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VM1 [Запущено] - Oracle VirtualBox
Файл Машина Перегляд Введення
GNU nano 6.2
auto lo
iface lo inet loopback

auto enp0s3
iface enp0s3 inet dhcp

auto enp0s8
iface enp0s8 inet static
address 10.10.10.1
netmask 255.255.255.0
broadcast 10.10.10.255
VM1@VM1:~$ cat /etc/network/interfaces
auto lo
iface lo inet loopback

auto enp0s3
iface enp0s3 inet dhcp

auto enp0s8
iface enp0s8 inet static
address 10.10.10.1
netmask 255.255.255.0
broadcast 10.10.10.255
VM1@VM1:~$
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```
VM1@VM1:~$ sudo systemctl restart systemd-networkd
VM1@VM1:~$
```

```
VM1@VM1:~$ sudo ifup enp0s3
Internet Systems Consortium DHCP Client 4.4.1
Copyright 2004-2018 Internet Systems Consortium.
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For info, please visit https://www.isc.org/software/dhcp/

Listening on LPF/enp0s3/08:00:27:aa:9c:28
Sending on   LPF/enp0s3/08:00:27:aa:9c:28
Sending on   Socket/fallback
Created duid "\000\001\000\001/Y\273\014\010\000'\252\234(".
DHCPDISCOVER on enp0s3 to 255.255.255.255 port 67 interval 3 (xid=0xd5a67c15)
DHCPOFFER of 10.0.2.15 from 10.0.2.2
DHCPREQUEST for 10.0.2.15 on enp0s3 to 255.255.255.255 port 67 (xid=0x157ca6d5)
DHCPACK of 10.0.2.15 from 10.0.2.2 (xid=0xd5a67c15)
RTNETLINK answers: File exists
bound to 10.0.2.15 -- renewal in 40520 seconds.
VM1@VM1:~$ _
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VM1@VM1:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state U
    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 f
0
    link/ether 08:00:27:aa:9c:28 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 metric 100 brd 10.0.2.255 scope global
        valid_lft 86343sec preferred_lft 86343sec
    inet6 fd00::a00:27ff:feaa:9c28/64 scope global dynamic m
        valid_lft 86344sec preferred_lft 14344sec
    inet6 fe80::a00:27ff:feaa:9c28/64 scope link
        valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc f
0
    link/ether 08:00:27:3b:4a:a3 brd ff:ff:ff:ff:ff:ff
    inet 10.10.10.1/24 brd 10.10.10.255 scope global enp0s8
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe3b:4aa3/64 scope link
        valid_lft forever preferred_lft forever

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VM2 [Запущено] - Oracle VirtualBox	
Файл Машина Перегляд Введення	
GNU nano 6.2	VM2@VM2:~\$ cat /etc/network/interfaces
auto lo	auto lo
iface lo inet loopback	iface lo inet loopback
auto enp0s3	auto enp0s3
iface enp0s3 inet static	iface enp0s3 inet static
address 10.10.10.2	address 10.10.10.2
netmask 255.255.255.0	netmask 255.255.255.0
gateway 10.10.10.1	gateway 10.10.10.1
broadcast 10.10.10.255	broadcast 10.10.10.255
	VM2@VM2:~\$

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VM2@VM2:~$ sudo ifup enp0s3
VM2@VM2:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state U
    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 f
0
    link/ether 08:00:27:31:8f:56 brd ff:ff:ff:ff:ff:ff
    inet 10.10.10.2/24 brd 10.10.10.255 scope global enp0s3
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe31:8f56/64 scope link
        valid_lft forever preferred_lft forever

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VM1 [Запущено] - Oracle VirtualBox
Файл  Машина  Перегляд  Введення  Пристрої  Довідка
GNU nano 6.2 /etc/sysctl.conf
#
# /etc/sysctl.conf - Configuration file for setting system vari
# See /etc/sysctl.d/ for additional system variables.
# See sysctl.conf (5) for information.
#

#kernel.domainname = example.com

# Uncomment the following to stop low-level messages on console
#kernel.printk = 3 4 1 3

#####
# Functions previously found in netbase
#

# Uncomment the next two lines to enable Spoof protection (reve
# Turn on Source Address Verification in all interfaces to
# prevent some spoofing attacks
#net.ipv4.conf.default.rp_filter=1
#net.ipv4.conf.all.rp_filter=1

