

使用32位AS編號的BGP實現配置示例

目錄

[簡介](#)

[必要條件](#)

[需求](#)

[硬體和軟體版本](#)

[慣例](#)

[設定](#)

[網路圖表](#)

[組態](#)

[驗證](#)

[顯示命令](#)

[相關資訊](#)

簡介

本檔案介紹如何使用32位AS編號設定邊界閘道通訊協定(BGP)。在BGP中，每個路由域都是一個管理域，並為其分配一個唯一的AS編號，並且在一組統一的路由策略內操作。它還維護域間路由。

在本檔案中，BGP對等是在16位和32位說話BGP路由器之間設定的。新的32位AS模式與16位AS模式相容。可以在32位模式下運作的BGP對等體對新功能作出積極回應，該作業階段在新模式下運作。另一方面，32位BGP對等體在與16位BGP揚聲器通訊時，16位通話路由器會忽略此新功能，並在16位模式下運行其BGP會話。

必要條件

需求

思科建議您瞭解BGP的基本知識。

硬體和軟體版本

本文檔中的配置基於採用Cisco IOS[®]軟體版本15.0(1)的Cisco 7200系列路由器。

慣例

如需文件慣例的詳細資訊，請參閱[思科技術提示慣例](#)。

設定

在本示例中，路由器R1和R3配置為使用16位AS模式在AS 100中形成iBGP關係。路由器R2和R4配置在AS 10.1中，並使用32位AS模式形成iBGP對等。路由器R1和R2運行並使用IGP協定，在此示例中，它們之間使用OSPF，並在它們之間形成eBGP鄰居。

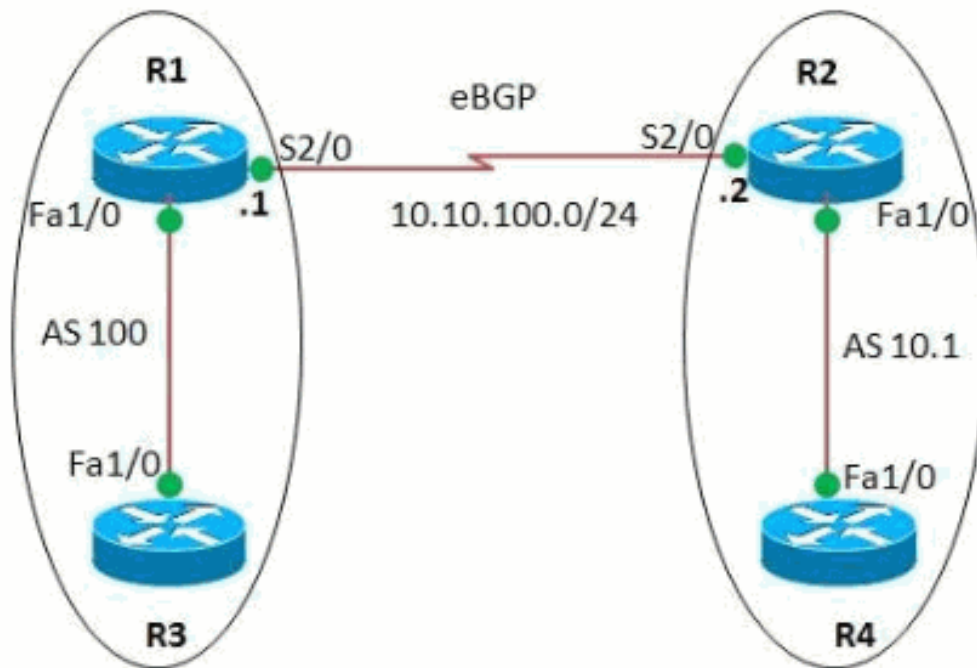
註：使用[Command Lookup Tool](#)(僅限註冊客戶)可以查詢有關本文檔中使用的命令的詳細資訊。

網路圖表

本檔案會使用以下網路設定：

Fa1/0: 192.168.10.1/24
Lo 0: 1.1.1.1/32
Lo 10: 192.168.100.1/24
Lo 20: 192.168.200.1/24

Fa1/0: 172.16.10.1/24
Lo 0: 2.2.2.2/32
Lo 10: 10.1.1.1/32
Lo 20: 20.1.1.1/32



Fa1/0: 192.168.10.2/24
Lo 0: 30.30.30.30/32

Fa0/0: 172.16.10.2/24
Lo 0: 40.40.40.40/32

組態

本檔案會使用以下設定：

- [路由器R1](#)
- [路由器R2](#)
- [路由器R3](#)
- [路由器R4](#)

