

# Пример конфигурации DMVPN и сервера Easy VPN с профилями ISAKMP

## Содержание

[Введение](#)

[Предварительные условия](#)

[Требования](#)

[Используемые компоненты](#)

[Условные обозначения](#)

[Настройка](#)

[Схема сети](#)

[Конфигурации](#)

[Проверка](#)

[Устранение неполадок](#)

[Дополнительные сведения](#)

## Введение

В данном документе описываются способы настройки Dynamic Multipoint VPN (DMVPN) и Easy VPN с Xauth на одном и том же маршрутизаторе. Данная настройка обеспечивает динамическую адресацию оконечных устройств DMVPN. Профили протокола Internet Security Association and Key Management Protocol (ISAKMP) предоставляют возможность разделять способы аутентификации динамически адресуемых оконечных устройств DMVPN или клиентов Easy VPN.

## Предварительные условия

### Требования

Для этого документа отсутствуют особые требования.

### Используемые компоненты

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

- Маршрутизаторы Cisco 2691 и 3725, поддерживающие версии ПО Cisco IOS® 12.3(3) и 12.3(3)а

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

[Дополнительные сведения об условных обозначениях см. в документе Условные обозначения технических терминов Cisco.](#)

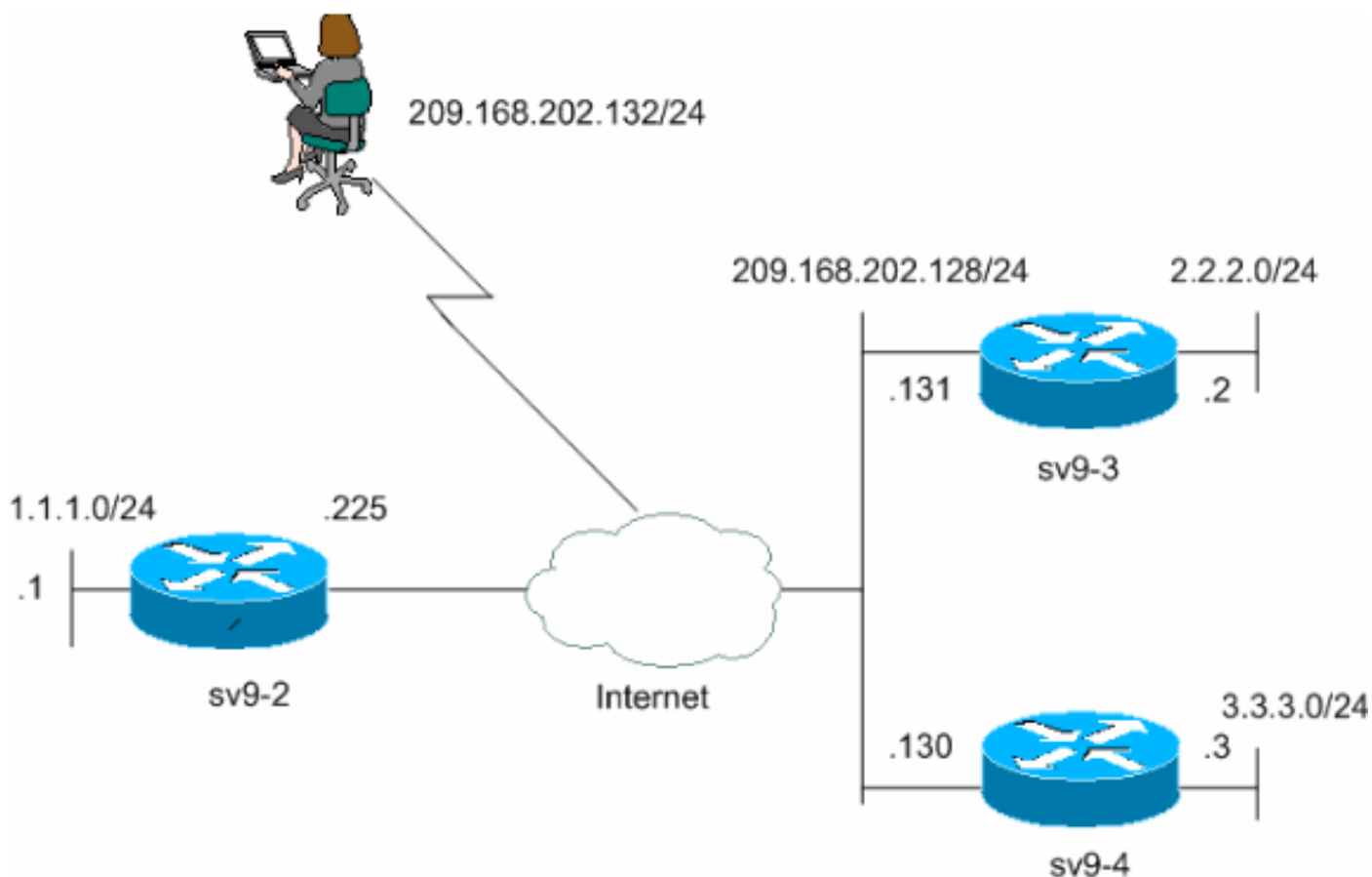
## Настройка

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

**Примечание:** [Чтобы получить подробные сведения о командах в данном документе, используйте Средство поиска команд \(только для зарегистрированных клиентов\).](#)

## Схема сети

В настоящем документе используется следующая схема сети.



