在ASA 5505和ASA/PIX之间的LAN-to-LAN隧道配置示例

Contents

Introduction

本文档提供了 Cisco 安全设备 (ASA/PIX) 与自适应安全设备 (ASA) 5505 之间的 LAN 到 LAN（站点到站点）IPSec 隧道的示例配置。

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

本文档中的信息基于以下软件和硬件版本：

- 运行软件版本 7.x 及更高版本的 Cisco 5500 系列 ASA
- 运行软件版本 7.x 及更高版本的 Cisco 5505 ASA

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.

相关产品

此配置也可用于以下硬件和软件版本：

- 运行软件版本 7.x 及更高版本的 Cisco 500 系列 PIX 安全设备
- 运行软件版本 7.x 及更高版本的 Cisco 5505 ASA

Conventions

有关文档规则的详细信息，请参阅 Cisco 技术提示规则。

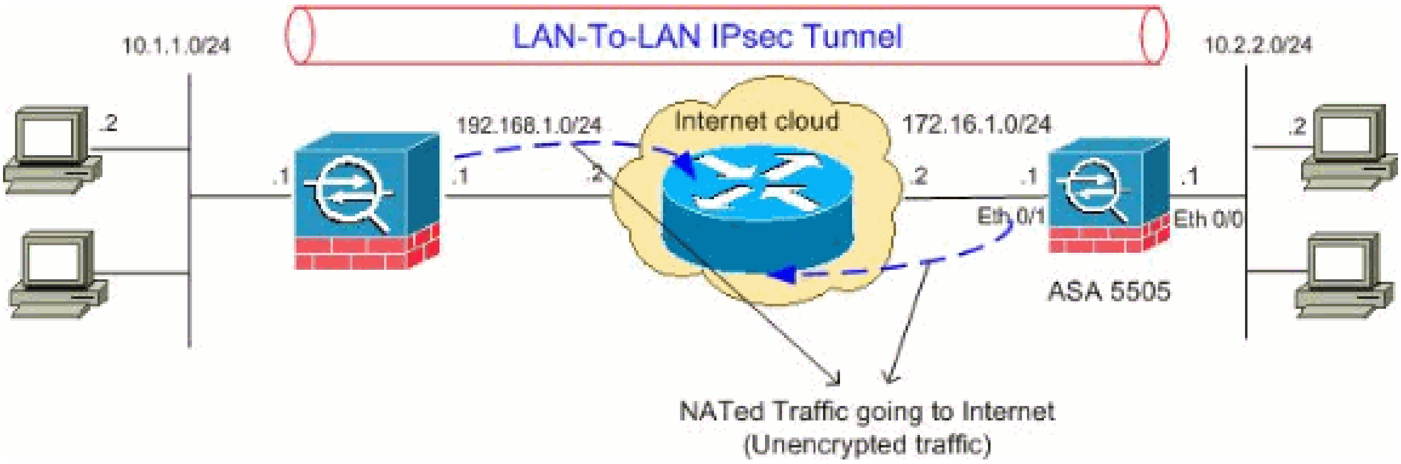
Configure

本部分提供有关如何配置本文档所述功能的信息。

Note: 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。

Network Diagram

本文档使用以下网络设置：



配置

本文档使用以下配置：

- Cisco 5505 ASA 配置
- Cisco 5510 ASA 配置

Cisco 5505 ASA 配置

```
ASA5505#show running-config
: Saved
:
ASA Version 8.0(2)
!
hostname ASA5505
enable password 8Ry2YjIyt7RRXU24 encrypted
names
!
interface Vlan1
 no nameif
 no security-level
 no ip address
!
interface Vlan2
 nameif outside
 security-level 0
 ip address 172.16.1.1 255.255.255.0
!
interface Vlan3
 nameif inside
 security-level 100
 ip address 10.2.2.1 255.255.255.0
!
interface Ethernet0/0
 switchport access vlan 3
!
interface Ethernet0/1
 switchport access vlan 2
!
interface Ethernet0/2
 shutdown
!
interface Ethernet0/3
 shutdown
!
interface Ethernet0/4
 shutdown
!
interface Ethernet0/5
 shutdown
!
interface Ethernet0/6
 shutdown
!
interface Ethernet0/7
 shutdown
!
passwd 2KFQnbNIdI.2KYOU encrypted
boot system disk0:/asa802-k8.bin
ftp mode passive
access-list 100 extended permit ip 10.2.2.0
255.255.255.0 10.1.1.0 255.255.255.0

!--- Access-list for interesting traffic (Site to Site)
to be !--- encrypted between ASA 5505 and ASA/PIX
networks. access-list nonat extended permit ip 10.2.2.0
255.255.255.0 10.1.1.0 255.255.255.0

!--- Access-list for traffic to bypass the network
address !--- translation (NAT) process. pager lines 24
mtu inside 1500 mtu outside 1500 no failover icmp
unreachable rate-limit 1 burst-size 1 asdm image
disk0:/asdm-602.bin no asdm history enable arp timeout
14400 nat-control global (outside) 1 interface
nat (inside) 0 access-list nonat
nat (inside) 1 0.0.0.0 0.0.0.0

!--- 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.


