

# Función de anuncio condicional BGP

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## Introducción

Este documento describe la función de anuncio condicional del protocolo de gateway fronterizo (BGP) que proporciona un control adicional de los anuncios de ruta, que depende de la existencia de otros prefijos en la tabla BGP.

## Prerequisites

### Requirements

Cisco le recomienda que tenga conocimiento acerca de este tema:

- Independiente de la plataforma

### Componentes Utilizados

La información que contiene este documento se basa en las siguientes versiones de software y hardware.

- IOS
- IOS-XE
- ASR 1000

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. Si tiene una red en vivo, asegúrese de entender el posible impacto de cualquier comando.

## Configurar

Configure R1, R2 y R3. La configuración se proporciona aquí.

## Diagrama de la red



## Configuraciones

### Configuración R1:

```

!
hostname R1
!
ip cef
!
interface Loopback0
ip address 1.1.1.1 255.255.255.255
!
interface Loopback1
ip address 1.1.1.2 255.255.255.255
!
interface Loopback2
ip address 1.1.1.3 255.255.255.255
!
interface Loopback3
ip address 1.1.1.4 255.255.255.255
!
interface Loopback4
ip address 1.1.1.5 255.255.255.255
!
interface Loopback100
ip address 10.139.224.1 255.255.240.0
!
interface Ethernet0/0
ip address 10.10.12.1 255.255.255.0
!
router bgp 1
bgp log-neighbor-changes
neighbor 10.10.12.2 remote-as 2
!
address-family ipv4
network 0.0.0.0 route-map DEF
network 1.1.1.1 mask 255.255.255.255 route-map RM1
network 1.1.1.5 mask 255.255.255.255
redistribute connected route-map CUST
neighbor 10.10.12.2 activate
neighbor 10.10.12.2 send-community
neighbor 10.10.12.2 soft-reconfiguration inbound
exit-address-family
!
ip forward-protocol nd
!
ip bgp-community new-format

```

```

ip route 0.0.0.0 0.0.0.0 Null0
!
ip prefix-list CUST seq 5 permit 10.139.224.0/20
!
ip prefix-list DEFAULT seq 5 permit 0.0.0.0/0
!
ip prefix-list PL1 seq 5 permit 1.1.1.1/32
!
route-map CUST permit 10
match ip address prefix-list CUST
set community 64671:501
!
route-map RM1 permit 10
match ip address prefix-list PL1
set community 64952:3008
!
route-map DEF permit 10
match ip address prefix-list DEFAULT
set community 64848:3011 65011:200 65013:200
!
end

```

## Configuración R2:

```

!
hostname R2
!
ip cef
!
interface Loopback0
 ip address 2.2.2.2 255.255.255.255
!
interface Ethernet0/0
 ip address 10.10.12.2 255.255.255.0
!
interface Ethernet0/1
 ip address 10.10.23.2 255.255.255.0
!
router bgp 2
 bgp log-neighbor-changes
 neighbor 10.10.12.1 remote-as 1
 neighbor 10.10.23.3 remote-as 3
!
 address-family ipv4
  neighbor 10.10.12.1 activate
  neighbor 10.10.12.1 soft-reconfiguration inbound
  neighbor 10.10.23.3 activate
  neighbor 10.10.23.3 send-community
  neighbor 10.10.23.3 advertise-map ADV-MAP exist-map EXIST-MAP <<< This statement changes in
non-exist-map
  neighbor 10.10.23.3 soft-reconfiguration inbound
  exit-address-family
!
ip forward-protocol nd
!
ip bgp-community new-format
ip community-list standard DEFAULT-ROUTE permit 65013:200
ip community-list standard DC1-ROUTES permit 64952:3008
ip community-list standard DC2-ROUTES permit 64671:501
ip community-list standard DC3-ROUTES permit 64950:3009
ip community-list standard DEFAULT-ROUTE-DENY deny 65013:200
!
!

