Настройка динамических многоточечных виртуальных частных сетей (DMVPN) с применением GRE поверх IPSec между несколькими маршрутизаторами

Содержание

Введение

Функция динамичной многоточечной VPN (DMVPN) позволяет пользователям лучше масштабировать большие и малые сети VPN с IPSec путем объединения туннелей общей инкапсуляции маршрутизирования (GRE), шифрования IPSec, и протокола разрешения следующего скачка (NHRP), чтобы предоставить пользователям легкую настройку через криптографические профили, которые заменяют требования для определения статических криптографических карт и динамическое обнаружение конечных точек туннеля.

Предварительные условия

Требования

Для данного документа нет особых требований.

Используемые компоненты

Сведения, содержащиеся в данном документе, касаются следующих версий программного и аппаратного обеспечения.

- Маршрутизаторы Cisco 2691 и 3725
- Cisco IOS® Software Release 12.3(3)

Примечание. Множественная сквозная передача IPSec (IPSec pass-through) поддерживается только программным обеспечением Cisco IOS версий 12,2(2)XK, 12,2(13)T или более поздними версиями.

Ниже приведены результаты выполнения команды **show version** в маршрутизаторе.

```
sv9-4#show version
    Cisco Internetwork Operating System Software
    IOS (tm) 2600 Software (C2691-IK9S-M), Version 12.3(3),
       RELEASE SOFTWARE (fc2)
    Copyright (c) 1986-2003 by cisco Systems, Inc.
    Compiled Tue 19-Aug-03 05:52 by dchih
    Image text-base: 0x60008954, data-base: 0x61D08000

    ROM: System Bootstrap, Version 12.2(8r)T2,
       RELEASE SOFTWARE (fc1)

    sv9-4 uptime is 1 hour, 39 minutes
    System returned to ROM by reload
    System image file is "flash:c2691-ik9s-mz.123-3.bin"

    This product contains cryptographic features and is subject
    to United States and local country laws governing import,
    export, transfer and use. Delivery of Cisco cryptographic
    products does not imply third-party authority to import,
    export, distribute or use encryption. Importers, exporters,
    distributors and users are responsible for compliance with
    U.S. and local country laws. By using this product you agree
    to comply with applicable laws and regulations. If you are
    unable to comply with U.S. and local laws, return this product
    immediately.

    A summary of U.S. laws governing Cisco cryptographic products
    may be found at:
    http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

    If you require further assistance please contact us by sending
    email to export@cisco.com.

    cisco 2691 (R7000) processor (revision 0.1)
       with 98304K/32768K bytes of memory.
    Processor board ID JMX0710L5CE
    R7000 CPU at 160Mhz, Implementation 39,
       Rev 3.3, 256KB L2 Cache
    Bridging software.
    X.25 software, Version 3.0.0.
    SuperLAT software (copyright 1990 by Meridian Technology Corp).
    2 FastEthernet/IEEE 802.3 interface(s)
    2 Serial(sync/async) network interface(s)
    1 ATM network interface(s)
    1 Virtual Private Network (VPN) Module(s)
    DRAM configuration is 64 bits wide with parity disabled.
    55K bytes of non-volatile configuration memory.
    125184K bytes of ATA System CompactFlash (Read/Write)

    Configuration register is 0x2102
```

Сведения, содержащиеся в данном документе, были получены с устройств в специальной лабораторной среде. Все устройства, используемые в этом документе, были запущены с чистой (заданной по умолчанию) конфигурацией. В рабочей сети необходимо изучить потенциальное воздействие всех команд до их использования.

Теоретические сведения

Функция работает в соответствии с следующими правилами.

- Каждое оконечное устройство обладает постоянным туннелем IPSec направленным к концентратору, а не к другим оконечным устройствам внутри сети. Каждое оконечное устройство зарегистрировано в качестве клиента сервера NHRP.
- Когда оконечное устройство отсылает пакет в сеть назначения (частную) на другом оконечном устройстве, им посылается запрос на сервер NHRP о реальном (внешнем) адресе оконечного устройства-получателя.
- После того, как вызывающее оконечное устройство определяет адрес однорангового узла устройства получателя, оно может организовать динамический туннель IPSec к устройству получателя.
- Туннели между оконечными устройствами построены на основе многоточечного интерфейса GRE (mGRE).
- Связи между оконечными устройствами устанавливаются по запросу всякий раз, когда есть трафик между оконечными устройствами Таким образом, пакеты могут обходить концентратор и использовать туннель от одного оконечного устройства к

другому.

Следующие определения относятся к набору правил.

- NHRP – является протоколом клиента и сервера, где концентратор является сервером, а оконечное устройство клиентом. Концентратор содержит NHRP-базу данных адресов публичных интерфейсов каждого направления. Каждое оконечное устройство регистрирует настоящий адрес при перезагрузке, и отсылает запросы в базу данных NHRP о настоящих адресах оконечных устройств, чтобы создать прямые туннели.
- Туннельный интерфейс mGRE позволяет одному GRE интерфейсу поддерживать несколько туннелей IPSec, а также упрощает размер и сложность конфигурации.

Примечание. При достижении определенного предварительно настроенного периода бездействия в туннелях между оконечными устройствами, маршрутизатор деактивирует эти туннели для сбережения ресурсов (сопоставление безопасности IPSec [SA]).

Примечание. Профиль трафика должен следовать правилу 80-20%: 80% трафика состоит из трафика оконечного устройства к концентратору, а 20% - это трафик между оконечными устройствами.

Условные обозначения

Более подробные сведения о применяемых в документе обозначениях см. в документе Условные обозначения, используемые в технической документации Cisco.

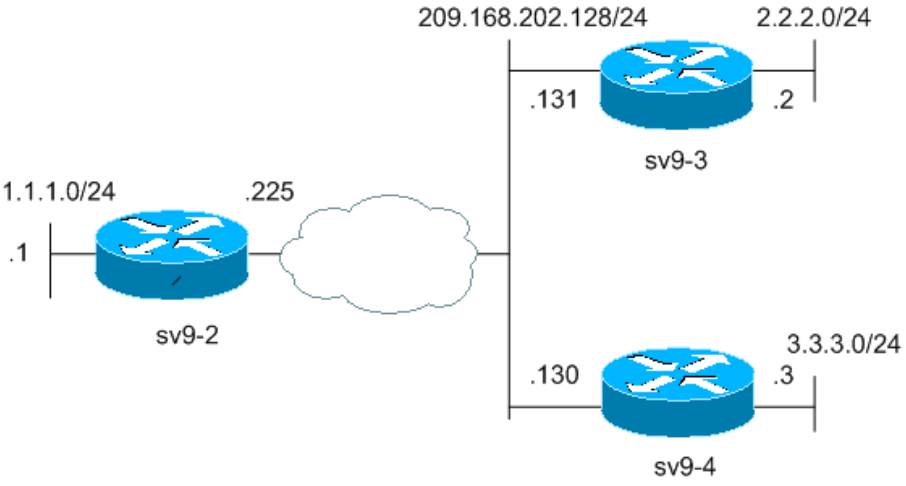
Настройка

В этом разделе приводится информация по настройке функций, описанных в данном документе.

