standard (192 bit keys).  
hash algorithm: Message Digest 5  
authentication method: Pre-Shared Key  
Diffie-Hellman group: #2 (1024 bit)  
lifetime: 86400 seconds, no volume limit  
Protection suite of priority 65014  
encryption algorithm: AES - Advanced Encryption Standard (128 bit keys).

```

hash algorithm:      Secure Hash Standard
authentication method: Pre-Shared Key
Diffie-Hellman group: #2 (1024 bit)
lifetime:           86400 seconds, no volume limit
Protection suite of priority 65015
  encryption algorithm: AES - Advanced Encryption Standard (128 bit keys).
  hash algorithm:      Message Digest 5
  authentication method: Pre-Shared Key
  Diffie-Hellman group: #2 (1024 bit)
  lifetime:           86400 seconds, no volume limit
Protection suite of priority 65016
  encryption algorithm: Three key triple DES
  hash algorithm:      Secure Hash Standard
  authentication method: Pre-Shared Key
  Diffie-Hellman group: #2 (1024 bit)
  lifetime:           86400 seconds, no volume limit
Protection suite of priority 65017
  encryption algorithm: Three key triple DES
  hash algorithm:      Message Digest 5
  authentication method: Pre-Shared Key
  Diffie-Hellman group: #2 (1024 bit)
  lifetime:           86400 seconds, no volume limit
Protection suite of priority 65018
  encryption algorithm: DES - Data Encryption Standard (56 bit keys).
  hash algorithm:      Message Digest 5
  authentication method: Pre-Shared Key
  Diffie-Hellman group: #2 (1024 bit)
  lifetime:           86400 seconds, no volume limit

```

• **show crypto isakmp sa** - 显示对等体上的所有当前 IKE SA。

```

pix506-635#show crypto isakmp sa
Total      : 1
Embryonic  : 0

```

dst	src	state	pending	created
10.20.20.1	10.10.10.1	QM_IDLE	0	4

```

pix506-635#

```

• **show crypto ipsec sa** - 显示对等体之间构建的 IPsec SA。

```

pix506-635#show crypto ipsec sa

interface: outside
Crypto map tag: _vpnc_cm, local addr. 10.10.10.1

local ident (addr/mask/prot/port): (172.16.1.0/255.255.255.0/0/0)
remote ident (addr/mask/prot/port): (172.22.1.0/255.255.255.0/0/0)
current_peer: 10.20.20.1:500
PERMIT, flags={origin_is_acl,}
#pkts encaps: 706, #pkts encrypt: 706, #pkts digest 706
#pkts decaps: 655, #pkts decrypt: 655, #pkts verify 655
#pkts compressed: 0, #pkts decompressed: 0
#pkts not compressed: 0, #pkts compr. failed: 0, #pkts decompress failed: 0
#send errors 1, #recv errors 0

local crypto endpt.: 10.10.10.1, remote crypto endpt.: 10.20.20.1
path mtu 1500, ipsec overhead 56, media mtu 1500
current outbound spi: 9b94d824

inbound esp sas:
spi: 0x3ea12bbe(1050749886)
transform: esp-des esp-md5-hmac ,
in use settings ={Tunnel, }
slot: 0, conn id: 3, crypto map: _vpnc_cm
sa timing: remaining key lifetime (k/sec): (4607941/24712)
IV size: 8 bytes

```

```
replay detection support: Y

inbound ah sas:

inbound pcp sas:

outbound esp sas:
spi: 0x9b94d824(2610223140)
transform: esp-des esp-md5-hmac ,
in use settings ={Tunnel, }
slot: 0, conn id: 4, crypto map: _vpnc_cm
sa timing: remaining key lifetime (k/sec): (4607958/24712)
IV size: 8 bytes
replay detection support: Y

outbound ah sas:

outbound pcp sas:
```

- **show vpnclient** - 显示 VPN Client 或 EasyVPN 远程设备配置信息。

```
pix506-635#show vpnclient

LOCAL CONFIGURATION
vpnclient server 10.20.20.1
vpnclient mode network-extension-mode
vpnclient vpngroup mytunnel password *****
vpnclient username cisco password *****
vpnclient enable

DOWNLOADED DYNAMIC POLICY
Current Server : 10.20.20.1
PFS Enabled : No
Secure Unit Authentication Enabled : No
User Authentication Enabled : No
Split Networks : 172.22.1.0/255.255.255.0
Backup Servers : None

pix506-635#
```

