Configure EIGRP Named Mode

Contents

Introduction

This document describes the named Enhanced Interior Gateway Routing Protocol (EIGRP) mode feature and discusses differences between traditional and named mode with the help of a relevant configuration.

Prerequisites

Requirements

Cisco recommends that you have basic knowledge of IP Routing and the EIGRP protocol.

Components Used

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, make sure that you understand the potential impact of any command.

Background Information

The traditional way to configure EIGRP requires various parameters to be configured under the interface and EIGRP configuration mode. In order to configure EIGRP IPV4 and IPv6, it is required to configure separate EIGRP instances. Traditional EIGRP does not support Virtual Routing and

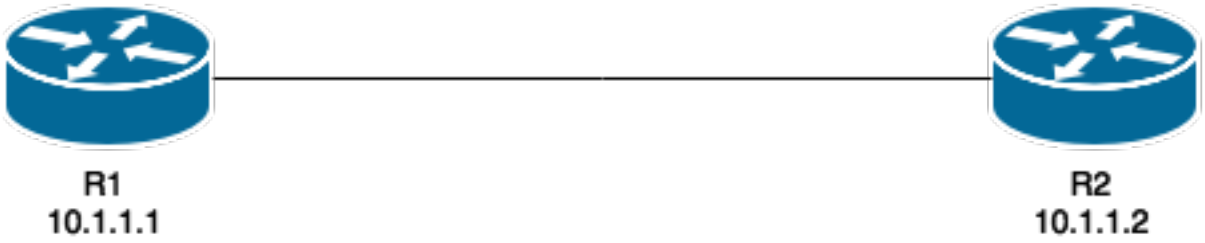
Forwarding (VRF) in IPv6 EIGRP implementations.

With Named mode EIGRP, everything is configured at a single place under the EIGRP configuration and there are no restrictions as mentioned previously.

Configure

Network Diagram

This image is a sample topology for the rest of the document.



Unlike the traditional method, the EIGRP instance is neither created nor started when this is configured on the router:

```
R1(config)#router eigrp TEST
```

The instance will be created when address-family and autonomous system number is configured, for example:

```
R1(config-router)#address-family ipv4 unicast autonomous-system 1
```

With this named mode, only a single instance of EIGRP needs to be created. It can be used for all address family types. It also supports multiple VRFs limited only by available system resources. One thing to be aware of in regards to the named mode is that configuration of the address-family does not enable IPv4 routing as a traditional configuration of IPv4 EIGRP. A 'no shut' is required in order to start the process:

```
router eigrp [virtual-instance-name | asystem]
[no] shutdown
```

Named EIGRP has three modes under which the bulk of the configuration is completed. These are:

- address-family configuration mode - (config-router-af)#
- address-family interface configuration mode - (config-router-af-interface)#
- address-family topology configuration mode - (config-router-af-topology)#

Address-family Configuration Mode

You enter this mode with this command:

```
R1(config-router)#address-family ipv4 unicast autonomous-system 1
```

```
R1(config-router-af)#?
Address Family configuration commands:
 af-interface                Enter Address Family interface configuration
 default                      Set a command to its defaults
 eigrp                        EIGRP Address Family specific commands
 exit-address-family  Exit Address Family configuration mode
 help                         Description of the interactive help system
 maximum-prefix       Maximum number of prefixes acceptable in aggregate
 metric                       Modify metrics and parameters for advertisement
 neighbor                   Specify an IPv4 neighbor router
 network                     Enable routing on an IP network
 no                           Negate a command or set its defaults
 shutdown                 Shutdown address family
 timers                       Adjust peering based timers
 topology                  Topology configuration mode
```

In this mode, these parameters can be configured: Networks, EIGRP neighbor, and EIGRP Router-id. The other two configuration modes of named EIGRP are accessed from this mode.

