

Il server DHCP non funziona su un router con Cisco IOS-XE SD-WAN con DIA

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Introduzione

In questo documento vengono descritti i problemi tipici che si possono verificare quando i criteri dati centralizzati per l'accesso diretto a Internet (DIA) e il server DHCP vengono configurati sulla VPN sul lato servizio dello stesso router con software IOS®-XE SDWAN. Problemi simili possono verificarsi con qualsiasi altro tipo di traffico in entrata nel dispositivo dalla VPN sul lato servizio e destinato all'elaborazione locale del router.

Problema

Il server DHCP non funziona sul router con il software Cisco IOS®-XE SDWAN. DIA è configurato con un criterio dati centralizzato come mostrato di seguito:

```
policy
data-policy _LAN_DIA
  vpn-list LAN
    sequence 1
      match
        destination-data-prefix-list EXCLUDE_SUBNET
      !
      action accept
      set
        local-tloc-list
          color biz-internet lte
          encaps ipsec
      !
    !
  !
  sequence 11
    action accept
    nat use-vpn 0
  !
!
default-action accept
!
lists
data-prefix-list EXCLUDE_SUBNET
  ip-prefix 10.0.0.0/8
!
site-list DIA_BRANCHES
  site-id 7
  site-id 6
```

```

!
vpn-list LAN
  vpn 10
!
!
!
apply-policy
site-list DIA_BRANCHES
  data-policy _LAN_DIA_EXCLUDE from-service
!
!

```

Soluzione

Per funzionare, i pacchetti DHCP devono essere esclusi dalla policy sui dati, poiché dai debug di traccia dei pacchetti è evidente che i pacchetti indirizzati a indirizzi di broadcast non possono essere indirizzati (DROP 72 Ipv4RoutingErr) e sono NAT (Azione: REDIRECT_NAT) in base ai criteri SDWAN (funzionalità: SDWAN Data Policy (IN):

```

B2#show platform packet-trace summary
<skipped>
28   V190                V190                DROP    72   (Ipv4RoutingErr)
29   Gi0/1/0             Gi0/0/0             FWD
30   V190                V190                DROP    72   (Ipv4RoutingErr)

```

```

B2#show platform packet-trace packet 28
Packet: 28          CBUG ID: 28
Summary
  Input       : Vlan90
  Output      : Vlan90
  State       : DROP 72 (Ipv4RoutingErr)
  Timestamp
    Start     : 14482257476440 ns (12/17/2018 13:56:58.524691 UTC)
    Stop      : 14482257534440 ns (12/17/2018 13:56:58.524749 UTC)

```

```

Path Trace
Feature: IPV4(Input)
  Input       : Vlan90
  Output      : <unknown>
  Source      : 0.0.0.0
  Destination : 255.255.255.255
  Protocol    : 17 (UDP)
  SrcPort     : 68
  DstPort     : 67
Feature: DEBUG_COND_INPUT_PKT
  Entry       : Input - 0x10e44b40
  Input       : Vlan90
  Output      : <unknown>
  Lapsed time : 106 ns
Feature: IPV4_INPUT_DST_LOOKUP_CONSUME
  Entry       : Input - 0x10e5ca94
  Input       : Vlan90
  Output      : <unknown>
  Lapsed time : 253 ns
Feature: IPV4_INPUT_FOR_US_MARTIAN
  Entry       : Input - 0x10e5cb24
  Input       : Vlan90
  Output      : <unknown>
  Lapsed time : 4853 ns
Feature: IPV4_INPUT_FNF_FIRST_EXT