Примечание. Дополнительную информацию о командах, используемых в данном документе, можно получить в разделе Средства поиска команд (только для зарегистрированных клиентов).

Сетевой график

В данном документе используется сеть, изображенная на следующей схеме.



Конфигурации

В данном документе используются следующие конфигурации.

- Конфигурация концентратора - маршрутизатора (sv9-2)
- Конфигурация оконечного устройства #1 (sv9-3)
- Конфигурация оконечного устройства #2 (sv9-4)

Конфигурация концентратора - маршрутизатора (sv9-2)

```
sv9-2#show run
Building configuration...

Current configuration : 1827 bytes
!
version 12.3
service config
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname sv9-2
!
boot-start-marker
boot-end-marker
!
enable password cisco
!
no aaa new-model
ip subnet-zero
!
!
no ip domain lookup
!
ip ssh break-string
!
!--- Создать политику протокола управления ключами ассоциации безопасности Интернет
!--- (ISAKMP) для первой фазы согласования.

!
crypto isakmp policy 10
hash md5
authentication pre-share
!--- Добавить динамические предварительные общие ключи для всех удаленных
!--- маршрутизаторов VPN.

crypto isakmp key cisco123 address 0.0.0.0 0.0.0.0
!
!--- Создать политику второй фазы для непосредственно шифрования данных.

crypto ipsec transform-set strong esp-3des esp-md5-hmac
!
!--- Создать профиль IPSec, который будет динамично применяться к
!--- туннелям GRE поверх IPSec.

crypto ipsec profile cisco
set security-association lifetime seconds 120
set transform-set strong
!
!
!
!
!
!
!
!
!
!
!
no voice hpi capture buffer
no voice hpi capture destination
!
!
!
!
!
!
!
!--- Создать шаблон туннеля GRE, который будет применен ко
!--- всем динамически созданным туннелям GRE.
```

```
interface Tunnel0
ip address 192.168.1.1 255.255.255.0
no ip redirects
ip mtu 1440
ip nhrp authentication cisco123
ip nhrp map multicast dynamic
ip nhrp network-id 1
tunnel source FastEthernet0/0
tunnel mode gre multipoint
tunnel key 0
tunnel protection ipsec profile cisco
!
!--- Это исходящий интерфейс.

interface FastEthernet0/0
ip address 209.168.202.225 255.255.255.224
duplex auto
speed auto
!
!--- Это входящий интерфейс.

interface FastEthernet0/1
ip address 1.1.1.1 255.255.255.0
duplex auto
speed auto
!
interface BRI1/0
no ip address
shutdown
!
interface BRI1/1
no ip address
shutdown
!
interface BRI1/2
no ip address
shutdown
!
interface BRI1/3
no ip address
shutdown
!
!--- Включить протокол маршрутизации на прием и отправку
!--- динамических обновлений о частных сетях.

router eigrp 90
network 1.1.1.0 0.0.0.255
network 192.168.1.0
no auto-summary
!
ip http server
no ip http secure-server
ip classless
ip route 0.0.0.0 0.0.0.0 10.66.79.193
!
!
!
!
!
!
!
!
!
!
!
line con 0
exec-timeout 0 0
transport preferred all
transport output all
escape-character 27
line aux 0
transport preferred all
transport output all
line vty 0 4
password cisco
login
transport preferred all
transport input all
transport output all
!
!
end
```

Конфигурация оконечного устройства #1 (sv9-3)

```
sv9-3#show run
Building configuration...

Current configuration : 1993 bytes
!
version 12.3
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname sv9-3
!
boot-start-marker
boot system flash:c3725-ik9s-mz.123-3.bin
boot-end-marker
!
!
no aaa new-model
ip subnet-zero
!
!
no ip domain lookup
!
ip ssh break-string
!
!
!--- Создать политику ISAKMP для первой фазы согласований.

crypto isakmp policy 10
hash md5
authentication pre-share
!--- Добавить динамические предварительные общие ключи для всех удаленных
!--- маршрутизаторов VPN и концентрирующих маршрутизаторов.

crypto isakmp key cisco123 address 0.0.0.0 0.0.0.0
!
!
!--- Создать политику второй фазы для непосредственно шифрования данных.

crypto ipsec transform-set strong esp-3des esp-md5-hmac
!
!--- Создать профиль IPSec, который будет динамично применяться к
!--- туннелям GRE поверх IPSec.

crypto ipsec profile cisco
set security-association lifetime seconds 120
set transform-set strong
!
!
!
!
!
!
!
!
!
!
!
no voice hpi capture buffer
no voice hpi capture destination
!
!
fax interface-type fax-mail
!
!
!
!
!
!--- Создать шаблон туннеля GRE, который будет применен ко
!--- всем динамически созданным туннелям GRE.

interface Tunnel0
ip address 192.168.1.2 255.255.255.0
no ip redirects
ip mtu 1440
ip nhrp authentication cisco123
```

```
ip nhrp map multicast dynamic
ip nhrp map 192.168.1.1 209.168.202.225
ip nhrp map multicast 209.168.202.225
ip nhrp network-id 1
ip nhrp nhs 192.168.1.1
tunnel source FastEthernet0/0
tunnel mode gre multipoint
tunnel key 0
tunnel protection ipsec profile cisco
!
!--- Это исходящий интерфейс.

interface FastEthernet0/0
ip address 209.168.202.131 255.255.255.224
duplex auto
speed auto
!
!--- Это входящий интерфейс.

interface FastEthernet0/1
ip address 2.2.2.2 255.255.255.0
duplex auto
speed auto
!
interface BRI1/0
no ip address
shutdown
!
interface BRI1/1
no ip address
shutdown
!
interface BRI1/2
no ip address
shutdown
!
interface BRI1/3
no ip address
shutdown
!
!--- Включить протокол маршрутизации на прием и отправку
!--- динамических обновлений о частных сетях.

router eigrp 90
network 2.2.2.0 0.0.0.255
network 192.168.1.0
no auto-summary
!
ip http server
no ip http secure-server
ip classless
ip route 0.0.0.0 0.0.0.0 209.168.202.225
ip route 3.3.3.0 255.255.255.0 Tunnel0
!
!
!
!
!
!
!
!
dial-peer cor custom
!
!
!
!
!
line con 0
exec-timeout 0 0
transport preferred all
transport output all
escape-character 27
line aux 0
transport preferred all
transport output all
line vty 0 4
login
transport preferred all
transport input all
transport output all
!
!
end
```