## 故障排除

本部分提供的信息可用于对配置进行故障排除。

如果已按照本文档所述设置了 EasyVPN 远程硬件客户端和 EasyVPN 服务器，但仍然遇到问题，请收集每个 PIX 的 **debug** 输出和 **show** 命令的输出，以供 Cisco 技术支持进行分析。另请参阅[排除 PIX 故障以在已建立的 IPSec 隧道上传输数据流](#)或[IP 安全故障排除 - 了解和使用 debug 命令](#)。在 PIX 上启用 IPsec 调试。

以下部分显示了 PIX **debug** 命令和示例输出。

- [EasyVPN 服务器命令](#)
- [EasyVPN 远程硬件客户端命令](#)

[命令输出解释程序](#) ( [仅限注册用户](#) ) (OIT) 支持某些 **show** 命令。使用 OIT 可查看对 **show** 命令输出的分析。

**注意：** 使用 `debug` 命令之前，请参阅[有关 Debug 命令的重要信息](#)。

## EasyVPN 服务器命令

- `debug crypto ipsec` - 显示第 2 阶段的 IPsec 协商。
- `debug crypto isakmp` - 显示第 1 阶段的 ISAKMP 协商。

下面显示了示例输出。

```
ASA5520-704#debug crypto ipsec 2
ASA5520-704#debug crypto isakmp 2
ASA5520-704# Sep 15 23:02:42 [IKEv1]: IP = 10.10.10.1, Connection landed
on tunnel_group mytunnel
Sep 15 23:02:43 [IKEv1]: Group = mytunnel, Username = cisco, IP = 10.10.10.1,
User (cisco) authenticated.
Sep 15 23:02:48 [IKEv1]: Group = mytunnel, Username = cisco, IP = 10.10.10.1,
PHASE 1 COMPLETED
Sep 15 23:02:48 [IKEv1]: Group = mytunnel, Username = cisco, IP = 10.10.10.1,
IKE: requesting SPI!
Sep 15 23:02:48 [IKEv1]: Group = mytunnel, Username = cisco, IP = 10.10.10.1,
Security negotiation complete for User (cisco) Responder, Inbound SPI = 0x436fbef1,
Outbound SPI = 0x5c6b5137
Sep 15 23:02:48 [IKEv1]: Group = mytunnel, Username = cisco, IP = 10.10.10.1,
IKE: requesting SPI!
Sep 15 23:02:48 [IKEv1]: Group = mytunnel, Username = cisco, IP = 10.10.10.1,
Starting P2 Rekey timer to expire in 27360 seconds
Sep 15 23:02:48 [IKEv1]: Group = mytunnel, Username = cisco, IP = 10.10.10.1,
PHASE 2 COMPLETED (msgid=dc3aalef)
Sep 15 23:02:48 [IKEv1]: Group = mytunnel, Username = cisco, IP = 10.10.10.1,
Security negotiation complete for User (cisco) Responder, Inbound SPI = 0x69352d74,
Outbound SPI = 0x4a7e47fc
Sep 15 23:02:48 [IKEv1]: Group = mytunnel, Username = cisco, IP = 10.10.10.1,
Starting P2 Rekey timer to expire in 27360 seconds
Sep 15 23:02:48 [IKEv1]: Group = mytunnel, Username = cisco, IP = 10.10.10.1,
PHASE 2 COMPLETED (msgid=58a397ad)
```

## EasyVPN 远程硬件客户端命令

- `debug crypto ipsec` - 显示第 2 阶段的 IPsec 协商。
- `debug crypto isakmp` - 显示第 1 阶段的 ISAKMP 协商。

```
pix506-635(config)#vpnclient enable
```

```
ISAKMP (0): ID payload
next-payload : 13
type : 11
protocol : 17
port : 0
length : 12pix506-635(config)#
ISAKMP (0): Total payload length: 16
ISAKMP (0:0): sending NAT-T vendor ID - rev 2 & 3
ISAKMP (0): beginning Aggressive Mode exchange
crypto_isakmp_process_block:src:10.20.20.1, dest:10.10.10.1 spt:500 dpt:500
OAK_AG exchange
ISAKMP (0): processing SA payload. message ID = 0

ISAKMP (0): Checking ISAKMP transform 9 against priority 65001 policy
ISAKMP: encryption DES-CBC
ISAKMP: hash MD5
ISAKMP: default group 2
ISAKMP: extended auth pre-share (init)
```