route outside 10.1.1.0 255.255.255.0 172.16.1.2 1
route outside 192.168.1.0 255.255.255.0 172.16.1.2 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 mgcp-pat 0:05:00
timeout sip 0:30:00 sip_media 0:02:00 sip-invite 0:03:00
sip-disconnect 0:02:0
timeout uauth 0:05:00 absolute
dynamic-access-policy-record DfltAccessPolicy
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. crypto ipsec transform-set
myset esp-3des esp-sha-hmac

!--- Define the transform set for Phase 2. crypto map
outside_map 20 match address 100

!--- Define which traffic can be sent to the IPsec peer.
crypto map outside_map 20 set peer 192.168.1.1

!--- Sets the IPsec peer. crypto map outside_map 20 set
transform-set myset

!--- Sets the IPsec transform set "myset" !--- to be
used with the crypto map entry "outside_map" crypto map
outside_map interface outside

!--- Crypto map applied to the outside interface of the
ASA crypto isakmp enable outside
crypto isakmp policy 10
 authentication pre-share
 encryption 3des
 hash sha
 group 2
 lifetime 86400

!--- PHASE 1 CONFIGURATION ---! !--- This configuration
uses isakmp policy 10. !--- These configuration commands
!--- define the Phase 1 policies that are used. telnet
timeout 5 ssh timeout 5 console timeout 0 threat-
detection basic-threat threat-detection statistics
access-list ! class-map inspection_default match
default-inspection-traffic ! ! policy-map type inspect
dns preset_dns_map parameters 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 netbios inspect rsh inspect
rtsp inspect skinny inspect esmtp inspect sqlnet inspect
sunrpc inspect tftp inspect sip inspect xdmcp ! service-
policy global_policy global tunnel-group 192.168.1.1
type ipsec-l2l

!--- In order to create and manage the database of
connection-specific records !--- for ipsec-l2l—IPsec
(LAN-to-LAN) tunnels, use the tunnel-group !--- command
in global configuration mode. !--- For L2L connections
the name of the tunnel group MUST be the IP !--- address
of the IPsec peer.
```

```
tunnel-group 192.168.1.1 ipsec-attributes
 pre-shared-key *

!--- Enter the pre-shared-key in order to configure the
authentication method. prompt hostname context
Cryptochecksum:68eba159fd8e4c893f24185ffb40bb6f : end
ASA5505#
```