Конфигурация оконечного устройства #2 (sv9-4)

```
sv9-4#show run
Building configuration...

Current configuration : 1994 bytes
!
version 12.3
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname sv9-4
!
boot-start-marker
boot system flash:c2691-ik9s-mz.123-3.bin
boot-end-marker
!
!
no aaa new-model
ip subnet-zero
!
!
no ip domain lookup
!
ip ssh break-string
!
!
!
!--- Создать политику ISAKMP для первой фазы согласований.

crypto isakmp policy 10
hash md5
authentication pre-share
!--- Добавить динамические предварительные общие ключи для всех удаленных
!--- маршрутизаторов VPN и концентрирующих маршрутизаторов.

crypto isakmp key cisco123 address 0.0.0.0 0.0.0.0
!
!
!--- Создать политику второй фазы для непосредственно шифрования данных.

crypto ipsec transform-set strong esp-3des esp-md5-hmac
!
!--- Создать профиль IPSec, который будет динамично применяться к
!--- туннелям GRE поверх IPSec.

crypto ipsec profile cisco
set security-association lifetime seconds 120
set transform-set strong
!
!
!
!
!
!
!
!
!
!
!
no voice hpi capture buffer
no voice hpi capture destination
!
!
!
!
!
!
!
!--- Создать шаблон туннеля GRE, который будет применен ко
!--- всем динамически созданным туннелям GRE.

interface Tunnel0
ip address 192.168.1.3 255.255.255.0
no ip redirects
ip mtu 1440
ip nhrp authentication cisco123
```

```
ip nhrp map multicast dynamic
ip nhrp map 192.168.1.1 209.168.202.225
ip nhrp map multicast 209.168.202.225
ip nhrp network-id 1
ip nhrp nhs 192.168.1.1
tunnel source FastEthernet0/0
tunnel mode gre multipoint
tunnel key 0
tunnel protection ipsec profile cisco
!
!--- Это исходящий интерфейс.

interface FastEthernet0/0
ip address 209.168.202.130 255.255.255.224
duplex auto
speed auto
!
interface Serial0/0
no ip address
shutdown
clockrate 2000000
no fair-queue
!
!--- Это входящий интерфейс.

interface FastEthernet0/1
ip address 3.3.3.3 255.255.255.0
duplex auto
speed auto
!
interface Serial0/1
no ip address
shutdown
clockrate 2000000
!
interface ATM1/0
no ip address
shutdown
no atm ilmi-keepalive
!
!--- Включить протокол маршрутизации на прием и отправку
!--- динамических обновлений о частных сетях.

router eigrp 90
network 3.3.3.0 0.0.0.255
network 192.168.1.0
no auto-summary
!
ip http server
no ip http secure-server
ip classless
ip route 2.2.2.0 255.255.255.0 Tunnel0
ip route 0.0.0.0 0.0.0.0 209.168.202.225
!
!
!
!
!
!
!
!
dial-peer cor custom
!
!
!
!
!
line con 0
exec-timeout 0 0
transport preferred all
transport output all
escape-character 27
line aux 0
transport preferred all
transport output all
line vty 0 4
password cisco
login
transport preferred all
transport input all
transport output all
!
!
end
```

Проверка

В этом разделе приведена информация, которую можно использовать для проверки правильности работы конфигурации.

Некоторые команды **show** поддерживаются Интерпретатором выходных данных (только для зарегистрированных клиентов); это позволяет выполнять анализ выходных данных команды **show**.

- **show crypto engine connection active** – отображает общее количество зашифрованных и расшифрованных пакетов для SA.
- **show crypto ipsec sa** – отображает статистику по активным туннелям.
- **show crypto isakmp sa** – отображает состояние ISAKMP SA.

Поиск и устранение неполадок

В этом разделе описывается процесс устранения неполадок конфигурации.

Команды устранения неполадок

Примечание. Прежде чем применять команды **debug**, ознакомьтесь с разделом Важные сведения о командах Debug.

- **debug crypto ipsec** – отображает события IPSec.
- **debug crypto isakmp** – выдает сообщения о событиях обмена ключами в Интернете (IKE, Internet Key Exchange).
- **debug crypto engine** – отображает информацию от криптографического модуля.

Дополнительные сведения об устранении неисправностей IPSec см. в Основных сведениях об устранении неисправностей в IP-безопасности и об использовании команд отладки.

