

# Пример конфигурации динамического IPsec между статически обращенным ASA и динамично обращенным маршрутизатором IOS с NAT

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## Введение

Этот документ предоставляет пример конфигурации для того, как включить Устройство адаптивной защиты (ASA) для принятия динамических подключений IPsec от Маршрутизатора IOS.

## Предварительные условия

### Требования

Прежде чем вы будете делать попытку этой конфигурации, будете гарантировать, что и ASA и маршрутизатор имеют интернет-соединение для установления Туннеля IPsec.

В этом документе предполагается, что назначение IP-адресов на внешних и частных интерфейсах уже выполнено и что возможно отправить эхо-запрос на IP-адрес удаленного устройства сети VPN.

### Используемые компоненты

Сведения, содержащиеся в данном документе, касаются следующих версий программного обеспечения и оборудования:

- Маршрутизатор Cisco 2900 с Cisco IOS Software Release 15.2 (4) M3
- Версия программного обеспечения 9.4 (1) Устройства адаптивной защиты Cisco

Сведения, представленные в этом документе, были получены от устройств, работающих в специальной лабораторной среде. Все устройства, описанные в этом документе, были запущены с чистой (стандартной) конфигурацией. В рабочей сети необходимо изучить потенциальное воздействие всех команд до их использования.

## Условные обозначения

[Более подробную информацию о применяемых в документе обозначениях см. в описании условных обозначений, используемых в технической документации Cisco.](#)

## Общие сведения

При доступе из частной сети 10.1.1.x в Интернет удаленный маршрутизатор выполняет преобразование сетевых адресов (NAT). Трафик от 10.1.1.x до частной сети 10.2.2.x позади ASA исключен из процесса NAT. Туннель IPsec устанавливает, только если трафик (10.1.1.x) подражает соединению от маршрутизатора с ASA, который имеет удаленную сеть (10.2.2. x. Маршрутизатор может инициировать соединения с ASA, но ASA не может инициировать соединения с маршрутизатором.

Эта конфигурация позволяет ASA создать динамический LAN-LAN IPsec (L2L) туннель с удаленным маршрутизатором с поддержкой VPN. Этот маршрутизатор динамически получает свой внешний IP-адрес от поставщика услуг Интернета. Этот механизм динамического выделения IP-адресов от поставщика услуг реализуется протоколом DHCP. При этом IP-адреса, переставшие быть востребованными для хостов, можно использовать повторно.

На ASA можно настроить Руководство NAT для обеспечения трафика, который проходит туннель, не становится преобразованным. В данном примере, если вы находитесь в 10.2.2.0 сетях и переходите к 10.1.1.0 сетям, **Ручной NAT** использовал разрешать 10.1.1.0 сетевым трафикам быть зашифрованными, не будучи преобразованным в IP-адрес внешнего интерфейса. На маршрутизаторе **route-map** и **команды access-list** используются, чтобы разрешить 10.1.1.0 сетевым трафикам быть зашифрованными без NAT. Однако, когда вы идете куда-либо еще (как Интернет), вы преобразованы в IP-адрес внешнего интерфейса через Преобразование адресов портов (PAT).

**Примечание:** См. [Применение NAT](#) для получения дополнительной информации о NAT

Это команды настройки, требуемые на ASA для трафика *не* пробегать PAT по туннелю и трафик к Интернету для пробежки PAT

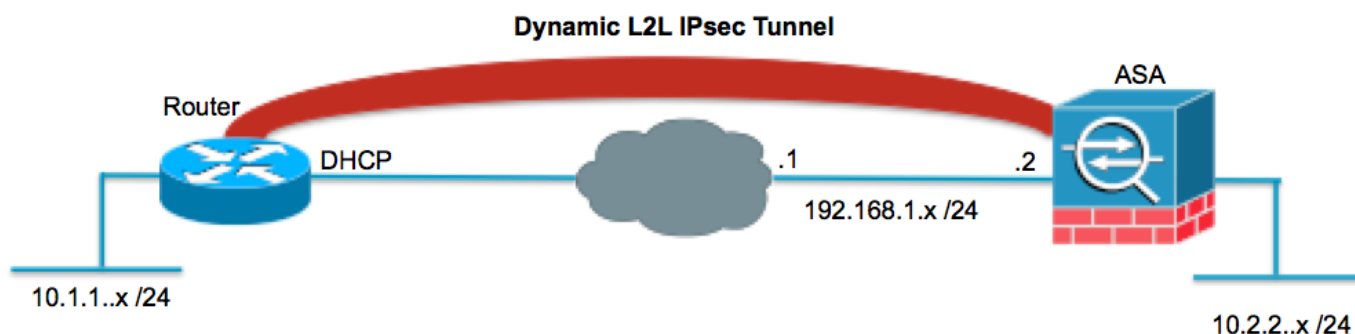
```
object network LOCAL
 subnet 10.2.2.0 255.255.255.0
object network REMOTE
 subnet 10.1.1.0 255.255.255.0
nat (inside,outside) source static LOCAL LOCAL destination static
REMOTE REMOTEobject network LOCAL
 nat (inside,outside) dynamic interface
```

# Настройка

В этом разделе содержатся сведения о настройке функций, описанных в этом документе.

