Atraso de 5 segundos quando o receptor remoto dispara a união para a árvore mLDP

Contents

Introduction

Este documento descreve um atraso de 5 segundos no encaminhamento de tráfego multicast sobre a árvore do Multipoint Label Distribution Protocol (mLDP) quando um Receptor Remoto ingressa no Grupo de Multicast e quando o roteador PE de ingresso executa o Cisco IOS® XR.

Informações de Apoio

Um receptor remoto é um receptor no backbone mLDP do ponto de vista da origem.

O atraso de 5 segundos foi introduzido de propósito devido à ID de bug da Cisco CSCvb50266 5 segundos de atraso de encaminhamento MLDP para o receptor local quando há um receptor MVPN existente

Este CDETS foi criado para contornar o problema da ID de bug da Cisco CSCtg68851 A comutação do padrão para MDTs de dados não é impecável para multipath de LC

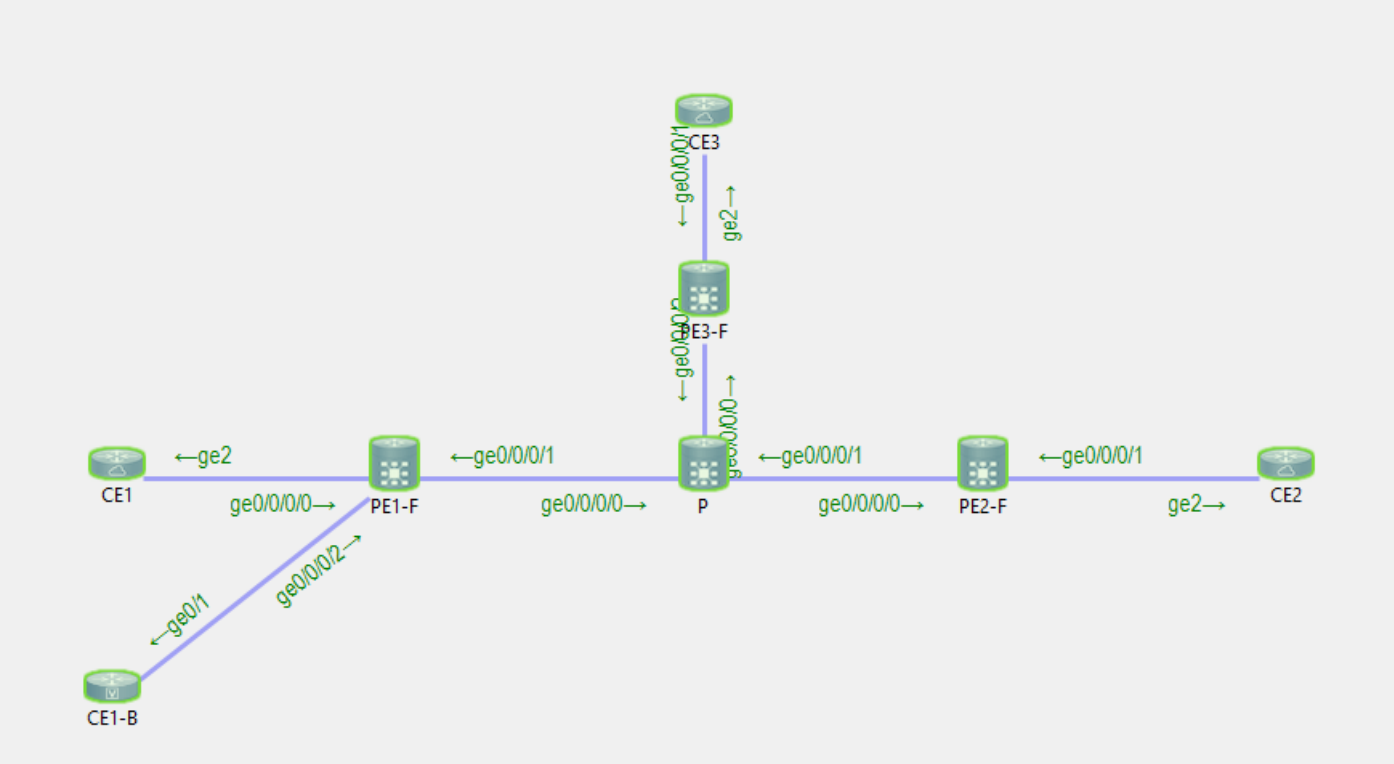
Alterações

- Se o roteador PE de entrada executa uma versão IOS®-XR após o bug da Cisco ID CSCtg68851 , o atraso de 5 segundos está lá.
- Se o roteador de ingresso PE executa uma versão IOS®-XR após o bug da Cisco ID CSCvb50266 , o atraso de 5 segundos está lá por padrão.