Пример отладочных выходных данных

- Отладочные данные NHRP
- Отладочные данные ISAKMP и согласования IPSec

Отладочные данные NHRP

В следующих выходных данных отладки показан запрос NHRP и ответ преобразования NHRP. Отладочные данные были получены с оконечных устройств sv9-4 и sv9-3, а также с концентратора sv9-2.

```
sv9-4#show debug
NHRP:
NHRP protocol debugging is on

sv9-4#ping 2.2.2.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2.2.2.2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 4/4/4 ms
```

```
sv9-4#
*Mar 1 02:06:01.667: NHRP: Sending packet to NHS 192.168.1.1 on Tunnel0
*Mar 1 02:06:01.671: NHRP: Sending packet to NHS 192.168.1.1 on Tunnel0
*Mar 1 02:06:01.675: NHRP: Sending packet to NHS 192.168.1.1 on Tunnel0
*Mar 1 02:06:01.679: NHRP: Encapsulation succeeded.
  Tunnel IP addr 209.168.202.225
*Mar 1 02:06:01.679: NHRP: Send Resolution Request via Tunnel0,
  packet size: 84
*Mar 1 02:06:01.679: src: 192.168.1.3, dst: 192.168.1.1
*Mar 1 02:06:01.679: NHRP: 84 bytes out Tunnel0
*Mar 1 02:06:01.679: NHRP: Sending packet to NHS 192.168.1.1 on Tunnel0
*Mar 1 02:06:01.683: NHRP: Sending packet to NHS 192.168.1.1 on Tunnel0
*Mar 1 02:06:03.507: NHRP: Encapsulation succeeded.
  Tunnel IP addr 209.168.202.225
*Mar 1 02:06:03.507: NHRP: Send Resolution Request via Tunnel0,
  packet size: 84
*Mar 1 02:06:03.507: src: 192.168.1.3, dst: 192.168.1.1
*Mar 1 02:06:03.507: NHRP: 84 bytes out Tunnel0
*Mar 1 02:06:03.511: NHRP: Receive Resolution Reply via Tunnel0,
  packet size: 132
*Mar 1 02:06:03.511: NHRP: netid_in = 0, to_us = 1
*Mar 1 02:06:03.511: NHRP: No need to delay processing of resolution
  event nbma src:209.168.202.130 nbma dst:209.168.202.131

sv9-3#
05:31:12: NHRP: Sending packet to NHS 192.168.1.1 on Tunnel0
05:31:12: NHRP: Sending packet to NHS 192.168.1.1 on Tunnel0
05:31:12: NHRP: Sending packet to NHS 192.168.1.1 on Tunnel0
05:31:12: NHRP: Encapsulation succeeded. Tunnel IP addr 209.168.202.225
05:31:12: NHRP: Send Resolution Request via Tunnel0, packet size: 84
05:31:12: src: 192.168.1.2, dst: 192.168.1.1
05:31:12: NHRP: 84 bytes out Tunnel0
05:31:12: NHRP: Sending packet to NHS 192.168.1.1 on Tunnel0
05:31:12: NHRP: Receive Resolution Request via Tunnel0, packet size: 104
05:31:12: NHRP: netid_in = 1, to_us = 0
05:31:12: NHRP: Delaying resolution request nbma src:209.168.202.131
  nbma dst:209.168.202.130 reason:IPSEC-IFC: need to wait for IPsec SAs.
05:31:12: NHRP: Receive Resolution Reply via Tunnel0, packet size: 112
05:31:12: NHRP: netid_in = 0, to_us = 1
05:31:12: NHRP: Resolution request is already being processed (delayed).
05:31:12: NHRP: Resolution Request not queued.
  Already being processed (delayed).
05:31:12: NHRP: Sending packet to NHS 192.168.1.1 on Tunnel0
05:31:13: NHRP: Process delayed resolution request src:192.168.1.3
  dst:2.2.2.2
05:31:13: NHRP: No need to delay processing of resolution event
  nbma src:209.168.202.131 nbma dst:209.168.202.130

sv9-2#
*Mar 1 06:03:40.174: NHRP: Forwarding packet within same fabric
  Tunnel0 -> Tunnel0
*Mar 1 06:03:40.174: NHRP: Forwarding packet within same fabric
  Tunnel0 -> Tunnel0
*Mar 1 06:03:40.178: NHRP: Forwarding packet within same fabric
  Tunnel0 -> Tunnel0
*Mar 1 06:03:40.182: NHRP: Receive Resolution Request via Tunnel0,
  packet size: 84
*Mar 1 06:03:40.182: NHRP: netid_in = 1, to_us = 0
*Mar 1 06:03:40.182: NHRP: No need to delay processing of resolution
  event nbma src:209.168.202.225 nbma dst:209.168.202.130
*Mar 1 06:03:40.182: NHRP: nhrp_rtlookup yielded Tunnel0
*Mar 1 06:03:40.182: NHRP: netid_out 1, netid_in 1
*Mar 1 06:03:40.182: NHRP: nhrp_cache_lookup_comp returned 0x0
*Mar 1 06:03:40.182: NHRP: calling nhrp_forward
*Mar 1 06:03:40.182: NHRP: Encapsulation succeeded.
  Tunnel IP addr 209.168.202.131
*Mar 1 06:03:40.182: NHRP: Forwarding Resolution Request via Tunnel0,
  packet size: 104
*Mar 1 06:03:40.182: src: 192.168.1.1, dst: 2.2.2.2
*Mar 1 06:03:40.182: NHRP: 104 bytes out Tunnel0
*Mar 1 06:03:40.182: NHRP: Forwarding packet within same fabric
  Tunnel0 -> Tunnel0
*Mar 1 06:03:40.182: NHRP: Receive Resolution Request via Tunnel0,
  packet size: 84
*Mar 1 06:03:40.182: NHRP: netid_in = 1, to_us = 0
*Mar 1 06:03:40.182: NHRP: No need to delay processing of resolution
  event nbma src:209.168.202.225 nbma dst:209.168.202.131
*Mar 1 06:03:40.182: NHRP: nhrp_rtlookup yielded Tunnel0
*Mar 1 06:03:40.182: NHRP: netid_out 1, netid_in 1
*Mar 1 06:03:40.182: NHRP: nhrp_cache_lookup_comp returned 0x63DE9498
*Mar 1 06:03:40.182: NHRP: Encapsulation succeeded.
  Tunnel IP addr 209.168.202.131
*Mar 1 06:03:40.182: NHRP: Send Resolution Reply via Tunnel0,
  packet size: 112
```

```
*Mar 1 06:03:40.186: src: 192.168.1.1, dst: 192.168.1.2
*Mar 1 06:03:40.186: NHRP: 112 bytes out Tunnel0
*Mar 1 06:03:40.186: NHRP: Forwarding packet within same fabric
  Tunnel0 -> Tunnel0
*Mar 1 06:03:42.010: NHRP: Receive Resolution Request via Tunnel0,
  packet size: 84
*Mar 1 06:03:42.010: NHRP: netid_in = 1, to_us = 0
*Mar 1 06:03:42.010: NHRP: No need to delay processing of resolution
  event nbma src:209.168.202.225 nbma dst:209.168.202.130
```

