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NIC – Network Ethernet Adapter

```
[root@zmpt01 ~]# cd /etc/sysconfig/network-scripts/
```

```
[root@zmpt01 network-scripts]# ls
```

```
ifcfg-enp0s3
```

```
ifcfg-enp0s8
```

```
ifcfg-enp0s9
```

Example of NIC configuration file - ifcfg-enp0s3

```
[root@zmpt01 network-scripts]# vi ifcfg-enp0s3
```

```
TYPE=Ethernet
BOOTPROTO=dhcp
NAME=enp0s3
DEVICE=enp0s3
ONBOOT=yes
```

TYPE=Ethernet	Connection
BOOTPROTO=dhcp	Protocol[dhcp is random] [static is assigned]
NAME=enp0s3	This NiC name, matches with config file
DEVICE=enp0s3	This NiC device, matches with Config file
ONBOOT=yes	If yes system will automatically enable ip

DHCP

- Dynamic Host Control Protocol – IP is assigned randomly by router
- DHCP IP can change anytime
- t/s check to see if the IP address has changed



```
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group
default qlen 1000
```

```
link/ether 08:00:27:28:09:c4 brd ff:ff:ff:ff:ff:ff
```

```
inet 192.168.56.105/24 brd 192.168.56.255 scope global noprefixroute dynamic enp0s3
```

```
valid_lft 1137sec preferred_lft 1137sec
```

```
inet6 fe80::a00:27ff:fe28:9c4/64 scope link
```

```
valid_lft forever preferred_lft forever
```

Static

- the IP address is assigned manually to the host/ server/ computer/ box

```
[root@zmp01 network-scripts]# vi ifcfg-enp0s3
```

```
TYPE=Ethernet
BOOTPROTO=static
NAME=enp0s3
DEVICE=enp0s3
ONBOOT=yes
HWADDR=08:00:27:28:09:c4
IPADDR=192.168.56.110
NETMASK=255.255.255.0
```

TYPE=Ethernet	Connection
BOOTPROTO=static	Protocol[dhcp is random] [static is assigned]
NAME=enp0s3	This NiC name, matches with config file
DEVICE=enp0s3	This NiC device, matches with Config file
ONBOOT=yes	If yes system will automatically enable ip
HWADDR=08:00:27:28:09:c4	Hardware Address or MAC Address
IPADDR=192.168.56.110	Static IP of your choice
NETMASK=255.255.255.0	Sub Network Mask

Restart the system

```
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group
default qlen 1000
```

```
link/ether 08:00:27:28:09:c4 brd ff:ff:ff:ff:ff:ff
```

```
inet 192.168.56.110/24 brd 192.168.56.255 scope global noprefixroute enp0s3
```

```
valid_lft forever preferred_lft forever
```