```

```

ip prefix-list DEFAULT seq 5 permit 1.1.1.5/32
ip prefix-list DEFAULT seq 10 permit 1.1.1.1/32
!
ip prefix-list EXIST seq 5 permit 10.10.10.10/32
!
ip prefix-list DEFAULT-ROUTE seq 5 permit 0.0.0.0/0
!
ip prefix-list DEFAULT-ROUTE-DENY seq 5 deny 0.0.0.0/0
!
ip prefix-list IP1 seq 5 permit 10.139.224.0/20
!
ip prefix-list T2 seq 5 permit 1.1.1.5/32
!
route-map ADV-MAP permit 10
  match ip address prefix-list IP1
!
route-map ADV-MAP permit 20
  match community DC1-ROUTES DC2-ROUTES DC3-ROUTES
!
route-map EXIST-MAP permit 10
  description Verify Default Route from MDC-SWG
  match ip address prefix-list DEFAULT-ROUTE IP1
  match community DEFAULT-ROUTE
!
!
end

```

### Configuración R3:

```

!
hostname R3
!
ip cef
!
interface Loopback0
  ip address 3.3.3.3 255.255.255.255
!
interface Ethernet0/1
  ip address 10.10.23.3 255.255.255.0
  shutdown
!
router bgp 3
  bgp log-neighbor-changes
  neighbor 10.10.23.2 remote-as 2
  !
  address-family ipv4
    neighbor 10.10.23.2 activate
    neighbor 10.10.23.2 send-community
    neighbor 10.10.23.2 soft-reconfiguration inbound
  exit-address-family
!
ip forward-protocol nd
!
ip bgp-community new-format
!
end

```

## Verificación

Condición 1:

Si la ruta predeterminada no está presente en el RIB BGP, R2 no debería anunciar ciertas rutas.  
Si la ruta predeterminada está presente en el RIB BGP, R2 debería anunciar todas las rutas.

Usar exist-map

Condición 2:

Si la ruta predeterminada no está presente en el RIB BGP, R2 debería anunciar todas las rutas.  
Si la ruta predeterminada está presente en el RIB BGP, R2 no debería anunciar ciertas rutas.

Usar mapa no existente

```
R1#show ip bgp
BGP table version is 7, local router ID is 10.139.224.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,
               x best-external, a additional-path, c RIB-compressed,
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found
```

	Network	Next Hop	Metric	LocPrf	Weight	Path
*>	0.0.0.0	0.0.0.0	0		32768	i
*>	1.1.1.1/32	0.0.0.0	0		32768	i
*>	1.1.1.5/32	0.0.0.0	0		32768	i
*>	10.139.224.0/20	0.0.0.0	0		32768	?

```
R2#show ip bgp
BGP table version is 11, local router ID is 2.2.2.2
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,
               x best-external, a additional-path, c RIB-compressed,
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found
```

	Network	Next Hop	Metric	LocPrf	Weight	Path
*>	0.0.0.0	10.10.12.1	0		0 1	i
*>	1.1.1.1/32	10.10.12.1	0		0 1	i
*>	1.1.1.5/32	10.10.12.1	0		0 1	i
*>	10.139.224.0/20	10.10.12.1	0		0 1	?

```
R2#show ip bgp 0.0.0.0
```

```
BGP routing table entry for 0.0.0.0/0, version 9
Paths: (1 available, best #1, table default)
  Advertised to update-groups:
    1
  Refresh Epoch 1
  1, (received & used)
  10.10.12.1 from 10.10.12.1 (10.139.224.1)
    Origin IGP, metric 0, localpref 100, valid, external, best
    Community: 64848:3011 65011:200 65013:200
    rx pathid: 0, tx pathid: 0x0
```

```
R2#show ip bgp neighbors 10.10.23.3 advertised-routes
BGP table version is 11, local router ID is 2.2.2.2
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,
               x best-external, a additional-path, c RIB-compressed,
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found
```

Network	Next Hop	Metric	LocPrf	Weight	Path
*> 0.0.0.0	10.10.12.1	0		0	1 i
*> 1.1.1.1/32	10.10.12.1	0		0	1 i
*> 1.1.1.5/32	10.10.12.1	0		0	1 i
*> 10.139.224.0/20	10.10.12.1	0		0	1 ?