## Конфигурации

Эти конфигурации используются в данном документе.

- [конфигурация концентратора sv9-2](#)
- [sv9-3 - конфигурация оконечных устройств](#)
- [конфигурация речевого интерфейса sv9-4](#)

## конфигурация концентратора sv9-2

```
sv9-2#show run Building configuration... Current
configuration : 2876 bytes ! version 12.3 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 ! username cisco password 0 cisco aaa
new-model ! ! !--- Xauth is configured for local
authentication. aaa authentication login userauthen
local aaa authorization network hw-client-groupname
local aaa session-id common ip subnet-zero ! ! no ip
domain lookup ! ip audit notify log ip audit po max-
events 100 ip ssh break-string no ftp-server write-
enable ! ! !--- Keyring that defines the wildcard pre-
shared key. crypto keyring dmvpnspokes pre-shared-key
address 0.0.0.0 0.0.0.0 key cisco123 ! !--- Create an
ISAKMP policy for Phase 1 negotiations. !--- This policy
is for DMVPN spokes. crypto isakmp policy 10 hash md5
authentication pre-share ! !--- Create an ISAKMP policy
for Phase 1 negotiations. !--- This policy is for Easy
VPN Clients. crypto isakmp policy 20 hash md5
authentication pre-share group 2 ! !--- VPN Client
configuration for group "hw-client-groupname" !--- (this
name is configured in the VPN Client). crypto isakmp
client configuration group hw-client-groupname key hw-
client-password dns 1.1.11.10 1.1.11.11 wins 1.1.11.12
1.1.11.13 domain cisco.com pool dynpool !--- Profile for
VPN Client connections, matches the !--- "hw-client-
group" group and defines the XAuth properties. crypto
isakmp profile VPNclient match identity group hw-client-
groupname client authentication list userauthen isakmp
authorization list hw-client-groupname client
configuration address respond !--- Profile for LAN-to-
LAN connection, references !--- the wildcard pre-shared
key and a wildcard !--- identity (this is what is broken
in !--- Cisco bug ID CSCea77140) !--- and no XAuth.
crypto isakmp profile DMVPN keyring dmvpnspokes match
identity address 0.0.0.0 ! ! !--- Create the Phase 2
policy for actual data encryption. crypto ipsec
transform-set strong esp-3des esp-md5-hmac mode
transport ! !--- Create an IPsec profile to be applied
dynamically to the !--- generic routing encapsulation
(GRE) over IPsec tunnels. crypto ipsec profile cisco set
security-association lifetime seconds 120 set transform-
set strong set isakmp-profile DMVPN ! ! !--- This
dynamic crypto map references the ISAKMP !--- Profile
VPN Client above. !--- Reverse route injection is used
to provide the !--- DMVPN networks access to any Easy
VPN Client networks. crypto dynamic-map dynmap 10 set
isakmp-profile VPNclient reverse-route set transform-set
strong ! ! !--- Crypto map only references the dynamic
crypto map above. crypto map dynmap 1 ipsec-isakmp
dynamic dynmap ! ! ! ! ! ! ! ! ! no voice hpi capture
buffer no voice hpi capture destination ! ! ! ! ! ! !---
Create a GRE tunnel template which is applied to !---
all the dynamically created GRE tunnels. 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 ip nhrp
holdtime 300 no ip split-horizon eigrp 90 tunnel source
FastEthernet0/0 tunnel mode gre multipoint tunnel key 0
tunnel protection ipsec profile cisco ! interface
FastEthernet0/0 ip address 209.168.202.225 255.255.255.0
```

```

duplex auto speed auto crypto map dynmap ! 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 ! !--- Enable a routing
protocol to send and receive !--- dynamic updates about
the private networks. router eigrp 90 redistribute
static network 1.1.1.0 0.0.0.255 network 192.168.1.0 no
auto-summary ! ip local pool dynpool 1.1.11.60 1.1.11.80
ip http server no ip http secure-server ip classless ! !
! ! ! ! ! ! ! ! ! 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 transport preferred all
transport input all transport output all ! ! end