Cisco 5510 ASA 配置

```
ASA5510#show running-config
: Saved
:
ASA Version 8.0(2)
!
hostname ASA5510
enable password 8Ry2YjIyt7RRXU24 encrypted
names
!
interface Ethernet0/0
 nameif inside
 security-level 100
 ip address 10.1.1.1 255.255.255.0
!
interface Ethernet0/1
 nameif outside
 security-level 0
 ip address 192.168.1.1 255.255.255.0
!
interface Ethernet0/2
 shutdown
 no nameif
 no security-level
 no ip address
!
interface Ethernet0/3
 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
access-list 100 extended permit ip 10.1.1.0
255.255.255.0 10.2.2.0 255.255.255.0

!--- Access-list for interesting traffic (Site to Site)
to be !--- encrypted between ASA 5505 and ASA/PIX
networks. access-list nonat extended permit ip 10.1.1.0
255.255.255.0 10.2.2.0 255.255.255.0

!--- Access-list for traffic to bypass the network
address !--- translation (NAT) process. pager lines 24
mtu inside 1500 mtu outside 1500 no failover icmp
unreachable rate-limit 1 burst-size 1 asdm image
disk0:/asdm-522.bin no asdm history enable arp timeout
```

```
14400 nat-control global (outside) 1 interface
nat (inside) 0 access-list nonat
nat (inside) 1 0.0.0.0 0.0.0.0

!--- 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.


route outside 10.2.2.0 255.255.255.0 192.168.1.2 1
route outside 172.16.1.0 255.255.255.0 192.168.1.2 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 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 uauth 0:05:00 absolute
dynamic-access-policy-record DfltAccessPolicy
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. crypto ipsec transform-set
myset esp-3des esp-sha-hmac

!--- Define the transform set for Phase 2. crypto map
outside_map 20 match address 100

!--- Define which traffic can be sent to the IPsec peer.
crypto map outside_map 20 set peer 172.16.1.1

!--- Sets the IPsec peer. crypto map outside_map 20 set
transform-set myset

!--- Sets the IPsec transform set "myset" !--- to be
used with the crypto map entry "outside_map" crypto map
outside_map interface outside

!--- Crypto map applied to the outside interface of the
ASA crypto isakmp enable outside
crypto isakmp policy 10
 authentication pre-share
 encryption 3des
 hash sha
 group 2
 lifetime 86400

!--- PHASE 1 CONFIGURATION ---! !--- This configuration
uses isakmp policy 10. !--- These configuration commands
!--- define the Phase 1 policies that are used. crypto
isakmp policy 65535 authentication pre-share encryption
3des hash sha group 2 lifetime 86400 telnet timeout 5
ssh timeout 5 console timeout 0 threat-detection basic-
threat threat-detection statistics access-list ! class-
map inspection_default match default-inspection-traffic
! ! policy-map type inspect dns preset_dns_map
parameters 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 netbios inspect rsh inspect rtsp
```

```
inspect skinny inspect esmtp inspect sqlnet inspect
sunrpc inspect tftp inspect sip inspect xdmcp ! service-
policy global_policy global tunnel-group 172.16.1.1 type
ipsec-l2l

!--- In order to create and manage the database of
connection-specific records !--- for ipsec-l2l—IPsec
(LAN-to-LAN) tunnels, use the tunnel-group !--- command
in global configuration mode. !--- For L2L connections
the name of the tunnel group MUST be the IP !--- address
of the IPsec peer.


tunnel-group 172.16.1.1 ipsec-attributes
 pre-shared-key *
!--- Enter the pre-shared-key in order to configure the
authentication method. prompt hostname context
Cryptochecksum:d41d8cd98f00b204e9800998ecf8427e : end
ASA5510#
```

Verify

Use this section to confirm that your configuration works properly.

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。

- **show crypto isakmp sa** - 显示对等体上的所有当前 IKE 安全关联 (SA)。
- **show crypto ipsec sa** — 显示所有当前 IPsec SA。