路由器R1

```
R1#show run
Building configuration...
!
version 15.0
!
hostname R1
!
ip cef
!
interface Loopback0
ip address 1.1.1.1 255.255.255.255
!
interface Loopback10
ip address 192.168.100.1 255.255.255.0
!
interface Loopback20
ip address 192.168.200.1 255.255.255.0
!
interface FastEthernet1/0
ip address 192.168.10.1 255.255.255.0
duplex auto
speed auto
!
interface Serial2/0
ip address 10.10.100.1 255.255.255.0
serial restart-delay 0
!
router ospf 1
log-adjacency-changes
network 1.1.1.1 0.0.0.0 area 0
network 10.10.100.0 0.0.0.255 area 0
!
router bgp 100
!--- BGP is configured using 16-bit AS number no
synchronization bgp router-id 10.10.10.10 bgp asnotation
dot
!--- This command change the default asplain notation to
dot notation. !--- Note that without this command the AS
number will treated as asplain notation i.e. 10.1 will
be displayed as 655361

bgp log-neighbor-changes
network 192.168.100.0
network 192.168.200.0
neighbor 2.2.2.2 remote-as 10.1
!--- The AS number of the eBGP peer in 32-bit neighbor
2.2.2.2 ebgp-multihop 255 neighbor 2.2.2.2 update-source
Loopback0 neighbor 192.168.10.2 remote-as 100 neighbor
192.168.10.2 next-hop-self no auto-summary ! end
```

路由器R2

```
R2#show run
!
version 15.0
!
hostname R2
!
ip cef
!
interface Loopback0
```

```

ip address 2.2.2.2 255.255.255.0
!
interface Loopback10
ip address 10.1.1.1 255.255.255.255
!
interface Loopback20
ip address 20.1.1.1 255.255.255.255
!
interface FastEthernet1/0
ip address 172.16.10.1 255.255.255.0
duplex auto
speed auto
!
interface Serial2/0
ip address 10.10.100.2 255.255.255.0
serial restart-delay 0
!
!
router ospf 1
 log-adjacency-changes
 network 2.2.2.2 0.0.0.0 area 0
 network 10.10.100.0 0.0.0.255 area 0
!
router bgp 10.1
!--- BGP is configured using 32-bit AS number no
synchronization bgp router-id 20.20.20.20 bgp asnotation
dot bgp log-neighbor-changes network 10.1.1.1 mask
255.255.255.255 network 20.1.1.1 mask 255.255.255.255
neighbor 1.1.1.1 remote-as 100 neighbor 1.1.1.1 ebgp-
multihop 255 neighbor 1.1.1.1 update-source Loopback0
neighbor 172.16.10.2 remote-as 10.1 neighbor 172.16.10.2
next-hop-self no auto-summary ! end

```

路由器R3

```

R3#show run
Building configuration...
!
version 15.0
ip cef
!
interface Loopback0
 ip address 30.30.30.30 255.255.255.255
!
interface FastEthernet1/0
 ip address 192.168.10.2 255.255.255.0
 duplex auto
 speed auto
!
router bgp 100
 no synchronization
 bgp router-id 3.3.3.3
 bgp log-neighbor-changes
 network 30.30.30.30 mask 255.255.255.255
 neighbor 192.168.10.1 remote-as 100
 neighbor 192.168.10.1 next-hop-self
 no auto-summary
!--- iBGP peering is formed between routers R1 and R3
using 16-bit AS number. ! end

```

路由器R4

```
R4#show run
Building configuration...
!
version 15.0
ip cef
!
interface Loopback0
 ip address 40.40.40.40 255.255.255.255
!
interface FastEthernet1/0
 ip address 172.16.10.2 255.255.255.0
 duplex auto
 speed auto
!
router bgp 10.1
 no synchronization
 bgp router-id 4.4.4.4
 bgp asnotation dot
 bgp log-neighbor-changes
 network 40.40.40.40 mask 255.255.255.255
 neighbor 172.16.10.1 remote-as 10.1
 no auto-summary
!
end
!--- iBGP peering is formed between routers R2 and R4
using 32-bit AS number.
```