Отладочные данные ISAKMP и согласования IPSec

В следующих выходных данных отладки показаны ISAKMP и согласование IPSec. Отладочные данные были получены с оконечных устройств sv9-4 и sv9-3.

```
sv9-4#ping 2.2.2.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2.2.2.2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/4 ms
sv9-4#
*Mar 1 02:25:37.107: ISAKMP (0:0): received packet from 209.168.202.131
  dport 500 sport 500 Global (N) NEW SA
*Mar 1 02:25:37.107: ISAKMP: local port 500, remote port 500
*Mar 1 02:25:37.107: ISAKMP: insert sa successfully sa = 63B38288
*Mar 1 02:25:37.107: ISAKMP (0:12): Input = IKE_MESG_FROM_PEER,
  IKE_MM_EXCH
*Mar 1 02:25:37.107: ISAKMP (0:12): Old State = IKE_READY
  New State = IKE_R_MM1

*Mar 1 02:25:37.107: ISAKMP (0:12): processing SA payload.
  message ID = 0
*Mar 1 02:25:37.107: ISAKMP (0:12): processing vendor id payload
*Mar 1 02:25:37.107: ISAKMP (0:12): vendor ID seems Unity/DPD but
  major 157 mismatch
*Mar 1 02:25:37.107: ISAKMP (0:12): vendor ID is NAT-T v3
*Mar 1 02:25:37.107: ISAKMP (0:12): processing vendor id payload
*Mar 1 02:25:37.107: ISAKMP (0:12): vendor ID seems Unity/DPD but
  major 123 mismatch
*Mar 1 02:25:37.107: ISAKMP (0:12): vendor ID is NAT-T v2
*Mar 1 02:25:37.107: ISAKMP: Looking for a matching key for
  209.168.202.131 in default : success
*Mar 1 02:25:37.107: ISAKMP (0:12): found peer pre-shared key
  matching 209.168.202.131
*Mar 1 02:25:37.107: ISAKMP (0:12) local preshared key found
*Mar 1 02:25:37.107: ISAKMP : Scanning profiles for xauth ...
*Mar 1 02:25:37.107: ISAKMP (0:12): Checking ISAKMP transform 1
  against priority 10 policy
*Mar 1 02:25:37.107: ISAKMP: encryption DES-CBC
*Mar 1 02:25:37.107: ISAKMP: hash MD5
*Mar 1 02:25:37.107: ISAKMP: default group 1
*Mar 1 02:25:37.107: ISAKMP: auth pre-share
*Mar 1 02:25:37.107: ISAKMP: life type in seconds
*Mar 1 02:25:37.107: ISAKMP: life duration (VPI) of 0x0 0x1 0x51 0x80
*Mar 1 02:25:37.107: ISAKMP (0:12): atts are acceptable.
  Next payload is 0
*Mar 1 02:25:37.115: ISAKMP (0:12): processing vendor id payload
*Mar 1 02:25:37.115: ISAKMP (0:12): vendor ID seems Unity/DPD but
  major 157 mismatch
*Mar 1 02:25:37.115: ISAKMP (0:12): vendor ID is NAT-T v3
*Mar 1 02:25:37.115: ISAKMP (0:12): processing vendor id payload
*Mar 1 02:25:37.115: ISAKMP (0:12): vendor ID seems Unity/DPD but
  major 123 mismatch
*Mar 1 02:25:37.115: ISAKMP (0:12): vendor ID is NAT-T v2
*Mar 1 02:25:37.115: ISAKMP (0:12): Input = IKE_MESG_INTERNAL,
  IKE_PROCESS_MAIN_MODE
*Mar 1 02:25:37.115: ISAKMP (0:12): Old State = IKE_R_MM1
  New State = IKE_R_MM1

*Mar 1 02:25:37.115: ISAKMP (0:12): constructed NAT-T vendor-03 ID
*Mar 1 02:25:37.115: ISAKMP (0:12): sending packet to 209.168.202.131
  my_port 500 peer_port 500 (R) MM_SA_SETUP
*Mar 1 02:25:37.115: ISAKMP (0:12): Input = IKE_MESG_INTERNAL,
  IKE_PROCESS_COMPLETE
*Mar 1 02:25:37.115: ISAKMP (0:12): Old State = IKE_R_MM1
  New State = IKE_R_MM2
```

```
*Mar 1 02:25:37.123: ISAKMP (0:12): received packet from 209.168.202.131
  dport 500 sport 500 Global (R) MM_SA_SETUP
*Mar 1 02:25:37.123: ISAKMP (0:12): Input = IKE_MESG_FROM_PEER,
  IKE_MM_EXCH
*Mar 1 02:25:37.123: ISAKMP (0:12): Old State = IKE_R_MM2
  New State = IKE_R_MM3

*Mar 1 02:25:37.123: ISAKMP (0:12): processing KE payload.
  message ID = 0
*Mar 1 02:25:37.131: ISAKMP (0:12): processing NONCE payload.
  message ID = 0
*Mar 1 02:25:37.131: ISAKMP: Looking for a matching key for
  209.168.202.131 in default : success
*Mar 1 02:25:37.131: ISAKMP (0:12): found peer pre-shared key matching
  209.168.202.131
*Mar 1 02:25:37.131: ISAKMP: Looking for a matching key for
  209.168.202.131 in default : success
*Mar 1 02:25:37.131: ISAKMP (0:12): found peer pre-shared key
  matching 209.168.202.131
*Mar 1 02:25:37.135: ISAKMP (0:12): SKEYID state generated
*Mar 1 02:25:37.135: ISAKMP (0:12): processing vendor id payload
*Mar 1 02:25:37.135: ISAKMP (0:12): vendor ID is Unity
*Mar 1 02:25:37.135: ISAKMP (0:12): processing vendor id payload
*Mar 1 02:25:37.135: ISAKMP (0:12): vendor ID is DPD
*Mar 1 02:25:37.135: ISAKMP (0:12): processing vendor id payload
*Mar 1 02:25:37.135: ISAKMP (0:12): speaking to another IOS box!
*Mar 1 02:25:37.135: ISAKMP:received payload type 17
*Mar 1 02:25:37.135: ISAKMP:received payload type 17
*Mar 1 02:25:37.135: ISAKMP (0:12): Input = IKE_MESG_INTERNAL,
  IKE_PROCESS_MAIN_MODE
*Mar 1 02:25:37.135: ISAKMP (0:12): Old State = IKE_R_MM3
  New State = IKE_R_MM3

*Mar 1 02:25:37.135: ISAKMP (0:12): sending packet to 209.168.202.131
  my_port 500 peer_port 500 (R) MM_KEY_EXCH
*Mar 1 02:25:37.135: ISAKMP (0:12): Input = IKE_MESG_INTERNAL,
  IKE_PROCESS_COMPLETE
*Mar 1 02:25:37.135: ISAKMP (0:12): Old State = IKE_R_MM3
  New State = IKE_R_MM4

*Mar 1 02:25:37.147: ISAKMP (0:12): received packet from 209.168.202.131
  dport 500 sport 500 Global (R) MM_KEY_EXCH
*Mar 1 02:25:37.151: ISAKMP (0:12): Input = IKE_MESG_FROM_PEER,
  IKE_MM_EXCH
*Mar 1 02:25:37.151: ISAKMP (0:12): Old State = IKE_R_MM4
  New State = IKE_R_MM5

*Mar 1 02:25:37.151: ISAKMP (0:12): processing ID payload.
  message ID = 0
*Mar 1 02:25:37.151: ISAKMP (0:12): peer matches *none* of the profiles
*Mar 1 02:25:37.151: ISAKMP (0:12): processing HASH payload.
  message ID = 0
*Mar 1 02:25:37.151: ISAKMP (0:12): processing NOTIFY INITIAL_CONTACT
  protocol 1 spi 0, message ID = 0, sa = 63B38288
*Mar 1 02:25:37.151: ISAKMP (0:12): Process initial contact,
  bring down existing phase 1 and 2 SA's with local 209.168.202.130
  remote 209.168.202.131 remote port 500
*Mar 1 02:25:37.151: ISAKMP (0:12): SA has been authenticated with
  209.168.202.131
*Mar 1 02:25:37.151: ISAKMP (0:12): peer matches *none* of the profiles
*Mar 1 02:25:37.151: ISAKMP (0:12): Input = IKE_MESG_INTERNAL,
  IKE_PROCESS_MAIN_MODE
*Mar 1 02:25:37.151: ISAKMP (0:12): Old State = IKE_R_MM5
  New State = IKE_R_MM5

*Mar 1 02:25:37.151: IPSEC(key_engine): got a queue event...
*Mar 1 02:25:37.151: ISAKMP (0:12): SA is doing pre-shared key
  authentication using id type ID_IPV4_ADDR
*Mar 1 02:25:37.151: ISAKMP (12): ID payload
next-payload : 8
type : 1
addr : 209.168.202.130
protocol : 17
port : 500
length : 8
*Mar 1 02:25:37.151: ISAKMP (12): Total payload length: 12
*Mar 1 02:25:37.155: ISAKMP (0:12): sending packet to 209.168.202.131
  my_port 500 peer_port 500 (R) MM_KEY_EXCH
*Mar 1 02:25:37.155: ISAKMP (0:12): Input = IKE_MESG_INTERNAL,
  IKE_PROCESS_COMPLETE
*Mar 1 02:25:37.155: ISAKMP (0:12): Old State = IKE_R_MM5
  New State = IKE_P1_COMPLETE

*Mar 1 02:25:37.155: ISAKMP (0:12): Input = IKE_MESG_INTERNAL,
```

```
  IKE_PHASE1_COMPLETE
*Mar 1 02:25:37.155: ISAKMP (0:12): Old State = IKE_P1_COMPLETE
  New State = IKE_P1_COMPLETE

*Mar 1 02:25:37.159: ISAKMP (0:12): received packet from 209.168.202.131
  dport 500 sport 500 Global (R) QM_IDLE
*Mar 1 02:25:37.159: ISAKMP: set new node -1682446278 to QM_IDLE
*Mar 1 02:25:37.159: ISAKMP (0:12): processing HASH payload.
  message ID = -1682446278
*Mar 1 02:25:37.159: ISAKMP (0:12): processing SA payload.
  message ID = -1682446278
*Mar 1 02:25:37.159: ISAKMP (0:12): Checking IPSec proposal 1
*Mar 1 02:25:37.159: ISAKMP: transform 1, ESP_3DES
*Mar 1 02:25:37.159: ISAKMP: attributes in transform:
*Mar 1 02:25:37.159: ISAKMP: encaps is 1
*Mar 1 02:25:37.159: ISAKMP: SA life type in seconds
*Mar 1 02:25:37.159: ISAKMP: SA life duration (basic) of 120
*Mar 1 02:25:37.159: ISAKMP: SA life type in kilobytes
*Mar 1 02:25:37.159: ISAKMP: SA life duration (VPI) of 0x0 0x46 0x50 0x0
*Mar 1 02:25:37.159: ISAKMP: authenticator is HMAC-MD5
*Mar 1 02:25:37.159: ISAKMP (0:12): atts are acceptable.
*Mar 1 02:25:37.163: IPSEC(validate_proposal_request): proposal part #1,
(key eng. msg.) INBOUND local= 209.168.202.130, remote= 209.168.202.131,
local_proxy= 209.168.202.130/255.255.255.255/47/0 (type=1),
remote_proxy= 209.168.202.131/255.255.255.255/47/0 (type=1),
protocol= ESP, transform= esp-3des esp-md5-hmac ,
lifedur= 0s and 0kb,
spi= 0x0(0), conn_id= 0, keysize= 0, flags= 0x2
*Mar 1 02:25:37.163: IPSEC(kei_proxy): head = Tunnel0-head-0,
  map->ivrf = , kei->ivrf =
*Mar 1 02:25:37.163: IPSEC(kei_proxy): head = Tunnel0-head-0,
  map->ivrf = , kei->ivrf =
*Mar 1 02:25:37.163: ISAKMP (0:12): processing NONCE payload.
  message ID = -1682446278
*Mar 1 02:25:37.163: ISAKMP (0:12): processing ID payload.
  message ID = -1682446278
*Mar 1 02:25:37.163: ISAKMP (0:12): processing ID payload.
  message ID = -1682446278
*Mar 1 02:25:37.163: ISAKMP (0:12): asking for 1 spis from ipsec
*Mar 1 02:25:37.163: ISAKMP (0:12): Node -1682446278,
  Input = IKE_MESG_FROM_PEER, IKE_QM_EXCH
*Mar 1 02:25:37.163: ISAKMP (0:12): Old State = IKE_QM_READY
  New State = IKE_QM_SPI_STARVE
*Mar 1 02:25:37.163: IPSEC(key_engine): got a queue event...
*Mar 1 02:25:37.163: IPSEC(spi_response): getting spi 3935077313
  for SA from 209.168.202.130 to 209.168.202.131 for prot 3
*Mar 1 02:25:37.163: ISAKMP: received ke message (2/1)