Total number of prefixes 4

#### Condition1 Verification:

=====

If default route is not present in BGP RIB, R2 should not advertise certain routes.

If default route is present in BGP RIB, R2 should advertise all the routes. Use exist-map

#### R2's BGP Configuration:

=====

```
R2#show running-config | sec bgp
router bgp 2
  bgp log-neighbor-changes
  neighbor 10.10.12.1 remote-as 1
  neighbor 10.10.23.3 remote-as 3
  !
  address-family ipv4
    neighbor 10.10.12.1 activate
    neighbor 10.10.12.1 soft-reconfiguration inbound
    neighbor 10.10.23.3 activate
    neighbor 10.10.23.3 send-community
  neighbor 10.10.23.3 advertise-map ADV-MAP exist-map EXIST-MAP
  neighbor 10.10.23.3 soft-reconfiguration inbound
  exit-address-family
  ip bgp-community new-format
```

#### When Default route is removed from R2's BGP RIB:

=====

```
*Mar 6 09:07:08.833: BGP(0): 10.10.12.1 rcv UPDATE about 0.0.0.0/0 -- withdrawn
*Mar 6 09:07:08.833: BGP(0): no valid path for 0.0.0.0/0
*Mar 6 09:07:08.833: BGP: topo global:IPv4 Unicast:base Remove_fwdroute for 0.0.0.0/0
*Mar 6 09:07:08.833: BGP(0): (base) 10.10.23.3 send unreachable (format) 0.0.0.0/0
*Mar 6 09:07:21.280: BPG(0): Condition EXIST-MAP changes to Withdraw
*Mar 6 09:07:21.353: BGP(0): net 1.1.1.1/32 matches ADV MAP ADV-MAP: bump version to 13
*Mar 6 09:07:21.353: BGP(0): net 10.139.224.0/20 matches ADV MAP ADV-MAP: bump version to 14
*Mar 6 09:07:21.362: BGP(0): Revise route installing 1 of 1 routes for 1.1.1.1/32 ->
10.10.12.1(global) to main IP table
*Mar 6 09:07:21.362: BGP(0): Revise route installing 1 of 1 routes for 10.139.224.0/20 ->
10.10.12.1(global) to main IP table
*Mar 6 09:07:38.933: BGP(0): (base) 10.10.23.3 send unreachable (format) 1.1.1.1/32
*Mar 6 09:07:38.933: BGP(0): (base) 10.10.23.3 send unreachable (format) 10.139.224.0/20
```

```
R2#show ip bgp neighbors 10.10.23.3 advertised-routes
BGP table version is 14, local router ID is 2.2.2.2
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,
               x best-external, a additional-path, c RIB-compressed,
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found
```

