

BGP-implementatie met 32-bits AS-nummerconfiguratie

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Dit document beschrijft hoe u Border Gateway Protocol (BGP) dient te configureren met behulp van 32-bits AS-nummer. In BGP, is elk routingdomein één enkel administratief domein en heeft een uniek AS aantal toegewezen aan het, en wordt geëxploiteerd binnen een uniform reeks routingbeleid. Het onderhoudt ook routing tussen domeinen.

In dit document wordt BGP-ping ingesteld tussen 16-bits en 32-bits BGP-routers. De nieuwe 32-bits AS-modus is compatibel met de 16-bits AS-modus. De BGP-peers die in 32-bits modus kunnen werken, reageren positief op de nieuwe mogelijkheid en die sessie werkt in nieuwe modus. Aan de andere kant, de 32-bits BGP-peers wanneer ze met de 16-bits BGP-sprekers communiceren, negeren de 16-bits spraakrouters deze nieuwe mogelijkheid en opereren hun BGP-sessie in 16-bits modus.

[Voorwaarden](#)

[Vereisten](#)

Cisco raadt u aan basiskennis van BGP te hebben.

[Hardware en softwareversies](#)

De configuraties in dit document zijn gebaseerd op Cisco 7200 Series router met Cisco IOS® software release 15.0(1).

Conventies

Raadpleeg [Cisco Technical Tips Conventions \(Conventies voor technische tips van Cisco\)](#) voor meer informatie over documentconventies.

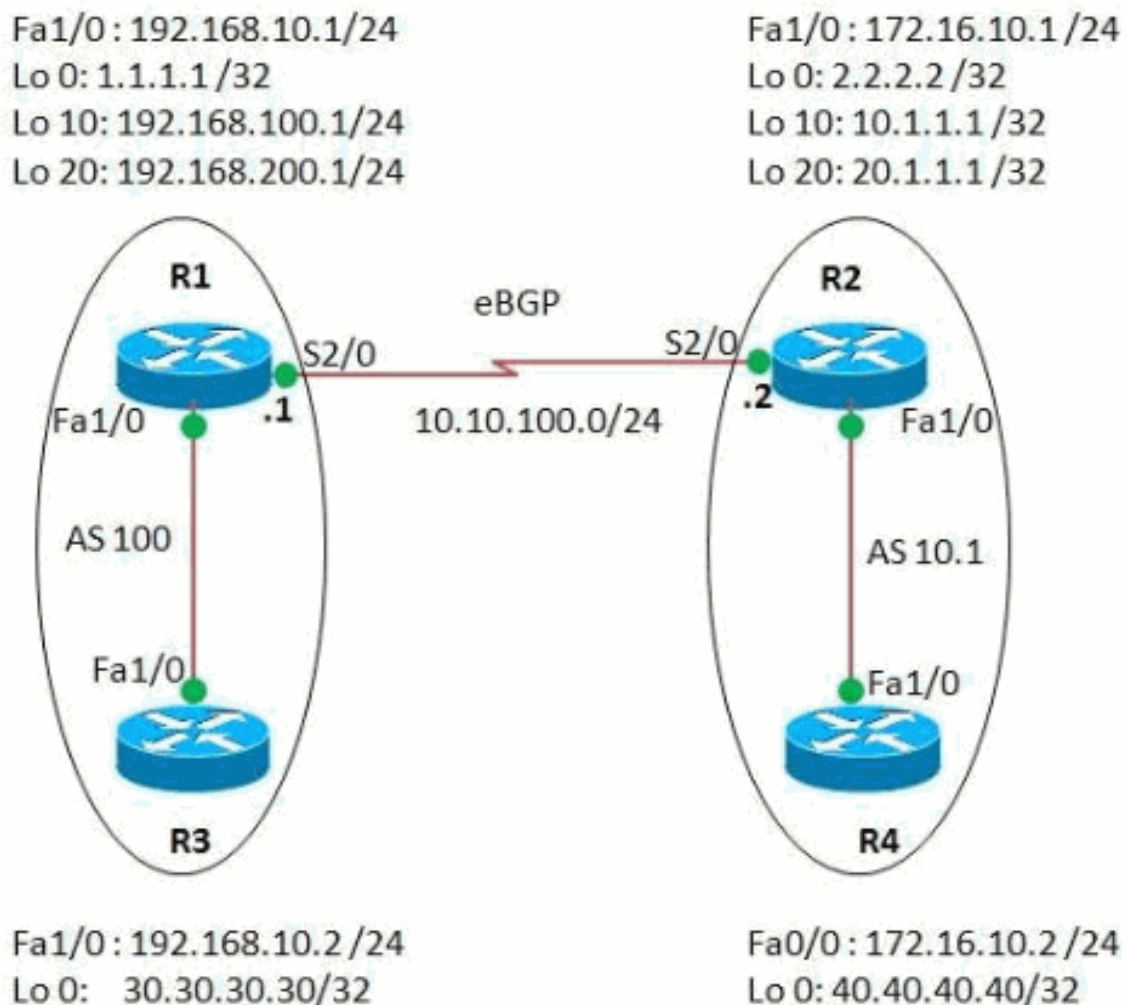
Configureren

In dit voorbeeld worden de routers R1 en R3 geconfigureerd om in AS 100 te zijn, wat een iBGP-relatie vormt met 16-bits AS-modus. De routers R2 en R4 worden geconfigureerd in AS 10.1 en vormen iBGP met behulp van de 32-bits AS-modus. De routers R1 en R2 lopen en IGP protocol, in dit voorbeeld OSPF tussen elkaar en vormen ook eBGP dichtbij tussen hen.

N.B.: Gebruik het [Opdrachtupgereedschap \(alleen geregistreeerde klanten\)](#) om meer informatie te vinden over de opdrachten die in dit document worden gebruikt.

Netwerkdigram

Het netwerk in dit document is als volgt opgebouwd:



Configuraties

Dit document gebruikt deze configuraties:

- [router R1](#)
- [router R2](#)
- [router R3](#)
- [router R4](#)

router 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
```

router 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
```

router 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
```

router 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.
```

Verifiëren

Gebruik dit gedeelte om te bevestigen dat de configuratie correct werkt.

Het [Uitvoer Tolk](#) ([uitsluitend geregistreeerde](#) klanten) (OIT) ondersteunt bepaalde **show** opdrachten. Gebruik de OIT om een analyse van de opdrachtoutput van de **show** te bekijken.

Opdrachten weergeven

Om te verifiëren dat BGP 32-bits ASN kan ondersteunen, gebruik de [show ip bgp buurcommando](#).

ip bgp-buurman tonen

In router R1

```
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---

Als u de items in de BGP-routingtabel wilt tonen, gebruikt u de opdracht [ip bgp tonen](#).

ip-bgp tonen

In router R1

```

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 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.

```

Om bereikbaarheid tussen routers te controleren, gebruikt u de ping-opdracht.

```

pingelen

Van router 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

Van router 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).
```

[Gerelateerde informatie](#)

- [Ondersteuning van Cisco IOS BGP 4-bands ASN](#)
- [BGP-ondersteuningspagina](#)
- [BGP-casestudy's](#)
- [Autonoom systeemnummers bekijken](#)
- [Technische ondersteuning en documentatie – Cisco Systems](#)