*Mar 1 02:25:37.415: ISAKMP (0:12): sending packet to 209.168.202.131
  my_port 500 peer_port 500 (R) QM_IDLE
*Mar 1 02:25:37.415: ISAKMP (0:12): Node -1682446278,
  Input = IKE_MESG_FROM_IPSEC, IKE_SPI_REPLY
*Mar 1 02:25:37.415: ISAKMP (0:12): Old State = IKE_QM_SPI_STARVE
  New State = IKE_QM_R_QM2
*Mar 1 02:25:37.427: ISAKMP (0:12): received packet from
  209.168.202.131 dport 500 sport 500 Global (R) QM_IDLE
*Mar 1 02:25:37.439: ISAKMP (0:12): Creating IPSec SAs
*Mar 1 02:25:37.439: inbound SA from 209.168.202.131 to
  209.168.202.130 (f/i) 0/ 0
(proxy 209.168.202.131 to 209.168.202.130)
*Mar 1 02:25:37.439: has spi 0xEA8C83C1 and conn_id 5361 and flags 2
*Mar 1 02:25:37.439: lifetime of 120 seconds
*Mar 1 02:25:37.439: lifetime of 4608000 kilobytes
*Mar 1 02:25:37.439: has client flags 0x0
*Mar 1 02:25:37.439: outbound SA from 209.168.202.130 to
  209.168.202.131 (f/i) 0/ 0 (proxy 209.168.202.130 to 209.168.202.131)
*Mar 1 02:25:37.439: has spi 1849847934 and conn_id 5362 and flags A
*Mar 1 02:25:37.439: lifetime of 120 seconds
*Mar 1 02:25:37.439: lifetime of 4608000 kilobytes
*Mar 1 02:25:37.439: has client flags 0x0
*Mar 1 02:25:37.439: ISAKMP (0:12): deleting node -1682446278 error
  FALSE reason "quick mode done (await)"
*Mar 1 02:25:37.439: ISAKMP (0:12): Node -1682446278,
  Input = IKE_MESG_FROM_PEER, IKE_QM_EXCH
*Mar 1 02:25:37.439: ISAKMP (0:12): Old State = IKE_QM_R_QM2
  New State = IKE_QM_PHASE2_COMPLETE
*Mar 1 02:25:37.439: IPSEC(key_engine): got a queue event...
*Mar 1 02:25:37.439: IPSEC(initialize_sas): ,
(key eng. msg.) INBOUND local= 209.168.202.130, remote= 209.168.202.131,
local_proxy= 209.168.202.130/0.0.0.0/47/0 (type=1),
remote_proxy= 209.168.202.131/0.0.0.0/47/0 (type=1),
protocol= ESP, transform= esp-3des esp-md5-hmac ,
lifedur= 120s and 4608000kb,
spi= 0xEA8C83C1(3935077313), conn_id= 5361, keysize= 0, flags= 0x2
*Mar 1 02:25:37.439: IPSEC(initialize sas): ,
```

```
(key eng. msg.) OUTBOUND local= 209.168.202.130, remote= 209.168.202.131,
local_proxy= 209.168.202.130/0.0.0.0/47/0 (type=1),
remote_proxy= 209.168.202.131/0.0.0.0/47/0 (type=1),
protocol= ESP, transform= esp-3des esp-md5-hmac ,
lifedur= 120s and 4608000kb,
spi= 0x6E42707E(1849847934), conn_id= 5362, keysize= 0, flags= 0xA
*Mar 1 02:25:37.439: IPSEC(kei_proxy): head = Tunnel0-head-0,
  map->ivrf = , kei->ivrf =
*Mar 1 02:25:37.439: IPSEC(kei_proxy): head = Tunnel0-head-0,
  map->ivrf = , kei->ivrf =
*Mar 1 02:25:37.439: IPSEC(add mtree): src 209.168.202.130,
  dest 209.168.202.131, dest_port 0

*Mar 1 02:25:37.439: IPSEC(create_sa): sa created,
(sa) sa_dest= 209.168.202.130, sa_prot= 50,
sa_spi= 0xEA8C83C1(3935077313),
sa_trans= esp-3des esp-md5-hmac , sa_conn_id= 5361
*Mar 1 02:25:37.439: IPSEC(create_sa): sa created,
(sa) sa_dest= 209.168.202.131, sa_prot= 50,
sa_spi= 0x6E42707E(1849847934),
sa_trans= esp-3des esp-md5-hmac , sa_conn_id= 5362
sv9-4#
*Mar 1 02:25:55.183: ISAKMP (0:10): purging node 180238748
*Mar 1 02:25:55.323: ISAKMP (0:10): purging node -1355110639
sv9-4#

sv9-3#

05:50:48: ISAKMP: received ke message (1/1)
05:50:48: ISAKMP (0:0): SA request profile is (NULL)
05:50:48: ISAKMP: local port 500, remote port 500
05:50:48: ISAKMP: set new node 0 to QM_IDLE
05:50:48: ISAKMP: insert sa successfully sa = 62DB93D0
05:50:48: ISAKMP (0:26): Can not start Aggressive mode, trying Main mode.
05:50:48: ISAKMP: Looking for a matching key for 209.168.202.130
  in default : success
05:50:48: ISAKMP (0:26): found peer pre-shared key
  matching 209.168.202.130
05:50:48: ISAKMP (0:26): constructed NAT-T vendor-03 ID
05:50:48: ISAKMP (0:26): constructed NAT-T vendor-02 ID
05:50:48: ISAKMP (0:26): Input = IKE_MESG_FROM_IPSEC, IKE_SA_REQ_MM
05:50:48: ISAKMP (0:26): Old State = IKE_READY New State = IKE_I_MM1

05:50:48: ISAKMP (0:26): beginning Main Mode exchange
05:50:48: ISAKMP (0:26): sending packet to 209.168.202.130 my_port 500
  peer_port 500 (I) MM_NO_STATE
05:50:48: ISAKMP (0:26): received packet from 209.168.202.130 dport 500
  sport 500 Global (I) MM_NO_STATE
05:50:48: ISAKMP (0:26): Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH
05:50:48: ISAKMP (0:26): Old State = IKE_I_MM1 New State = IKE_I_MM2

05:50:48: ISAKMP (0:26): processing SA payload. message ID = 0
05:50:48: ISAKMP (0:26): processing vendor id payload
05:50:48: ISAKMP (0:26): vendor ID seems Unity/DPD
  but major 157 mismatch
05:50:48: ISAKMP (0:26): vendor ID is NAT-T v3
05:50:48: ISAKMP: Looking for a matching key for 209.168.202.130
  in default : success
05:50:48: ISAKMP (0:26): found peer pre-shared key
  matching 209.168.202.130
05:50:48: ISAKMP (0:26) local preshared key found
05:50:48: ISAKMP : Scanning profiles for xauth ...
05:50:48: ISAKMP (0:26): Checking ISAKMP transform 1 against
  priority 10 policy
05:50:48: ISAKMP: encryption DES-CBC
05:50:48: ISAKMP: hash MD5
05:50:48: ISAKMP: default group 1
05:50:48: ISAKMP: auth pre-share
05:50:48: ISAKMP: life type in seconds
05:50:48: ISAKMP: life duration (VPI) of 0x0 0x1 0x51 0x80
05:50:48: ISAKMP (0:26): atts are acceptable. Next payload is 0
05:50:48: ISAKMP (0:26): processing vendor id payload
05:50:48: ISAKMP (0:26): vendor ID seems Unity/DPD
  but major 157 mismatch
05:50:48: ISAKMP (0:26): vendor ID is NAT-T v3
05:50:48: ISAKMP (0:26): Input = IKE_MESG_INTERNAL,
  IKE_PROCESS_MAIN_MODE
05:50:48: ISAKMP (0:26): Old State = IKE_I_MM2
  New State = IKE_I_MM2

05:50:48: ISAKMP (0:26): sending packet to 209.168.202.130 my_port 500
  peer_port 500 (I) MM_SA_SETUP
05:50:48: ISAKMP (0:26): Input = IKE_MESG_INTERNAL, IKE_PROCESS_COMPLETE
05:50:48: ISAKMP (0:26): Old State = IKE_I_MM2 New State = IKE_I_MM3
```

```
05:50:48: ISAKMP (0:26): received packet from 209.168.202.130 dport 500
  sport 500 Global (I) MM_SA_SETUP
05:50:48: ISAKMP (0:26): Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH
05:50:48: ISAKMP (0:26): Old State = IKE_I_MM3 New State = IKE_I_MM4

05:50:48: ISAKMP (0:26): processing KE payload. message ID = 0
05:50:48: ISAKMP (0:26): processing NONCE payload. message ID = 0
05:50:48: ISAKMP: Looking for a matching key for 209.168.202.130
  in default : success
05:50:48: ISAKMP (0:26): found peer pre-shared key
  matching 209.168.202.130
05:50:48: ISAKMP: Looking for a matching key for 209.168.202.130
  in default : success
05:50:48: ISAKMP (0:26): found peer pre-shared key
  matching 209.168.202.130
05:50:48: ISAKMP (0:26): SKEYID state generated
05:50:48: ISAKMP (0:26): processing vendor id payload
05:50:48: ISAKMP (0:26): vendor ID is Unity
05:50:48: ISAKMP (0:26): processing vendor id payload
05:50:48: ISAKMP (0:26): vendor ID is DPD
05:50:48: ISAKMP (0:26): processing vendor id payload
05:50:48: ISAKMP (0:26): speaking to another IOS box!
05:50:48: ISAKMP:received payload type 17
05:50:48: ISAKMP:received payload type 17
05:50:48: ISAKMP (0:26): Input = IKE_MESG_INTERNAL,
  IKE_PROCESS_MAIN_MODE
05:50:48: ISAKMP (0:26): Old State = IKE_I_MM4
  New State = IKE_I_MM4

05:50:48: ISAKMP (0:26): Send initial contact
05:50:48: ISAKMP (0:26): SA is doing pre-shared key authentication
  using id type ID_IPV4_ADDR
05:50:48: ISAKMP (26): ID payload
next-payload : 8
type : 1
addr : 209.168.202.131
protocol : 17
port : 500
length : 8
05:50:48: ISAKMP (26): Total payload length: 12
05:50:48: ISAKMP (0:26): sending packet to 209.168.202.130 my_port 500
  peer_port 500 (I) MM_KEY_EXCH
05:50:48: ISAKMP (0:26): Input = IKE_MESG_INTERNAL,
  IKE_PROCESS_COMPLETE
05:50:48: ISAKMP (0:26): Old State = IKE_I_MM4
  New State = IKE_I_MM5

05:50:48: ISAKMP (0:26): received packet from 209.168.202.130 dport 500
  sport 500 Global (I) MM_KEY_EXCH
05:50:48: ISAKMP (0:26): Input = IKE_MESG_FROM_PEER,
  IKE_MM_EXCH
05:50:48: ISAKMP (0:26): Old State = IKE_I_MM5
  New State = IKE_I_MM6

05:50:48: ISAKMP (0:26): processing ID payload. message ID = 0
05:50:48: ISAKMP (0:26): processing HASH payload. message ID = 0
05:50:48: ISAKMP (0:26): SA has been authenticated with 209.168.202.130
05:50:48: ISAKMP (0:26): peer matches *none* of the profiles
05:50:48: ISAKMP (0:26): Input = IKE_MESG_INTERNAL,
  IKE_PROCESS_MAIN_MODE
05:50:48: ISAKMP (0:26): Old State = IKE_I_MM6
  New State = IKE_I_MM6

05:50:48: ISAKMP (0:26): Input = IKE_MESG_INTERNAL,
  IKE_PROCESS_COMPLETE
05:50:48: ISAKMP (0:26): Old State = IKE_I_MM6
  New State = IKE_P1_COMPLETE

05:50:48: ISAKMP (0:26): beginning Quick Mode exchange,
  M-ID of -1682446278
05:50:48: ISAKMP (0:26): sending packet to 209.168.202.130 my_port 500
  peer_port 500 (I) QM_IDLE
05:50:48: ISAKMP (0:26): Node -1682446278, Input = IKE_MESG_INTERNAL,
  IKE_INIT_QM
05:50:48: ISAKMP (0:26): Old State = IKE_QM_READY
  New State = IKE_QM_I_QM1
05:50:48: ISAKMP (0:26): Input = IKE_MESG_INTERNAL,
  IKE_PHASE1_COMPLETE
05:50:48: ISAKMP (0:26): Old State = IKE_P1_COMPLETE
  New State = IKE_P1_COMPLETE

05:50:48: ISAKMP (0:26): received packet from 209.168.202.130 dport 500
  sport 500 Global (I) QM_IDLE
05:50:48: ISAKMP (0:26): processing HASH payload.
```