本部分显示用于以下配置的示例验证配置：

- Cisco 5505 ASA
- Cisco 5510 ASA

Cisco 5505 ASA 配置

```

ASA5505#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: 192.168.1.1
    Type    : L2L             Role    : initiator
    Rekey   : no              State   : MM_ACTIVE


ASA5505#show crypto ipsec sa
interface: outside
    Crypto map tag: outside_map, seq num: 20, local
addr: 172.16.1.1

      access-list 100 permit ip 10.2.2.0 255.255.255.0
10.1.1.0 255.255.255.0
      local ident (addr/mask/prot/port):
(10.2.2.0/255.255.255.0/0/0)
      remote ident (addr/mask/prot/port):
```

```
(10.1.1.0/255.255.255.0/0/0)
      current_peer: 192.168.1.1

      #pkts encaps: 4, #pkts encrypt: 4, #pkts digest: 4
      #pkts decaps: 4, #pkts decrypt: 4, #pkts verify: 4
      #pkts compressed: 0, #pkts decompressed: 0
      #pkts not compressed: 4, #pkts comp failed: 0,
#pkts decomp failed: 0
      #pre-frag successes: 0, #pre-frag failures: 0,
#fragments created: 0
      #PMTUs sent: 0, #PMTUs rcvd: 0, #decapsulated frgs
needing reassembly: 0
      #send errors: 0, #recv errors: 0

      local crypto endpt.: 172.16.1.1, remote crypto
endpt.: 192.168.1.1

      path mtu 1500, ipsec overhead 58, media mtu 1500
      current outbound spi: A0411DE6

    inbound esp sas:
      spi: 0x8312C39C (2199045020)
         transform: esp-3des esp-sha-hmac none
         in use settings ={L2L, Tunnel, }
         slot: 0, conn_id: 8192, crypto-map: outside_map
         sa timing: remaining key lifetime (kB/sec):
(3824999/27807)
         IV size: 8 bytes
         replay detection support: Y
    outbound esp sas:
      spi: 0xA0411DE6 (2688622054)
         transform: esp-3des esp-sha-hmac none
         in use settings ={L2L, Tunnel, }
         slot: 0, conn_id: 8192, crypto-map: outside_map
         sa timing: remaining key lifetime (kB/sec):
(3824999/27807)
         IV size: 8 bytes
         replay detection support: Y
```

Cisco 5510 ASA 配置

```

ASA5510#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: 172.16.1.1
    Type    : L2L             Role    : responder
    Rekey   : no              State   : MM_ACTIVE

ASA5510#show crypto ipsec sa
interface: outside
    Crypto map tag: outside_map, seq num: 20, local
addr: 192.168.1.1

      access-list 100 permit ip 10.1.1.0 255.255.255.0
10.2.2.0 255.255.255.0
      local ident (addr/mask/prot/port):
(10.1.1.0/255.255.255.0/0/0)
      remote ident (addr/mask/prot/port):
(10.2.2.0/255.255.255.0/0/0)
```

```
      current_peer: 172.16.1.1

      #pkts encaps: 4, #pkts encrypt: 4, #pkts digest: 4
      #pkts decaps: 4, #pkts decrypt: 4, #pkts verify: 4
      #pkts compressed: 0, #pkts decompressed: 0
      #pkts not compressed: 4, #pkts comp failed: 0,
#pkts decomp failed: 0
      #pre-frag successes: 0, #pre-frag failures: 0,
#fragments created: 0
      #PMTUs sent: 0, #PMTUs rcvd: 0, #decapsulated frgs
needing reassembly: 0
      #send errors: 0, #recv errors: 0

      local crypto endpt.: 192.168.1.1, remote crypto
endpt.: 172.16.1.1

      path mtu 1500, ipsec overhead 58, media mtu 1500
      current outbound spi: 8312C39C

    inbound esp sas:
      spi: 0xA0411DE6 (2688622054)
         transform: esp-3des esp-sha-hmac none
         in use settings ={L2L, Tunnel, }
         slot: 0, conn_id: 8192, crypto-map: outside_map
         sa timing: remaining key lifetime (kB/sec):
(4274999/27844)
         IV size: 8 bytes
         replay detection support: Y
    outbound esp sas:
      spi: 0x8312C39C (2199045020)
         transform: esp-3des esp-sha-hmac none
         in use settings ={L2L, Tunnel, }
         slot: 0, conn_id: 8192, crypto-map: outside_map
         sa timing: remaining key lifetime (kB/sec):
(4274999/27844)
         IV size: 8 bytes
         replay detection support: Y
```

