

1. Проверяем интерфейсы в корне: **ip a**

```
s180707@gb:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    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 fq_codel state UP group default qlen 1000
    link/ether 08:00:27:72:20:ae brd ff:ff:ff:ff:ff:ff
    inet 10.1.1.153/24 metric 100 brd 10.1.1.255 scope global dynamic enp0s3
        valid_lft 690887sec preferred_lft 690887sec
    inet6 fe80::a00:27ff:fe72:20ae/64 scope link
        valid_lft forever preferred_lft forever
3: docker0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN group default
    link/ether 02:42:c3:fe:3a:b7 brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
        valid_lft forever preferred_lft forever
s180707@gb:~$
```

2. Создаем сетевое пространство имен:

sudo unshare --net /bin/bash

```
s180707@gb:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 10
    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 fq_codel state UP group defau
    link/ether 08:00:27:72:20:ae brd ff:ff:ff:ff:ff:ff
    inet 10.1.1.153/24 metric 100 brd 10.1.1.255 scope global dynamic enp0s3
        valid_lft 690887sec preferred_lft 690887sec
    inet6 fe80::a00:27ff:fe72:20ae/64 scope link
        valid_lft forever preferred_lft forever
3: docker0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN group d
    link/ether 02:42:c3:fe:3a:b7 brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
        valid_lft forever preferred_lft forever
s180707@gb:~$ sudo unshare --net /bin/bash
root@gb:/home/s180707# ip a
1: lo: <LOOPBACK> mtu 65536 qdisc noop state DOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
root@gb:/home/s180707#
```

sudo ip netns add netnstack1

```
s180707@gb:~$ sudo ip netns add netnstack1
s180707@gb:~$ ip netns list
netnstack1
s180707@gb:~$
```

3. Проверяем: **sudo nsenter --net=/var/run/netns/netnstack1 /bin/bash**

```
s180707@gb:~$ sudo nsenter --net=/var/run/netns/netnstack1 /bin/bash
root@gb:/home/s180707# ip a
1: lo: <LOOPBACK> mtu 65536 qdisc noop state DOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
root@gb:/home/s180707#
```

4. Создаем виртуальные интерфейсы: **sudo ip link add veth0-task1 type veth peer name ceth0-task1**

```
s180707@gb:~$ sudo ip link add veth0-task1 type veth peer name ceth0-task1
s180707@gb:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    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 fq_codel state UP group default qlen 1000
    link/ether 08:00:27:72:20:ae brd ff:ff:ff:ff:ff:ff
    inet 10.1.1.153/24 metric 100 brd 10.1.1.255 scope global dynamic enp0s3
        valid_lft 673207sec preferred_lft 673207sec
    inet6 fe80::a00:27ff:fe72:20ae/64 scope link
        valid_lft forever preferred_lft forever
3: docker0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN group default
    link/ether 02:42:c3:fe:3a:b7 brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
        valid_lft forever preferred_lft forever
6: ceth0-task1@veth0-task1: <BROADCAST,MULTICAST,M-DOWN> mtu 1500 qdisc noop state DOWN group default qlen 1000
    link/ether 8e:5b:70:ca:ca:ff brd ff:ff:ff:ff:ff:ff
7: veth0-task1@ceth0-task1: <BROADCAST,MULTICAST,M-DOWN> mtu 1500 qdisc noop state DOWN group default qlen 1000
    link/ether be:c1:8f:1c:15:da brd ff:ff:ff:ff:ff:ff
s180707@gb:~$
```

5. Помещаем ceth0-task1 в netnstack1: **sudo ip link set ceth0-task1 netns netnstack1**

```
s180707@gb:~$ sudo ip link set ceth0-task1 netns netnstack1
s180707@gb:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    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 fq_codel state UP group default qlen 1000
    link/ether 08:00:27:72:20:ae brd ff:ff:ff:ff:ff:ff
    inet 10.1.1.153/24 metric 100 brd 10.1.1.255 scope global dynamic enp0s3
        valid_lft 673022sec preferred_lft 673022sec
    inet6 fe80::a00:27ff:fe72:20ae/64 scope link
        valid_lft forever preferred_lft forever
3: docker0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN group default
    link/ether 02:42:c3:fe:3a:b7 brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
        valid_lft forever preferred_lft forever
7: veth0-task1@if6: <BROADCAST,MULTICAST> mtu 1500 qdisc noop state DOWN group default qlen 1000
    link/ether be:c1:8f:1c:15:da brd ff:ff:ff:ff:ff:ff link-netns netnstack1
s180707@gb:~$ sudo nsenter --net=/var/run/netns/netnstack1 /bin/bash
root@gb:/home/s180707# ip a
1: lo: <LOOPBACK> mtu 65536 qdisc noop state DOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
6: ceth0-task1@if7: <BROADCAST,MULTICAST> mtu 1500 qdisc noop state DOWN group default qlen 1000
    link/ether 8e:5b:70:ca:ca:ff brd ff:ff:ff:ff:ff:ff link-netnsid 0
root@gb:/home/s180707#
```