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  message ID = -1682446278
05:50:48: ISAKMP (0:26): processing SA payload.
  message ID = -1682446278
05:50:48: ISAKMP (0:26): Checking IPSec proposal 1
05:50:48: ISAKMP: transform 1, ESP_3DES
05:50:48: ISAKMP: attributes in transform:
05:50:48: ISAKMP: encaps is 1
05:50:48: ISAKMP: SA life type in seconds
05:50:48: ISAKMP: SA life duration (basic) of 120
05:50:48: ISAKMP: SA life type in kilobytes
05:50:48: ISAKMP: SA life duration (VPI) of 0x0 0x46 0x50 0x0
05:50:48: ISAKMP: authenticator is HMAC-MD5
05:50:48: ISAKMP (0:26): atts are acceptable.
05:50:48: IPSEC(validate_proposal_request): proposal part #1,
(key eng. msg.) INBOUND local= 209.168.202.131,
  remote= 209.168.202.130,
local_proxy= 209.168.202.131/255.255.255.255/47/0 (type=1),
remote_proxy= 209.168.202.130/255.255.255.255/47/0 (type=1),
protocol= ESP, transform= esp-3des esp-md5-hmac ,
lifedur= 0s and 0kb,
spi= 0x0(0), conn_id= 0, keysize= 0, flags= 0x2
05:50:48: IPSEC(kei_proxy): head = Tunnel0-head-0,
  map->ivrf = , kei->ivrf =
05:50:48: IPSEC(kei_proxy): head = Tunnel0-head-0,
  map->ivrf = , kei->ivrf =
05:50:48: ISAKMP (0:26): processing NONCE payload.
  message ID = -1682446278
05:50:48: ISAKMP (0:26): processing ID payload.
  message ID = -1682446278
05:50:48: ISAKMP (0:26): processing ID payload.
  message ID = -1682446278
05:50:48: ISAKMP (0:26): Creating IPSec SAs
05:50:48: inbound SA from 209.168.202.130 to
  209.168.202.131 (f/i) 0/ 0
(proxy 209.168.202.130 to 209.168.202.131)
05:50:48: has spi 0x6E42707E and conn_id 5547 and flags 2
05:50:48: lifetime of 120 seconds
05:50:48: lifetime of 4608000 kilobytes
05:50:48: has client flags 0x0
05:50:48: outbound SA from 209.168.202.131 to 209.168.202.130
  (f/i) 0/ 0 (proxy 209.168.202.131 to 209.168.202.130)
05:50:48: has spi -359889983 and conn_id 5548 and flags A
05:50:48: lifetime of 120 seconds
05:50:48: lifetime of 4608000 kilobytes
05:50:48: has client flags 0x0
05:50:48: IPSEC(key_engine): got a queue event...
05:50:48: IPSEC(initialize_sas): ,
(key eng. msg.) INBOUND local= 209.168.202.131,
  remote= 209.168.202.130,
local_proxy= 209.168.202.131/0.0.0.0/47/0 (type=1),
remote_proxy= 209.168.202.130/0.0.0.0/47/0 (type=1),
protocol= ESP, transform= esp-3des esp-md5-hmac ,
lifedur= 120s and 4608000kb,
spi= 0x6E42707E(1849847934), conn_id= 5547, keysize= 0, flags= 0x2
05:50:48: IPSEC(initialize_sas): ,
(key eng. msg.) OUTBOUND local= 209.168.202.131,
  remote= 209.168.202.130,
local_proxy= 209.168.202.131/0.0.0.0/47/0 (type=1),
remote_proxy= 209.168.202.130/0.0.0.0/47/0 (type=1),
protocol= ESP, transform= esp-3des esp-md5-hmac ,
lifedur= 120s and 4608000kb,
spi= 0xEA8C83C1(3935077313), conn_id= 5548, keysize= 0, flags= 0xA
05:50:48: IPSEC(kei_proxy): head = Tunnel0-head-0,
  map->ivrf = , kei->ivrf =
05:50:48: IPSEC(kei_proxy): head = Tunnel0-head-0,
  map->ivrf = , kei->ivrf =
05:50:48: IPSEC(add mtree): src 209.168.202.131, dest 209.168.202.130,
  dest_port 0