Troubleshoot

本部分提供的信息可用于对配置进行故障排除。

使用以下命令可以：

- **clear crypto isakmp sa** — 清除第 1 阶段 SA。**警告： clear crypto isakmp sa** 命令是强制型的，它将清除所有活动 VPN 隧道。从 PIX/ASA 软件的 8.0(3) 版本开始，可以使用 **clear crypto isakmp sa <peer ip address>** 命令清除单个 IKE SA。在软件版本 8.0(3) 之前，可以使用 vpn-sessiondb logoff tunnel-group <tunnel-group-name> 命令清除单个隧道的 IKE 和 IPsec SA。

  ```
  ASA5505#vpn-sessiondb logoff tunnel-group 192.168.1.1
  Do you want to logoff the VPN session(s)? [confirm] Y
  INFO: Number of sessions from TunnelGroup "192.168.1.1" logged off : 1

  ASA5505# Jan 19 13:58:43 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, P
  itcher: received key delete msg, spi 0xaa157573
  Jan 19 13:58:43 [IKEv1]: Group = 192.168.1.1, IP = 192.168.1.1, Connection termi
  nated for peer 192.168.1.1.  Reason: Administrator Reset  Remote Proxy 10.1.1.0,
   Local Proxy 10.2.2.0
  Jan 19 13:58:43 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, IKE SA MM:
  ```

```
116f1ccf rcv'd Terminate: state MM_ACTIVE  flags 0x0021c042, refcnt 1, tuncnt 1
Jan 19 13:58:43 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, sending de
lete/delete with reason message
Jan 19 13:58:43 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, constructi
ng blank hash payload
Jan 19 13:58:43 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, constructi
ng IPSec delete payload
Jan 19 13:58:43 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, constructi
ng qm hash payload
Jan 19 13:58:43 [IKEv1]: IP = 192.168.1.1, IKE_DECODE SENDING Message (msgid=c17
46fb4) with payloads : HDR + HASH (8) + DELETE (12) + NONE (0) total length : 68
Jan 19 13:58:43 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, Active uni
t receives a delete event for remote peer 192.168.1.1.

Jan 19 13:58:43 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, IKE Deleti
ng SA: Remote Proxy 10.1.1.0, Local Proxy 10.2.2.0
Jan 19 13:58:43 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, IKE SA MM:
116f1ccf terminating:  flags 0x0121c002, refcnt 0, tuncnt 0
Jan 19 13:58:43 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, sending de
lete/delete with reason message
Jan 19 13:58:43 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, constructi
ng blank hash payload
Jan 19 13:58:43 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, constructi
ng IKE delete payload
Jan 19 13:58:43 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, constructi
ng qm hash payload
Jan 19 13:58:43 [IKEv1]: IP = 192.168.1.1, IKE_DECODE SENDING Message (msgid=a7e
78fac) with payloads : HDR + HASH (8) + DELETE (12) + NONE (0) total length : 80
Jan 19 13:58:43 [IKEv1 DEBUG]: Pitcher: received key delete msg, spi 0xaa157573
Jan 19 13:58:43 [IKEv1 DEBUG]: Pitcher: received key delete msg, spi 0x746fe476
Jan 19 13:58:43 [IKEv1]: IP = 192.168.1.1, Received encrypted packet with no mat
ching SA, dropping
```

- **clear crypto ipsec sa peer <peer IP address>** — 清除所需的第 2 阶段 SA。

```
ASA5505(config)#clear ipsec sa peer 192.168.1.1
ASA5505(config)# IPSEC: Deleted inbound decrypt rule, SPI 0x8030618F
    Rule ID: 0xD4E56A18
IPSEC: Deleted inbound permit rule, SPI 0x8030618F
    Rule ID: 0xD4DF4110
IPSEC: Deleted inbound tunnel flow rule, SPI 0x8030618F
    Rule ID: 0xD4DAE1F0
IPSEC: Deleted inbound VPN context, SPI 0x8030618F
    VPN handle: 0x00058FBC
IPSEC: Deleted outbound encrypt rule, SPI 0x0D6CDEEB
    Rule ID: 0xD4DA4348
IPSEC: Deleted outbound permit rule, SPI 0x0D6CDEEB
    Rule ID: 0xD4DAE7A8
IPSEC: Deleted outbound VPN context, SPI 0x0D6CDEEB
    VPN handle: 0x0005633C
```