```

### sv9-3 - конфигурация оконечных устройств

```

sv9-3#show run Building configuration... Current
configuration : 2052 bytes ! version 12.3 service
timestamps debug datetime msec service timestamps log
datetime msec no service password-encryption ! hostname
sv9-3 ! boot-start-marker boot system flash:c3725-
ik9o3s-mz.123-3.bin boot-end-marker ! ! no aaa new-model
ip subnet-zero ! ! no ip domain lookup ! ip audit notify
log ip audit po max-events 100 ip ssh break-string no
ftp-server write-enable ! ! ! !--- Create an ISAKMP
policy for Phase 1 negotiations. crypto isakmp policy 10
hash md5 authentication pre-share !--- Add dynamic pre-
shared keys for all remote VPN routers. crypto isakmp
key cisco123 address 0.0.0.0 0.0.0.0 ! ! !--- Create the
Phase 2 policy for actual data encryption. crypto ipsec
transform-set strong esp-3des esp-md5-hmac mode
transport ! !--- Create an IPsec profile to be applied
dynamically to the !--- GRE over IPsec tunnels. crypto
ipsec profile cisco set security-association lifetime
seconds 120 set transform-set strong ! ! no voice hpi
capture buffer no voice hpi capture destination ! ! !---
Create a GRE tunnel template which is applied to !---
all the dynamically created GRE tunnels. 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 holdtime 300 ip nhrp nhs
192.168.1.1 no ip split-horizon eigrp 90 tunnel source
FastEthernet0/0 tunnel mode gre multipoint tunnel key 0
tunnel protection ipsec profile cisco ! interface
FastEthernet0/0 ip address 209.168.202.130 255.255.255.0
duplex auto speed auto ! interface FastEthernet0/1 ip
address 3.3.3.3 255.255.255.0 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 ! !--- Enable a routing protocol to send and
receive !--- dynamic updates about the private networks.
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 0.0.0.0 0.0.0.0
209.168.202.225 ip route 2.2.2.0 255.255.255.0 Tunnel0 !
! 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 речевого интерфейса sv9-4

```
sv9-4#show run Building configuration... Current
configuration : 1992 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-
jk9o3s-mz.123-3a.bin boot-end-marker ! enable password
cisco ! no aaa new-model ip subnet-zero !! no ip domain
lookup ! ip audit notify log ip audit po max-events 100
ip ssh break-string no ftp-server write-enable !!! !---
- Create an ISAKMP policy for Phase 1 negotiations.
crypto isakmp policy 10 hash md5 authentication pre-
share !--- Add dynamic pre-shared keys for all remote
VPN routers. crypto isakmp key cisco123 address 0.0.0.0
0.0.0.0 !! !--- Create the Phase 2 policy for actual
data encryption. crypto ipsec transform-set strong esp-
3des esp-md5-hmac mode transport ! !--- Create an IPsec
profile apply dynamically to the !--- GRE over IPsec
tunnels. crypto ipsec profile cisco set security-
association lifetime seconds 120 set transform-set
strong !! no voice hpi capture buffer no voice hpi
capture destination !! !--- Create a GRE tunnel
template which is applied to !--- all the dynamically
created GRE tunnels. 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 holdtime 300 ip nhrp nhs 192.168.1.1 no ip split-
horizon eigrp 90 tunnel source FastEthernet0/0 tunnel
mode gre multipoint tunnel key 0 tunnel protection ipsec
profile cisco ! interface FastEthernet0/0 ip address
209.168.202.131 255.255.255.0 duplex auto speed auto !
interface FastEthernet0/1 ip address 2.2.2.2
255.255.255.0 duplex auto speed auto ! !--- Enable a
routing protocol to send and receive !--- dynamic
updates about the private networks. 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 !!
dial-peer cor custom !! line con 0 exec-timeout 0 0
transport output lat pad v120 lapb-ta mop telnet rlogin
udptn ssh escape-character 27 line aux 0 transport
output lat pad v120 lapb-ta mop telnet rlogin udptn ssh
line vty 0 4 login transport input lat pad v120 lapb-ta
mop telnet rlogin udptn ssh transport output lat pad
v120 lapb-ta mop telnet rlogin udptn ssh !! end
```

## Проверка

В данном разделе содержатся сведения о проверке работы конфигурации.

Команды отладки, которые выполняются на маршрутизаторе концентратора, могут подтвердить, что корректные параметры согласованы для подключений оконечного устройства и клиента VPN. Выполните данные команды **debug**.

[Средство Output Interpreter \(OIT\) \(только для зарегистрированных клиентов\) поддерживает определенные команды show.](#) Посредством OIT можно анализировать выходные данные

команд show.

**Примечание:** [Прежде чем выполнять какие-либо команды отладки , ознакомьтесь с документом "Важные сведения о командах отладки".](#)

- **debug crypto isakmp** – отображает сообщения о событиях IKE.
- **debug crypto ipsec** – Отображает сведения о событиях IPSec.

sv9-2#

```
*Mar 13 04:38:21.187: ISAKMP (0:0): received packet from 209.168.202.130
      dport 500 sport 500 Global (N) NEW SA
*Mar 13 04:38:21.187: ISAKMP: local port 500, remote port 500
*Mar 13 04:38:21.187: ISAKMP: insert sa successfully sa = 63F585CC
*Mar 13 04:38:21.187: ISAKMP (0:689): Input = IKE_MSG_FROM_PEER, IKE_MM_EXCH
*Mar 13 04:38:21.187: ISAKMP (0:689): Old State = IKE_READY New State = IKE_R_MM1