Traditional Configuration

```
Interface GigabitEthernet 0/0
 ip bandwidth-percent eigrp 1 75
 ipv6 enable
 ipv6 eigrp 1
 ip bandwidth-percent eigrp 1 75
no shut
!
router eigrp 1
eigrp router-id 10.10.10.1
network 0.0.0.0 0.0.0.0

ipv6 router eigrp 1
 eigrp router-id 10.10.10.1
 no shut
```

Named Configuration

```
router eigrp TEST
 !
 address-family ipv4 unicast autonomous-system 1
 !
 network 0.0.0.0
 eigrp router-id 10.10.10.1
 no shutdown
 exit-address-family
 !
 address-family ipv6 unicast autonomous-system 1
 !
 eigrp router-id 10.10.10.1
 no shutdown
 exit-address-family
```

Address-family Interface Configuration Mode

This mode takes all the interface specific commands that were previously configured on an actual interface (logical or physical). EIGRP authentication, split-horizon, and summary-address configuration are some of the options that are now configured here instead of on the actual interface:

```
R1(config-router-af)#af-interface g0/0
R1(config-router-af-interface)#?
Address Family Interfaces configuration commands:
 authentication             authentication subcommands
 bandwidth-percent    Set percentage of bandwidth percentage limit
 bfd                        Enable Bidirectional Forwarding Detection
 dampening-change   Percent interface metric must change to cause update
 dampening-interval   Time in seconds to check interface metrics
 default                    Set a command to its defaults
 exit-af-interface          Exit from Address Family Interface configuration
 hello-interval             Configures hello interval
 hold-time                  Configures hold time
 next-hop-self              Configures EIGRP next-hop-self
 no                       Negate a command or set its defaults
 passive-interface        Suppress address updates on an interface
 shutdown                   Disable Address-Family on interface
 split-horizon              Perform split horizon
 summary-address     Perform address summarization
```

Note: You can use the **af-interface default** command in order to apply the configuration to all the interfaces at once.

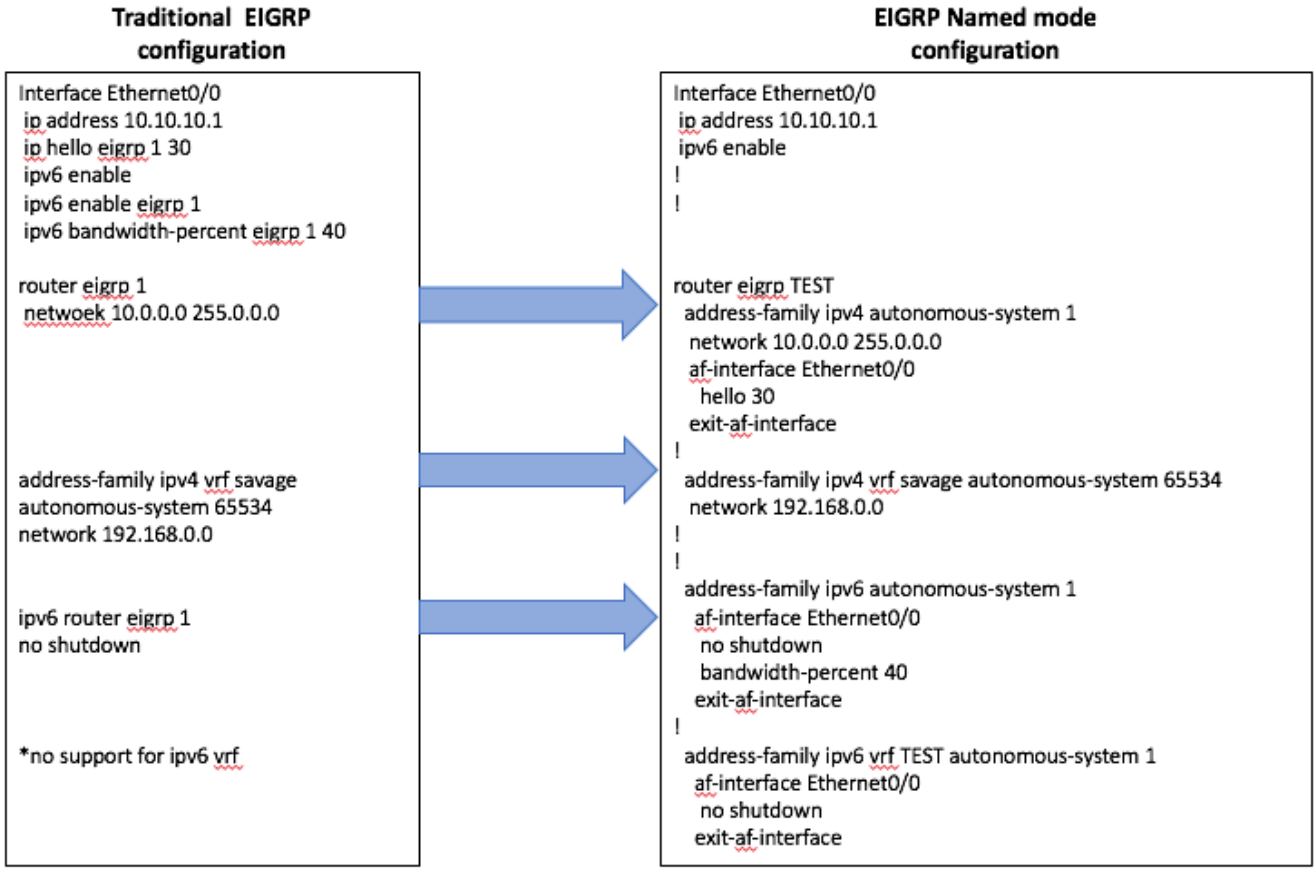
Address-family Topology Configuration Mode