## Схема сети

В настоящем документе используется следующая схема сети:



## Конфигурации

Эти конфигурации используются в данном документе:

### Маршрутизатор

```
Router#show running-config
Current configuration : 1354 bytes
!
version 15.2
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname Router
!
boot-start-marker
boot-end-marker
!
!
no aaa new-model
!
resource policy
!
ip cef

!--- Configuration for IKE policies.
!--- Enables the IKE policy configuration (config-isakmp)
!--- command mode, where you can specify the parameters that
!--- are used during an IKE negotiation.

crypto isakmp policy 1
  encryption aes 256
  hash sha
```

```
authentication pre-share
group 2
```

```
!--- Specifies the preshared key "cisco123" which should
!--- be identical at both peers. This is a global
!--- configuration mode command.
```

```
crypto isakmp key cisco123 address 192.168.1.2
!
```

```
!--- Configuration for IPsec policies.
!--- Enables the crypto transform configuration mode,
!--- where you can specify the transform sets that are used
!--- during an IPsec negotiation.
```

```
crypto ipsec transform-set myset esp-aes 256 esp-sha-hmac
```

```
!--- Indicates that IKE is used to establish
!--- the IPsec Security Association for protecting the
!--- traffic specified by this crypto map entry.
```

```
crypto map mymap 10 ipsec-isakmp
```

```
!--- Sets the IP address of the remote end.
```

```
set peer 192.168.1.2
```

```
!--- Configures IPsec to use the transform-set
!--- "myset" defined earlier in this configuration.
```

```
set transform-set myset
```

```
!--- Specifies the interesting traffic to be encrypted.
```

```
match address 101
```

```
!
!
!
!
interface FastEthernet0/0
```

```
!--- The interface dynamically learns its IP address
!--- from the service provider.
```

```
ip address DHCP
```

```
ip virtual-reassembly
half-duplex
```

```
!--- Configures the interface to use the
!--- crypto map "mymap" for IPsec.
```

```
crypto map mymap
!
interface FastEthernet1/0
no ip address
shutdown
duplex auto
speed auto
!
interface Serial2/0
ip address 10.1.1.2 255.255.255.0
ip nat inside
ip virtual-reassembly
no fair-queue
!
interface Serial2/1
no ip address
shutdown
!
interface Serial2/2
no ip address
shutdown
!
interface Serial2/3
no ip address
shutdown
!
ip http server
no ip http secure-server
!
ip route 0.0.0.0 0.0.0.0 FastEthernet0/0
!
ip nat inside source route-map nonat interface FastEthernet0/0 overload
!

!--- This crypto ACL 101 -permit identifies the
!--- matching traffic flows to be protected via encryption.

access-list 101 permit ip 10.1.1.0 0.0.0.255 10.2.2.0 0.0.0.255

!--- This ACL 110 identifies the traffic flows using route map and
!--- are PATed via outside interface (Ethernet0/0).

access-list 110 deny ip 10.1.1.0 0.0.0.255 10.2.2.0 0.0.0.255
access-list 110 permit ip 10.1.1.0 0.0.0.255 any

!
route-map nonat permit 10
match ip address 110
!
!
control-plane
!

!
line con 0
line aux 0
line vty 0 4
!
!
```

end

## ASA

```
ASA#show running-config
```

```
ASA Version 9.4(1)
```

```
!
```

```
hostname ASA
```

```
enable password 8Ry2YjIyt7RRXU24 encrypted
```

```
names
```

```
!
```

```
!--- Configure the outside and inside interfaces.
```

```
interface GigabitEthernet0/0
```

```
 nameif outside
```

```
 security-level 0
```

```
 ip address 192.168.1.2 255.255.255.0
```

```
!
```

```
interface GigabitEthernet0/1
```

```
 nameif inside
```

```
 security-level 100
```

```
 ip address 10.2.2.1 255.255.255.0
```

```
!
```

```
!
```

```
!--- Output is suppressed.
```

```
!
```

```
passwd 2KFQnbNIdI.2KYOU encrypted
```

```
ftp mode passive
```

```
!--- Manual NAT prevents NAT for networks specified in the statement - nonat.
```

```
!--- The Object NAT 1 command specifies PAT using
```

```
!--- the outside interface for all other traffic.
```

```
object network LOCAL
```

```
 subnet 10.2.2.0 255.255.255.0
```

```
object network REMOTE
```

```
 subnet 10.1.1.0 255.255.255.0
```

```
pager lines 24
```

```
mtu outside 1500
```

```
mtu inside 1500
```

```
no failover
```

```
no asdm history enable
```

```
arp timeout 14400
```

```
!--- Manual NAT prevents NAT for networks specified in the statement - nonat.
```

```
!--- The Object NAT 1 command specifies PAT using
```

```
!--- the outside interface for all other traffic.
```

```
nat (inside,outside) source static LOCAL LOCAL destination static REMOTE REMOTE
```

```
!
```

```
object network LOCAL
```

```
 nat (inside,outside) dynamic interface
```

```
route outside 0.0.0.0 0.0.0.0 192.168.1.1 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
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 ikev1 transform-set myset esp-aes-256 esp-sha-hmac

!--- Defines a dynamic crypto map with
!--- the specified encryption settings.

crypto dynamic-map cisco 1 set ikev1 transform-set myset

!--- Binds the dynamic map to the IPsec/ISAKMP process.

crypto map dyn-map 10 ipsec-isakmp dynamic cisco

!--- Specifies the interface to be used with
!--- the settings defined in this configuration.

crypto map dyn-map interface outside

!--- PHASE 1 CONFIGURATION ---!

!--- This configuration uses isakmp policy 10.
!--- The configuration commands here define the Phase
!--- 1 policy parameters that are used.

crypto ikev1 enable outside
crypto isakmp policy 10
  authentication pre-share
  encryption aes-256
  hash sha
  group 2
  lifetime 86400

!--- The security appliance provides the default tunnel groups
!--- for Lan to Lan access (DefaultL2LGroup) and configure the preshared key
!--- (cisco123) to authenticate the remote router.

tunnel-group DefaultL2LGroup ipsec-attributes
  pre-shared-key cisco123

telnet timeout 5
ssh timeout 5
```

```
console timeout 0
!
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
prompt hostname context
Cryptochecksum:6ed4a7bce392a439d0a16e86743e2663
: end
```

## Очистка ассоциаций безопасности

В privileged режиме ASA используйте эти команды:

- **clear [crypto] ipsec sa**— удаляет все активные ассоциации безопасности IPSec. Ключевое слово `crypto` является необязательным.
- **clear crypto isakmp sa**— удаляет активные ассоциации безопасности IKE. Ключевое слово `crypto` является необязательным.

## Проверка

Этот раздел позволяет убедиться, что конфигурация работает правильно.

[Cisco CLI Анализатор \(только зарегистрированные клиенты\)](#) поддерживает некоторые команды `show`. Используйте Cisco CLI Анализатор для просмотра аналитику выходных данных команд `show`.

