

Retraso de 5 segundos cuando el receptor remoto activa la unión para el árbol mLDP

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Introducción

Este documento describe un retraso de 5 segundos en el reenvío del tráfico multidifusión sobre el árbol del Protocolo de distribución de etiquetas multipunto (mLDP) cuando un receptor remoto se une al grupo de multidifusión y cuando el router PE de ingreso ejecuta Cisco IOS® XR.

Antecedentes

Un receptor remoto es un receptor a través de la estructura básica mLDP desde el punto de vista del origen.

La demora de 5 segundos se introdujo a propósito debido al Id. de bug Cisco [CSCvb50266](#) Retraso de reenvío MLDP de 5 segundos al receptor local cuando hay un receptor MVPN existente

Este CDETS se creó para solucionar el problema del Id. de error de Cisco [CSCtg68851](#) El cambio de los MDT de datos predeterminados a los MDT de datos no es ininterrumpido para el trayecto múltiple LC

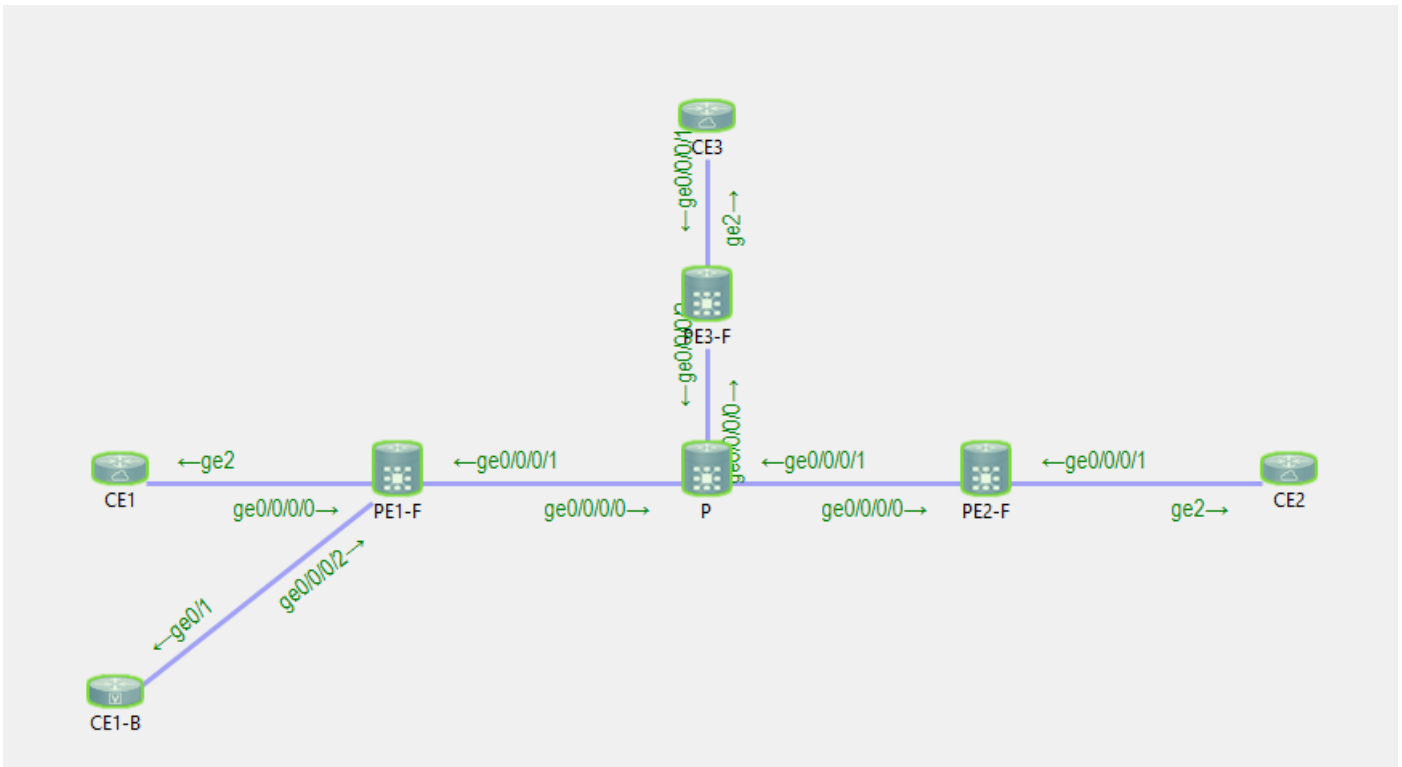
Cambios

- Si el router PE de ingreso ejecuta una versión IOS®-XR después del Id. de bug Cisco [CSCtg68851](#) , la demora de 5 segundos está ahí.
- Si el router PE de ingreso ejecuta una versión IOS®-XR después del Id. de bug Cisco [CSCvb50266](#) , el retardo de 5 segundos está presente de forma predeterminada.

Si esto no se desea, el reenvío de la secuencia multicast puede acelerarse mediante un comando de configuración oculto.

Aquí está un ejemplo.

Consulte la Figura 1 para obtener una topología de prueba.



CE1 es el Origen 10.100.1.5 para el flujo multicast 232.1.1.1.

CE2 y CE1-B son los receptores para el flujo multicast 232.1.1.1.

Prueba 1. El receptor remoto se une sin receptor local

Depuración 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 mfwf encap flag is ON with value '0x1##one'
ipv4 mrib route flag is ON with value 'one#'
```

No hay ningún receptor local en el router PE PE1 de ingreso:

```
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#
```

El receptor remoto CE1 se conecta:

```
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_mfwf_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_mrrib_pre_process_encap_id_update: encap_id: 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)

```

No hay retardo para configurar el encap-ID en el router PE de ingreso.

Esta es la entrada de reenvío multicast creada en el router PE de ingreso:

```