Se isso não for desejado, o encaminhamento do fluxo multicast pode ser acelerado por um comando de configuração oculto.

Exemplo:

Procure na Figura 1 uma topologia de teste.



CE1 é a origem 10.100.1.5 para o fluxo multicast 232.1.1.1.

CE2 e CE1-B são os receptores para o fluxo multicast 232.1.1.1.

Teste 1. O receptor remoto se junta com nenhum receptor local

Depuração habilitada:

```
RP/0/0/CPU0:PE1#debug mrib vrf one route
RP/0/0/CPU0:PE1#debug mfib vrf one ipv4 encap
RP/0/0/CPU0:PE1#show debug

####  debug flags set from tty 'con0_0_CPU0'  ####
ipv4 mfwd encap flag is ON with value '0x1##one'
ipv4 mrib route flag is ON with value 'one#'
```

Não há receptor local no roteador PE1 de entrada:

```
RP/0/0/CPU0:PE1#sh mrib vrf one route 232.1.1.1 10.100.1.5
No matching route in MRIB route-DB
RP/0/0/CPU0:PE1#
```

O receptor remoto CE1 entra on-line:

```
RP/0/0/CPU0:PE1#RP/0/0/CPU0:Feb 13 10:26:33.280 : mrib[1149]:   [  6] TID: 0xe0000010
(10.100.1.5,232.1.1.1) Added RPF* EID*, #A=1, #F=1, #MDT_A=0, RPF=10.2.1.5 [Lm F* LMI* TR*]
[Gi0/0/0/0 A*], Route Ver = 0x7ca
RP/0/0/CPU0:Feb 13 10:26:33.290 : ipv4_mfwd_partner[263]: Encap: encap id set  eid: 1
(10.100.1.5,232.1.1.1)
RP/0/0/CPU0:Feb 13 10:26:33.300 : mrib[1149]:   [  6] TID: 0xe0000010 (10.100.1.5,232.1.1.1)
```

```
Updated RPF EID*, #A=1, #F=1, #MDT_A=0 [Lm F LMI* MA* TR], Route Ver = 0x7cc
RP/0/0/CPU0:Feb 13 10:26:33.310 : ipv4_mfwd_partner[263]: Encap:
ip_mfwd_mrib_pre_process_encapid_update: encapid: 2, te_ole_cnt: 0,lsmid_ole_cnt: 1,
gre_ole_cnt: 0 ti_mofrr_ole_cnt: 0 flags: 0x0
RP/0/0/CPU0:Feb 13 10:26:33.310 : ipv4_mfwd_partner[263]: Encap: [2482] Encap entry created
(0xa10cb414) for eid 2 (stale N) flags 0x0
RP/0/0/CPU0:Feb 13 10:26:33.310 : ipv4_mfwd_partner[263]: Encap: [3039] RegDB entry 0xa08fd084
for LSMID 0x1d turnaround TRUE(new: Y ifh_changed N) ifhandle: b0
RP/0/0/CPU0:Feb 13 10:26:33.310 : ipv4_mfwd_partner[263]: Encap: [3533] Encap entry for eid 2
(0xa10cb414) proc done
RP/0/0/CPU0:Feb 13 10:26:33.310 : ipv4_mfwd_partner[263]: Encap: encap id update eid: 2
(10.100.1.5,232.1.1.1)
```

Não há atraso para definir o encap-ID no roteador de entrada PE.