```

Entry : Input - 0x10e48968
Input : Vlan90
Output : <unknown>
Lapsed time : 600 ns
Feature: SDWAN Data Policy IN
VRF : 1
Seq : 1
DNS Flags : (0x0) NONE
Policy Flags : 0x10
Action : REDIRECT_NAT
Feature: SDWAN_DATA_POLICY_IN_EXT
Entry : Input - 0x10eb9d7c
Input : Vlan90
Output : <unknown>
Lapsed time : 5360 ns
Feature: IPV4_INPUT_DST_LOOKUP_ISSUE
Entry : Input - 0x10e5c9d8
Input : Vlan90
Output : <unknown>
Lapsed time : 200 ns
Feature: IPV4_INPUT_ARL
Entry : Input - 0x10e46158
Input : Vlan90
Output : <unknown>
Lapsed time : 200 ns
Feature: IPV4_INTERNAL_DST_LOOKUP_CONSUME
Entry : Input - 0x10e5cac4
Input : Vlan90
Output : <unknown>
Lapsed time : 253 ns
Feature: STILE_LEGACY_DROP
Entry : Input - 0x10eb294c
Input : Vlan90
Output : <unknown>
Lapsed time : 306 ns
Feature: INGRESS_MMA_LOOKUP_DROP
Entry : Input - 0x10eae2a4
Input : Vlan90
Output : <unknown>
Lapsed time : 213 ns
Feature: INPUT_DROP_FNF_AOR
Entry : Input - 0x10e5b864
Input : Vlan90
Output : <unknown>
Lapsed time : 386 ns
Feature: INPUT_FNF_DROP
Entry : Input - 0x10e48cf8
Input : Vlan90
Output : <unknown>
Lapsed time : 493 ns
Feature: INPUT_DROP_FNF_AOR_RELEASE
Entry : Input - 0x10e5b234
Input : Vlan90
Output : <unknown>
Lapsed time : 213 ns
Feature: INPUT_DROP
Entry : Input - 0x10e439d4
Input : Vlan90
Output : <unknown>
Lapsed time : 106 ns
Feature: IPV4_INTERNAL_FOR_US
Entry : Input - 0x10e5cb54
Input : Vlan90
Output : <unknown>

Lapsed time : 4640 ns

Il criterio dei dati viene modificato in modo da escludere i pacchetti DHCP (porte UDP 67,68) da NAT, come mostrato di seguito:

```
B2# show sdwan policy from-vsmart
from-vsmart data-policy _LAN_DIA
direction from-service
vpn-list LAN
sequence 1
match
destination-data-prefix-list EXCLUDE_SUBNET
action accept
set
local-tloc-list
color biz-internet lte
encap ipsec
sequence 11
match
destination-port 67-68
protocol 17
action accept
sequence 21
match
source-port 67-68
protocol 17
action accept
sequence 31
action accept
nat use-vpn 0
no nat fallback
default-action accept
from-vsmart lists vpn-list LAN
vpn 10
from-vsmart lists data-prefix-list EXCLUDE_SUBNET
ip-prefix 10.0.0.0/8
```

Il debug della traccia dei pacchetti visualizzerà un'immagine diversa per i pacchetti DHCP e verranno indirizzati alla CPU RP per un'ulteriore elaborazione locale (stato: PUNT 60) come dovrebbero essere:

```
B2#show platform packet-trace summary
Pkt  Input          Output          State Reason
<skipped>
88   V190            internal0/0/rp:0 PUNT 60 (IP subnet or broadcast pac
89   INJ.7           Gi0/1/0.MOD0   FWD
90   Gi0/1/0         internal0/0/rp:0 PUNT 60 (IP subnet or broadcast pac
91   INJ.7           Gi0/1/0.MOD0   FWD
92   Gi0/0/0         internal0/0/rp:0 PUNT 60 (IP subnet or broadcast pac
93   Gi0/1/1         Ce0/2/0        FWD
94   Gi0/0/0         internal0/0/rp:0 PUNT 60 (IP subnet or broadcast pac
95   V190            internal0/0/rp:0 PUNT 60 (IP subnet or broadcast pac
96   INJ.7           Gi0/1/0.MOD0   FWD
97   Gi0/1/1         internal0/0/rp:0 PUNT 60 (IP subnet or broadcast pac
98   INJ.7           Gi0/1/0.MOD0   FWD
```

```
B2# show platform packet-trace packet 88
Packet: 88          CBUG ID: 88
Summary
```

Input : Vlan90
Output : internal0/0/rp:0
State : PUNT 60 (IP subnet or broadcast pac
Timestamp
Start : 16485953871600 ns (12/17/2018 14:30:22.221086 UTC)
Stop : 16485953959680 ns (12/17/2018 14:30:22.221174 UTC)

Path Trace

Feature: IPV4(Input)

Input : Vlan90
Output : <unknown>
Source : 0.0.0.0
Destination : 255.255.255.255
Protocol : 17 (UDP)
SrcPort : 68
DstPort : 67

Feature: DEBUG_COND_INPUT_PKT

Entry : Input - 0x10e44b40
Input : Vlan90
Output : <unknown>
Lapsed time : 93 ns

Feature: IPV4_INPUT_DST_LOOKUP_CONSUME

Entry : Input - 0x10e5ca94
Input : Vlan90
Output : <unknown>
Lapsed time : 320 ns