- **debug crypto isakmp sa <debug level>** — 调试 ISAKMP SA 协商。

```
ASA5505(config)#debug crypto isakmp 7
ASA5505(config)# Jan 19 13:39:49 [IKEv1]: IP = 192.168.1.1, IKE_DECODE RECEIVED
Message (msgid=0) with payloads : HDR + SA (1) + VENDOR (13) + VENDOR (13) + VEN
DOR (13) + NONE (0) total length : 188
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, processing SA payload
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, Oakley proposal is acceptable
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, processing VID payload
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, Received NAT-Traversal ver 02 V
ID
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, processing VID payload
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, Received NAT-Traversal ver 03 V
ID
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, processing VID payload
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, Received Fragmentation VID
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, IKE Peer included IKE fragmenta
tion capability flags:  Main Mode:        True  Aggressive Mode:  True
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, processing IKE SA payload
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, IKE SA Proposal # 1, Transform
# 1 acceptable  Matches global IKE entry # 2
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, constructing ISAKMP SA payload
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, constructing NAT-Traversal VID
ver 02 payload
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, constructing Fragmentation VID
+ extended capabilities payload
Jan 19 13:39:49 [IKEv1]: IP = 192.168.1.1, IKE_DECODE SENDING Message (msgid=0)
with payloads : HDR + SA (1) + VENDOR (13) + VENDOR (13) + NONE (0) total length
 : 128
Jan 19 13:39:49 [IKEv1]: IP = 192.168.1.1, IKE_DECODE RECEIVED Message (msgid=0)
 with payloads : HDR + KE (4) + NONCE (10) + VENDOR (13) + VENDOR (13) + VENDOR
(13) + VENDOR (13) + NAT-D (130) + NAT-D (130) + NONE (0) total length : 304
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, processing ke payload
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, processing ISA_KE payload
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, processing nonce payload
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, processing VID payload
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, Received Cisco Unity client VID
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, processing VID payload
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, Received xauth V6 VID
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, processing VID payload
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, Processing VPN3000/ASA spoofing
 IOS Vendor ID payload (version: 1.0.0, capabilities: 20000001)
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, processing VID payload
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, Received Altiga/Cisco VPN3000/C
isco ASA GW VID
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, processing NAT-Discovery payloa
d
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, computing NAT Discovery hash
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, processing NAT-Discovery payloa
d
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, computing NAT Discovery hash
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, constructing ke payload
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, constructing nonce payload
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, constructing Cisco Unity VID pa
yload
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, constructing xauth V6 VID paylo
ad
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, Send IOS VID
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, Constructing ASA spoofing IOS V
endor ID payload (version: 1.0.0, capabilities: 20000001)
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, constructing VID payload
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, Send Altiga/Cisco VPN3000/Cisco
 ASA GW VID
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, constructing NAT-Discovery payl
oad
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, computing NAT Discovery hash
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, constructing NAT-Discovery payl
oad
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, computing NAT Discovery hash
Jan 19 13:39:49 [IKEv1]: IP = 192.168.1.1, Connection landed on tunnel_group 192
.168.1.1
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, Generating
 keys for Responder...