*Mar 13 04:38:21.187: ISAKMP (0:689): processing SA payload. message ID = 0
*Mar 13 04:38:21.187: ISAKMP (0:689): processing vendor id payload
*Mar 13 04:38:21.187: ISAKMP (0:689): vendor ID seems Unity/DPD but
      major 157 mismatch
*Mar 13 04:38:21.187: ISAKMP (0:689): vendor ID is NAT-T v3
*Mar 13 04:38:21.187: ISAKMP (0:689): processing vendor id payload
*Mar 13 04:38:21.191: ISAKMP (0:689): vendor ID seems Unity/DPD but
      major 123 mismatch
*Mar 13 04:38:21.191: ISAKMP (0:689): vendor ID is NAT-T v2
*Mar 13 04:38:21.191: ISAKMP: Looking for a matching key for 209.168.202.130
      in default
*Mar 13 04:38:21.191: ISAKMP: Looking for a matching key for 209.168.202.130
      in dmvpnspokes : success
*Mar 13 04:38:21.191: ISAKMP (0:689): found peer pre-shared key matching
      209.168.202.130
*Mar 13 04:38:21.191: ISAKMP (0:689) local preshared key found
*Mar 13 04:38:21.191: ISAKMP : Scanning profiles for xauth ... VPNclient
*Mar 13 04:38:21.191: ISAKMP (0:689) Authentication by xauth preshared
*Mar 13 04:38:21.191: ISAKMP (0:689): Checking ISAKMP transform 1 against
      priority 10 policy
*Mar 13 04:38:21.191: ISAKMP: encryption DES-CBC
*Mar 13 04:38:21.191: ISAKMP: hash MD5
*Mar 13 04:38:21.191: ISAKMP: default group 1
*Mar 13 04:38:21.191: ISAKMP: auth pre-share
*Mar 13 04:38:21.191: ISAKMP: life type in seconds
*Mar 13 04:38:21.191: ISAKMP: life duration (VPI) of 0x0 0x1 0x51 0x80
*Mar 13 04:38:21.191: ISAKMP (0:689): atts are acceptable. Next payload is 0
*Mar 13 04:38:21.195: ISAKMP (0:689): processing vendor id payload
*Mar 13 04:38:21.195: ISAKMP (0:689): vendor ID seems Unity/DPD but major
      157 mismatch
*Mar 13 04:38:21.195: ISAKMP (0:689): vendor ID is NAT-T v3
*Mar 13 04:38:21.195: ISAKMP (0:689): processing vendor id payload
*Mar 13 04:38:21.195: ISAKMP (0:689): vendor ID seems Unity/DPD but
      major 123 mismatch
*Mar 13 04:38:21.195: ISAKMP (0:689): vendor ID is NAT-T v2
*Mar 13 04:38:21.195: ISAKMP (0:689): Input = IKE_MSG_INTERNAL,
      IKE_PROCESS_MAIN_MODE
*Mar 13 04:38:21.195: ISAKMP (0:689): Old State = IKE_R_MM1 New State = IKE_R_MM1