ISAKMP: life type in seconds  
ISAKMP: life duration (VPI) of 0x0 0x1 0x51 0x80  
ISAKMP (0): atts are not acceptable. Next payload is 0  
ISAKMP (0): Checking ISAKMP transform 9 against priority 65002 policy  
ISAKMP: encryption DES-CBC  
ISAKMP: hash MD5  
ISAKMP: default group 2  
ISAKMP: extended auth pre-share (init)  
ISAKMP: life type in seconds  
ISAKMP: life duration (VPI) of 0x0 0x1 0x51 0x80  
ISAKMP (0): atts are not acceptable. Next payload is 0  
ISAKMP (0): Checking ISAKMP transform 9 against priority 65003 policy  
ISAKMP: encryption DES-CBC  
ISAKMP: hash MD5  
ISAKMP: default group 2  
ISAKMP: extended auth pre-share (init)  
ISAKMP: life type in seconds  
ISAKMP: life duration (VPI) of 0x0 0x1 0x51 0x80  
ISAKMP (0): atts are not acceptable. Next payload is 0  
ISAKMP (0): Checking ISAKMP transform 9 against priority 65004 policy  
ISAKMP: encryption DES-CBC  
ISAKMP: hash MD5  
ISAKMP: default group 2  
ISAKMP: extended auth pre-share (init)  
ISAKMP: life type in seconds  
ISAKMP: life duration (VPI) of 0x0 0x1 0x51 0x80  
ISAKMP (0): atts are not acceptable. Next payload is 0  
ISAKMP (0): Checking ISAKMP transform 9 against priority 65005 policy  
ISAKMP: encryption DES-CBC  
ISAKMP: hash MD5  
ISAKMP: default group 2  
ISAKMP: extended auth pre-share (init)  
ISAKMP: life type in seconds  
ISAKMP: life duration (VPI) of 0x0 0x1 0x51 0x80  
ISAKMP (0): atts are not acceptable. Next payload is 0  
ISAKMP (0): Checking ISAKMP transform 9 against priority 65006 policy  
ISAKMP: encryption DES-CBC  
ISAKMP: hash MD5  
ISAKMP: default group 2  
ISAKMP: extended auth pre-share (init)  
ISAKMP: life type in seconds  
ISAKMP: life duration (VPI) of 0x0 0x1 0x51 0x80  
ISAKMP (0): atts are not acceptable. Next payload is 0  
ISAKMP (0): Checking ISAKMP transform 9 against priority 65007 policy  
ISAKMP: encryption DES-CBC  
ISAKMP: hash MD5  
ISAKMP: default group 2  
ISAKMP: extended auth pre-share (init)  
ISAKMP: life type in seconds  
ISAKMP: life duration (VPI) of 0x0 0x1 0x51 0x80  
ISAKMP (0): atts are not acceptable. Next payload is 0  
ISAKMP (0): Checking ISAKMP transform 9 against priority 65008 policy  
ISAKMP: encryption DES-CBC  
ISAKMP: hash MD5  
ISAKMP: default group 2  
ISAKMP: extended auth pre-share (init)  
ISAKMP: life type in seconds  
ISAKMP: life duration (VPI) of 0x0 0x1 0x51 0x80  
ISAKMP (0): atts are not acceptable. Next payload is 0  
ISAKMP (0): Checking ISAKMP transform 9 against priority 65009 policy  
ISAKMP: encryption DES-CBC  
ISAKMP: hash MD5  
ISAKMP: default group 2  
ISAKMP: extended auth pre-share (init)

```
ISAKMP: life type in seconds
ISAKMP: life duration (VPI) of 0x0 0x1 0x51 0x80
ISAKMP (0): atts are acceptable. Next payload is 0
ISAKMP (0): processing KE payload. message ID = 0

ISAKMP (0): processing NONCE payload. message ID = 0

ISAKMP (0): processing ID payload. message ID = 0
