Uitgebreide TACACS+ en RADIUS-verificatie configureren met VPN-client

Inhoud

Inleiding

Dit document bevat voorbeeldconfiguraties voor uitgebreide verificatie (Xauth) van TACACS+ en RADIUS Internet Engineering Task Force (IETF). Met Xauth kunt u IP Security (IPSec) op Virtual Private Networks (VPN's) implementeren met behulp van TACACS+ of RADIUS als uw gebruikersverificatiemethode in het Internet Key Exchange (IKE)-protocol. Deze optie biedt verificatie aan een gebruiker die de Cisco Secure VPN-client 1.1 op hun PC heeft geïnstalleerd, door de gebruiker te vragen om een gebruikersnaam en een wachtwoord, en verifieert deze vervolgens met de informatie die is opgeslagen in de verificatie-, autorisatie- en accounting (AAA) server, de TACACS+ of RADIUS-database. Verificatie vindt plaats tussen IKE fase 1 en IKE fase 2. Als de gebruiker authentiek is, wordt een fase 2 Security Association (SA) opgericht waarna gegevens veilig naar het beschermde netwerk kunnen worden verzonden.

Xauth bevat alleen *verificatie* en niet *autorisatie* (waarbij gebruikers kunnen gaan nadat de verbinding is gelegd). *Accounting* (waar gebruikers naartoe gingen) is niet geïmplementeerd.

De configuratie moet zonder Xauth werken voordat u Xauth implementeert. Ons voorbeeld demonstreert Mode Configuration (Mode Config) en Network adresomzetting (NAT) naast Xauth, maar de veronderstelling is dat IPSec-connectiviteit aanwezig is voordat u de opdrachten Xauth toevoegt.

Zorg ervoor dat de lokale Xauth (gebruikersnaam/wachtwoord op de router) werkt voordat u TACACS+ of RADIUS Xauth probeert.

Voorwaarden

Vereisten

Er zijn geen specifieke vereisten van toepassing op dit document.

Gebruikte componenten

De informatie in dit document is gebaseerd op de volgende software- en hardware-versies:

- VPN-clientversie 1.1 (of hoger)
- Cisco IOS-release 12.1.2.2.T, 12.1.2.2.P (of hoger)
- RADIUS-verificatie is getest met Cisco 3640-actieve c3640-jo3s56i-mz.121-2.3.T

De informatie in dit document is gebaseerd op de apparaten in een specifieke laboratoriumomgeving. Alle apparaten die in dit document worden beschreven, hadden een opgeschoonde (standaard)configuratie. Als uw netwerk live is, moet u de potentiële impact van elke opdracht begrijpen.

Conventies

Raadpleeg de Cisco Technical Tips Convention voor meer informatie over documentconventies.