05:50:48: IPSEC(create_sa): sa created,
(sa) sa_dest= 209.168.202.131, sa_prot= 50,
sa_spi= 0x6E42707E(1849847934),
sa_trans= esp-3des esp-md5-hmac , sa_conn_id= 5547
05:50:48: IPSEC(create_sa): sa created,
(sa) sa_dest= 209.168.202.130, sa_prot= 50,
sa_spi= 0xEA8C83C1(3935077313),
sa_trans= esp-3des esp-md5-hmac , sa_conn_id= 5548
05:50:48: ISAKMP (0:26): sending packet to 209.168.202.130 my_port 500
  peer_port 500 (I) QM_IDLE
05:50:48: ISAKMP (0:26): deleting node -1682446278 error FALSE reason ""
05:50:48: ISAKMP (0:26): Node -1682446278, Input = IKE_MESG_FROM_PEER,
  IKE_QM_EXCH
05:50:48: ISAKMP (0:26): Old State = IKE_QM_I_QM1
  New State = IKE QM PHASE2 COMPLETE
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05:50:49: ISAKMP (0:21): purging node 334570133
sv9-3#
```

Дополнительные сведения

- **Протоколы согласования IPsec и IKE**
- **Техническая поддержка – Cisco Systems**

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http://www.cisco.com/support/RU/customer/content/10/107628/dcmvpn.shtml