Praktikum

DNS

I. Tujuan

Praktikan mampu memahami apa yang itu DNS, cara kerja DNS. Mampu melakukan instalasi serta mampu melakukan setting DNS server pada sistem operasi Linux

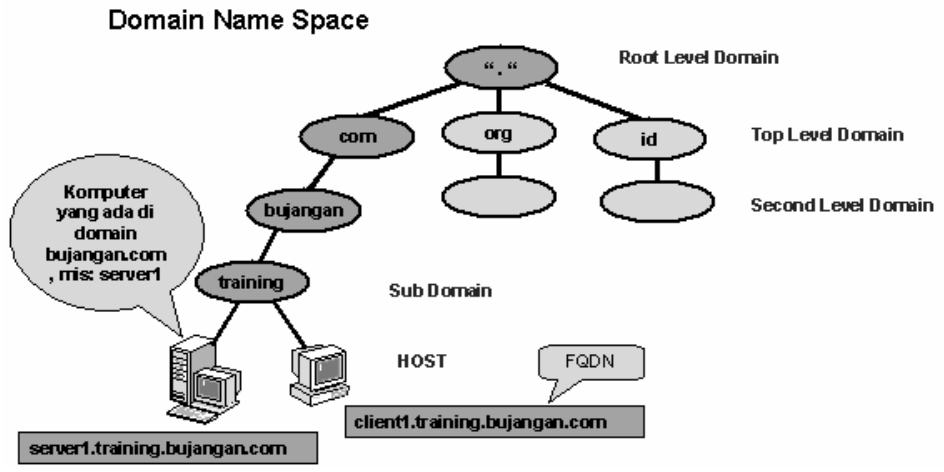
II. Keperluan

a. Koneksi Internet dan IP NameServer ISP sebagai forwarders
b. Paket bind dari Fedora Core 5
c. Praktikan mengetahui pengertian dan cara kerja DNS server

III. Dasar Teori

DNS dapat disamakan fungsinya dengan buku telepon. Dimana setiap komputer di jaringan Internet memiliki host name (nama komputer) dan Internet Protocol (IP) address. Secara umum, setiap client yang akan mengkoneksikan komputer yang satu ke komputer yang lain, akan menggunakan host name.

Lalu komputer anda akan menghubungi DNS server untuk mencek host name yang anda minta tersebut berapa IP address-nya. IP address ini yang digunakan untuk mengkoneksikan komputer anda dengan komputer lainnya



IV. Langkah-langkah Praktikum

Sebelum melakukan konfigurasi server DNS, perlu diketahui beberapa tools dalam checking DNS server seperti **nslookup** (windows dan linux) dan **host** dan **dig**

A. nslookup

Perintah dasar untuk me-*resolve* host name dari sebuah server (missal google.com) dapat menggunakan perintah ***nslookup [hostname].*** Perintah ini terdapat pada system operasi Linux maupun Windows.

a. Cara mencari host di Linux dengan nslookup

Nslookup digunakan untuk mengetahui alamat IP atau alamat Host.

```
josh@learningwithexpert:~$ nslookup
> google.com
Server:         172.24.14.1
Address:        172.24.14.1#53

Non-authoritative answer:
Name:   google.com
Address: 64.233.167.99
Name:   google.com
Address: 64.233.187.99
Name:   google.com
Address: 72.14.207.99
> te.ugm.ac.id
Server:         172.24.14.1
Address:        172.24.14.1#53

Non-authoritative answer:
Name:   te.ugm.ac.id
Address: 222.124.24.18
```

b. Cara mencari host di Windows

Menggunakan nslookup pada system operasi windows

Ketik > *nslookup [alamat DNS server] [alamat yang dituju]*

Pada saat alamat DNS server dikosongi, maka server DNS yang digunakan untuk mendapatkan alamat host adalah server DNS defaultnya.

```
C:\Documents and Settings\josh>nslookup www.ugm.ac.id
Server:  penguin.ugm
Address:  172.16.30.7

Name:    www.ugm.ac.id
Address:  222.124.24.14


C:\Documents and Settings\josh>nslookup
Default Server:  penguin.ugm
Address:  172.16.30.7

> te.ugm.ac.id
Server:  penguin.ugm
Address:  172.16.30.7

Non-authoritative answer:
Name:    te.ugm.ac.id
Address:  222.124.24.18
```