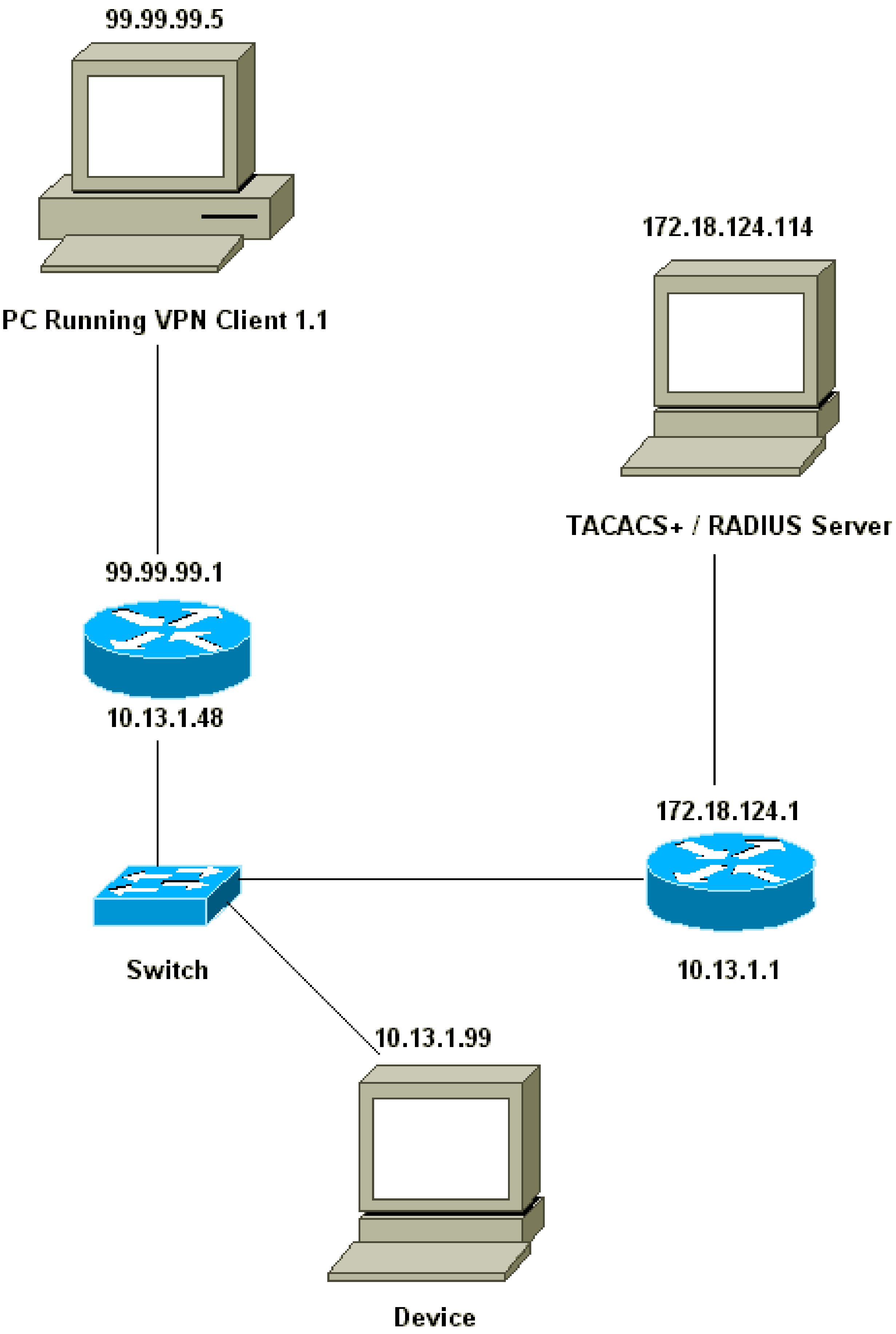
Configureren

Deze sectie bevat informatie over het configureren van de functies die in dit document worden beschreven.

Opmerking: Gebruik het Opname Gereedschap (alleen geregistreerde klanten) om meer informatie te verkrijgen over de opdrachten die in deze sectie worden gebruikt.

Netwerkdiagram

Het netwerk in dit document is als volgt opgebouwd:



VPN-client 1.1 Instellen

```
Network Security policy:
 1- Myconn
         My Identity = ip address
                 Connection security: Secure
                 Remote Party Identity and addressing
                         ID Type: IP subnet
                         10.13.1.0 (range of inside network)
                         Port all Protocol all

                 Connect using secure tunnel
                         ID Type: IP address
                         99.99.99.1
                         Pre-shared key = cisco1234

         Authentication (Phase 1)
         Proposal 1
                 Authentication method: pre-shared key
                 Encryp Alg: DES
                 Hash Alg: MD5
                 SA life: Unspecified
                 Key Group: DH 1

         Key exchange (Phase 2)
         Proposal 1
                 Encapsulation ESP
                 Encrypt Alg: DES
                 Hash Alg: MD5
                 Encap: tunnel
                 SA life: Unspecified
                 no AH

 2- Other Connections
             Connection security: Non-secure
             Local Network Interface
                 Name: Any
                 IP Addr: Any
                 Port: All
```

Met Xauth die op de router wordt ingeschakeld, wanneer de gebruiker probeert verbinding te maken met een apparaat in de router (hier hebben we een ping-t #.#.#.), verschijnt er een grijs scherm:

```
User Authentication for 3660
Username:
Password:
```