Network	Next Hop	Metric	LocPrf	Weight	Path
*> 1.1.1.5/32	10.10.12.1	0		0	1 i

Total number of prefixes 1

When Default route is added back into R2's BGP RIB:

```
=====
*Mar 6 09:15:22.883: BGP(0): 10.10.12.1 rcvd UPDATE w/ attr: nexthop 10.10.12.1, origin i,
metric 0, merged path 1, AS_PATH , community 64848:3011 65011:200 65013:200
*Mar 6 09:15:22.883: BGP(0): 10.10.12.1 rcvd 0.0.0.0/0
*Mar 6 09:15:22.883: BGP(0): Revise route installing 1 of 1 routes for 0.0.0.0/0 ->
10.10.12.1(global) to main IP table
*Mar 6 09:15:22.883: BGP(0): (base) 10.10.23.3 send UPDATE (format) 0.0.0.0/0, next 10.10.23.2,
metric 0, path 1
*Mar 6 09:16:21.759: BGP(0): Condition EXIST-MAP changes to Advertise
*Mar 6 09:16:21.759: BGP(0): net 1.1.1.1/32 matches ADV MAP ADV-MAP: bump version to 16
*Mar 6 09:16:21.759: BGP(0): net 10.139.224.0/20 matches ADV MAP ADV-MAP: bump version to 17
*Mar 6 09:16:21.768: BGP(0): Revise route installing 1 of 1 routes for 1.1.1.1/32 ->
10.10.12.1(global) to main IP table
*Mar 6 09:16:21.769: BGP(0): Revise route installing 1 of 1 routes for 10.139.224.0/20 ->
10.10.12.1(global) to main IP table
*Mar 6 09:16:21.769: BGP(0): (base) 10.10.23.3 send UPDATE (format) 1.1.1.1/32, next
10.10.23.2, metric 0, path 1
*Mar 6 09:16:21.769: BGP(0): (base) 10.10.23.3 send UPDATE (format) 10.139.224.0/20, next
10.10.23.2, metric 0, path 1
```

```
R2#show ip bgp neighbors 10.10.23.3 advertised-routes
BGP table version is 17, local router ID is 2.2.2.2
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,
               x best-external, a additional-path, c RIB-compressed,
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found
```

Network	Next Hop	Metric	LocPrf	Weight	Path
*> 0.0.0.0	10.10.12.1	0		0	1 i
*> 1.1.1.1/32	10.10.12.1	0		0	1 i
*> 1.1.1.5/32	10.10.12.1	0		0	1 i
*> 10.139.224.0/20	10.10.12.1	0		0	1 ?

Total number of prefixes 4

#### Condition2 Verification:

```
=====
If default route is not present in BGP RIB, R2 should advertise all the routes.
If default route is present in BGP RIB, R2 should not advertise certain routes. Use non-exist-
map
```

#### R2's BGP Configuration:

```
=====
R2#show running-config | sec bgp
router bgp 2
  bgp log-neighbor-changes
  neighbor 10.10.12.1 remote-as 1
  neighbor 10.10.23.3 remote-as 3
  !
  address-family ipv4
    neighbor 10.10.12.1 activate
    neighbor 10.10.12.1 soft-reconfiguration inbound
    neighbor 10.10.23.3 activate
    neighbor 10.10.23.3 send-community
  neighbor 10.10.23.3 advertise-map ADV-MAP non-exist-map EXIST-MAP
  neighbor 10.10.23.3 soft-reconfiguration inbound
  exit-address-family
ip bgp-community new-format
```

When Default route is removed from R2's BGP RIB:

=====

```

*Mar 6 09:21:24.445: BGP(0): 10.10.12.1 rcv UPDATE about 0.0.0.0/0 -- withdrawn
*Mar 6 09:21:24.445: BGP(0): no valid path for 0.0.0.0/0
*Mar 6 09:21:24.445: BGP: topo global:IPv4 Unicast:base Remove_fwdroute for 0.0.0.0/0
*Mar 6 09:21:24.445: BGP(0): (base) 10.10.23.3 send unreachable (format) 0.0.0.0/0
*Mar 6 09:22:22.050: BPG(0): Condition EXIST-MAP changes to Advertise
*Mar 6 09:22:22.050: BGP(0): net 1.1.1.1/32 matches ADV MAP ADV-MAP: bump version to 21
*Mar 6 09:22:22.050: BGP(0): net 10.139.224.0/20 matches ADV MAP ADV-MAP: bump version to 22
*Mar 6 09:22:22.060: BGP(0): Revise route installing 1 of 1 routes for 1.1.1.1/32 ->
10.10.12.1(global) to main IP table
*Mar 6 09:22:22.060: BGP(0): Revise route installing 1 of 1 routes for 10.139.224.0/20 ->
10.10.12.1(global) to main IP table
*Mar 6 09:22:22.060: BGP(0): (base) 10.10.23.3 send UPDATE (format) 1.1.1.1/32, next
10.10.23.2, metric 0, path 1
*Mar 6 09:22:22.060: BGP(0): (base) 10.10.23.3 send UPDATE (format) 10.139.224.0/20, next
10.10.23.2, metric 0, path 1