ISAKMP (0): processing HASH payload. message ID = 0
crypto_isakmp_process_block:src:10.20.20.1, dest:10.10.10.1 spt:500 dpt:500
crypto_isakmp_process_block:src:10.20.20.1, dest:10.10.10.1 spt:500 dpt:500
ISAKMP : attributes being requested

crypto_isakmp_process_block:src:10.20.20.1, dest:10.10.10.1 spt:500 dpt:500
ISAKMP (0): beginning Quick Mode exchange, M-ID of 1567562998:5d6f1cf6IPSEC
(key_engine): got a queue event...
IPSEC(spi_response): getting spi 0x411cf95(68276117) for SA
from 10.20.20.1 to 10.10.10.1 for prot 3

crypto_isakmp_process_block:src:10.20.20.1, dest:10.10.10.1 spt:500 dpt:500
OAK_QM exchange
oakley_process_quick_mode:
OAK_QM_IDLE
ISAKMP (0): processing SA payload. message ID = 1567562998

ISAKMP : Checking IPsec proposal 1

ISAKMP: transform 1, ESP_DES
ISAKMP: attributes in transform:
ISAKMP: SA life type in seconds
ISAKMP: SA life duration (basic) of 28800
ISAKMP: SA life type in kilobytes
ISAKMP: SA life duration (VPI) of 0x0 0x46 0x50 0x0
ISAKMP: encaps is 1
ISAKMP: authenticator is HMAC-MD5
ISAKMP (0): atts are acceptable.IPSEC(validate_proposal_request):
proposal part #1,
(key eng. msg.) dest= 10.20.20.1, src= 10.10.10.1,
dest_proxy= 172.22.1.0/255.255.255.0/0/0 (type=4),
src_proxy= 10.10.10.1/255.255.255.255/0/0 (type=1),
protocol= ESP, transform= esp-des esp-md5-hmac ,
lifedur= 0s and 0kb,
spi= 0x0(0), conn_id= 0, keysize= 0, flags= 0x4

ISAKMP (0): processing NONCE payload. message ID = 1567562998

ISAKMP (0): processing ID payload. message ID = 1567562998
ISAKMP (0): processing ID payload. message ID = 1567562998
ISAKMP (0): Creating IPsec SAs
inbound SA from 10.20.20.1 to 10.10.10.1 (proxy 172.22.1.0 to 10.10.10.1)
has spi 68276117 and conn_id 5 and flags 4
lifetime of 28800 seconds
lifetime of 4608000 kilobytes
outbound SA from 10.10.10.1 to 10.20.20.1 (proxy 10.10.10.1 to 172.22.1.0)
has spi 418090151 and conn_id 6 and flags 4
lifetime of 28800 seconds
lifetime of 4608000 kilobytesIPSEC(key_engine): got a queue event...
IPSEC(initialize_sas): ,
(key eng. msg.) dest= 10.10.10.1, src= 10.20.20.1,
dest_proxy= 10.10.10.1/255.255.255.255/0/0 (type=1),
src_proxy= 172.22.1.0/255.255.255.0/0/0 (type=4),
protocol= ESP, transform= esp-des esp-md5-hmac ,
lifedur= 28800s and 4608000kb,
spi= 0x411cf95(68276117), conn_id= 5, keysize= 0, flags= 0x4
```

```
IPSEC(initialize_sas): ,
(key eng. msg.) src= 10.10.10.1, dest= 10.20.20.1,
src_proxy= 10.10.10.1/255.255.255.255/0/0 (type=1),
dest_proxy= 172.22.1.0/255.255.255.0/0/0 (type=4),
protocol= ESP, transform= esp-des esp-md5-hmac ,
lifedur= 28800s and 4608000kb,
spi= 0x18eb8ca7(418090151), conn_id= 6, keysize= 0, flags= 0x4

VPN Peer: IPSEC: Peer ip:10.20.20.1/500 Ref cnt incremented to:2
Total VPN Peers:1
VPN Peer: IPSEC: Peer ip:10.20.20.1/500 Ref cnt incremented to:3
Total VPN Peers:1
return status is IKMP_NO_ERROR
ISAKMP (0): beginning Quick Mode exchange,