6. Включаем интерфейс veth0-task1: **sudo ip link set veth0-task1 up**

Присваиваем ip: **sudo ip addr add 10.0.0.1/24 dev veth0-task1**

```
s180707@gb:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    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 fq_codel state UP group default qlen 1000
    link/ether 08:00:27:72:20:ae brd ff:ff:ff:ff:ff:ff
    inet 10.1.1.153/24 metric 100 brd 10.1.1.255 scope global dynamic enp0s3
        valid_lft 672424sec preferred_lft 672424sec
    inet6 fe80::a00:27ff:fe72:20ae/64 scope link
        valid_lft forever preferred_lft forever
3: docker0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN group default
    link/ether 02:42:c3:fe:3a:b7 brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
        valid_lft forever preferred_lft forever
7: veth0-task1@if6: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state LOWERLAYERDOWN group default qlen 1000
    link/ether be:c1:8f:1c:15:da brd ff:ff:ff:ff:ff:ff link-netns netnstack1
    inet 10.0.0.1/24 scope global veth0-task1
        valid_lft forever preferred_lft forever
```

7. Переходим внутрь netnstack1: **sudo nsenter --net=/var/run/netns/netnstack1 /bin/bash**

Включаем интерфейс lo: **ip link set lo up**

Включаем интерфейс ceth0-task1: **ip link set ceth0-task1 up**

```
s180707@gb:~$ sudo nsenter --net=/var/run/netns/netn1task1 /bin/bash
root@gb:/home/s180707# ip a
1: lo: <LOOPBACK> mtu 65536 qdisc noop state DOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
6: ceth0-task1@if7: <BROADCAST,MULTICAST> mtu 1500 qdisc noop state DOWN group default qlen 1000
    link/ether 8e:5b:70:ca:ca:ff brd ff:ff:ff:ff:ff:ff link-netnsid 0
root@gb:/home/s180707# ip link set lo up
root@gb:/home/s180707# ip link set ceth0-task1 up
root@gb:/home/s180707# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    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
6: ceth0-task1@if7: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default qlen 1000
    link/ether 8e:5b:70:ca:ca:ff brd ff:ff:ff:ff:ff:ff link-netnsid 0
    inet6 fe80::8c5b:70ff:feca:caff/64 scope link
        valid_lft forever preferred_lft forever
root@gb:/home/s180707#
```

8. Присваиваем ip : ip addr add 10.0.0.2/24 dev ceth0-task1

```
root@gb:/home/s180707# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    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
6: ceth0-task1@if7: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default qlen 1000
    link/ether 8e:5b:70:ca:ca:ff brd ff:ff:ff:ff:ff:ff link-netnsid 0
    inet 10.0.0.2/24 scope global ceth0-task1
        valid_lft forever preferred_lft forever
    inet6 fe80::8c5b:70ff:feca:caff/64 scope link
        valid_lft forever preferred_lft forever
root@gb:/home/s180707#
```

9. Проверяем: ping 10.0.0.2

```
s180707@gb:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    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 fq_codel state UP group default qlen 1000
    link/ether 08:00:27:72:20:ae brd ff:ff:ff:ff:ff:ff
    inet 10.1.1.153/24 metric 100 brd 10.1.1.255 scope global dynamic enp0s3
        valid_lft 671293sec preferred_lft 671293sec
    inet6 fe80::a00:27ff:fe72:20ae/64 scope link
        valid_lft forever preferred_lft forever
3: docker0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN group default
    link/ether 02:42:c3:fe:3a:b7 brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
        valid_lft forever preferred_lft forever
7: veth0-task1@if6: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default qlen 1000
    link/ether be:c1:8f:1c:15:da brd ff:ff:ff:ff:ff:ff link-netns netn1task1
    inet 10.0.0.1/24 scope global veth0-task1
        valid_lft forever preferred_lft forever
    inet6 fe80::bcc1:8fff:fe1c:15da/64 scope link
        valid_lft forever preferred_lft forever
s180707@gb:~$ ping 10.0.0.2
PING 10.0.0.2 (10.0.0.2) 56(84) bytes of data.
64 bytes from 10.0.0.2: icmp_seq=1 ttl=64 time=0.027 ms
64 bytes from 10.0.0.2: icmp_seq=2 ttl=64 time=0.031 ms
64 bytes from 10.0.0.2: icmp_seq=3 ttl=64 time=0.031 ms
64 bytes from 10.0.0.2: icmp_seq=4 ttl=64 time=0.031 ms
^Z
[2]+  Stopped                  ping 10.0.0.2
s180707@gb:~$
```

10. Проверяем: ping 10.0.0.1

```
s180707@gb:~$ sudo nsenter --net=/var/run/netns/netnstack1 /bin/bash
root@gb:/home/s180707# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    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
6: ceth0-task1@if7: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default qlen 1000
    link/ether 8e:5b:70:ca:ca:ff brd ff:ff:ff:ff:ff:ff link-netnsid 0
    inet 10.0.0.2/24 scope global ceth0-task1
        valid_lft forever preferred_lft forever
    inet6 fe80::8c5b:70ff:feca:caff/64 scope link
        valid_lft forever preferred_lft forever
root@gb:/home/s180707# ping 10.0.0.1
PING 10.0.0.1 (10.0.0.1) 56(84) bytes of data.
64 bytes from 10.0.0.1: icmp_seq=1 ttl=64 time=0.028 ms
64 bytes from 10.0.0.1: icmp_seq=2 ttl=64 time=0.033 ms
64 bytes from 10.0.0.1: icmp_seq=3 ttl=64 time=0.032 ms
64 bytes from 10.0.0.1: icmp_seq=4 ttl=64 time=0.031 ms
^Z
[1]+  Stopped                  ping 10.0.0.1
root@gb:/home/s180707#
```