Esta é a entrada de encaminhamento multicast criada no roteador PE de entrada:

```
RP/0/0/CPU0:PE1#show mrib vrf one route 232.1.1.1 10.100.1.5

IP Multicast Routing Information Base
Entry flags: L - Domain-Local Source, E - External Source to the Domain,
   C - Directly-Connected Check, S - Signal, IA - Inherit Accept,
   IF - Inherit From, D - Drop, ME - MDT Encap, EID - Encap ID,
   MD - MDT Decap, MT - MDT Threshold Crossed, MH - MDT interface handle
   CD - Conditional Decap, MPLS - MPLS Decap, EX - Extranet
   MoFE - MoFRR Enabled, MoFS - MoFRR State, MoFP - MoFRR Primary
   MoFB - MoFRR Backup, RPFID - RPF ID Set, X - VXLAN
Interface flags: F - Forward, A - Accept, IC - Internal Copy,
   NS - Negate Signal, DP - Don't Preserve, SP - Signal Present,
   II - Internal Interest, ID - Internal Disinterest, LI - Local Interest,
   LD - Local Disinterest, DI - Decapsulation Interface
   EI - Encapsulation Interface, MI - MDT Interface, LVIF - MPLS Encap,
   EX - Extranet, A2 - Secondary Accept, MT - MDT Threshold Crossed,
   MA - Data MDT Assigned, LMI - mLDP MDT Interface, TMI - P2MP-TE MDT Interface
   IRMI - IR MDT Interface

(10.100.1.5,232.1.1.1) RPF nbr: 10.2.1.5 Flags: RPF
 Up: 00:02:29
 Incoming Interface List
   GigabitEthernet0/0/0/0 Flags: A, Up: 00:02:2
 Outgoing Interface List
   Lmdtone Flags: F LMI MA TR, Up: 00:02:29

RP/0/0/CPU0:PE1#show mfib vrf one route 232.1.1.1 10.100.1.5 detail

IP Multicast Forwarding Information Base
Entry flags: C - Directly-Connected Check, S - Signal, D - Drop,
 IA - Inherit Accept, IF - Inherit From, EID - Encap ID,
 ME - MDT Encap, MD - MDT Decap, MT - MDT Threshold Crossed,
 MH - MDT interface handle, CD - Conditional Decap,
 DT - MDT Decap True, EX - Extranet, RPFID - RPF ID Set,
 MoFE - MoFRR Enabled, MoFS - MoFRR State, X - VXLAN
Interface flags: F - Forward, A - Accept, IC - Internal Copy,
 NS - Negate Signal, DP - Don't Preserve, SP - Signal Present,
 EG - Egress, EI - Encapsulation Interface, MI - MDT Interface,
 EX - Extranet, A2 - Secondary Accept
Forwarding/Replication Counts: Packets in/Packets out/Bytes out
Failure Counts: RPF / TTL / Empty Olist / Encap RL / Other

(10.100.1.5,232.1.1.1),  Flags:  EID , FMA: 0x10000 ,
 Up: 00:02:48
 Last Used: 00:00:01
```

```
 SW Forwarding Counts: 168/168/16800
 SW Replication Counts: 168/0/0
 SW Failure Counts: 0/0/0/0/0
 Route ver: 0x7d0
 MVPN Info :-
   Associated Table ID : 0xe0000000
   MDT Handle: 0x0, MDT Probe:Y [Y], Rate:Y, Acc:Y
   MDT SW Ingress Encap V4/V6, Egress decap: 0 / 0, 0
   Encap ID: 2, RPF ID: 0
   Local Receiver: False, Turnaround: False
 Lmdtone Flags:  F LMI TR, Up:00:02:48
 GigabitEthernet0/0/0/0 Flags:  A, Up:00:02:48
```