Configuraties

Configuratie van servers

Xauth-verificatie kan worden uitgevoerd door TACACS+ of door RADIUS. We wilden er zeker van zijn dat de Xauth-gebruikers Xauth mochten doen, maar niet mochten telen op de router, dus voegden we de opdracht **Aa** autorisatie exec toe. We gaven de RADIUS-gebruikers "antwoordkenmerk Service-Type=Outbound=5" (in plaats van Administratieve of Aanmelden). In Cisco Secure UNIX is dit "Outbound"; In Cisco Secure NT is dit "Dialout Framed." Als dit TACACS+ gebruikers waren, zouden we ze geen shell/exec-permissies geven.

Routerconfiguratie voor TACACS+ of RADIUS-Xauth
`Current configuration:`

```
!
version 12.1
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname carter
!
!--- Enable AAA and define authentication and
authorization parameters aaa new-model
aaa authentication login default group radius|tacacs+
none
aaa authentication login xauth_list group radius|tacacs+
aaa authorization exec default group radius|tacacs+ none
enable secret 5 $1$VY18$uO2CRnqUzugV0NYtd14Gg0
enable password ww
!
username john password 0 doe
!
ip subnet-zero
ip audit notify log
ip audit po max-events 100
cns event-service server
!
crypto isakmp policy 10
hash md5
authentication pre-share
crypto isakmp key cisco1234 address 0.0.0.0 0.0.0.0
crypto isakmp client configuration address-pool local
ourpool
!
crypto ipsec transform-set mypolicy esp-des esp-md5-hmac
!
crypto dynamic-map dyna 10
set transform-set mypolicy
!
crypto map test client authentication list xauth_list
crypto map test client configuration address initiate
crypto map test client configuration address respond
crypto map test 5 ipsec-isakmp dynamic dyna
!
interface Ethernet0/0
ip address 10.13.1.48 255.255.255.0
ip nat inside
no ip route-cache
no ip mroute-cache
no mop enabled
!
interface TokenRing0/0
no ip address
shutdown
ring-speed 16
!
interface Ethernet2/0
ip address 99.99.99.1 255.255.255.0
ip nat outside
no ip route-cache
no ip mroute-cache
no mop enabled
crypto map test
!
interface TokenRing2/0
no ip address
shutdown
```

```
ring-speed 16
!
ip local pool ourpool 10.2.1.1 10.2.1.254
ip nat pool outsidepool 99.99.99.50 99.99.99.60 netmask
255.255.255.0
ip nat inside source route-map nonat pool outsidepool
ip classless
ip route 0.0.0.0 0.0.0.0 10.13.1.1
no ip http server
!
access-list 101 deny ip 10.13.1.0 0.0.0.255 10.2.1.0
0.0.0.255
access-list 101 permit ip 10.13.1.0 0.0.0.255 any
dialer-list 1 protocol ip permit
dialer-list 1 protocol ipx permit
route-map nonat permit 10
match ip address 101
!
!--- Define TACACS server host and key parameters
tacacs-server host 172.18.124.114
tacacs-server key cisco
radius-server host 172.18.124.114 auth-port 1645 acct-
port 1646
radius-server retransmit 3
radius-server key cisco
!
line con 0
transport input none
line aux 0
line vty 0 4
password WW
!
end
```

Verifiëren

Er is momenteel geen verificatieprocedure beschikbaar voor deze configuratie.

Problemen oplossen

Deze sectie bevat informatie waarmee u problemen met de configuratie kunt oplossen.

Opdrachten voor troubleshooting

Het Uitvoer Tolk (uitsluitend geregistreerde klanten) (OIT) ondersteunt bepaalde **show** opdrachten. Gebruik de OIT om een analyse van **tonen** opdrachtoutput te bekijken.

Opmerking: Raadpleeg Belangrijke informatie over debug Commands voordat u **debug-**opdrachten gebruikt.

