DHCP服务器在运行带DIA的Cisco IOS-XE SD-WAN的路由器上不工作

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简介

本文档介绍在运行IOS®-XE SDWAN软件的同一路由器的服务端VPN上配置直接互联网接入(DIA)和DHCP服务器的集中式数据策略时，可能会遇到的典型问题。从服务端VPN传入设备并用于路由器本地处理的任何其他流量也可能出现类似问题。

问题

DHCP服务器在使用Cisco IOS®-XE SDWAN软件的路由器上不起作用。DIA配置了集中数据策略，如下所示：

```
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
        encap 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
!
!
```

解决方案

为了实现此目的，应将DHCP数据包从数据策略中排除，因为从数据包跟踪调试中可以清楚地看到，无法路由发往广播地址的数据包(DROP 72 Ipv4RoutingErr)，并且它们是NATed(操作：根据SDWAN策略(功能：SDWAN数据策略输入):

```
B2#show platform packet-trace summary
<skipped>
28    Vl90              Vl90              DROP   72  (Ipv4RoutingErr)
29    Gi0/1/0           Gi0/0/0           FWD
30    Vl90              Vl90              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
```

数据策略被修改为从NAT中排除DHCP数据包（UDP端口67,68），如下所示：

```
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
```

Packet-trace debug将显示DHCP数据包的不同图片，并且它们将被传送到RP CPU以进行进一步的本地处理(状态：PUNT 60):

```
B2#show platform packet-trace summary
Pkt   Input             Output            State  Reason
<skipped>
88    Vl90              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    Vl90              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
```

这是预期行为，如果集中式数据策略未适当排除特定流量类型，则可能发现用于本地设备路由处理器(RP)CPU处理的任何其他流量存在类似问题(例如，如果路由器用作NTP源，则网络时间协议(NTP)同步)。

注意：有关数据路径数据包跟踪的详细信息，请参阅

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