Teste 2. O receptor remoto se junta ao receptor local

Há um receptor local na entrada PE1:

```
RP/0/0/CPU0:PE1#show mrib vrf one route 232.1.1.1 10.100.1.5


IP Multicast Routing Information Base
Entry flags: L - Domain-Local Source, E - External Source to the Domain,
   C - Directly-Connected Check, S - Signal, IA - Inherit Accept,
   IF - Inherit From, D - Drop, ME - MDT Encap, EID - Encap ID,
   MD - MDT Decap, MT - MDT Threshold Crossed, MH - MDT interface handle
   CD - Conditional Decap, MPLS - MPLS Decap, EX - Extranet
   MoFE - MoFRR Enabled, MoFS - MoFRR State, MoFP - MoFRR Primary
   MoFB - MoFRR Backup, RPFID - RPF ID Set, X - VXLAN
Interface flags: F - Forward, A - Accept, IC - Internal Copy,
   NS - Negate Signal, DP - Don't Preserve, SP - Signal Present,
   II - Internal Interest, ID - Internal Disinterest, LI - Local Interest,
   LD - Local Disinterest, DI - Decapsulation Interface
   EI - Encapsulation Interface, MI - MDT Interface, LVIF - MPLS Encap,
   EX - Extranet, A2 - Secondary Accept, MT - MDT Threshold Crossed,
   MA - Data MDT Assigned, LMI - mLDP MDT Interface, TMI - P2MP-TE MDT Interface
   IRMI - IR MDT Interface

(10.100.1.5,232.1.1.1) RPF nbr: 10.2.1.5 Flags: RPF
 Up: 00:57:15
 Incoming Interface List
   GigabitEthernet0/0/0/0 Flags: A, Up: 00:57:15
 Outgoing Interface List
   GigabitEthernet0/0/0/2 Flags: F NS, Up: 00:57:15
```

Depurações habilitadas:

```
RP/0/0/CPU0:PE1#debug mrib vrf one route
RP/0/0/CPU0:PE1#debug mfib vrf one ipv4 encap

RP/0/0/CPU0:PE1#show debug

####  debug flags set from tty 'con0_0_CPU0'  ####
ipv4 mfwd encap flag is ON with value '0x1##one'
ipv4 mrib route flag is ON with value 'one#'

RP/0/0/CPU0:PE1#show mfib vrf one route 232.1.1.1 10.100.1.5 detail

IP Multicast Forwarding Information Base
Entry flags: C - Directly-Connected Check, S - Signal, D - Drop,
 IA - Inherit Accept, IF - Inherit From, EID - Encap ID,
```

```
 ME - MDT Encap, MD - MDT Decap, MT - MDT Threshold Crossed,
 MH - MDT interface handle, CD - Conditional Decap,
 DT - MDT Decap True, EX - Extranet, RPFID - RPF ID Set,
 MoFE - MoFRR Enabled, MoFS - MoFRR State, X - VXLAN
Interface flags: F - Forward, A - Accept, IC - Internal Copy,
 NS - Negate Signal, DP - Don't Preserve, SP - Signal Present,
 EG - Egress, EI - Encapsulation Interface, MI - MDT Interface,
 EX - Extranet, A2 - Secondary Accept
Forwarding/Replication Counts: Packets in/Packets out/Bytes out
Failure Counts: RPF / TTL / Empty Olist / Encap RL / Other

(10.100.1.5,232.1.1.1),  Flags:  , FMA: 0x10001 ,
 Up: 00:59:35
 Last Used: 00:00:01
 SW Forwarding Counts: 3566/3566/356600
 SW Replication Counts: 3566/3566/356600
 SW Failure Counts: 0/0/0/0/0
 Route ver: 0x3410
 MVPN Info :-
   MDT Handle: 0x0, MDT Probe:N [N], Rate:Y, Acc:Y
   MDT SW Ingress Encap V4/V6, Egress decap: 0 / 0, 0
   EG count: 1
   Encap ID: 0, RPF ID: 0
   Local Receiver: True, Turnaround: False
 GigabitEthernet0/0/0/0 Flags:  A, Up:00:59:35
 GigabitEthernet0/0/0/2 Flags:  NS EG, Up:00:59:35
```

O encap-ID é 0 porque ainda não há receptor remoto.