驗證

使用本節內容，確認您的組態是否正常運作。

[輸出直譯器工具](#)(僅供[已註冊](#)客戶使用)(OIT)支援某些show命令。使用OIT檢視show指令輸出的分析

。

顯示命令

若要確認BGP可支援32位ASN，請使用[show ip bgp neighbor](#) 命令。

show ip bgp neighbor

在路由器R1中

```
R1#show ip bgp neighbor 2.2.2.2
BGP neighbor is 2.2.2.2, remote AS 10.1, external link
  BGP version 4, remote router ID 20.20.20.20
  BGP state = Established, up for 03:28:22
  Last read 00:00:41, last write 00:00:29, hold time is
180, keepalive interval is 60 seconds
  Neighbor sessions:
    1 active, is multisession capable
  Neighbor capabilities:
    Route refresh: advertised and received(new)
    Four-octets ASN Capability: advertised and received
    Address family IPv4 Unicast: advertised and received
    Multisession Capability: advertised and received
  Message statistics, state Established:
    InQ depth is 0
    OutQ depth is 0
```

	Sent	Rcvd
Opens:	1	1
Notifications:	0	0
Updates:	3	3
Keepalives:	229	230
Route Refresh:	0	0
Total:	233	234

!--- Output omitted!---

要顯示BGP路由表中的條目，請使用 [show ip bgp](#) 命令。

```

show ip bgp
在路由器R1中

R1#sh ip bgp
BGP table version is 13, local router ID is 10.10.10.10
Status codes: s suppressed, d damped, h history, *
valid, > best, I - internal,
                r RIB-failure, S Stale
Origin codes: I - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf
Weight Path
*> 10.1.1.1/32      2.2.2.2           0
0 10.1 I
*> 20.1.1.1/32      2.2.2.2           0
0 10.1 I
*>i30.30.30.30/32    192.168.10.2      0    100
0 I
*> 40.40.40.40/32   2.2.2.2           0
0 10.1 I
*> 192.168.100.0    0.0.0.0           0
32768 I
*> 192.168.200.0    0.0.0.0           0
32768 I

  !--- Note that the routes highlighted are received from
  the eBGP peer router R2 which is in 32-bit AS 10.1. In
  router R3

R3#sh ip bgp
BGP table version is 11, local router ID is 3.3.3.3
Status codes: s suppressed, d damped, h history, *
valid, > best, I - internal,
                r RIB-failure, S Stale
Origin codes: I - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf
Weight Path
*>i10.1.1.1/32      192.168.10.1      0    100
0 655361 I
*>i20.1.1.1/32      192.168.10.1      0    100
0 655361 I
*> 30.30.30.30/32    0.0.0.0           0
32768 I
*>i40.40.40.40/32   192.168.10.1      0    100
0 655361 I
*>i192.168.100.0    192.168.10.1      0    100
0 I
*>i192.168.200.0    192.168.10.1      0    100

```

```

0 I

!--- The router R3 does not have bgp asnotation dot
configured in it. Therefore, the route received from the
router in 32-bit AS AS 10.1 is displayed as 655361.

In router R4

R4#sh ip bgp
BGP table version is 7, local router ID is 4.4.4.4
Status codes: s suppressed, d damped, h history, *
valid, > best, I - internal,
                r RIB-failure, S Stale
Origin codes: I - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf
Weight Path
*>i10.1.1.1/32      172.16.10.1          0    100
0 I
*>i20.1.1.1/32      172.16.10.1          0    100
0 I
*>i30.30.30.30/32   172.16.10.1          0    100
0 100 I
*> 40.40.40.40/32   0.0.0.0              0
32768 I
*>i192.168.100.0    172.16.10.1          0    100
0 100 I
*>i192.168.200.0    172.16.10.1          0    100
0 100 I

!--- The above output shows the entries in BGP routing
table of router R4.

```

要驗證路由器之間的連通性，請使用ping命令。

```

ping
從路由器R3

R3#ping 40.40.40.40

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 40.40.40.40, timeout
is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip
min/avg/max = 68/101/148 ms

從路由器R4

R4#ping 30.30.30.30

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 30.30.30.30, timeout
is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip
min/avg/max = 56/89/112 ms
!--- The above output shows that End to End connectivity
is established between R3 and R4, where R3 is AS 100(16-

```

bit AS) and router R4 is in **AS 10.1**(32-bit AS).

相關資訊

- [Cisco IOS BGP 4位元組ASN支援](#)
- [BGP 支援頁面](#)
- [BGP 個案研究](#)
- [探索自治系統編號](#)
- [技術支援與文件 - Cisco Systems](#)