M-ID of 43279810:29465c2IPSEC(key_engine): got a queue event...
IPSEC(spi_response): getting spi 0xa12022dd(2703237853) for SA
from 10.20.20.1 to 10.10.10.1 for prot 3

crypto_isakmp_process_block:src:10.20.20.1, dest:10.10.10.1 spt:500 dpt:500
OAK_QM exchange
oakley_process_quick_mode:
OAK_QM_IDLE
ISAKMP (0): processing SA payload. message ID = 43279810

ISAKMP : Checking IPsec proposal 1

ISAKMP: transform 1, ESP_DES
ISAKMP: attributes in transform:
ISAKMP: SA life type in seconds
ISAKMP: SA life duration (basic) of 28800
ISAKMP: SA life type in kilobytes
ISAKMP: SA life duration (VPI) of 0x0 0x46 0x50 0x0
ISAKMP: encaps is 1
ISAKMP: authenticator is HMAC-MD5
ISAKMP (0): atts are acceptable.IPSEC(validate_proposal_request): proposal
part #1,
(key eng. msg.) dest= 10.20.20.1, src= 10.10.10.1,
dest_proxy= 10.20.20.1/255.255.255.255/0/0 (type=1),
src_proxy= 10.10.10.1/255.255.255.255/0/0 (type=1),
protocol= ESP, transform= esp-des esp-md5-hmac ,
lifedur= 0s and 0kb,
spi= 0x0(0), conn_id= 0, keysize= 0, flags= 0x4

ISAKMP (0): processing NONCE payload. message ID = 43279810

ISAKMP (0): processing ID payload. message ID = 43279810
ISAKMP (0): processing ID payload. message ID = 43279810
ISAKMP (0): Creating IPsec SAs
inbound SA from 10.20.20.1 to 10.10.10.1 (proxy 10.20.20.1 to 10.10.10.1)
has spi 2703237853 and conn_id 3 and flags 4
lifetime of 28800 seconds
lifetime of 4608000 kilobytes
outbound SA from 10.10.10.1 to 10.20.20.1 (proxy 10.10.10.1 to 10.20.20.1)
has spi 1010314457 and conn_id 4 and flags 4
lifetime of 28800 seconds
lifetime of 4608000 kilobytesIPSEC(key_engine): got a queue event...
IPSEC(initialize_sas): ,
(key eng. msg.) dest= 10.10.10.1, src= 10.20.20.1,
dest_proxy= 10.10.10.1/255.255.255.255/0/0 (type=1),
src_proxy= 10.20.20.1/255.255.255.255/0/0 (type=1),
protocol= ESP, transform= esp-des esp-md5-hmac ,
lifedur= 28800s and 4608000kb,
spi= 0xa12022dd(2703237853), conn_id= 3, keysize= 0, flags= 0x4
IPSEC(initialize_sas): ,
```

```
(key eng. msg.) src= 10.10.10.1, dest= 10.20.20.1,
src_proxy= 10.10.10.1/255.255.255.255/0/0 (type=1),
dest_proxy= 10.20.20.1/255.255.255.255/0/0 (type=1),
protocol= ESP, transform= esp-des esp-md5-hmac ,
lifedur= 28800s and 4608000kb,
spi= 0x3c382cd9(1010314457), conn_id= 4, keysize= 0, flags= 0x4
```

```
VPN Peer: IPSEC: Peer ip:10.20.20.1/500 Ref cnt incremented to:4 Total
VPN Peers:1
```

```
VPN Peer: IPSEC: Peer ip:10.20.20.1/500 Ref cnt incremented to:5 Total
VPN Peers:1
```

```
return status is IKMP_NO_ERROR
```

```
ISAKMP (0): sending NOTIFY message 36136 protocol 1
```

```
crypto_isakmp_process_block:src:10.20.20.1, dest:10.10.10.1 spt:500 dpt:500
```

```
ISAKMP (0): processing NOTIFY payload 36137 protocol 1
```

```
spi 0, message ID = 1608818011
```

```
ISAKMP (0): received DPD_R_U_THERE_ACK from peer 10.20.20.1
```

```
return status is IKMP_NO_ERR_NO_TRANS
```

```
pix506-635(config)#
```

