

BGP-Funktion für bedingte Werbung

Inhalt

[Einführung](#)

[Voraussetzungen](#)

[Anforderungen](#)

[Verwendete Komponenten](#)

[Konfigurieren](#)

[Netzwerkdiagramm](#)

[Konfigurationen](#)

[Überprüfen](#)

[Fehlerbehebung](#)

Einführung

In diesem Dokument wird die Border Gateway Protocol (BGP)-Funktion für bedingtes Advertisement beschrieben, die zusätzliche Kontrolle über Routing-Meldungen bietet, je nachdem, ob weitere Präfixe in der BGP-Tabelle vorhanden sind.

Voraussetzungen

Anforderungen

Cisco empfiehlt, über Kenntnisse in diesem Bereich zu verfügen:

- Plattformunabhängig

Verwendete Komponenten

Die Informationen in diesem Dokument basieren auf den folgenden Software- und Hardwareversionen:

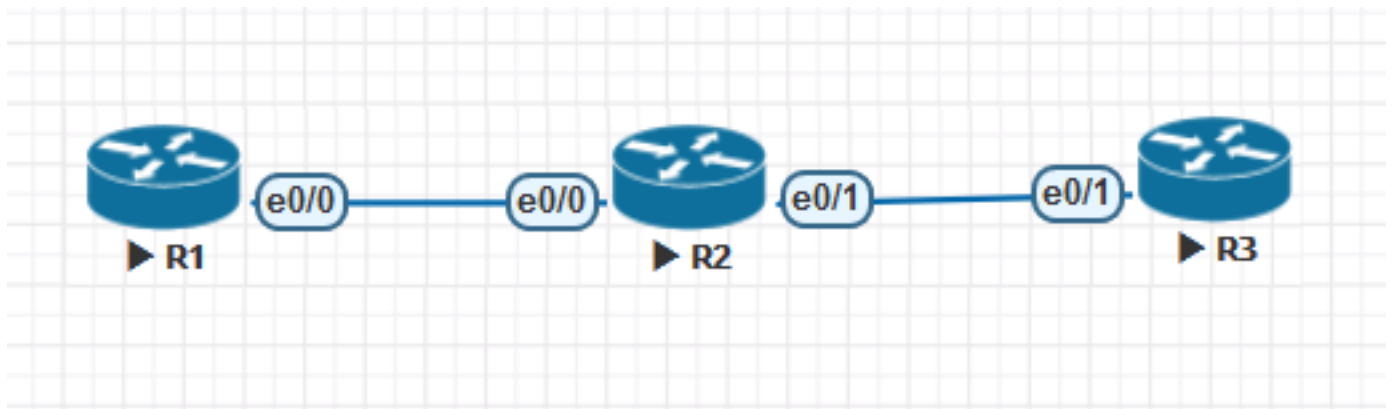
- IOS
- IOS-XE
- ASR 1000

Die Informationen in diesem Dokument wurden von den Geräten in einer bestimmten Laborumgebung erstellt. Alle in diesem Dokument verwendeten Geräte haben mit einer leeren (Standard-)Konfiguration begonnen. Wenn Ihr Netzwerk in Betrieb ist, stellen Sie sicher, dass Sie die potenziellen Auswirkungen eines Befehls verstehen.

Konfigurieren

Konfigurieren von R1, R2 und R3 Die Konfiguration finden Sie hier.

Netzwerkdiagramm



Konfigurationen

R1-Konfiguration:

```
!  
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

```

R2-Konfiguration:

```

!
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

```

R3-Konfiguration:

```

!
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

```

Überprüfen

Bedingung 1:

Wenn die Standardroute im BGP RIB nicht vorhanden ist, sollte R2 bestimmte Routen nicht ankündigen.

Wenn die Standardroute im BGP RIB vorhanden ist, muss R2 alle Routen ankündigen.

Existenzzuordnung verwenden

Bedingung 2:

Wenn die Standardroute im BGP RIB nicht vorhanden ist, sollte R2 alle Routen ankündigen.

Wenn die Standardroute im BGP RIB vorhanden ist, sollte R2 bestimmte Routen nicht ankündigen.

Nicht vorhandene Zuordnung verwenden

```
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: BGP(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: BGP(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

	Status der vorhandenen Zuordnung	Status der Anzeigenzuordnung
Wenn die Standardroute vorhanden ist.	Bedingung zugeordnet	Werbung
Wenn keine Standardroute vorhanden ist.	Bedingung nicht zugeordnet	Zurückgezogen
	Status der nicht vorhandenen Zuordnung	Status der Anzeigenzuordnung
Wenn die Standardroute vorhanden ist.	Bedingung zugeordnet	Zurückziehen
Wenn keine Standardroute vorhanden ist.	Bedingung nicht zugeordnet	Werbung

Fehlerbehebung

Der wichtige Befehl ist der Befehl **debug ip bgp updates**, der Ihnen eine Back-End-Verschiebung von Routenzuordnungen ermöglicht, die der BGP-bedingten Zuordnung zugeordnet sind. Bedingtes Debuggen mit ACL im großen Netzwerk.

Hinweis: Der BGP-Scanner-Prozess wird alle 60 Sekunden ausgeführt. Sobald wir also die Updates für die existierende Karte/nicht-existierende Karte erhalten, dauert es 60 Sekunden, um die Karte auszulösen.