```

R2#show ip bgp neighbors 10.10.23.3 advertised-routes

BGP table version is 22, local router ID is 2.2.2.2

Status codes: s suppressed, d damped, h history, \* valid, > best, i - internal,  
r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,  
x best-external, a additional-path, c RIB-compressed,

Origin codes: i - IGP, e - EGP, ? - incomplete

RPKI validation codes: V valid, I invalid, N Not found

Network	Next Hop	Metric	LocPrf	Weight	Path
*> 1.1.1.1/32	10.10.12.1	0		0	1 i
*> 1.1.1.5/32	10.10.12.1	0		0	1 i
*> 10.139.224.0/20	10.10.12.1	0		0	1 ?

Total number of prefixes 3

When Default route is added back into R2's BGP RIB:

=====

```

*Mar 6 09:23:04.461: BGP(0): 10.10.12.1 rcvd UPDATE w/ attr: nexthop 10.10.12.1, origin i,
metric 0, merged path 1, AS_PATH , community 64848:3011 65011:200 65013:200
*Mar 6 09:23:04.461: BGP(0): 10.10.12.1 rcvd 0.0.0.0/0
*Mar 6 09:23:04.461: BGP(0): Revise route installing 1 of 1 routes for 0.0.0.0/0 ->
10.10.12.1(global) to main IP table
*Mar 6 09:23:04.461: BGP(0): (base) 10.10.23.3 send UPDATE (format) 0.0.0.0/0, next 10.10.23.2,
metric 0, path 1
*Mar 6 09:23:22.090: BPG(0): Condition EXIST-MAP changes to Withdraw
*Mar 6 09:23:22.090: BGP(0): net 1.1.1.1/32 matches ADV MAP ADV-MAP: bump version to 24
*Mar 6 09:23:22.090: BGP(0): net 10.139.224.0/20 matches ADV MAP ADV-MAP: bump version to 25
*Mar 6 09:23:22.103: BGP(0): Revise route installing 1 of 1 routes for 1.1.1.1/32 ->
10.10.12.1(global) to main IP table
*Mar 6 09:23:22.103: BGP(0): Revise route installing 1 of 1 routes for 10.139.224.0/20 ->
10.10.12.1(global) to main IP table
*Mar 6 09:23:35.248: BGP(0): (base) 10.10.23.3 send unreachable (format) 1.1.1.1/32
*Mar 6 09:23:35.248: BGP(0): (base) 10.10.23.3 send unreachable (format) 10.139.224.0/20

```

R2#show ip bgp neighbors 10.10.23.3 advertised-routes

BGP table version is 25, local router ID is 2.2.2.2

Status codes: s suppressed, d damped, h history, \* valid, > best, i - internal,  
r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,  
x best-external, a additional-path, c RIB-compressed,

Origin codes: i - IGP, e - EGP, ? - incomplete

RPKI validation codes: V valid, I invalid, N Not found

Network	Next Hop	Metric	LocPrf	Weight	Path
*> 0.0.0.0	10.10.12.1	0		0	1 i
*> 1.1.1.5/32	10.10.12.1	0		0	1 i



Total number of prefixes 2

	<b>Estado del mapa existente</b>	<b>Estado del mapa de anuncios</b>
Si la ruta predeterminada está presente.	Condición coincidente	Anuncio
Si no hay una ruta predeterminada.	Condición no coincidente	Retirado
	<b>Estado de mapa no existente</b>	<b>Estado del mapa de anuncios</b>
Si la ruta predeterminada está presente.	Condición coincidente	Retirar
Si no hay una ruta predeterminada.	Condición no coincidente	Anuncio

## Troubleshoot

El comando importante es **debug ip bgp updates** que le proporciona un movimiento de backend de route-maps asociado con el mapa condicional de BGP. En una red grande, ejecute un debug condicional con ACL.

**Nota:** El proceso del Escáner BGP se ejecuta cada 60 segundos, por lo tanto, tan pronto como obtengamos las actualizaciones para el mapa existente/no existente-map, Advertise-map toma 60 segundos para activarse.