# Configure dampen-igp-metric in BGP on Cisco Nexus Switches

## Contents

## Introduction

This document describes the purpose of the dampen-igp-metric command in Border Gateway Protocol (BGP) on Cisco Nexus family of Switches which run the NX-OS Operating System.

## Prerequisites

### Requirements

Cisco recommends that you have knowledge of these topics:

- Nexus NX-OS Software.
- BGP Routing Protocol.

### Components Used

The information in this document is based on these software and hardware versions:

- Cisco N9K-C9508
- NXOS version 7.0(3)I7(6)

This document is not restricted to specific software and hardware versions.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

## Configure

By default, the Nexus Family of Switches have the command **dampen-igp-metric** set to its default

value of 600 seconds in the BGP configuration section.

This affects how BGP handles Interior Gateway Protocols (IGP) metric changes reported for redistributed routes. BGP dampens these changes as it process them in a batched fashion with a 10 minute delay.

This command allows you to adjust that delay or remove it altogether for quicker response to these changes.

The BGP MED (Multi Exit Discriminator) attribute is updated with the new cost of the redistributed IGP route once the timer expires.

### 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
```

This command can likewise be configured for **address-family ipv6 unicast** and per VRF instances in the BGP configuration section.

> **Note**: The command **dampen-igp-metric** also controls the delay time to update other BGP attributes like the Next-hop attribute when IGP routes are leaked into other VRFs with the use of BGP.

## Network Diagram

In this scenario,the Nexus Switch has been configured to redistribute Open Shortest Path First (OSPF) routes from the Routing Table into the BGP table.
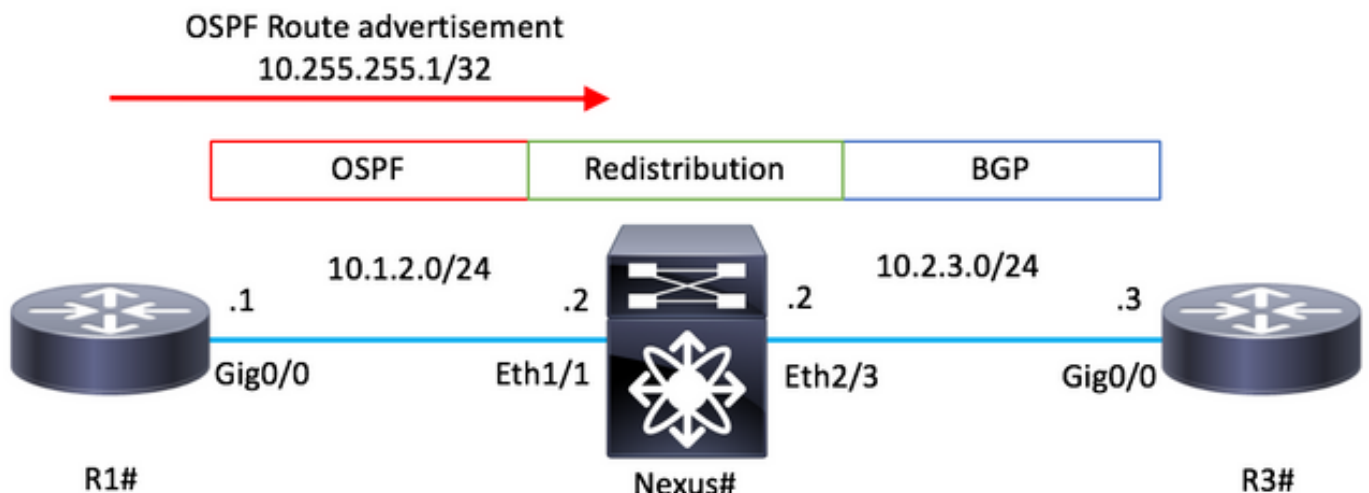
# Configurations

## R1 - Cisco IOS

```
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
```

## 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
```

## R3 - Cisco IOS

```
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
```

# Verify

Run the command **show bgp internal af**. Ensure the line **IGP Metric Dampening Interval** indicates the desired value.

Default value is 600 (seconds).

## 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
```

In the event that the OSPF route in the Routing Table updates its Cost, there is a delay to reflect this new value in the BGP MED path attribute.

### 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 ?
```

Run the command **no dampen-igp-metric** under BGP address-family configuration section to immediately update the MED attribute in the BGP table upon a OSPF Cost change in the Routing

Table.

**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 ?
```

# Troubleshoot

In order to confirm the functionality of the **dampen-igp-metric** command on NX-OS, turn on the next debugs.

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

**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 ?
```

Once done, disable the debugs with the next commands:

- undebug all
- no debug-filter all
- clear debug logfile <FILE_NAME>