## Устройство обеспечения безопасности ASA - команды показа

- **show crypto isakmp sa** — отображает все текущие ассоциации безопасности (SA) IKE узла.  
`ASA#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: 172.16.1.3
Type      : L2L                Role      : responder
Rekey     : no                 State     : MM_ACTIVE
```

- **show crypto ipsec sa** — отображает все текущие ассоциации безопасности (SA) IPsec

**узла.ASA#show crypto ipsec sa**

interface: outside

Crypto map tag: cisco, seq num: 1, local addr: 192.168.1.2

**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: 172.16.1.3

**#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.: 192.168.1.2, remote crypto endpt.: 172.16.1.3**

path mtu 1500, ipsec overhead 58, media mtu 1500

current outbound spi: 28C8C1BD

inbound esp sas:

spi: 0x33785672 (863524466)

transform: esp-3des esp-md5-hmac

in use settings = {L2L, Tunnel, }

slot: 0, conn\_id: 6, crypto-map: cisco

sa timing: remaining key lifetime (kB/sec): (4274999/3564)

IV size: 8 bytes

replay detection support: Y

outbound esp sas:

spi: 0x28C8C1BD (684245437)

transform: esp-3des esp-md5-hmac

in use settings = {L2L, Tunnel, }

slot: 0, conn\_id: 6, crypto-map: cisco

sa timing: remaining key lifetime (kB/sec): (4274999/3562)

IV size: 8 bytes

replay detection support: Y

## Команды show удаленного маршрутизатора IOS

- **show crypto isakmp sa** — отображает все текущие ассоциации безопасности (SA) IKE

**узла.Router#show crypto isakmp sa**

```
dst          src          state          conn-id slot status
192.168.1.2  172.16.1.3  QM_IDLE        1      0  ACTIVE
```

- **show crypto ipsec sa** — отображает все текущие ассоциации безопасности (SA) IPsec

**узла.Router#show crypto ipsec sa**

interface: Ethernet0/0

Crypto map tag: pix, local addr 172.16.1.3

protected vrf: (none)

**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 192.168.1.2 port 500**

PERMIT, flags={origin\_is\_acl,}

**#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: 0, #pkts compr. failed: 0
#pkts not decompressed: 0, #pkts decompress failed: 0
#send errors 62, #recv errors 0
```

**local crypto endpt.: 172.16.1.3, remote crypto endpt.: 192.168.1.2**

path mtu 1500, ip mtu 1500, ip mtu idb Ethernet0/0

current outbound spi: 0x333785672(863524466)

inbound esp sas:

spi: 0x28C8C1BD(684245437)

transform: esp-3des esp-md5-hmac ,

in use settings ={Tunnel, }

conn id: 2002, flow\_id: SW:2, crypto map: pix

sa timing: remaining key lifetime (k/sec): (4431817/3288)

IV size: 8 bytes

replay detection support: Y

Status: ACTIVE

inbound ah sas:

inbound pcp sas:

outbound esp sas:

spi: 0x333785672(863524466)

transform: esp-3des esp-md5-hmac ,

in use settings ={Tunnel, }

conn id: 2001, flow\_id: SW:1, crypto map: pix

sa timing: remaining key lifetime (k/sec): (4431817/3286)

IV size: 8 bytes

replay detection support: Y

Status: ACTIVE

outbound ah sas:

outbound pcp sas:

## Устранение неполадок

В этом разделе описывается процесс устранения неполадок конфигурации.

[Cisco CLI Анализатор \(только зарегистрированные клиенты\)](#) поддерживает некоторые команды **show**. Используйте Cisco CLI Анализатор для просмотра аналитики выходных данных команды **show**.

**Примечание:** См. [раздел Важные сведения о командах отладки](#) и [Устранение проблем системы безопасности IP - Понимание и Использование команд отладки](#) перед использованием команд отладки.

- [Устройство адаптивной безопасности - выходные данные отладки](#) **debug crypto ipsec 7** — отображает связь IPsec этапа 2. **debug crypto isakmp 7** — отображает процесс установления связи по протоколу ISAKMP на этапе 1.
- [Выходные данные команд debug удаленного маршрутизатора IOS](#) **debug crypto ipsec** — отображает согласования IPsec на Этапе 2. **debug crypto isakmp** — отображает согласования ISAKMP на 1-м этапе.

## ASA - выходные данные отладки

ASA#debug crypto isakmp 7

```
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE RECEIVED Message (msgid=0) with payloads : HDR + SA (1) + VENDOR (13) + VENDOR (13) + VENDOR (13) + NONE (0) total length : 144
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing SA payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Oakley proposal is acceptable
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing VID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing VID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Received NAT-Traversal ver 03 VID
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing VID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Received NAT-Traversal ver 02 VID
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing IKE SA payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, IKE SA Proposal # 1, Transform # 1 acceptable Matches global IKE entry # 3
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, constructing ISAKMP SA payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, constructing Fragmentation VID + extended capabilities payload
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE SENDING Message (msgid=0) with payloads : HDR + SA (1) + VENDOR (13) + NONE (0) total length : 108
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE RECEIVED Message (msgid=0) with payloads : HDR + KE (4) + NONCE (10) + VENDOR (13) + VENDOR (13) + VENDOR (13) + VENDOR (13) + NONE (0) total length : 256
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing ke payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing ISA_KE payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing nonce payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing VID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Received Cisco Unity client VID
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing VID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Received DPD VID
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing VID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Processing IOS/PIX Vendor ID payload (version: 1.0.0, capabilities: 0000077f)
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing VID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Received xauth V6 VID
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, constructing ke payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, constructing nonce payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, constructing Cisco Unity VID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, constructing xauth V6 VID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Send IOS VID
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Constructing ASA spoofing IOS Vendor ID payload (version: 1.0.0, capabilities: 20000001)
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, constructing VID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Send Altiga/Cisco VPN3000/CiscoASA GW VID
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, Connection landed on tunnel_group DefaultL2LGroup
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, Generating keys for Responder...
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE SENDING Message (msgid=0) with payloads : HDR + KE (4) + NONCE (10) + VENDOR (13) + VENDOR (13) + VENDOR (13) + VENDOR (13) + NONE (0) total length : 256
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE RECEIVED Message (msgid=0) with payloads : HDR + ID (5) + HASH (8) + NOTIFY (11) + NONE (0) total length : 88
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, processing ID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, processing hash payload
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, Computing hash for ISAKMP
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, processing notify payload
```

Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, Connection landed on tunnel\_group  
DefaultL2LGroup

Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3, Freeing  
previously allocated memory for authorization-dn-attributes

Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
constructing ID payload

Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
constructing hash payload

Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
Computing hash for ISAKMP

Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Constructing IOS keep alive  
payload: proposal=32767/32767 sec.

Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
constructing dpd vid payload

Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE\_DECODE SENDING Message (msgid=0)  
with payloads : HDR + ID (5) + HASH (8) + IOS KEEPALIVE (128) + VENDOR (13) +  
NONE (0) total length : 92

Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3, **PHASE 1 COMPLETED**

Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, Keep-alive type for this connection: DPD

Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, Starting  
P1 rekey timer: 82080 seconds.

Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE\_DECODE RECEIVED Message (msgid=4bc  
07a70) with payloads : HDR + HASH (8) + SA (1) + NONCE (10) + ID (5) + ID (5) +  
NONE (0) total length : 164

Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
processing hash payload

Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
processing SA payload

Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
processing nonce payload

Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
processing ID payload

Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
Received remote IP Proxy Subnet data in ID Payload:  
Address 10.1.1.0, Mask 255.255.255.0, Protocol 0, Port 0

Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
processing ID payload

Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
Received local IP Proxy Subnet data in ID Payload:  
Address 10.2.2.0, Mask 255.255.255.0, Protocol 0, Port 0

Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
QM IsRekeyedold sa not found by addr

Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
IKE Remote Peer configured for crypto map: cisco

Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
processing IPSec SA payload

Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, IPSec S  
A Proposal # 1, Transform # 1 acceptable Matches global IPSec SA entry # 1

Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3, IKE:  
requesting SPI!

Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
IKE got SPI from key engine: SPI = 0xc3fe4fb0

Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
oakleyconstucting quick mode

Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
constructing blank hash payload

Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
constructing IPSec SA payload

Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
constructing IPSec nonce payload

Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
constructing proxy ID

Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
Transmitting Proxy Id:

**Remote subnet: 10.1.1.0 Mask 255.255.255.0 Protocol 0 Port 0**

**Local subnet: 10.2.2.0 mask 255.255.255.0 Protocol 0 Port 0**

Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
constructing qm hash payload  
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE\_DECODE SENDING Message (msgid=4bc0  
7a70) with payloads : HDR + HASH (8) + SA (1) + NONCE (10) + ID (5) + N  
ONE (0) total length : 164  
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE\_DECODE RECEIVED Message (msgid=4bc  
07a70) with payloads : HDR + HASH (8) + NONE (0) total length : 48  
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
processing hash payload  
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
loading all IPSEC SAs  
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
Generating Quick Mode Key!  
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
Generating Quick Mode Key!  
Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3, Security nego  
tiation complete for LAN-to-LAN Group (DefaultL2LGroup) Responder,  
Inbound SPI= 0xc3fe4fb0, Outbound SPI = 0x9ac1e72c  
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
IKE got a KEY\_ADD msg for SA: SPI = 0x9ac1e72c  
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
Pitcher: received KEY\_UPDATE, spi 0xc3fe4fb0  
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,  
Starting P2 rekey timer: 3420 seconds.  
Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3, **PHASE 2 COMPL  
ETED** (msgid=4bc07a70)

pixfirewall#**debug crypto ipsec 7**

pixfirewall# IPSEC: New embryonic SA created @ 0x028B6EE0,

SCB: 0x028B6E50,  
Direction: inbound  
SPI : 0x97550AC8  
Session ID: 0x00000009  
VPIF num : 0x00000001  
Tunnel type: l2l  
Protocol : esp  
Lifetime : 240 seconds

IPSEC: New embryonic SA created @ 0x028B75E8,

SCB: 0x028B7528,  
Direction: outbound  
SPI : 0xB857E226  
Session ID: 0x00000009  
VPIF num : 0x00000001  
Tunnel type: l2l  
Protocol : esp  
Lifetime : 240 seconds

IPSEC: Completed host OBSA update, SPI 0xB857E226

IPSEC: Creating outbound VPN context, SPI 0xB857E226

Flags: 0x00000005  
SA : 0x028B75E8  
SPI : 0xB857E226  
MTU : 1500 bytes  
VCID : 0x00000000  
Peer : 0x00000000  
SCB : 0x028B7528  
Channel: 0x01693F28