# Uncomment the next line to enable TCP/IP SYN cookies
# See http://lwn.net/Articles/277146/
# Note: This may impact IPv6 TCP sessions too
#net.ipv4.tcp_syncookies=1

# Uncomment the next line to enable packet forwarding for IPv4
net.ipv4.ip_forward=1

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VM1@VM1:~$ sudo sysctl -p
net.ipv4.ip_forward = 1

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VM1@VM1:~$ cat /etc/iptables/rules.v4
# Generated by iptables-save v1.8.7 on Tue Mar  4 15:42:52 2025
*nat
:PREROUTING ACCEPT [0:0]
:INPUT ACCEPT [0:0]
:OUTPUT ACCEPT [0:0]
:POSTROUTING ACCEPT [0:0]
-A POSTROUTING -o enp0s3 -j MASQUERADE
COMMIT
# Completed on Tue Mar  4 15:42:52 2025
VM1@VM1:~$

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VM2@VM2:~$ sudo route
Kernel IP routing table

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Destination	Gateway	Genmask	Flags	Metric	Ref	Use	Iface
default	10.10.10.1	0.0.0.0	UG	0	0	0	enp0s3
10.10.10.0	0.0.0.0	255.255.255.0	U	0	0	0	enp0s3

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VM2@VM2:~$

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VM2@VM2:~$ ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=254 time=28.8 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=254 time=30.6 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=254 time=29.8 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=254 time=30.6 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=254 time=29.6 ms
^C
--- 8.8.8.8 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4015ms
rtt min/avg/max/mdev = 28.806/29.889/30.619/0.671 ms
VM2@VM2:~$ dig -x 8.8.8.8

; <<>> DiG 9.18.30-0ubuntu0.22.04.2-Ubuntu <<>> -x 8.8.8.8
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 51097
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 512
;; QUESTION SECTION:
;8.8.8.8.in-addr.arpa.          IN      PTR

;; ANSWER SECTION:
8.8.8.8.in-addr.arpa.  12845   IN      PTR      dns.google.

;; Query time: 28 msec
;; SERVER: 8.8.8.8#53(8.8.8.8) (UDP)
;; WHEN: Tue Mar 04 21:31:00 UTC 2025
;; MSG SIZE rcvd: 73

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VM2@VM2:~$ dig A epam.com

; <<>> DiG 9.18.30-0ubuntu0.22.04.2-Ubuntu <<>> A epam.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 3515
;; flags: qr rd ra ad; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 512
;; QUESTION SECTION:
;epam.com.                    IN      A

;; ANSWER SECTION:
epam.com.                  300     IN      A        104.18.40.171
epam.com.                  300     IN      A        172.64.147.85

;; Query time: 32 msec
;; SERVER: 8.8.8.8#53(8.8.8.8) (UDP)
;; WHEN: Tue Mar 04 21:32:09 UTC 2025
;; MSG SIZE rcvd: 69

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```

VM1@VM1:~$ ip route
default via 10.0.2.2 dev enp0s3

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```

VM1@VM1:~$ route
Kernel IP routing table
Destination      Gateway          Genmask          Flags Metric Ref
default          10.0.2.2        0.0.0.0          UG     100    0
10.0.2.0         0.0.0.0         255.255.255.0    U      100    0
10.0.2.2         0.0.0.0         255.255.255.255 UH     100    0
10.0.2.3         0.0.0.0         255.255.255.255 UH     100    0
10.10.10.0       0.0.0.0         255.255.255.0    U       0     0

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VM1@VM1:~$ traceroute google.com
traceroute to google.com (142.250.203.206), 30 hops max, 60 byte packets
 1 10.0.2.2 (10.0.2.2) 1.450 ms 1.500 ms 2.326 ms
 2 * * *
 3 * * *
 4 * * *
 5 * * *
 6 * * *
 7 *^C
VM1@VM1:~$

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VM2@VM2:~$ traceroute google.com
traceroute to google.com (142.250.203.142), 30 hops max, 60 byte packets
 1 10.10.10.1 (10.10.10.1) 0.721 ms 0.751 ms 0.879 ms
 2 10.0.2.2 (10.0.2.2) 1.412 ms 2.185 ms 1.873 ms
 3 * * *
 4 * * *
 5 * * *
 6 * * *
 7 * * *
 8 *^C

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