CE2, o receptor remoto fica on-line:

```
RP/0/0/CPU0:PE1#RP/0/0/CPU0:Feb 13 09:13:34.390 : mrib[1149]:   [  6] TID: 0xe0000010
(10.100.1.5,232.1.1.1) Updated RPF EID*, #A=1, #F=2, #MDT_A=0 [Lm F* LMI* TR*], Route Ver =
0x3412
RP/0/0/CPU0:Feb 13 09:13:34.390 : mrib[1149]:   [ 22] Redistributed
RP/0/0/CPU0:Feb 13 09:13:34.390 : ipv4_mfwd_partner[263]: Encap:
ip_mfwd_mrib_pre_process_encapid_update: encapid: 6, te_ole_cnt: 0,lsmid_ole_cnt: 1,
gre_ole_cnt: 0 ti_mofrr_ole_cnt: 0 flags: 0x1
RP/0/0/CPU0:Feb 13 09:13:34.390 : ipv4_mfwd_partner[263]: Encap: [2482] Encap entry created
(0xa08fd9d0) for eid 6 (stale N) flags 0x1
RP/0/0/CPU0:Feb 13 09:13:34.390 : ipv4_mfwd_partner[263]: Encap: [3039] RegDB entry 0xa10b5404
for LSMID 0x1 turnaround TRUE(new: N ifh_changed N) ifhandle: b0
RP/0/0/CPU0:Feb 13 09:13:34.390 : ipv4_mfwd_partner[263]: Encap: [3533] Encap entry for eid 6
(0xa08fd9d0) proc done
RP/0/0/CPU0:Feb 13 09:13:34.410 : mrib[1149]:   [  6] TID: 0xe0000010 (10.100.1.5,232.1.1.1)
Updated RPF EID*, #A=1, #F=2, #MDT_A=0 [Lm F LMI* MA* TR], Route Ver = 0x3414
RP/0/0/CPU0:Feb 13 09:13:34.410 : mrib[1149]:   [  6] TID: 0xe0000010 (10.100.1.5,232.1.1.1)
Updated RPF EID, #A=1, #F=2, #MDT_A=0 [Lm F LMI* MA TR], Route Ver = 0x3415
RP/0/0/CPU0:Feb 13 09:13:34.410 : ipv4_mfwd_partner[263]: Encap:
ip_mfwd_mrib_pre_process_encapid_update: encapid: 7, te_ole_cnt: 0,lsmid_ole_cnt: 1,
gre_ole_cnt: 0 ti_mofrr_ole_cnt: 0 flags: 0x1
RP/0/0/CPU0:Feb 13 09:13:34.410 : ipv4_mfwd_partner[263]: Encap: [2482] Encap entry created
(0xa08fd8a8) for eid 7 (stale N) flags 0x1
RP/0/0/CPU0:Feb 13 09:13:34.410 : ipv4_mfwd_partner[263]: Encap: [3039] RegDB entry 0xa08fd824
for LSMID 0x1c turnaround TRUE(new: Y ifh_changed N) ifhandle: b0
RP/0/0/CPU0:Feb 13 09:13:34.410 : ipv4_mfwd_partner[263]: Encap: [3533] Encap entry for eid 7
(0xa08fd8a8) proc done
RP/0/0/CPU0:Feb 13 09:13:34.500 : mrib[1149]:   [  6] TID: 0xe0000010 (10.100.1.5,232.1.1.1)
Updated RPF EID, #A=1, #F=2, #MDT_A=0 [Lm F LMI* MA TR], Route Ver = 0x3416
RP/0/0/CPU0:Feb 13 09:13:34.620 : mrib[1149]:   [ 22] Redistributed
RP/0/0/CPU0:Feb 13 09:13:34.620 : mrib[1149]:   [  6] TID: 0xe0000010 (10.100.1.5,232.1.1.1)
Updated RPF EID, #A=1, #F=2, #MDT_A=0 [Lm F LMI* MA TR], Route Ver = 0x3417
RP/0/0/CPU0:Feb 13 09:13:34.620 : ipv4_mfwd_partner[263]: Encap:
```

```
ip_mfwd_mrib_pre_process_encapid_update: encapid: 7, te_ole_cnt: 0,lsmid_ole_cnt: 1,
gre_ole_cnt: 0 ti_mofrr_ole_cnt: 0 flags: 0x1
RP/0/0/CPU0:Feb 13 09:13:34.620 : ipv4_mfwd_partner[263]: Encap: [2482] Encap entry existing
(0xa08fd8a8) for eid 7 (stale N) flags 0x1
RP/0/0/CPU0:Feb 13 09:13:34.620 : ipv4_mfwd_partner[263]: Encap: [3533] Encap entry for eid 7
(0xa08fd8a8) proc done
RP/0/0/CPU0:Feb 13 09:13:39.570 : ipv4_mfwd_partner[263]: Encap: encap id set  eid: 7
(10.100.1.5,232.1.1.1)
```