### • debug vpnclient - 显示特定于 VPN Client 的协商。

```
pix506-635(config)#vpnclient enable
```

```
pix506-635(config)# 44: VPNC CFG: transform set unconfig attempt done
```

```
45: VPNC CLI: no isakmp keepalive 10 5
```

```
46: VPNC CLI: no isakmp nat-traversal 20
```

```
47: VPNC CFG: IKE unconfig successful
```

```
48: VPNC CLI: no crypto map _vpnc_cm
```

```
49: VPNC CFG: crypto map deletion attempt done
```

```
50: VPNC CFG: crypto unconfig successful
```

```
51: VPNC CLI: no global (outside) 65001
```

```
52: VPNC CLI: no nat (inside) 0 access-list _vpnc_acl
```

```
53: VPNC CFG: nat unconfig attempt failed
```

```
54: VPNC CLI: no http 172.16.1.1 255.255.255.0 inside
```

```
55: VPNC CLI: no http server enable
```

```
56: VPNC CLI: no access-list _vpnc_acl
```

```
57: VPNC CFG: ACL deletion attempt failed
```

```
58: VPNC CLI: no crypto map _vpnc_cm interface outside
```

```
59: VPNC CFG: crypto map de/attach failed
```

```
60: VPNC CLI: no sysopt connection permit-ipsec
```

```
61: VPNC CLI: sysopt connection permit-ipsec
```

```
62: VPNC CFG: transform sets configured
```

```
63: VPNC CFG: crypto config successful
```

```
64: VPNC CLI: isakmp keepalive 10 5
```

```
65: VPNC CLI: isakmp nat-traversal 20
```

```
66: VPNC CFG: IKE config successful
```

```
67: VPNC CLI: http 172.16.1.1 255.255.255.0 inside
```

```
68: VPNC CLI: http server enable
```

```
69: VPNC CLI: aaa-server _vpnc_nwp_server protocol tacacs+
```

```
70: VPNC CLI: aaa-server _vpnc_nwp_server (outside) host 10.20.20.1
```

```
71: VPNC CLI: access-list _vpnc_nwp_acl permit ip any 172.22.1.0 255.255.255.0
```

```
72: VPNC CLI: aaa authentication match _vpnc_nwp_acl outbound _vpnc_nwp_server
```

```
73: VPNC CLI: no access-list _vpnc_acl
```

```
74: VPNC CFG: ACL deletion attempt failed
```

```
75: VPNC CLI: access-list _vpnc_acl permit ip host 10.10.10.1 host 10.20.20.1
```

```
76: VPNC CLI: crypto map _vpnc_cm 10 match address _vpnc_acl
```

```
77: VPNC CFG: crypto map acl update successful
```

```
78: VPNC CLI: no crypto map _vpnc_cm interface outside
```

```
79: VPNC CLI: crypto map _vpnc_cm interface outside
```

```
80: VPNC INF: IKE trigger request done
```

```
81: VPNC INF: Constructing policy download req
```

```
82: VPNC INF: Packing attributes for policy request
```

```
83: VPNC INF: Attributes being requested
```

```
84: VPNC ATT: ALT_SPLIT_INCLUDE
```

```
85: VPNC INF: 172.22.1.0/255.255.255.0
```

```
86: VPNC ATT: ALT_PFS: 0
87: VPNC INF: Received application version 'Cisco Systems, Inc
ASA5520 Version 7.0(4) built by builders on Thu 13-Oct-05 21:43'
88: VPNC ATT: ALT_CFG_SEC_UNIT: 0
89: VPNC ATT: ALT_CFG_USER_AUTH: 0
90: VPNC CLI: no aaa authentication match _vpnc_nwp_acl outbound _vpnc_nwp_server
91: VPNC CLI: no access-list _vpnc_nwp_acl permit ip any 172.22.1.0 255.255.255.0
92: VPNC CLI: no aaa-server _vpnc_nwp_server
93: VPNC CLI: no access-list _vpnc_acl
94: VPNC CLI: access-list _vpnc_acl permit ip 172.16.1.0 255.255.255.0
172.22.1.0 255.255.255.0
95: VPNC CLI: access-list _vpnc_acl permit ip host 10.10.10.1 172.22.1.0
255.255.255.0
96: VPNC CLI: access-list _vpnc_acl permit ip host 10.10.10.1 host 10.20.20.1
97: VPNC CFG: _vpnc_acl ST define done
98: VPNC CFG: Split DNS config attempt done
99: VPNC CLI: crypto map _vpnc_cm 10 match address _vpnc_acl
100: VPNC CFG: crypto map acl update successful
101: VPNC CLI: no crypto map _vpnc_cm interface outside
102: VPNC CLI: crypto map _vpnc_cm interface outside
103: VPNC CLI: no global (outside) 65001
104: VPNC CLI: no nat (inside) 0 access-list _vpnc_acl
105: VPNC CFG: nat unconfig attempt failed
106: VPNC CLI: nat (inside) 0 access-list _vpnc_acl
107: VPNC INF: IKE trigger request done
108: VPNC INF: IKE trigger request done

pix506-635(config)#
```

## 相关信息

- [Cisco PIX 防火墙软件](#)
- [Cisco Secure PIX 防火墙命令参考](#)
- [安全产品 Field Notices \( 包括 PIX \)](#)
- [请求注解 \(RFC\)](#)
- [IPsec 协商/IKE 协议](#)
- [技术支持和文档 - Cisco Systems](#)