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Static Route Configuration on Juniper Routers

Category: [Juniper](#), [Routing](#), [Static Routing](#)

Author: gokhankosem, on 15 Jan 12 - [6 Comments](#)

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In this article we will focus on static route configuration on Juniper routers. Here, instead of Cisco IOS, we will use JuNOS and we will be familiar with some JuNOS commands.

The basic topology that we will use is below. We have three routers and two network. We will provide the route from one network to another.



First of all we will give IP addresses to the interfaces. On JUNOS1 Router use the below commands to assign an ip to the interface em0.

```
root@JUNOS1> configure
```

```
[edit]
```

```
root@JUNOS1# edit interfaces em0
```

```
[edit interfaces em0]
```

```
root@JUNOS1# edit unit 0
```

```
[edit interfaces em0 unit 0]
```

```
root@JUNOS1# edit family inet
```

```
[edit interfaces em0 unit 0 family inet]
```

```
root@JUNOS1# set address 10.0.0.1/24
```

```
[edit interfaces em0 unit 0 family inet]
```

```
root@JUNOS1# commit
```

On JUNOS2 Router you can use the full command in only one line like below. But here we have two interfaces, so we will give to ip addresses that are in different network.

```
root@JUNOS2> configure
```

```
[edit]
```

```
root@JUNOS2# set interfaces em0 unit 0 family inet address 10.0.0.2/24
```

```
[edit]
```

```
root@JUNOS2# set interfaces em1 unit 0 family inet address 172.29.2.2/24
```

```
[edit]
```

```
root@JUNOS2# commit
```

For the last router, JUNOS3 Router use the below commands. Here we can also give ip address to the second interface but there is no device is connected to that interface.

```
root@JUNOS3> configure
```

```
[edit]
```

```
root@JUNOS3# set interfaces em0 unit 0 family inet address 172.29.2.1/24
```

```
[edit]
```

```
root@JUNOS3# set interfaces em1 unit 0 family inet address 192.168.0.2/24
```

```
[edit]
```

```
root@JUNOS3# commit
```

Now it is time to set the static routes on both JUNOS1 Router and JUNOS3 Router. To set a static route we will go to the “**routing-options**” hierarchy on JUNOS.

```
[edit]
```

```
root@JUNOS1# edit routing-options
```

```
[edit routing-options]
```

```
root@JUNOS1# set static route 172.29.2.0/24 next-hop 10.0.0.2
```

```
[edit routing-options]  
root@JUNOS1# commit
```

Here, we are saying that to the JUNOS1 router, use 10.0.0.2 interface to reach to the 172.29.2.0 network. Like this we will say to the JUNOS3 Router, use 172.29.2.2 to reach the 10.0.0.0 network.

```
[edit]  
root@JUNOS3# edit routing-options
```

```
[edit routing-options]  
root@JUNOS3# set static route 10.0.0.0/24 next-hop 172.29.2.2
```

```
[edit routing-options]  
root@JUNOS3# commit
```

To check our configuration we can use “**show configuration**” command alone or with “**display set**”. If we use it alone we will see the whole configuration with hierarchy. But if we use it with “**display set**” option, then we will see the whole configuration line by line with set command. The screenshots for the routers’ configuration are below:

```
root@Router1> show configuration | display set  
set version 10.1R1.8  
set system host-name Router1  
set system root-authentication encrypted-password "$1$Uv9NKNxm$lii4JH0/5RqG1qchK022j0"  
set system syslog user * any emergency  
set system syslog file messages any notice  
set system syslog file messages authorization info  
set system syslog file interactive-commands interactive-commands any  
set interfaces em0 unit 0 family inet address 10.0.0.1/24  
set routing-options static route 172.29.2.0/24 next-hop 10.0.0.2
```

```
root@Router2> show configuration | display set  
set version 10.1R1.8  
set system host-name Router2  
set system root-authentication encrypted-password "$1$qFeJI4Ty$teNNdYpUsPMYQN6C/UnyS0"  
set system syslog user * any emergency  
set system syslog file messages any notice  
set system syslog file messages authorization info  
set system syslog file interactive-commands interactive-commands any  
set interfaces em0 unit 0 family inet address 10.0.0.2/24  
set interfaces em1 unit 0 family inet address 172.29.2.2/24
```

```

root@Router3> show configuration | display set
set version 10.1R1.8
set system host-name Router3
set system root-authentication encrypted-password "$1$YHMHTRJj$WyeKQZhsDkagw9GYK
Lcyo1"
set system syslog user * any emergency
set system syslog file messages any notice
set system syslog file messages authorization info
set system syslog file interactive-commands interactive-commands any
set interfaces em0 unit 0 family inet address 172.29.2.1/24
set interfaces em1 unit 0 family inet address 192.168.0.2/24
set routing-options static route 10.0.0.0/24 next-hop 172.29.2.2

