

在Cisco Nexus交換機上的BGP中配置dampen-igp-metric

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簡介

本檔案介紹執行NX-OS作業系統的Cisco Nexus系列交換器上的邊界閘道通訊協定(BGP)中的dampen-igp-metric命令的目的。

必要條件

需求

思科建議您瞭解以下主題：

- Nexus NX-OS軟體。
- BGP路由協定。

採用元件

本文中的資訊係根據以下軟體和硬體版本：

- Cisco N9K-C9508
- NXOS 7.0(3)I7(6)版

本文件所述內容不限於特定軟體和硬體版本。

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

預設情況下，Nexus系列交換機在BGP配置部分將命令dampen-igp-metric設定為預設值600秒。

這會影響BGP處理為重分發路由報告的內部網關協定(IGP)度量更改的方式。BGP在以10分鐘延遲的分批方式處理更改時抑制這些更改。

此命令允許您調整該延遲或將其完全刪除，以更快響應這些更改。

計時器到期後，BGP MED (多出口鑑別器) 屬性將使用重新分佈的IGP路由的新開銷更新。

Nexus - Nexus NX-OS

```
Nexus# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Nexus(config)# router bgp 65535
Nexus(config-router)# address-family ipv4 unicast
Nexus(config-router-af)# dampen-igp-metric ?
  <20-3600> Time interval in seconds
             *Default value is 600

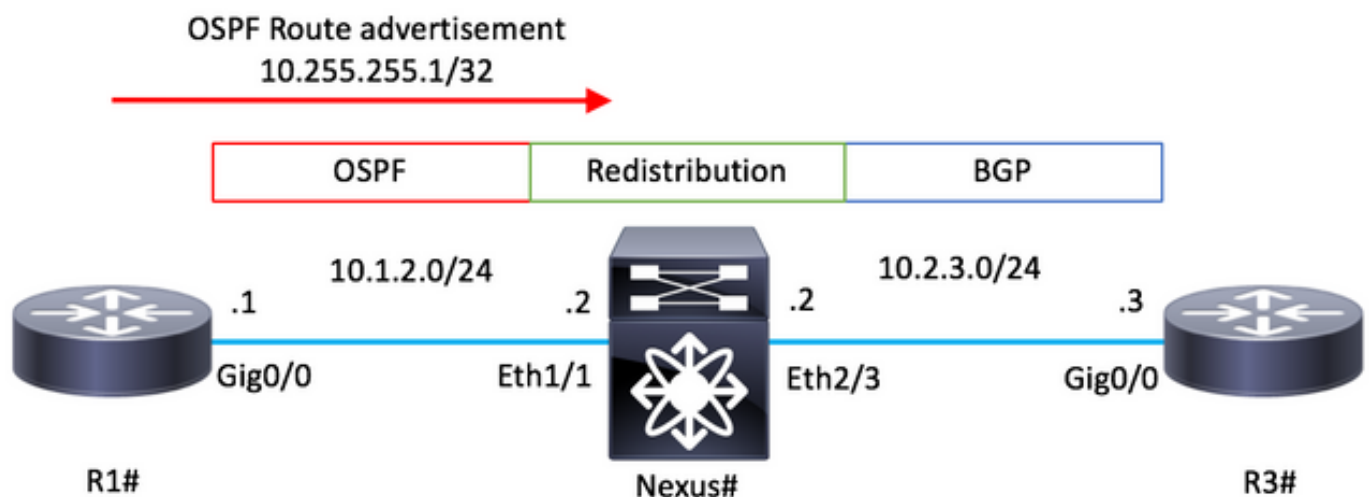
Nexus(config-router-af)# no dampen-igp-metric
```

同樣可以在BGP配置部分中為地址系列ipv6單播和每VRF例項配置此命令。

附註：使用BGP將IGP路由洩漏到其他VRF時，`dampen-igp-metric`命令還控制更新其他BGP屬性 (如下一跳屬性) 的延遲時間。

網路圖表

在此案例中，Nexus交換機配置為將開放最短路徑優先(OSPF)路由從路由表重分發到BGP表。



組態

R1 - Cisco IOS

```
configure terminal
!
hostname R1
```

```
!  
router ospf 1  
  router-id 10.255.255.1  
!  
interface Loopback0  
  ip address 10.255.255.1 255.255.255.255  
  ip ospf 1 area 0  
!  
interface GigabitEthernet0/0  
  ip address 10.1.2.1 255.255.255.0  
  ip ospf network point-to-point  
  ip ospf 1 area 0  
no shutdown ! end
```

Nexus - NX-OS

```
configure terminal  
!  
hostname Nexus  
!  
feature ospf  
feature bgp !  
route-map ALL  
! router ospf 1 router-id 10.255.255.2 ! router bgp 65535 router-id 10.255.255.2 address-family ipv4 un  
redistribute ospf 1 route-map ALL neighbor 10.2.3.3 remote-as 65535 address-family ipv4 unicast !  
interface Ethernet1/1  
  ip address 10.1.2.2/24  
  ip ospf network point-to-point  
  ip router ospf 1 area 0.0.0.0  
no shutdown ! interface Ethernet1/2 ip address 10.2.3.2/24 no shutdown
```

R3 - Cisco IOS

```
configure terminal  
!  
hostname R3  
!  
router bgp 65535  
  bgp log-neighbor-changes  
  neighbor 10.2.3.2 remote-as 65535  
!  
interface GigabitEthernet0/0  
  ip address 10.2.3.3 255.255.255.0  
  no shutdown  
!  
end
```