Jan 19 13:39:49 [IKEv1]: IP = 192.168.1.1, IKE_DECODE SENDING Message (msgid=0)
with payloads : HDR + KE (4) + NONCE (10) + VENDOR (13) + VENDOR (13) + VENDOR (
13) + VENDOR (13) + NAT-D (130) + NAT-D (130) + NONE (0) total length : 304
Jan 19 13:39:49 [IKEv1]: IP = 192.168.1.1, IKE_DECODE RECEIVED Message (msgid=0)
 with payloads : HDR + ID (5) + HASH (8) + IOS KEEPALIVE (128) + VENDOR (13) + N
ONE (0) total length : 96
```

```
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, processing
 ID payload
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, processing
 hash payload
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, Computing
hash for ISAKMP
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, Processing IOS keep alive paylo
ad: proposal=32767/32767 sec.
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, processing
 VID payload
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, Received D
PD VID
Jan 19 13:39:49 [IKEv1]: Group = 192.168.1.1, IP = 192.168.1.1, Automatic NAT De
tection Status:     Remote end is NOT behind a NAT device     This   end is NOT
behind a NAT device
Jan 19 13:39:49 [IKEv1]: IP = 192.168.1.1, Connection landed on tunnel_group 192
.168.1.1
Jan 19 13:39:49 [IKEv1]: Group = 192.168.1.1, IP = 192.168.1.1, Freeing previous
ly allocated memory for authorization-dn-attributes
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, constructi
ng ID payload
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, constructi
ng hash payload
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, Computing
hash for ISAKMP
Jan 19 13:39:49 [IKEv1 DEBUG]: IP = 192.168.1.1, Constructing IOS keep alive pay
load: proposal=32767/32767 sec.
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, constructi
ng dpd vid payload
Jan 19 13:39:49 [IKEv1]: IP = 192.168.1.1, IKE_DECODE SENDING Message (msgid=0)
with payloads : HDR + ID (5) + HASH (8) + IOS KEEPALIVE (128) + VENDOR (13) + NO
NE (0) total length : 96
Jan 19 13:39:49 [IKEv1]: Group = 192.168.1.1, IP = 192.168.1.1, PHASE 1 COMPLETE
D
Jan 19 13:39:49 [IKEv1]: IP = 192.168.1.1, Keep-alive type for this connection:
DPD
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, Starting P
1 rekey timer: 73440 seconds.
Jan 19 13:39:49 [IKEv1]: IP = 192.168.1.1, IKE_DECODE RECEIVED Message (msgid=94
21905f) with payloads : HDR + HASH (8) + SA (1) + NONCE (10) + ID (5) + ID (5) +
 NOTIFY (11) + NONE (0) total length : 196
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, processing
 hash payload
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, processing
 SA payload
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, processing
 nonce payload
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, processing
 ID payload
Jan 19 13:39:49 [IKEv1]: Group = 192.168.1.1, IP = 192.168.1.1, Received remote
IP Proxy Subnet data in ID Payload:   Address 10.1.1.0, Mask 255.255.255.0, Prot
ocol 0, Port 0
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, processing
 ID payload
Jan 19 13:39:49 [IKEv1]: Group = 192.168.1.1, IP = 192.168.1.1, Received local I
P Proxy Subnet data in ID Payload:   Address 10.2.2.0, Mask 255.255.255.0, Proto
col 0, Port 0
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, processing
 notify payload
Jan 19 13:39:49 [IKEv1]: Group = 192.168.1.1, IP = 192.168.1.1, QM IsRekeyed old
 sa not found by addr
Jan 19 13:39:49 [IKEv1]: Group = 192.168.1.1, IP = 192.168.1.1, Static Crypto Ma
p check, checking map = outside_map, seq = 20...
Jan 19 13:39:49 [IKEv1]: Group = 192.168.1.1, IP = 192.168.1.1, Static Crypto Ma
```

```
p check, map outside_map, seq = 20 is a successful match
Jan 19 13:39:49 [IKEv1]: Group = 192.168.1.1, IP = 192.168.1.1, IKE Remote Peer
configured for crypto map: outside_map
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, processing
 IPSec SA payload
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, IPSec SA P
roposal # 1, Transform # 1 acceptable  Matches global IPSec SA entry # 20
Jan 19 13:39:49 [IKEv1]: Group = 192.168.1.1, IP = 192.168.1.1, IKE: requesting
SPI!
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, IKE got SP
I from key engine: SPI = 0x826ff027
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, oakley con
stucting quick mode
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, constructi
ng blank hash payload
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, constructi
ng IPSec SA payload
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, constructi
ng IPSec nonce payload
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, constructi
ng proxy ID
Jan 19 13:39:49 [IKEv1 DEBUG]: Group = 192.168.1.1, IP = 192.168.1.1, Transmitti
```

