

配置BGP以通告Nexus交換機上的預設路由

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簡介

本文檔介紹配置邊界網關協定，以向基於Cisco Nexus NX-OS的交換機上的BGP鄰居通告預設路由。

必要條件

需求

思科建議事先瞭解以下主題：

- Nexus NX-OS軟體。
- 路由通訊協定，尤其是邊界網道通訊協定(BGP)。

採用元件

本檔案中的資訊是根據使用NX-OS版本7.3(0)D1(1)的Cisco Nexus 7000。

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您的網路運作中，請確保您瞭解任何指令可能造成的影響。

設定

網路指令

network 0.0.0.0/0命令在BGP RIB（BGP路由資訊庫）中注入預設路由。

前提條件是通過任何其他路由協定將預設路由新增到路由表中，或者手動配置靜態路由。

進入BGP RIB後，預設路由會通告給所有BGP鄰居，除非每個鄰居配置的出站過濾器明確拒絕。

BGP配置，如show running-config輸出所示。

```
Nexus BGP配置

<#root>
Nexus# show running-config bgp
!Command: show running-config bgp
!Time: Tue Dec  4 01:27:43 2018

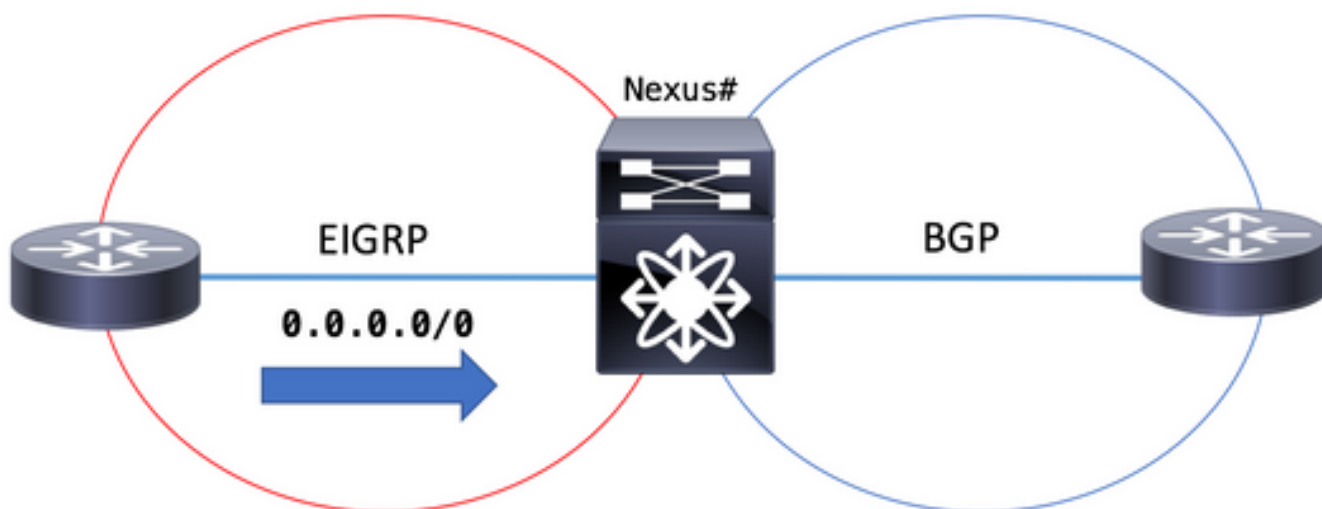
version 7.3(0)D1(1)
feature bgp

router bgp 64512
  address-family ipv4 unicast

network 0.0.0.0/0

  neighbor 10.1.3.3
    remote-as 64512
    address-family ipv4 unicast
```

在本示例中，Nexus從EIGRP協定接收預設路由。因此，Nexus路由表顯示了通過EIGRP可用的預設路由。



```
Nexus路由表

<#root>
```

```

Nexus#
show ip route 0.0.0.0

IP Route Table for VRF "default"
'*' denotes best ucast next-hop
 '**' denotes best mcast next-hop
 '[x/y]' denotes [preference/metric]
 '%<string>' in via output denotes VRF <string>

0.0.0.0/0, ubest/mbest: 1/0

    *via 10.1.2.2, Eth2/1, [170/2816], 00:00:50, eigrp-1, external
Nexus#

```

BGP RIB將0.0.0.0/0顯示為滿足先決條件的有效和最佳路徑。預設路由在路由表中，network 0.0.0.0/0命令在BGP配置部分配置。

Nexus BGP RIB (BGP表)

```

<#root>
Nexus# show bgp ipv4 unicast
BGP routing table information for VRF default, address family IPv4 Unicast
BGP table version is 13, local router ID is 10.255.255.1
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid, >-best
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-i
njected
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup

   Network          Next Hop          Metric      LocPrf      Weight Path
*>10.0.0.0/0        0.0.0.0                      100         32768 i

```

advertised-routes引數顯示向BGP對等體10.1.3.3通告的default-route

向特定BGP對等點通告的Nexus BGP路由

```

<#root>
Nexus#
show bgp ipv4 unicast neighbors 10.1.3.3 advertised-routes

Peer 10.1.3.3 routes for address family IPv4 Unicast:

