LAPORAN RESMI

PRAKTIKUM KONSEP JARINGAN

SETTING TCP/IP LINUX

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Praktikum 1 : mengenali NIC

Teori

NIC (Network Interfaces Card) adalah perangkat yang menyediakan media untuk menghubungkan antar komputer. Kebanyakan Kartu Jaringan berjenis kartu internal, yaitu kartu jaringan yang di pasang pada slot ekspansi di dalam komputer.

Jenis- Jenis Network Interface Card (NIC) diantaranya :
- Network Interface Fisik / Physic
- Network Interface Logis / Logic

Praktikum
- Install lscpi

```
# apt install pciutils
```

Jalankan command diatas untuk menginstall package

```
[sudo] password for nicho:
root@nicho-ubuntu:/home/nicho# apt install pciutils
Reading package lists... Done
Building dependency tree
Reading state information... Done
pciutils is already the newest version (1:3.6.4-1ubuntu0.20.04.1).
pciutils set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 96 not upgraded.
```

- Install lshw

```
# apt install lshw
```

```
root@nicho-ubuntu:/home/nicho# apt install lshw
Reading package lists... Done
Building dependency tree
Reading state information... Done
lshw is already the newest version (02.18.85-0.3ubuntu2.20.04.1).
lshw set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 96 not upgraded.
```

- ```
  # lspci | egrep -i network | ethernet
  ```

```
root@nicho-ubuntu:/home/nicho# lspci | egrep -i 'network|ethernet'
00:03.0 Ethernet controller: Intel Corporation 82540EM Gigabit Ethernet Control
ler (rev 02)
```

- # lspci -vmm

```
root@nicho-ubuntu:/home/nicho# lspci -vmm
Slot:    00:00.0
Class:   Host bridge
Vendor: Intel Corporation
Device: 440FX - 82441FX PMC [Natoma]
Rev:     02

Slot:    00:01.0
Class:   ISA bridge
Vendor: Intel Corporation
Device: 82371SB PIIX3 ISA [Natoma/Triton II]

Slot:    00:01.1
Class:   IDE interface
Vendor: Intel Corporation
Device: 82371AB/EB/MB PIIX4 IDE
Rev:     01
ProgIf: 8a
```

```
Slot:    00:02.0
Class:   VGA compatible controller
Vendor: VMware
Device: SVGA II Adapter
SVendor:        VMware
SDevice:        SVGA II Adapter

Slot:    00:03.0
Class:   Ethernet controller
Vendor: Intel Corporation
Device: 82540EM Gigabit Ethernet Controller
SVendor:        Intel Corporation
SDevice:        PRO/1000 MT Desktop Adapter
Rev:     02

Slot:    00:04.0
Class:   System peripheral
Vendor: InnoTek Systemberatung GmbH
Device: VirtualBox Guest Service

Slot:    00:05.0
Class:   Multimedia audio controller
Vendor: Intel Corporation
Device: 82801AA AC'97 Audio Controller
SVendor:        Dell
SDevice:        82801AA AC'97 Audio Controller
Rev:     01
```

```
Slot:    00:06.0
Class:   USB controller
Vendor:  Apple Inc.
Device:  KeyLargo/Intrepid USB
ProgIf:  10

Slot:    00:07.0
Class:   Bridge
Vendor:  Intel Corporation
Device:  82371AB/EB/MB PIIX4 ACPI
Rev:     08

Slot:    00:0d.0
Class:   SATA controller
Vendor:  Intel Corporation
Device:  82801HM/HEM (ICH8M/ICH8M-E) SATA Controller [AHCI mode]
Rev:     02
ProgIf:  01
```

- # lshw –class network

```
root@nicho-ubuntu:/home/nicho# lshw -class network
  *-network
       description: Ethernet interface
       product: 82540EM Gigabit Ethernet Controller
       vendor: Intel Corporation
       physical id: 3
       bus info: pci@0000:00:03.0
       logical name: enp0s3
       version: 02
       serial: 08:00:27:2f:03:64
       size: 1Gbit/s
       capacity: 1Gbit/s
       width: 32 bits
       clock: 66MHz
       capabilities: pm pcix bus_master cap_list ethernet physical tp 10bt 10bt
-fd 100bt 100bt-fd 1000bt-fd autonegotiation
       configuration: autonegotiation=on broadcast=yes driver=e1000 driverversi
on=5.13.0-44-generic duplex=full ip=10.0.2.15 latency=64 link=yes mingnt=255 mu
lticast=yes port=twisted pair speed=1Gbit/s
       resources: irq:19 memory:f0200000-f021ffff ioport:d020(size=8)
```

Praktikum 2 : Setting IP static

IP static bersifat tetap dan tidak akan berubah kecuali diubah secara manual oleh administrator jaringan.

IP mmodel statis tidak akan berubah meskipun setiap kali pengguna terhubung ke jaringan atau mengirim pesan .Biasanya ditugaskan ke server, server surat, dll.