- **debug crypto ipsec sa <debug level>** — 调试 IPsec SA 协商。

```
ASA5505(config)#debug crypto ipsec 7
ASA5505(config)# IPSEC: New embryonic SA created @ 0xD4E56E18,
    SCB: 0xD4E56CF8,
    Direction: inbound
    SPI      : 0x8030618F
    Session ID: 0x00006000
    VPIF num  : 0x00000001
    Tunnel type: l2l
    Protocol   : esp
    Lifetime   : 240 seconds
IPSEC: New embryonic SA created @ 0xD4E57AD8,
    SCB: 0xD4DAE608,
    Direction: outbound
    SPI      : 0x0D6CDEEB
    Session ID: 0x00006000
    VPIF num  : 0x00000001
    Tunnel type: l2l
    Protocol   : esp
    Lifetime   : 240 seconds
IPSEC: Completed host OBSA update, SPI 0x0D6CDEEB
IPSEC: Creating outbound VPN context, SPI 0x0D6CDEEB
    Flags: 0x00000005
    SA   : 0xD4E57AD8
    SPI  : 0x0D6CDEEB
    MTU  : 1500 bytes
    VCID : 0x00000000
    Peer : 0x00000000
    SCB  : 0x015E69CB
    Channel: 0xD3D60A98
IPSEC: Completed outbound VPN context, SPI 0x0D6CDEEB
    VPN handle: 0x0005633C
IPSEC: New outbound encrypt rule, SPI 0x0D6CDEEB
    Src addr: 10.2.2.0
    Src mask: 255.255.255.0
    Dst addr: 10.1.1.0
    Dst mask: 255.255.255.0
    Src ports
      Upper: 0
      Lower: 0
      Op   : ignore
    Dst ports
      Upper: 0
      Lower: 0
      Op   : ignore
    Protocol: 0
    Use protocol: false
    SPI: 0x00000000
    Use SPI: false
IPSEC: Completed outbound encrypt rule, SPI 0x0D6CDEEB
    Rule ID: 0xD4DA4348
IPSEC: New outbound permit rule, SPI 0x0D6CDEEB
    Src addr: 172.16.1.1
    Src mask: 255.255.255.255
    Dst addr: 192.168.1.1
    Dst mask: 255.255.255.255
    Src ports
      Upper: 0
      Lower: 0
      Op   : ignore
    Dst ports
      Upper: 0
      Lower: 0
      Op   : ignore
    Protocol: 50
    Use protocol: true
    SPI: 0x0D6CDEEB
    Use SPI: true
IPSEC: Completed outbound permit rule, SPI 0x0D6CDEEB
    Rule ID: 0xD4DAE7A8
IPSEC: Completed host IBSA update, SPI 0x8030618F
IPSEC: Creating inbound VPN context, SPI 0x8030618F
    Flags: 0x00000006
    SA   : 0xD4E56E18
    SPI  : 0x8030618F
    MTU  : 0 bytes
    VCID : 0x00000000
    Peer : 0x0005633C
    SCB  : 0x015DD135
    Channel: 0xD3D60A98
IPSEC: Completed inbound VPN context, SPI 0x8030618F
    VPN handle: 0x00058FBC
IPSEC: Updating outbound VPN context 0x0005633C, SPI 0x0D6CDEEB
    Flags: 0x00000005
    SA   : 0xD4E57AD8
    SPI  : 0x0D6CDEEB
    MTU  : 1500 bytes
    VCID : 0x00000000
    Peer : 0x00058FBC
    SCB  : 0x015E69CB
    Channel: 0xD3D60A98
IPSEC: Completed outbound VPN context, SPI 0x0D6CDEEB
    VPN handle: 0x0005633C
IPSEC: Completed outbound inner rule, SPI 0x0D6CDEEB
    Rule ID: 0xD4DA4348
IPSEC: Completed outbound outer SPD rule, SPI 0x0D6CDEEB
    Rule ID: 0xD4DAE7A8
IPSEC: New inbound tunnel flow rule, SPI 0x8030618F
    Src addr: 10.1.1.0
    Src mask: 255.255.255.0
    Dst addr: 10.2.2.0
    Dst mask: 255.255.255.0
    Src ports
      Upper: 0
      Lower: 0
      Op   : ignore
    Dst ports
      Upper: 0
      Lower: 0
      Op   : ignore
    Protocol: 0
    Use protocol: false
    SPI: 0x00000000
    Use SPI: false
IPSEC: Completed inbound tunnel flow rule, SPI 0x8030618F
    Rule ID: 0xD4DAE1F0
IPSEC: New inbound decrypt rule, SPI 0x8030618F
    Src addr: 192.168.1.1
    Src mask: 255.255.255.255
    Dst addr: 172.16.1.1
    Dst mask: 255.255.255.255
    Src ports
      Upper: 0
      Lower: 0
      Op   : ignore
    Dst ports
      Upper: 0
      Lower: 0
      Op   : ignore
    Protocol: 50
    Use protocol: true
    SPI: 0x8030618F
    Use SPI: true
IPSEC: Completed inbound decrypt rule, SPI 0x8030618F
    Rule ID: 0xD4E56A18
IPSEC: New inbound permit rule, SPI 0x8030618F
    Src addr: 192.168.1.1
```

Related Information

- Cisco ASA 5500 系列自适应安全设备支持页
- Cisco PIX 500 系列安全设备支持页
- 最常用的 L2L 和远程访问 IPSec VPN 故障排除解决方案
- IPsec 协商/IKE 协议支持页