```

```

BGP table version is 13, local router ID is 10.255.255.1
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid, >-best
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-i
njected
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup

```

Network	Next Hop	Metric	LocPrf	Weight	Path
*>10.0.0.0/0	0.0.0.0		100	32768	i

Redistribute和Default-Information Originate命令

在BGP進程下配置的redistribute命令將在BGP RIB中通過特定源路由協定（且由路由對映允許）注入路由表中存在的所有路由（預設路由除外）。

要允許從BGP RIB中的源路由協定安裝預設路由，需要命令default-information originate。

進入BGP RIB後，預設路由會通告給所有BGP鄰居，除非每個鄰居配置的出站過濾器明確拒絕。

BGP配置部分顯示redistribute EIGRP和default-information originate in place。

Nexus BGP配置

```

<#root>
Nexus# show running-config bgp
!Command: show running-config bgp
!Time: Tue Dec 4 01:33:41 2018
version 7.3(0)D1(1)
feature bgp
router bgp 64512
 address-family ipv4 unicast
   redistribute eigrp 1 route-map PERMIT-ALL
   default-information originate
 neighbor 10.1.3.3
  remote-as 64512
  address-family ipv4 unicast
A route map with no match entry permits all routes.
route-map PERMIT-ALL permit 10

```

在本示例中，Nexus從EIGRP協定接收預設路由。因此，Nexus路由表顯示了通過EIGRP可用的預設路由。

```
Nexus路由表

<#root>

Nexus# show ip route eigrp
IP Route Table for VRF "default"
'*' denotes best ucast next-hop
 '**' denotes best mcast next-hop
 '[x/y]' denotes [preference/metric]
 '%<string>' in via output denotes VRF <string>

0.0.0.0/0, ubest/mbest: 1/0

    *via 10.1.2.2, Eth2/1, [170/2816], 00:07:19, eigrp-1, external
192.168.2.0/24, ubest/mbest: 1/0
    *via 10.1.2.2, Eth2/1, [170/2816], 00:00:07, eigrp-1, external
```

BGP RIB將0.0.0.0/0顯示為有效且滿足先決條件後的最佳路徑。已在BGP中從源路由協定重分發預設路由，並在BGP配置部分中配置了default-information originate命令。

```
Nexus BGP RIB ( BGP表 )

<#root>

Nexus# show bgp ipv4 unicast
BGP routing table information for VRF default, address family IPv4 Unicast
BGP table version is 17, local router ID is 10.255.255.1
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid, >-best
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-i
njected
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup

   Network          Next Hop           Metric      LocPrf     Weight Path
*>r0.0.0.0/0        0.0.0.0            2816        100        32768 ?
*>r192.168.2.0/24  0.0.0.0            2816        100        32768 ?
```

advertised-routes引數顯示向BGP對等體10.1.3.3通告的default-route

```
向特定BGP對等點通告的Nexus BGP路由

<#root>
```

```

Nexus#
show bgp ipv4 unicast neighbors 10.1.3.3 advertised-routes

Peer 10.1.3.3 routes for address family IPv4 Unicast:
BGP table version is 17, local router ID is 10.255.255.1
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid, >-best
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-i
njected
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup

   Network          Next Hop          Metric      LocPrf      Weight Path
*>r0.0.0.0/0        0.0.0.0           2816         100        32768 ?
*>r192.168.2.0/24   0.0.0.0           2816         100        32768 ?

```

在BGP配置中沒有default-information originate命令的情況下，BGP RIB不會安裝預設路由。

BGP配置部分下一節只顯示redistribute EIGRP in place。

Nexus BGP配置

```

<#root>
Nexus# show run bgp

!Command: show running-config bgp
!Time: Tue Dec  4 01:39:30 2018

version 7.3(0)D1(1)
feature bgp

router bgp 64512
  address-family ipv4 unicast

  redistribute eigrp 1 route-map PERMIT-ALL

  neighbor 10.1.3.3
    remote-as 64512
    address-family ipv4 unicast

A route-map with no match entry permits all routes.
route-map PERMIT-ALL permit 10

```

路由表輸出顯示了EIGRP協定提供的預設路由。

Nexus路由表

```

Nexus# show ip route eigrp
IP Route Table for VRF "default"
'*' denotes best ucast next-hop
 '**' denotes best mcast next-hop
 '[x/y]' denotes [preference/metric]
 '%<string>' in via output denotes VRF <string>

0.0.0.0/0, ubest/mbest: 1/0
  *via 10.1.2.2, Eth2/1, [170/2816], 00:07:19, eigrp-1, external
192.168.2.0/24, ubest/mbest: 1/0
  *via 10.1.2.2, Eth2/1, [170/2816], 00:00:07, eigrp-1, external

```

如果使用no default-information originate命令，BGP RIB將不安裝0.0.0.0/0網路字首。


Nexus BGP RIB (BGP表)

```

Nexus# show bgp ipv4 unicast
BGP routing table information for VRF default, address family IPv4 Unicast
BGP table version is 18, local router ID is 10.255.255.1
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid, >-best
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-i
njected
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup

   Network          Next Hop          Metric      LocPrf      Weight Path
*>r192.168.2.0/24   0.0.0.0           2816        100         32768 ?

