

How to configure a static IP address on CentOS 7

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Question: On CentOS 7, I want to switch from DHCP to static IP address configuration with one of my network interfaces. What is a proper way to assign a static IP address to a network interface permanently on CentOS or RHEL 7?

If you want to set up a static IP address on a network interface in CentOS 7, there are several different ways to do it, varying depending on whether or not you want to use Network Manager for that.

Network Manager is a dynamic network control and configuration system that attempts to keep network devices and connections up and active when they are available). CentOS/RHEL 7 comes with Network Manager service installed and enabled by default.

To verify the status of Network Manager service:

```
$ systemctl status NetworkManager.service
```

To check which network interface is managed by Network Manager, run:

```
$ nmcli dev status
```

```
[dev@centos7 ~]$ systemctl status NetworkManager.service
NetworkManager.service - Network Manager
  Loaded: loaded (/usr/lib/systemd/system/NetworkManager.service; enabled)
  Active: active (running) since Sat 2014-09-20 11:12:01 EDT; 1h 1min ago
  Main PID: 849 (NetworkManager)
  CGroup: /system.slice/NetworkManager.service
          └─ 849 /usr/sbin/NetworkManager --no-daemon
             └─ 1217 /sbin/dhclient -d -sf /usr/libexec/nm-dhcp-helper -pf /var/...

[dev@centos7 ~]$
[dev@centos7 ~]$ nmcli dev status
DEVICE  TYPE      STATE      CONNECTION
enp0s3  ethernet  connected  enp0s3
lo      loopback  unmanaged  --
[dev@centos7 ~]$
```

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If the output of `nmccli` shows "connected" for a particular interface (e.g., `enp0s3` in the example), it means that the interface is managed by Network Manager. You can easily disable Network Manager for a particular interface, so that you can configure it on your own for a static IP address.

Here are **two different ways to assign a static IP address to a network interface on CentOS 7**. We will be configuring a network interface named `enp0s3`.

Configure a Static IP Address without Network Manager

Go to the `/etc/sysconfig/network-scripts` directory, and locate its configuration file (`ifcfg-enp0s3`). Create it if not found.

```
[root@centos7 network-scripts]# pwd
/etc/sysconfig/network-scripts
[root@centos7 network-scripts]# ls
ifcfg-enp0s3  ifdown-ppp      ifup-eth       ifup-sit
ifcfg-lo     ifdown-routes  ifup-ippp     ifup-Team
ifdown       ifdown-sit     ifup-ipv6     ifup-TeamPort
ifdown-bnep  ifdown-Team    ifup-isdn     ifup-tunnel
ifdown-eth   ifdown-TeamPort ifup-plip     ifup-wireless
ifdown-ippp  ifdown-tunnel  ifup-plusb    init.ipv6-global
ifdown-ipv6  ifup           ifup-post     network-functions
ifdown-isdn  ifup-aliases  ifup-ppp     network-functions-ipv6
ifdown-post  ifup-bnep     ifup-routes
```

Open the configuration file and edit the following variables:

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```
HWADDR="08:00:27:F3:D4:74"
TYPE="Ethernet"
BOOTPROTO="static"
IPADDR=192.168.0.17
NETMASK=255.255.255.0
NM_CONTROLLED=no
DEFROUTE="yes"
PEERDNS="yes"
PEERROUTES="yes"
IPV4_FAILURE_FATAL="no"
IPV6INIT="yes"
IPV6_AUTOCONF="yes"
IPV6_DEFROUTE="yes"
IPV6_PEERDNS="yes"
IPV6_PEERROUTES="yes"
IPV6_FAILURE_FATAL="no"
NAME="enp0s3"
UUID="63a1bb2b-fe58-4724-84ae-28ec671b083e"
ONBOOT="yes"
```

In the above, "NM_CONTROLLED=no" indicates that this interface will be set up using this configuration file, instead of being managed by Network Manager service. "ONBOOT=yes" tells the system to bring up the interface during boot.

Save changes and restart the network service using the following command:

```
# systemctl restart network.service
```

Now verify that the interface has been properly configured:

```
# ip add
```

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```
[root@centos7 network-scripts]# systemctl restart network.service
[root@centos7 network-scripts]# ip add
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP
    qlen 1000
    link/ether 08:00:27:f3:d4:74 brd ff:ff:ff:ff:ff:ff
    inet 192.168.0.17/24 brd 192.168.0.255 scope global enp0s3
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fef3:d474/64 scope link
        valid_lft forever preferred_lft forever
[root@centos7 network-scripts]# cat /etc/redhat-release
CentOS Linux release 7.0.1406 (Core)
[root@centos7 network-scripts]#
```

Configure a Static IP Address with Network Manager

If you want to use Network Manager to manage the interface, you can use `nmtui` (Network Manager Text User Interface) which provides a way to configure Network Manager in a terminal environment.