```

On the routing tables, we can see the static entry routes beside the directly connected interfaces. As you can see, the directly connected interfaces have preference value of 0. But the static ones have the value of 5. In Cisco IOS, we use “**administrative distance**” instead of “**preference**” value in JunOS.

```

root@Router1> show route

inet.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.0.0.0/24          * [Direct/0] 00:31:44
                    > via em0.0
10.0.0.1/32         * [Local/0] 00:31:44
                    Local via em0.0
172.29.2.0/24       * [Static/5] 00:31:16
                    > to 10.0.0.2 via em0.0

```

```

root@Router2> show route

inet.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.0.0.0/24          * [Direct/0] 01:33:58
                    > via em0.0
10.0.0.2/32          * [Local/0] 01:33:58
                    Local via em0.0
172.29.2.0/24       * [Direct/0] 01:33:58
                    > via em1.0
172.29.2.2/32       * [Local/0] 01:33:58
                    Local via em1.0

```

```

root@Router3> show route

inet.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.0.0.0/24          * [Static/5] 00:47:48
                    > to 172.29.2.2 via em0.0
172.29.2.0/24       * [Direct/0] 00:48:28
                    > via em0.0
172.29.2.1/32       * [Local/0] 00:48:28
                    Local via em0.0
192.168.0.0/24       * [Direct/0] 00:48:28
                    > via em1.0
192.168.0.2/32      * [Local/0] 00:48:28
                    Local via em1.0

```

To check the reachability from JUNOS1 Router to JUNOS3 Router, let's ping the JUNOS3 Router's em0 interface.

```

root@Router1> ping 172.29.2.1 count 3
PING 172.29.2.1 (172.29.2.1): 56 data bytes
64 bytes from 172.29.2.1: icmp_seq=0 ttl=63 time=2.081 ms
64 bytes from 172.29.2.1: icmp_seq=1 ttl=63 time=1.928 ms
64 bytes from 172.29.2.1: icmp_seq=2 ttl=63 time=2.621 ms

--- 172.29.2.1 ping statistics ---
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max/stddev = 1.928/2.210/2.621/0.297 ms

```

As you can see, the ping is successful. To see the way to JUNOS3 Router, we can use traceroute command too.

```

root@Router1> traceroute 172.29.2.1
traceroute to 172.29.2.1 (172.29.2.1), 30 hops max, 40 byte packets
 1  10.0.0.2 (10.0.0.2)  0.804 ms  0.553 ms  0.464 ms
 2  172.29.2.1 (172.29.2.1)  1.636 ms  1.652 ms  2.233 ms

```

With this command we can realize that to reach 172.29.2.1 interface, JUNOS1 Router goes to 10.0.0.2 interface first. And after that interface it reach the destination. This command is not important for such a basic topology. But in a huge topology, with many routers and hops, you can realize the importance of this command.

To be continued with different Juniper JuNOS configurations. Stay with ipcisco.com!!!



About the Author

Gokhan Kosem is a telecommunication engineer and a computer networks professional. His ambition to IP networks and end-to-end system installation made him to prepare this web-site. By sharing his experiences about various networking protocols beside different system installation experiences and Cisco, Juniper, Alcatel-Lucent devices configurations, he is aimed to be helpful for his colleagues in all over the world. He is currently lives in Istanbul, Turkey.

6 comments for “Static Route Configuration on Juniper Routers”

1

krishan shakya

Good One dear....please share more on juniper

[May 8th, 2012 at 10:38](#)

2

gokhankosem

Thank you Krishan...More on Juniper will come with next articles, keep on;)

[May 20th, 2012 at 14:52](#)

3

Khan

please share how to upgrade junos IOS

[May 28th, 2012 at 14:03](#)

4

Syareefdol

Salam gokhan..whats difference between unit 1 n unit 0?thks

[July 21st, 2012 at 17:01](#)

5

gokhankosem

Hi Syareefdol, it is the logical interface name taht you can give numver 0 through 16384. For example there is an interface, ge-0/0/1.0 . Here the "0" after "." is unit number;)

[July 21st, 2012 at 17:47](#)

6

mumtaz

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