*Mar 13 04:38:21.195: ISAKMP (0:689): constructed NAT-T vendor-03 ID
*Mar 13 04:38:21.195: ISAKMP (0:689): sending packet to 209.168.202.130
      my_port 500 peer_port 500 (R) MM_SA_SETUP
*Mar 13 04:38:21.195: ISAKMP (0:689): Input = IKE_MSG_INTERNAL,
      IKE_PROCESS_COMPLETE
*Mar 13 04:38:21.195: ISAKMP (0:689): Old State = IKE_R_MM1 New State = IKE_R_MM2
```

\*Mar 13 04:38:21.203: ISAKMP (0:689): received packet from 209.168.202.130 dport 500 sport 500 Global (R) MM\_SA\_SETUP

\*Mar 13 04:38:21.203: ISAKMP (0:689): Input = IKE\_MSG\_FROM\_PEER, IKE\_MM\_EXCH

\*Mar 13 04:38:21.203: ISAKMP (0:689): Old State = IKE\_R\_MM2 New State = IKE\_R\_MM3

\*Mar 13 04:38:21.203: ISAKMP (0:689): processing KE payload. message ID = 0

\*Mar 13 04:38:21.211: ISAKMP (0:689): processing NONCE payload. message ID = 0

\*Mar 13 04:38:21.211: ISAKMP: Looking for a matching key for 209.168.202.130 in default

\*Mar 13 04:38:21.211: ISAKMP: Looking for a matching key for 209.168.202.130 in dmvpnspokes : success

\*Mar 13 04:38:21.211: ISAKMP (0:689): found peer pre-shared key matching 209.168.202.130

\*Mar 13 04:38:21.211: ISAKMP: Looking for a matching key for 209.168.202.130 in default

\*Mar 13 04:38:21.211: ISAKMP: Looking for a matching key for 209.168.202.130 in dmvpnspokes : success

\*Mar 13 04:38:21.211: ISAKMP (0:689): found peer pre-shared key matching 209.168.202.130

\*Mar 13 04:38:21.215: ISAKMP (0:689): SKEYID state generated

\*Mar 13 04:38:21.215: ISAKMP (0:689): processing vendor id payload

\*Mar 13 04:38:21.215: ISAKMP (0:689): vendor ID is Unity

\*Mar 13 04:38:21.215: ISAKMP (0:689): processing vendor id payload

\*Mar 13 04:38:21.215: ISAKMP (0:689): vendor ID is DPD

\*Mar 13 04:38:21.215: ISAKMP (0:689): processing vendor id payload

\*Mar 13 04:38:21.215: ISAKMP (0:689): speaking to another IOS box!

\*Mar 13 04:38:21.215: ISAKMP:received payload type 17

\*Mar 13 04:38:21.215: ISAKMP:received payload type 17

\*Mar 13 04:38:21.215: ISAKMP (0:689): Input = IKE\_MSG\_INTERNAL, IKE\_PROCESS\_MAIN\_MODE

\*Mar 13 04:38:21.215: ISAKMP (0:689): Old State = IKE\_R\_MM3 New State = IKE\_R\_MM3

\*Mar 13 04:38:21.215: ISAKMP (0:689): sending packet to 209.168.202.130 my\_port 500 peer\_port 500 (R) MM\_KEY\_EXCH

\*Mar 13 04:38:21.215: ISAKMP (0:689): Input = IKE\_MSG\_INTERNAL, IKE\_PROCESS\_COMPLETE

\*Mar 13 04:38:21.215: ISAKMP (0:689): Old State = IKE\_R\_MM3 New State = IKE\_R\_MM4

\*Mar 13 04:38:21.227: ISAKMP (0:689): received packet from 209.168.202.130 dport 500 sport 500 Global (R) MM\_KEY\_EXCH

\*Mar 13 04:38:21.227: ISAKMP (0:689): Input = IKE\_MSG\_FROM\_PEER, IKE\_MM\_EXCH

\*Mar 13 04:38:21.227: ISAKMP (0:689): Old State = IKE\_R\_MM4 New State = IKE\_R\_MM5

\*Mar 13 04:38:21.227: ISAKMP (0:689): processing ID payload. message ID = 0

\*Mar 13 04:38:21.227: ISAKMP (0:689): peer matches DMVPN profile

\*Mar 13 04:38:21.227: ISAKMP: Looking for a matching key for 209.168.202.130 in default

\*Mar 13 04:38:21.227: ISAKMP: Looking for a matching key for 209.168.202.130 in dmvpnspokes : success

\*Mar 13 04:38:21.227: ISAKMP (0:689): Found ADDRESS key in keyring dmvpnspokes

\*Mar 13 04:38:21.227: ISAKMP (0:689): processing HASH payload. message ID = 0

\*Mar 13 04:38:21.227: ISAKMP (0:689): processing NOTIFY\_INITIAL\_CONTACT protocol 1 spi 0, message ID = 0, sa = 63F585CC

\*Mar 13 04:38:21.227: ISAKMP (0:689): Process initial contact, bring down existing phase 1 and 2 SA's with local 209.168.202.225 remote 209.168.202.130 remote port 500

\*Mar 13 04:38:21.227: IPSEC(key\_engine): got a queue event...

\*Mar 13 04:38:21.231: ISAKMP (0:689): SA has been authenticated with 209.168.202.130

\*Mar 13 04:38:21.231: ISAKMP (0:689): Input = IKE\_MSG\_INTERNAL, IKE\_PROCESS\_MAIN\_MODE

\*Mar 13 04:38:21.231: ISAKMP (0:689): Old State = IKE\_R\_MM5 New State = IKE\_R\_MM5

\*Mar 13 04:38:21.231: ISAKMP (0:689): SA is doing pre-shared key authentication using id type ID\_IPV4\_ADDR

\*Mar 13 04:38:21.231: ISAKMP (689): ID payload  
next-payload : 8  
type : 1  
addr : 209.168.202.225  
protocol : 17  
port : 500  
length : 8

\*Mar 13 04:38:21.231: ISAKMP (689): Total payload length: 12

\*Mar 13 04:38:21.231: ISAKMP (0:689): sending packet to 209.168.202.130  
my\_port 500 peer\_port 500 (R) MM\_KEY\_EXCH

\*Mar 13 04:38:21.231: ISAKMP (0:689): Input = IKE\_MSG\_INTERNAL,  
IKE\_PROCESS\_COMPLETE