O encap-ID é definido como 7, 5 segundos após a criação do encap-ID e o Multicast Routing Information Base (MRIB) foi atualizado com a interface Labeled MDT (LMDT) para Virtual Routing and Forwarding (VRF), uma na Outgoing Interface List (OIL).

```
RP/0/0/CPU0:PE1#show mrib vrf one route 232.1.1.1 10.100.1.5

IP Multicast Routing Information Base
Entry flags: L - Domain-Local Source, E - External Source to the Domain,
   C - Directly-Connected Check, S - Signal, IA - Inherit Accept,
   IF - Inherit From, D - Drop, ME - MDT Encap, EID - Encap ID,
   MD - MDT Decap, MT - MDT Threshold Crossed, MH - MDT interface handle
   CD - Conditional Decap, MPLS - MPLS Decap, EX - Extranet
   MoFE - MoFRR Enabled, MoFS - MoFRR State, MoFP - MoFRR Primary
   MoFB - MoFRR Backup, RPFID - RPF ID Set, X - VXLAN
Interface flags: F - Forward, A - Accept, IC - Internal Copy,
   NS - Negate Signal, DP - Don't Preserve, SP - Signal Present,
   II - Internal Interest, ID - Internal Disinterest, LI - Local Interest,
   LD - Local Disinterest, DI - Decapsulation Interface
   EI - Encapsulation Interface, MI - MDT Interface, LVIF - MPLS Encap,
   EX - Extranet, A2 - Secondary Accept, MT - MDT Threshold Crossed,
   MA - Data MDT Assigned, LMI - mLDP MDT Interface, TMI - P2MP-TE MDT Interface
   IRMI - IR MDT Interface

(10.100.1.5,232.1.1.1) RPF nbr: 10.2.1.5 Flags: RPF
 Up: 01:04:11
 Incoming Interface List
   GigabitEthernet0/0/0/0 Flags: A, Up: 01:04:11
 Outgoing Interface List
   Lmdtone Flags: F LMI MA TR, Up: 00:03:33
   GigabitEthernet0/0/0/2 Flags: F NS, Up: 01:04:11

RP/0/0/CPU0:PE1#show mfib vrf one route 232.1.1.1 10.100.1.5 detail

IP Multicast Forwarding Information Base
Entry flags: C - Directly-Connected Check, S - Signal, D - Drop,
 IA - Inherit Accept, IF - Inherit From, EID - Encap ID,
 ME - MDT Encap, MD - MDT Decap, MT - MDT Threshold Crossed,
 MH - MDT interface handle, CD - Conditional Decap,
 DT - MDT Decap True, EX - Extranet, RPFID - RPF ID Set,
 MoFE - MoFRR Enabled, MoFS - MoFRR State, X - VXLAN
Interface flags: F - Forward, A - Accept, IC - Internal Copy,
 NS - Negate Signal, DP - Don't Preserve, SP - Signal Present,
 EG - Egress, EI - Encapsulation Interface, MI - MDT Interface,
 EX - Extranet, A2 - Secondary Accept
Forwarding/Replication Counts: Packets in/Packets out/Bytes out
Failure Counts: RPF / TTL / Empty Olist / Encap RL / Other

(10.100.1.5,232.1.1.1),  Flags:  EID , FMA: 0x10001 ,
 Up: 01:04:25
 Last Used: 00:00:00
 SW Forwarding Counts: 3856/3856/385600
 SW Replication Counts: 3856/3856/385600
 SW Failure Counts: 0/0/0/0/0
```

```
 Route ver: 0x3417
 MVPN Info :-
   Associated Table ID : 0xe0000000
   MDT Handle: 0x0, MDT Probe:Y [Y], Rate:Y, Acc:Y
   MDT SW Ingress Encap V4/V6, Egress decap: 0 / 0, 0
   EG count: 1
   Encap ID: 7, RPF ID: 0
   Local Receiver: True, Turnaround: False
 Lmdtone Flags:  F LMI TR, Up:00:03:47
 GigabitEthernet0/0/0/0 Flags:  A, Up:01:04:25
 GigabitEthernet0/0/0/2 Flags:  NS EG, Up:01:04:25
```

Assim, o receptor remoto tem um atraso extra de 5 segundos para receber esse fluxo multicast.

> **Note**: A interface LMDT foi adicionada imediatamente ao MRIB e a interface LMDT também foi adicionada ao MFIB imediatamente com o flag F, mas com o ID de encapsulamento não definido.

O ID de encapsulamento no MFIB foi definido após o atraso de 5 segundos.