RP/0/0/CPU0:PE1#show mrrib 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
```

Prueba 2. El receptor remoto se une al receptor local

Hay un receptor local en el PE1 de ingreso:

```
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
```

Depuraciones 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

El encap-ID es 0 porque todavía no hay receptor remoto.

CE2, el receptor remoto se conecta:

```
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_encap_id_update: encap_id: 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_encap_id_update: encap_id: 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_mrrib_pre_process_encap_id_update: encap_id: 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)
```

El encap-ID se establece en 7, 5 segundos después de crear el encap-ID y de actualizar la Base de información de routing multidifusión (MRIB) con la interfaz MDT etiquetado (LMDT) para routing y reenvío virtuales (VRF), una en la lista de interfaces salientes (OIL).

```
RP/0/0/CPU0:PE1#show mrrib 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

```

Por lo tanto, el receptor remoto tiene un retraso adicional de 5 segundos en la recepción de este flujo multicast.

Nota: La interfaz LMDT se agregó inmediatamente en el MRIB y que la interfaz LMDT también se agregó en el MFIB inmediatamente con el indicador F, pero con el ID de encapsulado no configurado.

El ID de encapsulado en el MFIB se configuró después del retardo de 5 segundos.

Después del Id. de bug Cisco [CSCvb50266](#) , la demora es de 5 segundos para la programación del **encap-ID** cuando un receptor remoto se une. Este es el nuevo comportamiento predeterminado.

Ejecute el comando **show pim vrf <> context** para verificar el comportamiento:

```

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: -

```

Ejecute este comando oculto **mdt direct-switch** para eliminar la demora 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

```

Nota: A partir de 7.4.1, el comando ya no está 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 no aparece en la configuración en ejecución:

```
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
!
```

No se admite la configuración del *switch inmediato mdt* y el comando *mdt data* con la palabra clave *switch inmediato*.

El siguiente es un ejemplo de tal configuración:

```
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#
```