\*Mar 13 04:38:21.231: ISAKMP (0:689): Old State = IKE\_R\_MM5 New State =  
IKE\_P1\_COMPLETE

\*Mar 13 04:38:21.231: ISAKMP (0:689): Input = IKE\_MSG\_INTERNAL,  
IKE\_PHASE1\_COMPLETE

\*Mar 13 04:38:21.231: ISAKMP (0:689): Old State = IKE\_P1\_COMPLETE  
New State = IKE\_P1\_COMPLETE

\*Mar 13 04:38:21.235: ISAKMP (0:689): received packet from  
209.168.202.130 dport 500 sport 500 Global (R) QM\_IDLE

\*Mar 13 04:38:21.235: ISAKMP: set new node -1213418274 to QM\_IDLE

\*Mar 13 04:38:21.235: ISAKMP (0:689): processing HASH payload. message ID = -1213418274

\*Mar 13 04:38:21.235: ISAKMP (0:689): processing SA payload. message ID = -1213418274

\*Mar 13 04:38:21.235: ISAKMP (0:689): Checking IPsec proposal 1

\*Mar 13 04:38:21.235: ISAKMP: transform 1, ESP\_3DES

\*Mar 13 04:38:21.235: ISAKMP: attributes in transform:

\*Mar 13 04:38:21.235: ISAKMP: encaps is 2

\*Mar 13 04:38:21.235: ISAKMP: SA life type in seconds

\*Mar 13 04:38:21.235: ISAKMP: SA life duration (basic) of 120

\*Mar 13 04:38:21.235: ISAKMP: SA life type in kilobytes

\*Mar 13 04:38:21.235: ISAKMP: SA life duration (VPI) of 0x0 0x46 0x50 0x0

\*Mar 13 04:38:21.235: ISAKMP: authenticator is HMAC-MD5

\*Mar 13 04:38:21.235: ISAKMP (0:689): atts are acceptable.

\*Mar 13 04:38:21.235: IPSEC(validate\_proposal\_request): proposal part #1,  
(key eng. msg.) INBOUND local= 209.168.202.225, remote= 209.168.202.130,  
local\_proxy= 209.168.202.225/255.255.255.255/47/0 (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= 0x4

\*Mar 13 04:38:21.239: IPSEC(kei\_proxy): head = Tunnel0-head-0,  
map->ivrf = , kei->ivrf =

\*Mar 13 04:38:21.239: IPSEC(kei\_proxy): head = Tunnel0-head-0,  
map->ivrf = , kei->ivrf =

\*Mar 13 04:38:21.239: ISAKMP (0:689): processing NONCE payload.  
message ID = -1213418274

\*Mar 13 04:38:21.239: ISAKMP (0:689): processing ID payload.  
message ID = -1213418274

\*Mar 13 04:38:21.239: ISAKMP (0:689): processing ID payload.  
message ID = -1213418274

\*Mar 13 04:38:21.239: ISAKMP (0:689): asking for 1 spis from ipsec

\*Mar 13 04:38:21.239: ISAKMP (0:689): Node -1213418274, Input =  
IKE\_MSG\_FROM\_PEER, IKE\_QM\_EXCH

\*Mar 13 04:38:21.239: ISAKMP (0:689): Old State = IKE\_QM\_READY  
New State = IKE\_QM\_SPI\_STARVE

\*Mar 13 04:38:21.239: IPSEC(key\_engine): got a queue event...

\*Mar 13 04:38:21.239: IPSEC(spi\_response): getting spi 3759277150 for SA  
from 209.168.202.225 to 209.168.202.130 for prot 3

\*Mar 13 04:38:21.239: ISAKMP (0:689): received packet from



209.168.202.130 dport 500 sport 500 Global (R) QM\_IDLE

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*Mar 13 04:38:21.239: ISAKMP: set new node -1392382616 to QM_IDLE
*Mar 13 04:38:21.239: ISAKMP (0:689): processing HASH payload.
message ID = -1392382616
*Mar 13 04:38:21.239: ISAKMP (0:689): processing SA payload.
message ID = -1392382616
*Mar 13 04:38:21.239: ISAKMP (0:689): Checking IPsec proposal 1
*Mar 13 04:38:21.239: ISAKMP: transform 1, ESP_3DES
*Mar 13 04:38:21.239: ISAKMP: attributes in transform:
*Mar 13 04:38:21.239: ISAKMP: encaps is 2
*Mar 13 04:38:21.239: ISAKMP: SA life type in seconds
*Mar 13 04:38:21.239: ISAKMP: SA life duration (basic) of 120
*Mar 13 04:38:21.239: ISAKMP: SA life type in kilobytes
*Mar 13 04:38:21.239: ISAKMP: SA life duration (VPI) of 0x0 0x46 0x50 0x0
*Mar 13 04:38:21.239: ISAKMP: authenticator is HMAC-MD5
*Mar 13 04:38:21.239: ISAKMP (0:689): atts are acceptable.
*Mar 13 04:38:21.243: IPSEC(validate_proposal_request): proposal part #1,
(key eng. msg.) INBOUND local= 209.168.202.225, remote= 209.168.202.130,
local_proxy= 209.168.202.225/255.255.255.255/47/0 (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= 0x4
*Mar 13 04:38:21.243: IPSEC(kei_proxy): head = Tunnel0-head-0,
map->ivrf = , kei->ivrf =
*Mar 13 04:38:21.243: IPSEC(kei_proxy): head = Tunnel0-head-0,
map->ivrf = , kei->ivrf =
*Mar 13 04:38:21.243: ISAKMP (0:689): processing NONCE payload.
message ID = -1392382616
*Mar 13 04:38:21.243: ISAKMP (0:689): processing ID payload.
message ID = -1392382616
*Mar 13 04:38:21.243: ISAKMP (0:689): processing ID payload.
message ID = -1392382616
*Mar 13 04:38:21.243: ISAKMP (0:689): asking for 1 spis from ipsec
*Mar 13 04:38:21.243: ISAKMP (0:689): Node -1392382616, Input =
IKE_MSG_FROM_PEER, IKE_QM_EXCH
*Mar 13 04:38:21.243: ISAKMP (0:689): Old State = IKE_QM_READY
New State = IKE_QM_SPI_STARVE