- **debug van verificatie**—informatie over AAA/TACACS+-verificatie wordt weergegeven.
- **debug van crypto isakmp**-displays over IKE gebeurtenissen.
- **debug van crypto ipsec**-displays IPSec-gebeurtenissen.
- **debug crypto key-exchange**-shows Digital Signature Standard (DSS), openbare uitwisselingsberichten voor digitale handtekeningen.

- **debug straal**—informatie die bij RADIUS is gekoppeld.
- **debug van tacacs**-displays die gekoppeld zijn aan de TACACS.
- **duidelijke crypto isakmp** - Specificeert welke verbinding te ontruimen.
- **duidelijke crypto sa**-Verwijdert IPSec security associaties.

Voorbeeld van output van foutopsporing

Opmerking: TACACS+ debug zou erg vergelijkbaar zijn. Gebruik de opdracht **Debug tacacs+** in plaats van de opdracht **debug Straal**.

```
Carter#show debug
General OS:
  AAA Authentication debugging is on
Radius protocol debugging is on
Cryptographic Subsystem:
  Crypto ISAKMP debugging is on
  Crypto Engine debugging is on
  Crypto IPSEC debugging is on
Carter#term mon
03:12:54: ISAKMP (0:0): received packet from 99.99.99.5 (N) NEW SA
03:12:54: ISAKMP: local port 500, remote port 500
03:12:54: ISAKMP (0:1): Setting client config settings 6269C36C
03:12:54: ISAKMP (0:1): (Re)Setting client xauth list xauth_list
   and state
03:12:54: ISAKMP: Created a peer node for 99.99.99.5
03:12:54: ISAKMP: Locking struct 6269C36C from
   crypto_ikmp_config_initialize_sa
03:12:54: ISAKMP (0:1): processing SA payload. message ID = 0
03:12:54: ISAKMP (0:1): found peer pre-shared key matching 99.99.99.5
03:12:54: ISAKMP (0:1): Checking ISAKMP transform 1 against
   priority 10 policy
03:12:54: ISAKMP:      encryption DES-CBC
03:12:54: ISAKMP:      hash MD5
03:12:54: ISAKMP:      default group 1
03:12:54: ISAKMP:      auth pre-share
03:12:54: ISAKMP (0:1): atts are acceptable. Next payload is 0
03:12:54: CryptoEngine0: generate alg parameter
03:12:54: CRYPTO_ENGINE: Dh phase 1 status: 0
03:12:54: CRYPTO_ENGINE: DH phase 1 status: 0
03:12:54: ISAKMP (0:1): SA is doing pre-shared key authentication using
   id type ID_IPV4_ADDR
03:12:54: ISAKMP (0:1): sending packet to 99.99.99.5 (R) MM_SA_SETUP
03:12:54: ISAKMP (0:1): received packet from 99.99.99.5 (R) MM_SA_SETUP
03:12:54: ISAKMP (0:1): processing KE payload. Message ID = 0
03:12:54: CryptoEngine0: generate alg parameter
03:12:54: ISAKMP (0:1): processing NONCE payload. Message ID = 0
03:12:54: ISAKMP (0:1): found peer pre-shared key matching 99.99.99.5
03:12:54: CryptoEngine0: create ISAKMP SKEYID for conn id 1
03:12:54: ISAKMP (0:1): SKEYID state generated
03:12:54: ISAKMP (0:1): processing vendor id payload
03:12:54: ISAKMP (0:1): processing vendor id payload
03:12:54: ISAKMP (0:1): sending packet to 99.99.99.5 (R) MM_KEY_EXCH
03:12:55: ISAKMP (0:1): received packet from 99.99.99.5 (R) MM_KEY_EXCH
03:12:55: ISAKMP (0:1): processing ID payload. Message ID = 0
03:12:55: ISAKMP (0:1): processing HASH payload. Message ID = 0
03:12:55: CryptoEngine0: generate hmac context for conn id 1