- Cek IP address dengan command

```
# ip addr
```

```
root@nicho-ubuntu:/home/nicho# ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group defau
lt 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 g
roup default qlen 1000
    link/ether 08:00:27:2f:03:64 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3
       valid_lft 84939sec preferred_lft 84939sec
    inet6 fe80::e8b0:4972:a5ff:ce13/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
```

```
Ipv4 : 10.0.2.15
Netmask : 255.255.255.0
Iface : enp0s3
```

- Cek IP gateway

```
# route -n
```

```
root@nicho-ubuntu:/home/nicho# route -n
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
0.0.0.0         10.0.2.2        0.0.0.0         UG    100    0        0 enp0s3
10.0.2.0        0.0.0.0         255.255.255.0   U     100    0        0 enp0s3
169.254.0.0     0.0.0.0         255.255.0.0     U     1000   0        0 enp0s3
```

```
IP gateway : 10.0.2.2
```

- Edit file konfigurasi interface network di /etc/network/interfaces dengan nano editor

```
# nano /etc/network/interfaces
```

Masukkan nomor IP, netmask, gateway. Perhatikan, gunakan nomor IP yang ada saat anda mengecek nomor IP sebelumnya

```
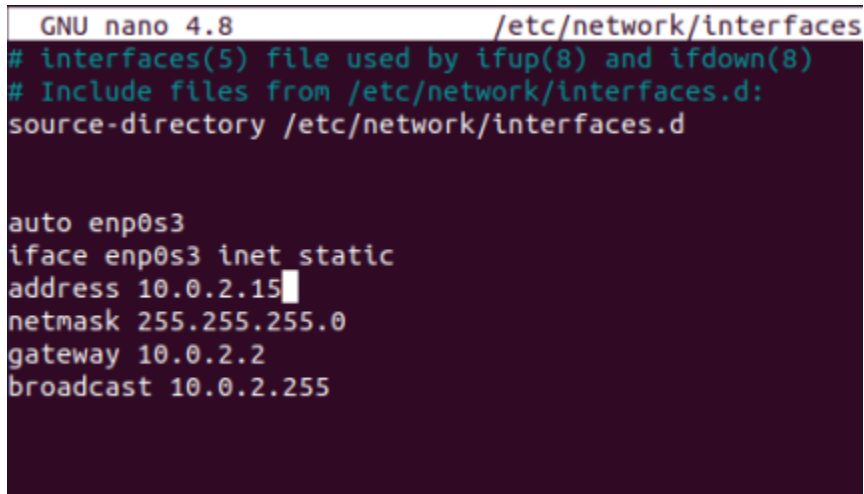auto <int-name>

iface <int-name> inet static
```

```
address <ip-address>
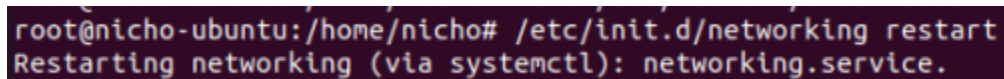
netmask <netmask>

gateway <gateway>
```

```
  GNU nano 4.8                      /etc/network/interfaces
# interfaces(5) file used by ifup(8) and ifdown(8)
# Include files from /etc/network/interfaces.d:
source-directory /etc/network/interfaces.d


auto enp0s3
iface enp0s3 inet static
address 10.0.2.15
netmask 255.255.255.0
gateway 10.0.2.2
broadcast 10.0.2.255
```

```
# /etc/init.d/networking restart
```

```
root@nicho-ubuntu:/home/nicho# /etc/init.d/networking restart
Restarting networking (via systemctl): networking.service.
```

Praktikum 3 : Setting IP dinamis

IP dinamis biasanya dikonfigurasi pada perangkat yang menggunakan protokol DHCP, dan sering memperoleh perubahan. DHCP (Dynamic Host Configuration Protocol) Server menggunakan sebuah sistem untuk melacak dan mencari informasi alamat IP yang asosiasi dengan elemen jaringan yang aktif. Alat yang digunakan untuk menerjemahan biasa dikenla dengan sebutan Domain Name Server (DNS).

- Edit file konfigurasi di /etc /network/interfaces

```
  GNU nano 4.8                    /etc/network/interfaces
# interfaces(5) file used by ifup(8) and ifdown(8)
# Include files from /etc/network/interfaces.d:
source-directory /etc/network/interfaces.d


auto enp0s3
allow-hotplug enp0s3
iface enp0s3 inet dhcp
address 10.0.2.15
netmask 255.255.255.0
gateway 10.0.2.2
```

- Restart network

```
# /etc/init.d/networking restart
```

```
root@nicho-ubuntu:/home/nicho# /etc/init.d/networking restart
Restarting networking (via systemctl): networking.service.
```

- Ketikkan   perintah dibawah agar PC (DHCP Client) meminta informasi network ke DHCP Server

```
# /usr/sbin/dhclient -v
```

```
root@nicho-ubuntu:/home/nicho# /usr/sbin/dhclient -v
Internet Systems Consortium DHCP Client 4.4.1
Copyright 2004-2018 Internet Systems Consortium.
All rights reserved.
For info, please visit https://www.isc.org/software/dhcp/

Listening on LPF/enp0s3/08:00:27:2f:03:64
Sending on   LPF/enp0s3/08:00:27:2f:03:64
Sending on   Socket/fallback
DHCPREQUEST for 10.0.2.15 on enp0s3 to 255.255.255.255 port 67 (xid=0x7d6ac986)
DHCPACK of 10.0.2.15 from 10.0.2.2 (xid=0x86c96a7d)
RTNETLINK answers: File exists
bound to 10.0.2.15 -- renewal in 34977 seconds.
```

Kesimpulan

IP statis tetap, maksudnya adalah alamat IP yang tidak dapat diubah sampai pengguna ingin mengubahnya. Atau sebaliknya, IP Dinamis sering berubah jika setiap pengguna terhubung ke jaringan.

IP statis dikonfigurasikan oleh ISP (Internet Service Provider) sementara itu IP dinamis dapat dikonfigurasi menggunakan DHCP.

Risiko terkait peretasan situs web besar dalam alamat IP statis karena selalu konstan. Sebaliknya, ada risiko rendah terkait pada alamat IP dinamis.

Ketika perangkat dikonfigurasi dengan alamat IP statis, itu dapat dilacak. Sedangkan dalam hal alamat IP dinamis, pelacakan perangkat sulit karena alamat IP selalu berubah.