*Mar 13 04:38:21.243: ISAKMP: received ke message (2/1)
*Mar 13 04:38:21.243: IPSEC(key_engine): got a queue event...
*Mar 13 04:38:21.243: IPSEC(spi_response): getting spi 1258185233 for SA
from 209.168.202.225 to 209.168.202.130 for prot 3
*Mar 13 04:38:21.243: ISAKMP: received ke message (2/1)
*Mar 13 04:38:21.491: ISAKMP (0:689): sending packet to
209.168.202.130 my_port 500 peer_port 500 (R) QM_IDLE
*Mar 13 04:38:21.491: ISAKMP (0:689): Node -1213418274, Input =
IKE_MSG_FROM_IPSEC, IKE_SPI_REPLY
*Mar 13 04:38:21.491: ISAKMP (0:689): Old State = IKE_QM_SPI_STARVE
New State = IKE_QM_R_QM2
*Mar 13 04:38:21.495: ISAKMP (0:689): sending packet to 209.168.202.130
my_port 500 peer_port 500 (R) QM_IDLE
*Mar 13 04:38:21.495: ISAKMP (0:689): Node -1392382616, Input =
IKE_MSG_FROM_IPSEC, IKE_SPI_REPLY
*Mar 13 04:38:21.495: ISAKMP (0:689): Old State = IKE_QM_SPI_STARVE
New State = IKE_QM_R_QM2
*Mar 13 04:38:21.503: ISAKMP (0:689): received packet from 209.168.202.130
dport 500 sport 500 Global (R) QM_IDLE

*Mar 13 04:38:21.511: ISAKMP (0:689): Creating IPsec SAs
*Mar 13 04:38:21.511: inbound SA from 209.168.202.130 to
209.168.202.225 (f/i) 0/ 0
(proxy 209.168.202.130 to 209.168.202.225)
*Mar 13 04:38:21.511: has spi 0xE012045E and conn_id 13777 and flags 4
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*Mar 13 04:38:21.511: lifetime of 120 seconds
*Mar 13 04:38:21.511: lifetime of 4608000 kilobytes
*Mar 13 04:38:21.511: has client flags 0x0
*Mar 13 04:38:21.511: outbound SA from 209.168.202.225 to
    209.168.202.130 (f/i) 0/ 0 (proxy 209.168.202.225
    to 209.168.202.130)
*Mar 13 04:38:21.511: has spi 1398157896 and conn_id 13778 and flags C
*Mar 13 04:38:21.511: lifetime of 120 seconds
*Mar 13 04:38:21.511: lifetime of 4608000 kilobytes
*Mar 13 04:38:21.511: has client flags 0x0
*Mar 13 04:38:21.511: ISAKMP (0:689): deleting node -1213418274 error
    FALSE reason "quick mode done (await)"
*Mar 13 04:38:21.511: ISAKMP (0:689): Node -1213418274, Input =
    IKE_MSG_FROM_PEER, IKE_QM_EXCH
*Mar 13 04:38:21.511: ISAKMP (0:689): Old State = IKE_QM_R_QM2
    New State = IKE_QM_PHASE2_COMPLETE
*Mar 13 04:38:21.511: IPSEC(key_engine): got a queue event...
*Mar 13 04:38:21.511: IPSEC(initialize_sas): ,
(key eng. msg.) INBOUND local= 209.168.202.225, remote= 209.168.202.130,
local_proxy= 209.168.202.225/0.0.0.0/47/0 (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= 0xE012045E(3759277150), conn_id= 13777, keysize= 0, flags= 0x4
*Mar 13 04:38:21.511: IPSEC(initialize_sas): ,
(key eng. msg.) OUTBOUND local= 209.168.202.225, remote= 209.168.202.130,
local_proxy= 209.168.202.225/0.0.0.0/47/0 (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= 0x53563248(1398157896), conn_id= 13778, keysize= 0, flags= 0xC
*Mar 13 04:38:21.511: IPSEC(kei_proxy): head = Tunnel0-head-0,
    map->ivrf = , kei->ivrf =
*Mar 13 04:38:21.511: IPSEC(kei_proxy): head = Tunnel0-head-0,
    map->ivrf = , kei->ivrf =
*Mar 13 04:38:21.511: IPSEC(add mtree): src 209.168.202.225, dest
    209.168.202.130, dest_port 0

*Mar 13 04:38:21.511: IPSEC(create_sa): sa created,
(sa) sa_dest= 209.168.202.225, sa_prot= 50,
sa_spi= 0xE012045E(3759277150),
sa_trans= esp-3des esp-md5-hmac , sa_conn_id= 13777
*Mar 13 04:38:21.511: IPSEC(create_sa): sa created,
(sa) sa_dest= 209.168.202.130, sa_prot= 50,
sa_spi= 0x53563248(1398157896),
sa_trans= esp-3des esp-md5-hmac , sa_conn_id= 13778
*Mar 13 04:38:21.511: ISAKMP (0:689): received packet from
    209.168.202.130 dport 500 sport 500 Global (R) QM_IDLE

*Mar 13 04:38:21.519: ISAKMP (0:689): Creating IPsec SAs
*Mar 13 04:38:21.519: inbound SA from 209.168.202.130 to 209.168.202.225 (f/i) 0/ 0
(proxy 209.168.202.130 to 209.168.202.225)
*Mar 13 04:38:21.519: has spi 0x4AFE6211 and conn_id 13779 and flags 4
*Mar 13 04:38:21.519: lifetime of 120 seconds
*Mar 13 04:38:21.519: lifetime of 4608000 kilobytes
*Mar 13 04:38:21.519: has client flags 0x0
*Mar 13 04:38:21.519: outbound SA from 209.168.202.225 to 209.168.202.130
    (f/i) 0/ 0 (proxy 209.168.202.225 to 209.168.202.130)
*Mar 13 04:38:21.523: has spi -1567576395 and conn_id 13780 and flags C
*Mar 13 04:38:21.523: lifetime of 120 seconds
*Mar 13 04:38:21.523: lifetime of 4608000 kilobytes
*Mar 13 04:38:21.523: has client flags 0x0
*Mar 13 04:38:21.523: ISAKMP (0:689): deleting node -1392382616 error
    FALSE reason "quick mode done (await)"
```