IPSEC: Completed outbound VPN context, SPI 0xB857E226

VPN handle: 0x0002524C

IPSEC: New outbound encrypt rule, SPI 0xB857E226

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 0xB857E226  
  Rule ID: 0x028A9988  
IPSEC: New outbound permit rule, SPI 0xB857E226  
  Src addr: 192.168.1.2  
  Src mask: 255.255.255.255  
  Dst addr: 172.16.1.3  
  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: 0xB857E226  
  Use SPI: true  
IPSEC: Completed outbound permit rule, SPI 0xB857E226  
  Rule ID: 0x028B5D90  
IPSEC: Completed host IBSA update, SPI 0x97550AC8  
IPSEC: Creating inbound VPN context, SPI 0x97550AC8  
  Flags: 0x00000006  
  SA : 0x028B6EE0  
  SPI : 0x97550AC8  
  MTU : 0 bytes  
  VCID : 0x00000000  
  Peer : 0x0002524C  
  SCB : 0x028B6E50  
  Channel: 0x01693F28  
IPSEC: Completed inbound VPN context, SPI 0x97550AC8  
  VPN handle: 0x0002B344  
IPSEC: Updating outbound VPN context 0x0002524C, SPI 0xB857E226  
  Flags: 0x00000005  
  SA : 0x028B75E8  
  SPI : 0xB857E226  
  MTU : 1500 bytes  
  VCID : 0x00000000  
  Peer : 0x0002B344  
  SCB : 0x028B7528  
  Channel: 0x01693F28  
IPSEC: Completed outbound VPN context, SPI 0xB857E226  
  VPN handle: 0x0002524C  
IPSEC: Completed outbound inner rule, SPI 0xB857E226  
  Rule ID: 0x028A9988  
IPSEC: Completed outbound outer SPD rule, SPI 0xB857E226  
  Rule ID: 0x028B5D90  
IPSEC: New inbound tunnel flow rule, SPI 0x97550AC8  
  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 0x97550AC8
  Rule ID: 0x027FF7F8
IPSEC: New inbound decrypt rule, SPI 0x97550AC8
  Src addr: 172.16.1.3
  Src mask: 255.255.255.255
  Dst addr: 192.168.1.2
  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: 0x97550AC8
  Use SPI: true
IPSEC: Completed inbound decrypt rule, SPI 0x97550AC8
  Rule ID: 0x028BB318
IPSEC: New inbound permit rule, SPI 0x97550AC8
  Src addr: 172.16.1.3
  Src mask: 255.255.255.255
  Dst addr: 192.168.1.2
  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: 0x97550AC8
  Use SPI: true
IPSEC: Completed inbound permit rule, SPI 0x97550AC8
  Rule ID: 0x028A7460
```

## Выходные данные команд debug удаленного маршрутизатора IOS