03:12:55: ISAKMP (0:1): processing NOTIFY INITIAL_CONTACT protocol 1
        spi 0, message ID = 0
03:12:55: ISAKMP (0:1): SA has been authenticated with 99.99.99.5
```

```
03:12:55: ISAKMP (1): ID payload
        next-payload : 8
        type         : 1
        protocol     : 17
        port         : 500
        length       : 8
03:12:55: ISAKMP (1): Total payload length: 12
03:12:55: CryptoEngine0: generate hmac context for conn id 1
03:12:55: CryptoEngine0: clear DH number for conn id 1
03:12:55: ISAKMP (0:1): sending packet to 99.99.99.5 (R) CONF_XAUTH
03:12:55: ISAKMP (0:1): received packet from 99.99.99.5 (R) CONF_XAUTH
03:12:55: ISAKMP (0:1): (Re)Setting client xauth list
   xauth_list and state
03:12:55: ISAKMP (0:1): Need XAUTH
03:12:55: AAA: parse name=ISAKMP idb type=-1 tty=-1
03:12:55: AAA/MEMORY: create_user (0x6269AD80) user='' ruser=''
   port='ISAKMP' rem_addr='99.99.99.5' authen_type=ASCII
   service=LOGIN priv=0
03:12:55: AAA/AUTHEN/START (2289801324): port='ISAKMP'
   list='xauth_list' action=LOGIN service=LOGIN
03:12:55: AAA/AUTHEN/START (2289801324): found list xauth_list
03:12:55: AAA/AUTHEN/START (2289801324): Method=radius (radius)
03:12:55: AAA/AUTHEN (2289801324): status = GETUSER
03:12:55: ISAKMP: got callback 1
03:12:55: ISAKMP/xauth: request attribute XAUTH_TYPE
03:12:55: ISAKMP/xauth: request attribute XAUTH_MESSAGE
03:12:55: ISAKMP/xauth: request attribute XAUTH_USER_NAME
03:12:55: ISAKMP/xauth: request attribute XAUTH_USER_PASSWORD
03:12:55: CryptoEngine0: generate hmac context for conn id 1
03:12:55: ISAKMP (0:1): initiating peer config to 99.99.99.5.
   ID = -280774539
03:12:55: ISAKMP (0:1): sending packet to 99.99.99.5 (R) CONF_XAUTH
03:13:00: ISAKMP (0:1): retransmitting phase 2 CONF_XAUTH
    -280774539 ...
03:13:00: ISAKMP (0:1): incrementing error counter on sa:
   retransmit phase 2
03:13:00: ISAKMP (0:1): incrementing error counter on sa:
   retransmit phase 2
03:13:00: ISAKMP (0:1): retransmitting phase 2 -280774539 CONF_XAUTH
03:13:00: ISAKMP (0:1): sending packet to 99.99.99.5 (R) CONF_XAUTH
03:13:02: ISAKMP (0:1): received packet from 99.99.99.5 (R) CONF_XAUTH
03:13:02: ISAKMP (0:1): processing transaction payload from
   99.99.99.5. Message ID = -280774539
03:13:02: CryptoEngine0: generate hmac context for conn id 1
03:13:02: ISAKMP: Config payload REPLY
03:13:02: ISAKMP/xauth: reply attribute XAUTH_TYPE
03:13:02: ISAKMP/xauth: reply attribute XAUTH_USER_NAME
03:13:02: ISAKMP/xauth: reply attribute XAUTH_USER_PASSWORD
03:13:02: AAA/AUTHEN/CONT (2289801324): continue_login (user='(undef)')
03:13:02: AAA/AUTHEN (2289801324): status = GETUSER
03:13:02: AAA/AUTHEN (2289801324): Method=radius (radius)
03:13:02: AAA/AUTHEN (2289801324): status = GETPASS
03:13:02: AAA/AUTHEN/CONT (2289801324): continue_login (user='zeke')
03:13:02: AAA/AUTHEN (2289801324): status = GETPASS
03:13:02: AAA/AUTHEN (2289801324): Method=radius (radius)
03:13:02: RADIUS: ustruct sharecount=2
03:13:02: RADIUS: Initial Transmit ISAKMP id 29 172.18.124.114:1645,
   Access-Request, len 68