Before using `nmtui`, first set "NM_CONTROLLED=yes" in `/etc/sysconfig/network-scripts/ifcfg-enp0s3`.

Now let's install `nmtui` as follows.

```
# yum install NetworkManager-tui
```

Then go ahead and edit the Network Manager configuration of `enp0s3` interface:

```
# nmtui edit enp0s3
```

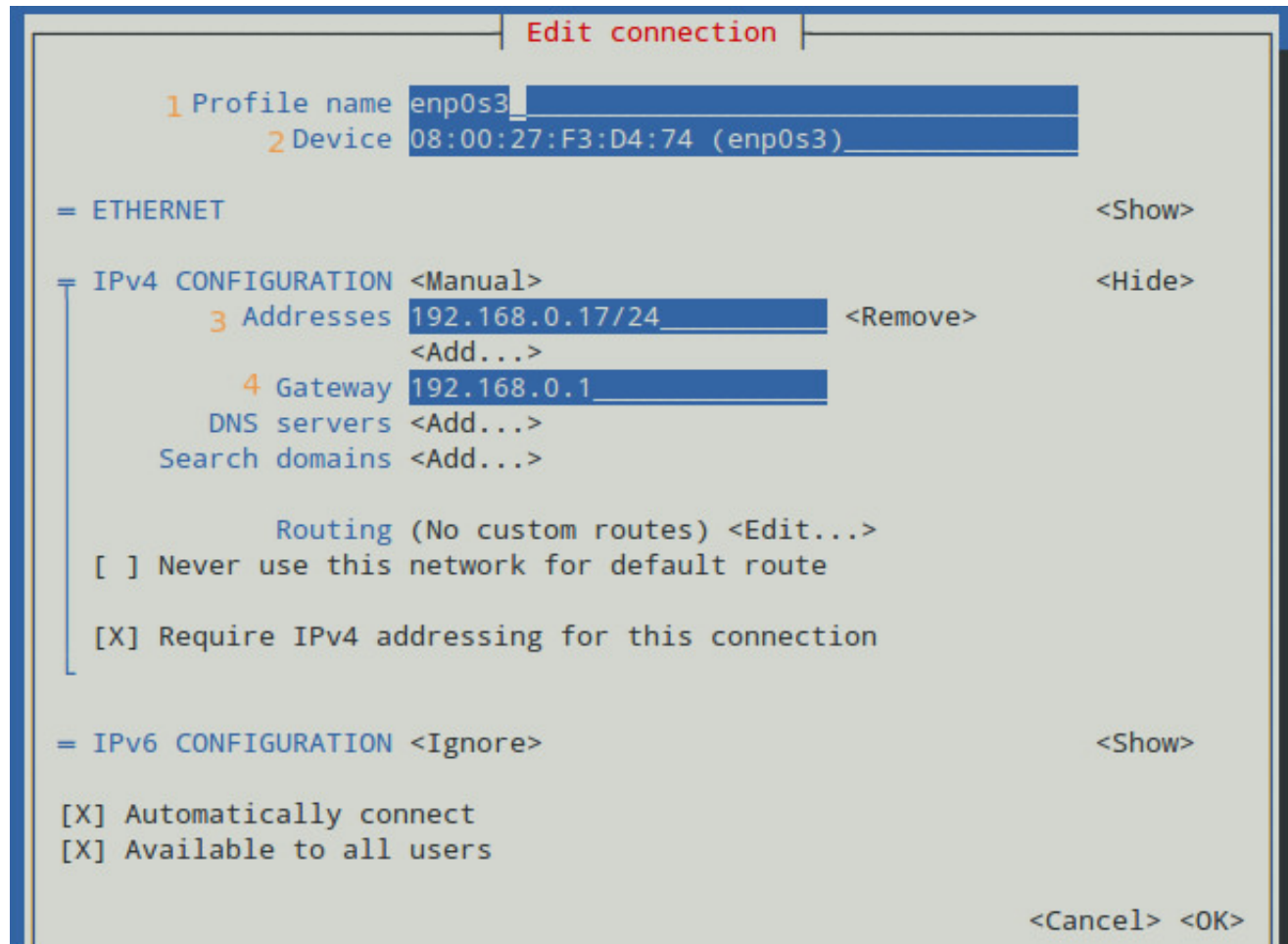
The following screen will allow us to manually enter the same information that is contained in `/etc/sysconfig/network-scripts/ifcfg-enp0s3`.

Use the arrow keys to navigate this screen, press Enter to select from a list of values (or fill in the desired values), and finally click OK at the bottom right:

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Finally, restart the network service.

```
# systemctl restart network.service
```

and you're ready to go.