Após o bug da Cisco ID CSCvb50266 , **o atraso é de 5 segundos para a programação do encap-ID** quando um receptor remoto se junta. Esse é o novo comportamento padrão.

Execute o comando **show pim vrf <> context** para verificar o comportamento:

```
RP/0/0/CPU0:PE1#show pim vrf one context

PIM context information for VRF one (0x12b70184)

VRF ID: 0x60000001
Table ID: 0xe0000010
Remote Table ID: 0xe0800010
MDT Default Group : 0.0.0.0
MDT Source : (10.100.1.1, Loopback0) Per-VRF
MDT Immediate Switch Not Configured
MDT handle: 0x0(Null)
Context Active, ITAL Active
Routing Enabled
Registered with MRIB
Not owner of MDT Interface
Raw socket req: T, act: T, LPTS filter req: T, act: T
UDP socket req: T, act: T, UDP vbind req: T, act: T
Reg Inj socket req: T, act: T, Reg Inj LPTS filter req: T, act: T
Mhost Default Interface : GigabitEthernet0/0/0/0 (publish pending: F)
Remote MDT Default Group : 0.0.0.0
Backup MLC virtual interface: Null
Neighbor-filter: -
MDT Neighbor-filter: -
```

Execute este comando oculto **mdt direct-switch** para remover o atraso de 5 segundos.

```
RP/0/0/CPU0:PE1#conf t
RP/0/0/CPU0:PE1(config)#multicast-routing vrf one
RP/0/0/CPU0:PE1(config-mcast-one)#address-family ipv4
RP/0/0/CPU0:PE1(config-mcast-one-ipv4)#mdt immediate-switch
RP/0/0/CPU0:PE1(config-mcast-one-ipv4)#commit
```

Note: A partir do 7.4.1, o comando não está mais oculto.

```
RP/0/0/CPU0:PE1#show pim vrf one context

PIM context information for VRF one (0x12b70184)

VRF ID: 0x60000001
Table ID: 0xe0000010
Remote Table ID: 0xe0800010
MDT Default Group : 0.0.0.0
MDT Source : (10.100.1.1, Loopback0) Per-VRF
MDT Immediate Switch Configured
MDT handle: 0x0(Null)
Context Active, ITAL Active
Routing Enabled
Registered with MRIB
Not owner of MDT Interface
Raw socket req: T, act: T, LPTS filter req: T, act: T
UDP socket req: T, act: T, UDP vbind req: T, act: T
Reg Inj socket req: T, act: T, Reg Inj LPTS filter req: T, act: T
Mhost Default Interface : GigabitEthernet0/0/0/0 (publish pending: F)
Remote MDT Default Group : 0.0.0.0
Backup MLC virtual interface: Null
Neighbor-filter: -
MDT Neighbor-filter: -
```

Este comando não aparece na configuração atual:

```
RP/0/0/CPU0:PE1#show running-config multicast-routing vrf one

multicast-routing
 vrf one
 address-family ipv4
  interface GigabitEthernet0/0/0/0
   enable
  !
  interface GigabitEthernet0/0/0/2
   enable
  !
  mdt source Loopback0
  rate-per-route
  accounting per-prefix
  bgp auto-discovery mldp
  !
  mdt partitioned mldp ipv4 p2mp
  mdt data mldp 100 immediate-switch
 !
```

Não é suportado configurar o *mdt direct-switch* e o *mdt data* com a palavra-chave *imediato-switch*. Veja a seguir um exemplo de tal configuração:

```
RP/0/RP0/CPU0:PE1#conf t
RP/0/RP0/CPU0:PE1(config)#multicast-routing
RP/0/RP0/CPU0:PE1(config-mcast)#vrf one
RP/0/RP0/CPU0:PE1(config-mcast-one)#address-family ipv4
RP/0/RP0/CPU0:PE1(config-mcast-one-ipv4)#mdt data mldp 100 immediate-switch
RP/0/RP0/CPU0:PE1(config-mcast-one-ipv4)#mdt immediate-switch
RP/0/RP0/CPU0:PE1(config-mcast-one-ipv4)#commit
RP/0/RP0/CPU0:PE1(config-mcast-one-ipv4)#end
RP/0/RP0/CPU0:PE1#
```