This mode provides several configuration options which operate on the EIGRP topology table. Things like redistribution, distance, offset list, variance and so on can be configured under this mode. You can enter this mode from the address-family configuration mode.

```
R1(config-router-af)#topology base
R1(config-router-af-topology)#?
Address Family Topology configuration commands:
 auto-summary         Enable automatic network number summarization
 default              Set a command to its defaults
 default-information  Control distribution of default information
 default-metric       Set metric of redistributed routes
 distance             Define an administrative distance
 distribute-list      Filter entries in eigrp updates
 eigrp                EIGRP specific commands
 exit-af-topology     Exit from Address Family Topology configuration
 maximum-paths        Forward packets over multiple paths
 metric               Modify metrics and parameters for advertisement
 no                   Negate a command or set its defaults
 offset-list          Add or subtract offset from EIGRP metrics
 redistribute         Redistribute IPv4 routes from another routing proto
 summary-metric       Specify summary to apply metric/filtering
 timers               Adjust topology specific timers
 traffic-share        How to compute traffic share over alternate paths
 variance             Control load balancing variance
```

Comparison

A comparison between the two configuration modes that were discussed is shown here:



Availability

The EIGRP named configuration is available from these Cisco IOS® releases:

- 15.0(1)M
- 12.2(33)SRE
- 12.2(33)XNE
- Cisco IOS XE Release 2.5

Automatic Conversion to Named EIGRP

There is an automatic method to convert the configuration from the traditional way to the new method. Inside the EIGRP process, the command

eigrp upgrade-cli <EIGRP Virtual-Instance Name> needs to be entered. This automatically converts the configuration to the named mode without an impact to the established EIGRP peering:

Traditional Configuration

```
router eigrp 1
network 10.10.10.1 0.0.0.0
!
interface Ethernet0/0
ip address 10.10.10.1 255.255.255.0
ip hello-interval eigrp 1 100
```

Configuration

```
R1(config)#router eigrp 1
R1(config-router)#eigrp upgrade-cli TEST
Configuration will be converted from router eigrp 1 to router eigrp TEST.
Are you sure you want to proceed? ? [yes/no]: yes

*Oct 10 14:14:40.684: EIGRP: Conversion of router eigrp 1 to router eigrp TEST -
Completed.
```

Converted Named Configuration

```
router eigrp TEST
!
address-family ipv4 unicast autonomous-system 1
!
af-interface Ethernet0/0
hello-interval 100
exit-af-interface
!
topology base
exit-af-topology
network 10.10.10.1 0.0.0.0
exit-address-family
```

Verify

There is currently no verification procedure available for this configuration.

Troubleshoot

There is currently no specific troubleshooting information available for this configuration.