03:13:02:         Attribute 4 6 0A0D0130
03:13:02:         Attribute 61 6 00000000
03:13:02:         Attribute 1 6 7A656B65
03:13:02:         Attribute 31 12 39392E39
03:13:02:         Attribute 2 18 D687A79D
03:13:02: RADIUS: Received from id 29 172.18.124.114:1645,
   Access-Accept, Len 26
03:13:02:         Attribute 6 6 00000005
03:13:02: RADIUS: saved authorization data for user 6269AD80
   at 62634D0C
03:13:02: AAA/AUTHEN (2289801324): status = PASS
03:13:02: ISAKMP: got callback 1
03:13:02: CryptoEngine0: generate hmac context for conn id 1
03:13:02: ISAKMP (0:1): initiating peer config to 99.99.99.5.
   ID = -280774539
03:13:02: ISAKMP (0:1): sending packet to 99.99.99.5 (R) CONF_XAUTH
03:13:03: ISAKMP (0:1): received packet from 99.99.99.5 (R) CONF_XAUTH
03:13:03: ISAKMP (0:1): processing transaction payload from 99.99.99.5.
   Message ID = -280774539
03:13:03: CryptoEngine0: generate hmac context for conn id 1
03:13:03: ISAKMP: Config payload ACK
03:13:03: ISAKMP (0:1): deleting node -280774539 error FALSE
   reason "done with transaction"
03:13:03: ISAKMP (0:1): allocating address 10.2.1.2
03:13:03: CryptoEngine0: generate hmac context for conn id 1
03:13:03: ISAKMP (0:1): initiating peer config to 99.99.99.5.
   ID = 2130856112
03:13:03: ISAKMP (0:1): sending packet to 99.99.99.5 (R) CONF_ADDR
03:13:03: ISAKMP (0:1): received packet from 99.99.99.5 (R) CONF_ADDR
03:13:03: ISAKMP (0:1): processing transaction payload
   from 99.99.99.5. Message ID = 2130856112
03:13:03: CryptoEngine0: generate hmac context for conn id 1
03:13:03: ISAKMP: Config payload ACK
03:13:03: ISAKMP (0:1): peer accepted the address!
03:13:03: ISAKMP (0:1): adding static route for 10.2.1.2
03:13:03: ISAKMP (0:1): installing route 10.2.1.2 255.255.255.255
   99.99.99.5
03:13:03: ISAKMP (0:1): deleting node 2130856112 error FALSE
   reason "done with transaction"
03:13:03: ISAKMP (0:1): Delaying response to QM request.
03:13:04: ISAKMP (0:1): received packet from 99.99.99.5 (R) QM_IDLE
03:13:04: ISAKMP (0:1): (Re)Setting client xauth list xauth_list
   and state
03:13:04: CryptoEngine0: generate hmac context for conn id 1
03:13:04: ISAKMP (0:1): processing HASH payload. Message ID = -1651205463
03:13:04: ISAKMP (0:1): processing SA payload. Message ID = -1651205463
03:13:04: ISAKMP (0:1): Checking IPSec proposal 1
03:13:04: ISAKMP: transform 1, ESP_DES
03:13:04: ISAKMP:   attributes in transform:
03:13:04: ISAKMP:      authenticator is HMAC-MD5
03:13:04: ISAKMP:      encaps is 1
03:13:04: validate proposal 0
03:13:04: ISAKMP (0:1): atts are acceptable.
03:13:04: IPSEC(validate_proposal_request): proposal part #1,
  (key eng. msg.) dest= 99.99.99.1, src= 99.99.99.5,
    dest_proxy= 10.13.1.0/255.255.255.0/0/0 (type=4),
    src_proxy= 10.2.1.2/255.255.255.255/0/0 (type=1),
    protocol= ESP, transform= ESP-Des esp-md5-hmac ,
    lifedur= 0s and 0kb,
    spi= 0x0(0), conn_id= 0, keysize= 0, flags= 0x4
03:13:04: validate proposal request 0
03:13:04: ISAKMP (0:1): processing NONCE payload.
   Message ID = -1651205463