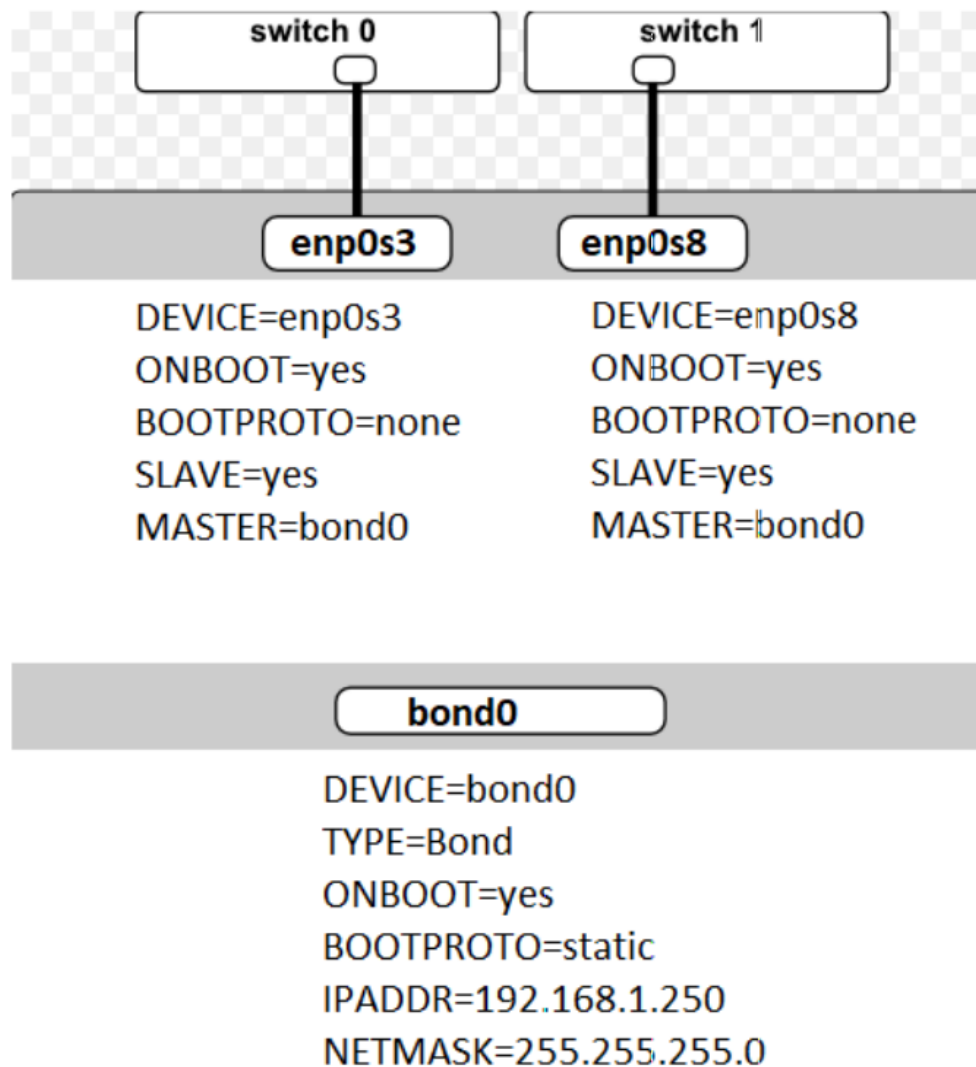
```
inet6 fe80::a00:27ff:fe28:9c4/64 scope link
```

```
valid_lft forever preferred_lft forever
```

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NiC Bonding



Linux allows binding of **multiple** network interfaces into a **single channel/NIC** using special kernel module called **bonding**.

Edit files as needed and input following information

```

[root@zmpt01 network-scripts]# cat ifcfg-enp0s3
DEVICE=enp0s3
ONBOOT=yes
BOOTPROTO=none
SLAVE=yes
MASTER=bond0
  
```



```
[root@zmpt01 network-scripts]# cat ifcfg-enp0s8
DEVICE=enp0s8
ONBOOT=yes
BOOTPROTO=none
SLAVE=yes
MASTER=bond0
```

Create file ifcfg-bond0

```
[root@zmpt01 network-scripts]# cat ifcfg-bond0
DEVICE=bond0
TYPE=Bond
ONBOOT=yes
BOOTPROTO=static
IPADDR=192.168.56.250
NETMASK=255.255.255.0
```

Create bond configuration file

```
[root@zmpt01 ~]# cd /etc/modprobe.d/

[root@zmpt01 modprobe.d]# vi bonding.conf

alias bond0 bonding
```

Activate Bonding

```
[root@zmpt01 ~]# modprobe bonding
```

Check if the bonding is active in memory

```
[root@zmpt01 ~]# lsmod | grep bonding
bonding          152979  0
```

Restart network

```
[root@zmpt01 ~]# systemctl restart network

2: enp0s3: <BROADCAST,MULTICAST,SLAVE,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast master bond0
state UP group default qlen 1000
    link/ether 08:00:27:28:09:c4 brd ff:ff:ff:ff:ff:ff
3: enp0s8: <BROADCAST,MULTICAST,SLAVE,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast master bond0
state UP group default qlen 1000
```



```
link/ether 08:00:27:28:09:c4 brd ff:ff:ff:ff:ff:ff
4: enp0s9: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group
default qlen 1000
    link/ether 08:00:27:f5:49:e8 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.6/24 brd 10.0.2.255 scope global noprefixroute dynamic enp0s9
        valid_lft 1131sec preferred_lft 1131sec
    inet6 fe80::dc0b:5bd8:ba77:427f/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
5: bond0: <BROADCAST,MULTICAST,MASTER,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP
group default qlen 1000
    link/ether 08:00:27:28:09:c4 brd ff:ff:ff:ff:ff:ff
    inet 192.168.56.250/24 brd 192.168.56.255 scope global noprefixroute bond0
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe28:9c4/64 scope link
        valid_lft forever preferred_lft forever
```