```
Router#debug crypto isakmp
*Dec 31 01:18:51.830: ISAKMP: received ke message (1/1)
*Dec 31 01:18:51.830: ISAKMP:(0:0:N/A:0): SA request profile is (NULL)
*Dec 31 01:18:51.830: ISAKMP: Created a peer struct for 192.168.1.2, peer port 500
*Dec 31 01:18:51.830: ISAKMP: New peer created peer = 0x64DC2CB4 peer_handle = 0
x80000022
```

\*Dec 31 01:18:51.834: ISAKMP: Locking peer struct 0x64DC2CB4, IKE refcount 1 for isakmp\_initiator

\*Dec 31 01:18:51.834: ISAKMP: local port 500, remote port 500

\*Dec 31 01:18:51.834: ISAKMP: set new node 0 to QM\_IDLE

\*Dec 31 01:18:51.834: insert sa successfully sa = 640D2660

\*Dec 31 01:18:51.834: ISAKMP:(0:0:N/A:0):Can not start Aggressive mode, trying Main mode.

\*Dec 31 01:18:51.834: ISAKMP:(0:0:N/A:0):found peer pre-shared key matching 192.168.1.2

\*Dec 31 01:18:51.838: ISAKMP:(0:0:N/A:0): constructed NAT-T vendor-07 ID

\*Dec 31 01:18:51.838: ISAKMP:(0:0:N/A:0): constructed NAT-T vendor-03 ID

\*Dec 31 01:18:51.838: ISAKMP:(0:0:N/A:0): constructed NAT-T vendor-02 ID

\*Dec 31 01:18:51.838: ISAKMP:(0:0:N/A:0):Input = IKE\_MESG\_FROM\_IPSEC, IKE\_SA\_REQ\_MM

\*Dec 31 01:18:51.838: ISAKMP:(0:0:N/A:0):Old State = IKE\_READY New State = IKE\_I\_MM1

\*Dec 31 01:18:51.838: ISAKMP:(0:0:N/A:0): **beginning Main Mode exchange**

\*Dec 31 01:18:51.842: ISAKMP:(0:0:N/A:0): sending packet to 192.168.1.2 my\_port 500 peer\_port 500 (I) MM\_NO\_STATE

\*Dec 31 01:18:51.846: ISAKMP (0:0): received packet from 192.168.1.2 dport 500 s port 500 Global (I) MM\_NO\_STATE

\*Dec 31 01:18:51.850: ISAKMP:(0:0:N/A:0):Input = IKE\_MESG\_FROM\_PEER, IKE\_MM\_EXCH

\*Dec 31 01:18:51.850: ISAKMP:(0:0:N/A:0):Old State = IKE\_I\_MM1 New State = IKE\_I\_MM2

\*Dec 31 01:18:51.850: ISAKMP:(0:0:N/A:0): processing SA payload. message ID = 0

\*Dec 31 01:18:51.850: ISAKMP:(0:0:N/A:0): processing vendor id payload

\*Dec 31 01:18:51.850: ISAKMP:(0:0:N/A:0): vendor ID seems Unity/DPD but major 194 mismatch

\*Dec 31 01:18:51.850: ISAKMP:(0:0:N/A:0):**found peer pre-shared key matching 192.168.1.2**

\*Dec 31 01:18:51.854: ISAKMP:(0:0:N/A:0): local preshared key found

\*Dec 31 01:18:51.854: ISAKMP : Scanning profiles for xauth ...

\*Dec 31 01:18:51.854: ISAKMP:(0:0:N/A:0):Checking ISAKMP transform 1 against priority 1 policy

\*Dec 31 01:18:51.854: ISAKMP: encryption 3DES-CBC

\*Dec 31 01:18:51.854: ISAKMP: hash MD5

\*Dec 31 01:18:51.854: ISAKMP: default group 2

\*Dec 31 01:18:51.854: ISAKMP: auth pre-share

\*Dec 31 01:18:51.854: ISAKMP: life type in seconds

\*Dec 31 01:18:51.854: ISAKMP: life duration (VPI) of 0x0 0x1 0x51 0x80

\*Dec 31 01:18:51.858: ISAKMP:(0:0:N/A:0):atts are acceptable. Next payload is 0

\*Dec 31 01:18:51.998: ISAKMP:(0:1:SW:1): processing vendor id payload

\*Dec 31 01:18:51.998: ISAKMP:(0:1:SW:1): vendor ID seems Unity/DPD but major 194 mismatch

\*Dec 31 01:18:51.998: ISAKMP:(0:1:SW:1):Input = IKE\_MESG\_INTERNAL, IKE\_PROCESS\_MAIN\_MODE

\*Dec 31 01:18:51.998: ISAKMP:(0:1:SW:1):Old State = IKE\_I\_MM2 New State = IKE\_I\_MM2

\*Dec 31 01:18:52.002: ISAKMP:(0:1:SW:1): sending packet to 192.168.1.2 my\_port 500 peer\_port 500 (I) MM\_SA\_SETUP

\*Dec 31 01:18:52.006: ISAKMP:(0:1:SW:1):Input = IKE\_MESG\_INTERNAL, **IKE\_PROCESS\_COMPLETE**

\*Dec 31 01:18:52.006: ISAKMP:(0:1:SW:1):Old State = IKE\_I\_MM2 New State = IKE\_I\_MM3

\*Dec 31 01:18:52.066: ISAKMP (0:134217729): received packet from 192.168.1.2 dport 500 sport 500 Global (I) MM\_SA\_SETUP

\*Dec 31 01:18:52.066: ISAKMP:(0:1:SW:1):Input = IKE\_MESG\_FROM\_PEER, IKE\_MM\_EXCH

\*Dec 31 01:18:52.066: ISAKMP:(0:1:SW:1):Old State = IKE\_I\_MM3 New State = IKE\_I\_MM4

\*Dec 31 01:18:52.070: ISAKMP:(0:1:SW:1): processing KE payload. message ID = 0

\*Dec 31 01:18:52.246: ISAKMP:(0:1:SW:1): processing NONCE payload. message ID =0

\*Dec 31 01:18:52.246: ISAKMP:(0:1:SW:1):found peer pre-shared key matching 192.168.1.2

\*Dec 31 01:18:52.250: ISAKMP:(0:1:SW:1):SKEYID state generated

\*Dec 31 01:18:52.250: ISAKMP:(0:1:SW:1): processing vendor id payload

\*Dec 31 01:18:52.250: ISAKMP:(0:1:SW:1): vendor ID is Unity

\*Dec 31 01:18:52.250: ISAKMP:(0:1:SW:1): processing vendor id payload

\*Dec 31 01:18:52.250: ISAKMP:(0:1:SW:1): vendor ID seems Unity/DPD but major 227 mismatch



\*Dec 31 01:18:52.250: ISAKMP:(0:1:SW:1): vendor ID is XAUTH  
\*Dec 31 01:18:52.250: ISAKMP:(0:1:SW:1): processing vendor id payload  
\*Dec 31 01:18:52.254: ISAKMP:(0:1:SW:1): speaking to another IOS box!  
\*Dec 31 01:18:52.254: ISAKMP:(0:1:SW:1): processing vendor id payload  
\*Dec 31 01:18:52.254: ISAKMP:(0:1:SW:1): vendor ID seems Unity/DPD but hash mismatch  
\*Dec 31 01:18:52.254: ISAKMP:(0:1:SW:1): Input = IKE\_MESG\_INTERNAL,  
IKE\_PROCESS\_MAIN\_MODE  
\*Dec 31 01:18:52.254: ISAKMP:(0:1:SW:1): Old State = IKE\_I\_MM4 New State = IKE\_I\_MM4  
\*Dec 31 01:18:52.262: ISAKMP:(0:1:SW:1): Send initial contact  