03:13:04: ISAKMP (0:1): processing ID payload.
   Message ID = -1651205463
03:13:04: ISAKMP (1): ID_IPV4_ADDR src 10.2.1.2 prot 0 port 0
03:13:04: ISAKMP (0:1): processing ID payload.
   Message ID = -1651205463
03:13:04: ISAKMP (1): ID_IPV4_ADDR_SUBNET dst 10.13.1.0/255.255.255.0
   port 0 port 0
```

```
03:13:04: ISAKMP (0:1): asking for 1 spis from ipsec
03:13:04: IPSEC(key_engine): got a queue event...
03:13:04: IPSEC(spi_response): getting spi 570798685 for SA
        from 99.99.99.5      to 99.99.99.1      for prot 3
03:13:04: ISAKMP: received ke message (2/1)
03:13:04: CryptoEngine0: generate hmac context for conn id 1
03:13:04: ISAKMP (0:1): sending packet to 99.99.99.5 (R) QM_IDLE
03:13:04: ISAKMP (0:1): received packet from 99.99.99.5 (R) QM_IDLE
03:13:04: CryptoEngine0: generate hmac context for conn id 1
03:13:04: ipsec allocate flow 0
03:13:04: ipsec allocate flow 0
03:13:04: ISAKMP (0:1): Creating IPSec SAs
03:13:04:         inbound SA from 99.99.99.5 to 99.99.99.1
        (proxy 10.2.1.2 to 10.13.1.0)
03:13:04:         has spi 0x2205B25D and conn_id 2000 and flags 4
03:13:04:         outbound SA from 99.99.99.1 to 99.99.99.5
   (proxy 10.13.1.0 to 10.2.1.2)
03:13:04:         has spi -1338747879 and conn_id 2001 and flags 4
03:13:04: ISAKMP (0:1): deleting node -195511155 error FALSE
   reason "saved qm no longer needed"
03:13:04: ISAKMP (0:1): deleting node -1651205463 error FALSE
   reason "quick mode done (await()"
03:13:04: IPSEC(key_engine): got a queue event...
03:13:04: IPSEC(initialize_sas): ,
  (key eng. msg.) dest= 99.99.99.1, src= 99.99.99.5,
    dest_proxy= 10.13.1.0/255.255.255.0/0/0 (type=4),
    src_proxy= 10.2.1.2/0.0.0.0/0/0 (type=1),
    protocol= ESP, transform= esp-des esp-md5-hmac ,
    lifedur= 0s and 0kb,
    spi= 0x2205B25D(570798685), conn_id= 2000,
    keysize= 0, flags= 0x4
03:13:04: IPSEC(initialize_sas): ,
  (key eng. msg.) src= 99.99.99.1, dest= 99.99.99.5,
    src_proxy= 10.13.1.0/255.255.255.0/0/0 (type=4),
    dest_proxy= 10.2.1.2/0.0.0.0/0/0 (type=1),
    protocol= ESP, transform= esp-des esp-md5-hmac ,
    lifedur= 0s and 0kb,
    spi= 0xB0345419(2956219417), conn_id= 2001,
    keysize= 0, flags= 0x4
03:13:04: IPSEC(create_sa): sa created,
  (sa) sa_dest= 99.99.99.1, sa_prot= 50,
    sa_spi= 0x2205B25D(570798685),
    sa_trans= esp-des esp-md5-hmac , sa_conn_id= 2000
03:13:04: IPSEC(create_sa): sa created,
  (sa) sa_dest= 99.99.99.5, sa_prot= 50,
    sa_spi= 0xB0345419(2956219417),
    sa_trans= esp-des esp-md5-hmac , sa_conn_id= 2001
03:13:04: ISAKMP: received ke message (4/1)
03:13:04: ISAKMP: Locking struct 6269C36C for IPSEC
03:13:05: IPSEC(decapsulate): error in decapsulation
   crypto_ipsec_sa_exists
```

Gerelateerde informatie

- Cisco VPN-clientondersteuningspagina
- Ondersteuning van IPSec-onderhandeling/IKE-protocollen
- Ondersteuning van Terminal Access Control System (TACACS+)
- Ondersteuning van externe verificatie (RADIUS)
- Verzoek om opmerkingen
- Technische ondersteuning en documentatie – Cisco Systems