```

 註：在用於Nexus 7000系列的NX-OS版本6.2(2)和用於Nexus 5000系列的6.0(2)N3(1)版本之前，不需要命令default-information originate。預設路由也只能通過redistribute命令注入BGP RIB。

Default-Originate命令

default-originate命令是根據每個BGP鄰居配置的。此命令會人工生成預設路由，並僅將其通告給特定的BGP對等體。

預設路由不需要存在於路由表中，也不會在BGP RIB中建立。

default-originate命令是根據每個鄰居配置的。

Nexus BGP配置

```
<#root>
Nexus# show running-config bgp
!Command: show running-config bgp
!Time: Tue Dec 4 02:22:43 2018

version 7.3(0)D1(1)
feature bgp

router bgp 64512
  address-family ipv4 unicast
    network 192.168.1.0/24
    neighbor 10.1.3.3
      remote-as 64512
      address-family ipv4 unicast
        default-originate
```

路由表中不需要預設路由。

Nexus路由表

```
Nexus# show ip route 0.0.0.0
IP Route Table for VRF "default"
'*' denotes best ucast next-hop
 '**' denotes best mcast next-hop
 '[x/y]' denotes [preference/metric]
 '%<string>' in via output denotes VRF <string>

Nexus#
```

在BGP表中未建立0.0.0.0/0條目。

Nexus BGP RIB (BGP表)

```
Nexus# show bgp ipv4 unicast
BGP routing table information for VRF default, address family IPv4 Unicast
BGP table version is 20, local router ID is 10.255.255.1
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid, >-best
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-i
njected
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup

  Network          Next Hop          Metric      LocPrf      Weight Path
*>192.168.1.0/24   0.0.0.0           100         32768 i
```


在通告給BGP對等體10.1.3.3的路由中可找到始發預設網路0.0.0.0/0條目

向特定BGP對等點通告的Nexus BGP路由

```
<#root>
```

```
Nexus# show bgp ipv4 unicast neighbors 10.1.3.3 advertised-routes
```

```
Peer 10.1.3.3 routes for address family IPv4 Unicast:
```

```
BGP table version is 20, local router ID is 10.255.255.1
```

```
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid, >-best  
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-i  
njected
```

```
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup
```

```
Originating default network 0.0.0.0/0
```

Network	Next Hop	Metric	LocPrf	Weight	Path
*>192.168.1.0/24	0.0.0.0		100	32768	i

或者，default-originate命令可以使用路由對映作為引數，有條件地通告預設路由。

可選default-originate route-map

```
<#root>
```

```
Nexus(config-router-neighbor-af)# default-originate ?
```

```
<CR>
```

```
route-map Route-map to specify criteria for originating default
```

路由對映需要與路由表中安裝的路由匹配，以便使default-originate向BGP對等體通告預設路由。

Nexus路由表

```
<#root>
```

```
Nexus# show ip route 192.168.3.0
```

```
IP Route Table for VRF "default"
```

```
'*' denotes best ucast next-hop
```

```
'**' denotes best mcast next-hop
```

```
'[x/y]' denotes [preference/metric]
'%<string>' in via output denotes VRF <string>
```

```
Route not found
```

在這種情況下，名為ADVERTISE-DEFAULT-IF的路由對映引用名為NETWORKS的字首清單和後一個192.168.3.0/24網路字首，這些字首必須存在於路由表中才能通告預設路由。

Nexus BGP配置

```
<#root>
ip prefix-list
NETWORKS
  seq 5 permit
192.168.3.0/24
!
route-map
ADVERTISE-DEFAULT-IF
  permit 10
  match ip address prefix-list
NETWORKS
!
router bgp 64512
  address-family ipv4 unicast
    network 192.168.1.0/24
  neighbor 10.1.3.3
    remote-as 64512
  address-family ipv4 unicast
default-originate route-map ADVERTISE-DEFAULT-IF
```

由於192.168.3.0/24不在路由表中，因此不會通告預設路由。

向特定BGP對等點通告的Nexus BGP路由

```
Nexus# show bgp ipv4 unicast neighbors 10.1.3.3 advertised-routes
```

```
Peer 10.1.3.3 routes for address family IPv4 Unicast:  
BGP table version is 20, local router ID is 10.255.255.1  
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid, >-best  
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-i  
njected  
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup
```

Network	Next Hop	Metric	LocPrf	Weight	Path
*>192.168.1.0/24	0.0.0.0		100	32768	i

關於此翻譯

思科已使用電腦和人工技術翻譯本文件，讓全世界的使用者能夠以自己的語言理解支援內容。請注意，即使是最佳機器翻譯，也不如專業譯者翻譯的內容準確。Cisco Systems, Inc. 對這些翻譯的準確度概不負責，並建議一律查看原始英文文件（提供連結）。