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*Mar 13 04:38:21.523: ISAKMP (0:689): Node -1392382616, Input = IKE_MSG_FROM_PEER,
IKE_QM_EXCH
*Mar 13 04:38:21.523: ISAKMP (0:689): Old State = IKE_QM_R_QM2 New State =
IKE_QM_PHASE2_COMPLETE
*Mar 13 04:38:21.523: IPSEC(key_engine): got a queue event...
*Mar 13 04:38:21.523: IPSEC(initialize_sas): ,
(key eng. msg.) INBOUND local= 209.168.202.225, remote= 209.168.202.130,
local_proxy= 209.168.202.225/0.0.0.0/47/0 (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= 0x4AFE6211(1258185233), conn_id= 13779, keysize= 0, flags= 0x4
*Mar 13 04:38:21.523: IPSEC(initialize_sas): ,
(key eng. msg.) OUTBOUND local= 209.168.202.225, remote= 209.168.202.130,
local_proxy= 209.168.202.225/0.0.0.0/47/0 (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= 0xA290AEB5(2727390901), conn_id= 13780, keysize= 0, flags= 0xC
*Mar 13 04:38:21.523: IPSEC(kei_proxy): head = Tunnel0-head-0,
map->ivrf = , kei->ivrf =
*Mar 13 04:38:21.523: IPSEC(kei_proxy): head = Tunnel0-head-0,
map->ivrf = , kei->ivrf =
*Mar 13 04:38:21.523: IPSEC(create_sa): sa created,
(sa) sa_dest= 209.168.202.225, sa_prot= 50,
sa_spi= 0x4AFE6211(1258185233),
sa_trans= esp-3des esp-md5-hmac , sa_conn_id= 13779
*Mar 13 04:38:21.523: IPSEC(create_sa): sa created,
(sa) sa_dest= 209.168.202.130, sa_prot= 50,
sa_spi= 0xA290AEB5(2727390901),
sa_trans= esp-3des esp-md5-hmac , sa_conn_id= 13780
*Mar 13 04:38:21.571: ISAKMP (0:687): purging node -114623302
*Mar 13 04:38:24.339: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 90: Neighbor
192.168.1.3 (Tunnel0) is up: new adjacency
```

## [Устранение неполадок](#)

[Дополнительные сведения об устранении проблем см. в разделе Устранение проблем IP-безопасности — общие сведения и использование команд debug.](#)

## [Дополнительные сведения](#)

- [Обзор DMVPN и ПО Cisco IOS](#)
- [Согласование IPsec/Протоколы IKE](#)
- [Cisco Systems – техническая поддержка и документация](#)