\*Dec 31 01:18:52.262: ISAKMP:(0:1:SW:1): **SA is doing pre-shared key authentication using id type ID\_IPV4\_ADDR**  
\*Dec 31 01:18:52.266: ISAKMP (0:134217729): ID payload  
    next-payload : 8  
    type : 1  
    address : 172.16.1.3  
    protocol : 17  
    port : 500  
    length : 12  
\*Dec 31 01:18:52.266: ISAKMP:(0:1:SW:1): Total payload length: 12  
\*Dec 31 01:18:52.266: ISAKMP:(0:1:SW:1): sending packet to 192.168.1.2 my\_port 5  
00 peer\_port 500 (I) MM\_KEY\_EXCH  
\*Dec 31 01:18:52.270: ISAKMP:(0:1:SW:1): Input = IKE\_MESG\_INTERNAL, IKE\_PROCESS\_COMPLETE  
\*Dec 31 01:18:52.270: ISAKMP:(0:1:SW:1): Old State = IKE\_I\_MM4 New State = IKE\_I\_MM5  
\*Dec 31 01:18:52.342: ISAKMP (0:134217729): **received packet from 192.168.1.2 dpo  
rt 500 sport 500 Global (I) MM\_KEY\_EXCH**  
\*Dec 31 01:18:52.342: ISAKMP:(0:1:SW:1): processing ID payload. message ID = 0  
\*Dec 31 01:18:52.342: ISAKMP (0:134217729): ID payload  
    next-payload : 8  
    type : 1  
    address : 192.168.1.2  
    protocol : 17  
    port : 500  
    length : 12  
\*Dec 31 01:18:52.342: ISAKMP:(0:1:SW:1):: peer matches \*none\* of the profiles  
\*Dec 31 01:18:52.346: ISAKMP:(0:1:SW:1): processing HASH payload. message ID = 0  
\*Dec 31 01:18:52.346: ISAKMP: received payload type 17  
\*Dec 31 01:18:52.346: ISAKMP:(0:1:SW:1): processing vendor id payload  
\*Dec 31 01:18:52.346: ISAKMP:(0:1:SW:1): vendor ID is DPD  
\*Dec 31 01:18:52.346: ISAKMP:(0:1:SW:1): SA authentication status: authenticated  
\*Dec 31 01:18:52.346: ISAKMP:(0:1:SW:1): SA has been authenticated with 192.168.1.2  
\*Dec 31 01:18:52.346: ISAKMP: Trying to insert a peer 172.16.1.3/192.168.1.2/500  
/, and inserted successfully 64DC2CB4.  
\*Dec 31 01:18:52.346: ISAKMP:(0:1:SW:1): Input = IKE\_MESG\_FROM\_PEER, IKE\_MM\_EXCH  
\*Dec 31 01:18:52.350: ISAKMP:(0:1:SW:1): Old State = IKE\_I\_MM5 New State =  
IKE\_I\_MM6  
\*Dec 31 01:18:52.350: ISAKMP:(0:1:SW:1): Input = IKE\_MESG\_INTERNAL,  
IKE\_PROCESS\_MAIN\_MODE  
\*Dec 31 01:18:52.350: ISAKMP:(0:1:SW:1): Old State = IKE\_I\_MM6 New State = IKE\_I\_MM6  
\*Dec 31 01:18:52.354: ISAKMP:(0:1:SW:1): Input = IKE\_MESG\_INTERNAL,  
IKE\_PROCESS\_COMPLETE  
\*Dec 31 01:18:52.354: ISAKMP:(0:1:SW:1): Old State = IKE\_I\_MM6 New State =  
IKE\_P1\_COMPLETE  
\*Dec 31 01:18:52.358: ISAKMP:(0:1:SW:1): beginning Quick Mode exchange, M-ID  
of 1270905456  
\*Dec 31 01:18:52.362: ISAKMP:(0:1:SW:1): sending packet to 192.168.1.2 my\_port 5  
00 peer\_port 500 (I) QM\_IDLE  
\*Dec 31 01:18:52.362: ISAKMP:(0:1:SW:1): Node 1270905456, Input =  
IKE\_MESG\_INTERNAL, IKE\_INIT\_QM  
\*Dec 31 01:18:52.362: ISAKMP:(0:1:SW:1): Old State = IKE\_QM\_READY  
New State = IKE\_QM\_I\_QM1  
\*Dec 31 01:18:52.362: ISAKMP:(0:1:SW:1): Input = IKE\_MESG\_INTERNAL,  
IKE\_PHASE1\_COMPLETE  
\*Dec 31 01:18:52.366: ISAKMP:(0:1:SW:1): Old State = IKE\_P1\_COMPLETE  
New State = **IKE\_P1\_COMPLETE**

\*Dec 31 01:18:52.374: ISAKMP (0:134217729): received packet from 192.168.1.2 dport 500 sport 500 Global (I) QM\_IDLE

\*Dec 31 01:18:52.378: ISAKMP:(0:1:SW:1): processing HASH payload.  
message ID = 1270905456

\*Dec 31 01:18:52.378: ISAKMP:(0:1:SW:1): processing SA payload.  
message ID = 1270905456

\*Dec 31 01:18:52.378: ISAKMP:(0:1:SW:1):Checking IPsec proposal 1

\*Dec 31 01:18:52.378: ISAKMP: transform 1, ESP\_3DES

\*Dec 31 01:18:52.378: ISAKMP: attributes in transform:

\*Dec 31 01:18:52.378: ISAKMP: SA life type in seconds

\*Dec 31 01:18:52.378: ISAKMP: SA life duration (basic) of 3600

\*Dec 31 01:18:52.378: ISAKMP: SA life type in kilobytes

\*Dec 31 01:18:52.378: ISAKMP: SA life duration (VPI) of 0x0 0x46 0x50 0x0

\*Dec 31 01:18:52.378: ISAKMP: encaps is 1 (Tunnel)

\*Dec 31 01:18:52.382: ISAKMP: authenticator is HMAC-MD5

\*Dec 31 01:18:52.382: ISAKMP:(0:1:SW:1):atts are acceptable.

\*Dec 31 01:18:52.382: ISAKMP:(0:1:SW:1): processing NONCE payload.  
message ID =1270905456

\*Dec 31 01:18:52.382: ISAKMP:(0:1:SW:1): processing ID payload.  
message ID = 1270905456

\*Dec 31 01:18:52.382: ISAKMP:(0:1:SW:1): processing ID payload.  
message ID = 1270905456

\*Dec 31 01:18:52.386: ISAKMP: Locking peer struct 0x64DC2CB4,  
IPSEC refcount 1 for for stuff\_ke

\*Dec 31 01:18:52.390: ISAKMP:(0:1:SW:1): Creating IPsec SAs

\*Dec 31 01:18:52.390: inbound SA from 192.168.1.2 to 172.16.1.3 (f/i) 0  
/ 0  
(proxy 10.2.2.0 to 10.1.1.0)

\*Dec 31 01:18:52.390: has spi 0x9AC1E72C and conn\_id 0 and flags 2

\*Dec 31 01:18:52.390: lifetime of 3600 seconds

\*Dec 31 01:18:52.390: lifetime of 4608000 kilobytes

\*Dec 31 01:18:52.390: has client flags 0x0

\*Dec 31 01:18:52.390: outbound SA from 172.16.1.3 to 192.168.1.2 (f/i) 0  
/0  
(proxy 10.1.1.0 to 10.2.2.0)

\*Dec 31 01:18:52.394: has spi -1006743632 and conn\_id 0 and flags A

\*Dec 31 01:18:52.394: lifetime of 3600 seconds

\*Dec 31 01:18:52.394: lifetime of 4608000 kilobytes