驗證

運行命令 `show bgp internal af`。確保行 `IGP Metric Dampening Interval` 指示所需的值。

預設值為 600 (秒)。

Nexus - NX-OS

```
Nexus# show bgp internal af
. . .

BGP Address Family Information for VRF: default
  Import Pending           : No
  Import Pending           : never
  Import Pending Reset     : never

Table Context Address : 0xcfa08bf4

Address family: IPv4 Unicast
. . .
IGP Metric Dampening Interval : 600
```

如果路由表中的OSPF路由更新其開銷，則會在BGP MED路徑屬性中延遲反映此新值。

Nexus - NX-OS

```
Nexus# show ip route 10.255.255.1
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>

10.255.255.1/32, ubest/mbest: 1/0
   *via 10.1.2.1, Eth1/1, [110/41], 01:58:41, ospf-1, intra
Nexus#
```

* There is an update in the Cost of the OSPF route 10.255.255.1/32

```
Nexus# show ip route 10.255.255.1 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> 10.255.255.1/32, ubest/mbest: 1/0 *via 10.1.2.1, Eth1/1, [110/190], 00:00:02, ospf-1, intra
Nexus#
```

```
Nexus# show bgp ipv4 unicast
BGP routing table information for VRF default, address family IPv4 Unicast
BGP table version is 4, Local Router ID is 10.255.255.2
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
*>r10.255.255.1/32	0.0.0.0	41	100	32768	?

Nexus#

* After 600 seconds.

```
Nexus# show bgp ipv4 unicast BGP routing table information for VRF default, address family IPv4 Unicast
table version is 5, Local Router ID is 10.255.255.2 Status: s-suppressed, x-deleted, S-stale, d-dampene
history, *-valid, >-best Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I
njected Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup Network Next Hop Metr
LocPrf Weight Path *>r10.255.255.1/32 0.0.0.0 190 100 32768 ?
```

在BGP address-family configuration部分下運行命令**no dampen-igp-metric**，以在路由表中的OSPF開銷發生更改時立即更新BGP表中的MED屬性。

Nexus - NX-OS

```
Nexus# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Nexus(config)# router bgp 65535
Nexus(config-router)# address-family ipv4 unicast
Nexus(config-router-af)# no dampen-igp-metric
```

```
* There is an update in the Cost of the OSPF route 10.255.255.1/32
```

```
Nexus# show ip route 10.255.255.1 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> 10.255.255.1/32, ubest/mbest: 1/0 *via 10.1.2.1, Eth1/1, [110/190], 00:00:02, ospf-1, intra
```

```
Nexus# show ip bgp BGP routing table information for VRF default, address family IPv4 Unicast BGP table
version is 7, Local Router ID is 10.255.255.2 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
njected Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup Network Next Hop Metr
LocPrf Weight Path *>r10.255.255.1/32 0.0.0.0 190 100 32768 ?
```

疑難排解

為了確認**dampen-igp-metric**命令在NX-OS上的功能，請開啟下一個調試。

- debug-filter bgp prefix <PREFIX/MASK>
- debug logfile <FILE_NAME>
- debug bgp dampening brib

Nexus - NX-OS

```
Nexus# debug-filter bgp prefix 10.255.255.1/32
Nexus# debug logfile bgpdebug.log
Nexus# debug bgp dampening brib
Nexus#
```

```
Nexus# show debug logfile bgpdebug.log
2019 Jul 23 21:13:27.676328 bgp: [25368] (default) BRIB: [IPv4 Unicast] Setting the update pending flag
10.255.255.1/32
Nexus# show debug logfile bgpdebug.log
2019 Jul 23 21:13:27.676328 bgp: [25368] (default) BRIB: [IPv4 Unicast] Setting the update pending flag
10.255.255.1/32
2019 Jul 23 21:20:47.641987 bgp: [25368] (default) BRIB: [IPv4 Unicast] Clearing the update pending fla
10.255.255.1/32
2019 Jul 23 21:20:47.642013 bgp: [25368] (default) BRIB: [IPv4 Unicast] Originating prefix 10.255.255.1
route type redistrib
2019 Jul 23 21:20:47.642075 bgp: [25368] (default) BRIB: [IPv4 Unicast] Installing prefix 10.255.255.1/
(redist) via 0.0.0.0 (0x0/0x0) into BRIB with extcomm Extcommunity: OSPF RT:0.0.0.0:0
2019 Jul 23 21:20:47.642395 bgp: [25368] (default) BRIB: [IPv4 Unicast] Path to 10.255.255.1/32 via 0.0
already exists, dflags=0x80002
2019 Jul 23 21:20:47.642415 bgp: [25368] (default) BRIB: [IPv4 Unicast] (10.255.255.1/32 (local)):
```

```
bgp_brib_add: handling nexthop, path->flags2: 0x1
2019 Jul 23 21:20:47.642447 bgp: [25368] (default) BRIB: [IPv4 Unicast] (10.255.255.1/32 (local)): retu
from bgp_brib_add, reeval=0new_path: 0, change: 1, undelete: 0, history: 0, force: 0, (pflags=0x2408)
rnh_flag_change 0
2019 Jul 23 21:20:47.642475 bgp: [25368] (default) BRIB: [IPv4 Unicast] Cleanup for dest 10.255.255.1/3
exits since it's on newlist
Nexus#
```

完成後，使用以下命令禁用調試：

- 取消全部調試
- no debug-filter all
- clear debug logfile <FILE_NAME>