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Red Hat / CentOS IPv6 Network Configuration

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[1]

Q. How do I configure static IPv6 networking under RHEL 5.x / Fedora / CentOS Linux?

[2]

A. Red Hat / CentOS / Fedora RHEL support IPv6 out of box. All you have to do is update two files and turn on networking.

You need to update and configure following files for IPv6 configuration:

1. **/etc/sysconfig/network** : Turn on networking in this file.
2. **/etc/sysconfig/network-scripts/ifcfg-eth0** : Set default IPv6 router IP and server IP address in this file.

Open /etc/sysconfig/network file, enter:

```
# vi /etc/sysconfig/network
```

Append following line:

```
NETWORKING_IPV6=yes
```

Open /etc/sysconfig/network-scripts/ifcfg-eth0 (1st network config file)

```
# vi /etc/sysconfig/network-scripts/ifcfg-eth0
```

Append following config directives for IPv6:

```
IPV6INIT=yes
IPV6ADDR=<IPv6-IP-Address>
IPV6_DEFAULTGW=<IPv6-IP-Gateway-Address>
```

Here is my sample file with mix of IPv4 and IPv6 assigned to eth0:

```
DEVICE=eth0
BOOTPROTO=static
ONBOOT=yes
HWADDR=00:30:48:33:bc:33
IPADDR=202.54.1.5
GATEWAY=202.54.1.3
NETMASK=255.255.255.248
IPV6INIT=yes
IPV6ADDR=2607:f0d0:1002:0011:0000:0000:0000:0002
IPV6_DEFAULTGW=2607:f0d0:1002:0011:0000:0000:0000:0001
```

Where,

- **NETWORKING_IPV6=yes|no** - Enable or disable global IPv6 initialization.
- **IPV6INIT=yes** - Enable or disable IPv6 configuration for all interfaces.
- **IPV6ADDR=2607:f0d0:1002:0011:0000:0000:0000:0002** - Specify a primary static IPv6 address here.
- **IPV6_DEFAULTGW=2607:f0d0:1002:0011:0000:0000:0000:0001** - Add a default route through specified gateway.

Save and close the file. Restart networking:

```
# service network restart
```

Verify your configuration by pinging ipv6 enabled site such as ipv6.google.com:

```
$ ping6 ipv6.google.com
```

Sample output:

```
PING ipv6.google.com(2001:4860:b002::68) 56 data bytes
64 bytes from 2001:4860:b002::68: icmp_seq=1 ttl=59 time=93.2 ms
64 bytes from 2001:4860:b002::68: icmp_seq=2 ttl=59 time=95.0 ms
64 bytes from 2001:4860:b002::68: icmp_seq=3 ttl=59 time=94.2 ms
64 bytes from 2001:4860:b002::68: icmp_seq=4 ttl=59 time=95.2 ms
64 bytes from 2001:4860:b002::68: icmp_seq=5 ttl=59 time=94.8 ms
64 bytes from 2001:4860:b002::68: icmp_seq=6 ttl=59 time=95.1 ms
64 bytes from 2001:4860:b002::68: icmp_seq=7 ttl=59 time=93.3 ms
64 bytes from 2001:4860:b002::68: icmp_seq=8 ttl=59 time=93.8 ms

--- ipv6.google.com ping statistics ---
8 packets transmitted, 8 received, 0% packet loss, time 7010ms
rtt min/avg/max/mdev = 93.268/94.376/95.268/0.799 ms
```

Traces path to a network host, enter:

```
$ traceroute6 ipv6.google.com
```

Print default IPv6 routing table, enter:

```
$ route -n -A inet6
```

Sample output:

```
Kernel IPv6 routing table
Destination                                 Next Hop                                Flags M
::1/128                                     ::                                      U     0
::62.41.14.144/128                          ::                                      U     0
::127.0.0.1/128                             ::                                      U     0
::/96                                       ::                                      U     2
2001:470:1f04:55a::2/128                    ::                                      U     0
2001:470:1f04:55a::/64                      ::                                      U     2
fe80::4833:22f4/128                         ::                                      U     0
fe80::212:3fff:fe75:fa0d/128                ::                                      U     0
fe80::/64                                   ::                                      U     2
fe80::/64                                   ::                                      U     2
ff00::/8                                    ::                                      U     2
ff00::/8                                    ::                                      U     2
::/0                                        ::                                      U     1
```

Once IPv6 configured properly, you need to setup IPv6 firewall using ip6tables command [3] under Linux.

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