Feature: IPV4_INPUT_FOR_US_MARTIAN

Entry : Input - 0x10e5cb24
Input : Vlan90
Output : <unknown>
Lapsed time : 8053 ns

Feature: IPV4_INPUT_FNF_FIRST_EXT

Entry : Input - 0x10e48968
Input : Vlan90
Output : <unknown>
Lapsed time : 533 ns

Feature: SDWAN Data Policy IN

VRF : 1
Seq : 1
DNS Flags : (0x0) NONE
Policy Flags : 0x0
Action : NONE

Feature: SDWAN_DATA_POLICY_IN_EXT

Entry : Input - 0x10eb9d7c
Input : Vlan90
Output : <unknown>
Lapsed time : 5626 ns

Feature: IPV4_INPUT_LOOKUP_PROCESS_EXT

Entry : Input - 0x10e5cc70
Input : Vlan90
Output : internal0/0/rp:0
Lapsed time : 1600 ns

Feature: IPV4_INPUT_FNF_FINAL_EXT

Entry : Input - 0x10e489c8
Input : Vlan90
Output : internal0/0/rp:0
Lapsed time : 386 ns

Feature: IPV4_INPUT_IPOPTIONS_PROCESS_EXT

Entry : Input - 0x10e5ce10
Input : Vlan90
Output : internal0/0/rp:0
Lapsed time : 186 ns

Feature: IPV4_INPUT_GOTO_OUTPUT_FEATURE_EXT

Entry : Input - 0x10e46278
Input : Vlan90

```
Output      : internal0/0/rp:0
Lapsed time : 493 ns
Feature: CBUG_OUTPUT_FIA_EXT
Entry       : Output - 0x10e44c00
Input       : Vlan90
Output      : internal0/0/rp:0
Lapsed time : 560 ns
Feature: IPV4_INTERNAL_ARL_SANITY_EXT
Entry       : Output - 0x10e46128
Input       : Vlan90
Output      : internal0/0/rp:0
Lapsed time : 253 ns
Feature: IPV4_OUTPUT_THREAT_DEFENSE_EXT
Entry       : Output - 0x10eb5cc4
Input       : Vlan90
Output      : internal0/0/rp:0
Lapsed time : 266 ns
Feature: IPV4_VFR_REFRAG_EXT
Entry       : Output - 0x10e5cf10
Input       : Vlan90
Output      : internal0/0/rp:0
Lapsed time : 66 ns
Feature: IPV4_OUTPUT_DROP_POLICY_EXT
Entry       : Output - 0x10e5e900
Input       : Vlan90
Output      : internal0/0/rp:0
Lapsed time : 2586 ns
Feature: DEBUG_COND_OUTPUT_PKT_EXT
Entry       : Output - 0x10e44ba0
Input       : Vlan90
Output      : internal0/0/rp:0
Lapsed time : 133 ns
Feature: INTERNAL_TRANSMIT_PKT_EXT
Entry       : Output - 0x10e45420
Input       : Vlan90
Output      : internal0/0/rp:0
Lapsed time : 5066 ns
```

IOSd Path Flow: Packet: 88 CBUG ID: 88

```
Feature: INFRA
Pkt Direction: IN
Packet Rcvd From DATAPLANE
```

```
Feature: IP
Pkt Direction: IN
Source       : 0.0.0.0
Destination  : 255.255.255.255
```

```
Feature: IP
Pkt Direction: IN
Packet Enqueued in IP layer
Source       : 0.0.0.0
Destination  : 255.255.255.255
Interface    : Vlan90
```

```
Feature: UDP
Pkt Direction: IN
src          : 0.0.0.0(68)
dst          : 255.255.255.255(67)
length       : 308
```

Questo è il comportamento previsto e problemi simili possono essere individuati con qualsiasi altro

tipo di traffico destinato all'elaborazione della CPU di un processore di routing del dispositivo locale (ad esempio sincronizzazione Network Time Protocol (NTP) se il router agisce come origine NTP) se i criteri dei dati centralizzati non escludono in modo appropriato un particolare tipo di traffico.

Nota: Per ulteriori informazioni su Datapath Packet Trace, consultare:

<https://www.cisco.com/c/en/us/support/docs/content-networking/adaptive-session-redundancy-asr/117858-technote-asr-00.html>