\*Dec 31 01:18:52.394: has client flags 0x0

\*Dec 31 01:18:52.394: ISAKMP:(0:1:SW:1): sending packet to 192.168.1.2 my\_port 500 peer\_port 500 (I) QM\_IDLE

\*Dec 31 01:18:52.398: ISAKMP:(0:1:SW:1):deleting node 1270905456 error  
FALSE reason "No Error"

\*Dec 31 01:18:52.398: ISAKMP:(0:1:SW:1):Node 1270905456, Input =  
IKE\_MSG\_FROM\_PEER, IKE\_QM\_EXCH

\*Dec 31 01:18:52.398: ISAKMP:(0:1:SW:1):Old State = IKE\_QM\_I\_QM1  
New State = IKE\_QM\_PHASE2\_COMPLETE

\*Dec 31 01:18:52.402: ISAKMP: Locking peer struct 0x64DC2CB4, IPSEC  
refcount 2 for from create\_transforms

\*Dec 31 01:18:52.402: ISAKMP: Unlocking IPSEC struct 0x64DC2CB4 from  
create\_transforms, count 1

\*Dec 31 01:19:06.130: ISAKMP (0:134217729): received packet from 192.168.1.2 dport 500 sport 500 Global (I) QM\_IDLE

\*Dec 31 01:19:06.130: ISAKMP: set new node 372376968 to QM\_IDLE

\*Dec 31 01:19:06.130: ISAKMP:(0:1:SW:1): processing HASH payload.  
message ID = 372376968

\*Dec 31 01:19:06.134: ISAKMP:(0:1:SW:1): processing NOTIFY DPD/R\_U\_THERE protocol 1  
spi 0, message ID = 372376968, sa = 640D2660

\*Dec 31 01:19:06.134: ISAKMP:(0:1:SW:1):deleting node 372376968 error  
FALSE reason "Informational (in) state 1"

\*Dec 31 01:19:06.134: ISAKMP:(0:1:SW:1):Input = IKE\_MSG\_FROM\_PEER,  
IKE\_INFO\_NOTIFY

\*Dec 31 01:19:06.134: ISAKMP:(0:1:SW:1):Old State = IKE\_P1\_COMPLETE

New State = IKE\_P1\_COMPLETE

\*Dec 31 01:19:06.134: ISAKMP:(0:1:SW:1):DPD/R\_U\_THERE received from peer 192.168.1.2, sequence 0x7E805468

\*Dec 31 01:19:06.138: ISAKMP: set new node 2096423279 to QM\_IDLE

\*Dec 31 01:19:06.138: ISAKMP:(0:1:SW:1):Sending NOTIFY DPD/R\_U\_THERE\_ACK protocol 1 spi 1689358936, message ID = 2096423279

\*Dec 31 01:19:06.138: ISAKMP:(0:1:SW:1): seq. no 0x7E805468

\*Dec 31 01:19:06.138: ISAKMP:(0:1:SW:1): sending packet to 192.168.1.2 my\_port 500 peer\_port 500 (I) QM\_IDLE

\*Dec 31 01:19:06.142: ISAKMP:(0:1:SW:1):purging node 2096423279

\*Dec 31 01:19:06.142: ISAKMP:(0:1:SW:1):Input = IKE\_MSG\_FROM\_PEER,

**IKE\_MSG\_KEEP\_ALIVE**

\*Dec 31 01:19:06.142: ISAKMP:(0:1:SW:1):Old State = IKE\_P1\_COMPLETE

New State = IKE\_P1\_COMPLETE

Router#**debug crypto ipsec**

\*Dec 31 01:29:05.402: IPSEC(sa\_request): ,

(key eng. msg.) OUTBOUND local= 172.16.1.3, remote= 192.168.1.2,  
local\_proxy= 10.1.1.0/255.255.255.0/0/0 (type=4),  
remote\_proxy= 10.2.2.0/255.255.255.0/0/0 (type=4),  
protocol= ESP, transform= esp-3des esp-md5-hmac (Tunnel),  
lifedur= 3600s and 4608000kb,  
spi= 0xB857E226(3092767270), conn\_id= 0, keysize= 0, flags= 0x400A

\*Dec 31 01:29:05.774: IPSEC(validate\_proposal\_request): proposal part #1,

(key eng. msg.) INBOUND local= 172.16.1.3, remote= 192.168.1.2,  
local\_proxy= 10.1.1.0/255.255.255.0/0/0 (type=4),  
remote\_proxy= 10.2.2.0/255.255.255.0/0/0 (type=4),  
protocol= ESP, transform= esp-3des esp-md5-hmac (Tunnel),  
lifedur= 0s and 0kb,  
spi= 0x0(0), conn\_id= 0, keysize= 0, flags= 0x2

\*Dec 31 01:29:05.778: Crypto mapdb : proxy\_match

src addr : 10.1.1.0  
dst addr : 10.2.2.0  
protocol : 0  
src port : 0  
dst port : 0

\*Dec 31 01:29:05.782: IPSEC(key\_engine): got a queue event with 2 kei messages

\*Dec 31 01:29:05.782: IPSEC(initialize\_sas): ,

(key eng. msg.) INBOUND local= 172.16.1.3, remote= 192.168.1.2,  
local\_proxy= 10.1.1.0/255.255.255.0/0/0 (type=4),  
remote\_proxy= 10.2.2.0/255.255.255.0/0/0 (type=4),  
protocol= ESP, transform= esp-3des esp-md5-hmac (Tunnel),  
lifedur= 3600s and 4608000kb,  
spi= 0xB857E226(3092767270), conn\_id= 0, keysize= 0, flags= 0x2

\*Dec 31 01:29:05.786: IPSEC(initialize\_sas): ,

(key eng. msg.) OUTBOUND local= 172.16.1.3, remote= 192.168.1.2,  
local\_proxy= 10.1.1.0/255.255.255.0/0/0 (type=4),  
remote\_proxy= 10.2.2.0/255.255.255.0/0/0 (type=4),  
protocol= ESP, transform= esp-3des esp-md5-hmac (Tunnel),  
lifedur= 3600s and 4608000kb,  
spi= 0x97550AC8(2538932936), conn\_id= 0, keysize= 0, flags= 0xA

\*Dec 31 01:29:05.786: **Crypto mapdb : proxy\_match**

**src addr : 10.1.1.0**  
**dst addr : 10.2.2.0**  
**protocol : 0**  
**src port : 0**  
**dst port : 0**

\*Dec 31 01:29:05.786: IPSEC(crypto\_ipsec\_sa\_find\_ident\_head): reconnecting with the same proxies and 192.168.1.2

\*Dec 31 01:29:05.786: IPsec: Flow\_switching Allocated flow for sibling 80000006

\*Dec 31 01:29:05.786: IPSEC(policy\_db\_add\_ident): src 10.1.1.0, dest 10.2.2.0, dest\_port 0

\*Dec 31 01:29:05.790: IPSEC(create\_sa): sa created,

```
(sa) sa_dest= 172.16.1.3, sa_proto= 50,  
    sa_spi= 0xB857E226(3092767270),  
    sa_trans= esp-3des esp-md5-hmac , sa_conn_id= 2001  
*Dec 31 01:29:05.790: IPSEC(create_sa): sa created,  
(sa) sa_dest= 192.168.1.2, sa_proto= 50,  
    sa_spi= 0x97550AC8(2538932936),  
    sa_trans= esp-3des esp-md5-hmac , sa_conn_id= 2002
```

## Дополнительные сведения

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