B. ***Dig dan Host***

dig(domain information gropher) sedang host (DNS lookup utility). Tools ini tidak terdapat pada windows, dan hanya terdapat pada Linux dan varian Unix. Dengan perintah ini kita dapat melihat informasi mengenai IP dari suatu host beserta dengan alamat yang dituju.

```
josh@learningwithexpert:~$ dig google.com
; <<>> DiG 9.3.2 <<>> google.com
;; global options:  printcmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 38035
;; flags: qr rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 4, ADDITIONAL: 4

;; QUESTION SECTION:
;google.com.                    IN      A

;; ANSWER SECTION:
google.com.             119     IN      A       72.14.207.99
```

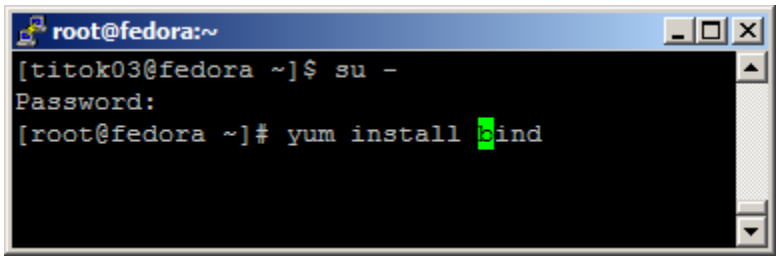
```
google.com.             119     IN      A       64.233.167.99
google.com.             119     IN      A       64.233.187.99

;; AUTHORITY SECTION:
google.com.             88759   IN      NS      ns4.google.com.
google.com.             88759   IN      NS      ns1.google.com.
google.com.             88759   IN      NS      ns2.google.com.
google.com.             88759   IN      NS      ns3.google.com.

;; ADDITIONAL SECTION:
ns4.google.com.         57290   IN      A       216.239.38.10
ns1.google.com.         57290   IN      A       216.239.32.10
ns2.google.com.         57290   IN      A       216.239.34.10
ns3.google.com.         57290   IN      A       216.239.36.10

;; Query time: 4 msec
;; SERVER: 172.24.14.1#53(172.24.14.1)
;; WHEN: Wed Aug 16 11:31:20 2006
;; MSG SIZE  rcvd: 222

josh@learningwithexpert:~$ host www.ugm.ac.id
www.ugm.ac.id has address 222.124.24.14
josh@learningwithexpert:~$ host ugm.ac.id
ugm.ac.id has address 222.124.24.4
ugm.ac.id mail is handled by 0 proxymail.ugm.ac.id.
ugm.ac.id mail is handled by 200 mx3.ugm.ac.id.
josh@learningwithexpert:~$ host -t ns ugm.ac.id
ugm.ac.id name server ns2.ugm.ac.id.
ugm.ac.id name server ns1.ugm.ac.id.
josh@learningwithexpert:~$ host -t mx ugm.ac.id
ugm.ac.id mail is handled by 0 proxymail.ugm.ac.id.
ugm.ac.id mail is handled by 200 mx3.ugm.ac.id.
josh@learningwithexpert:~$ host  google.com
google.com has address 72.14.207.99
google.com has address 64.233.167.99
google.com has address 64.233.187.99
google.com mail is handled by 10 smtp1.google.com.
google.com mail is handled by 10 smtp2.google.com.
```

```
google.com mail is handled by 10 smtp3.google.com.
google.com mail is handled by 10 smtp4.google.com.
```

Setting DNS Server

- Langkah pertama adalah melakukan instalasi ***bind***, sering pula di sebut dengan ***named.*** *Anda harus menjadi* ***root*** *untuk melakukan langkah selanjutnya.*
- Ketik perintah > **su –**
- Masukkan password root milik mesin anda
- Setelah anda menjadi **root**, kemudian

  ketik > **yum install bind**



- Setelah ***bind(named)*** terinstall, langkah berikutnya adalah melakukan konfigurasi pada ***bind(named)***
  - *Pastikan anda memiliki text editor pada mesin Linux anda dan pastikan juga anda dapat menggunakan text editor tersebut. Secara default* ***text editor*** *yang dibundel oleh sistem operasi Linux adalah* ***vi***
  - Selanjutnya anda perlu untuk mengedit file yang terdapat pada /etc/named.conf dan melakukan penambahan **zone file** pada /var/named/
  - **vi /etc/named.conf (masukkan konfigurasi dibawah ini)**

```
include "/var/named/named.conf.options";
// reduce log verbosity on issues outside our control
logging {
      category lame-servers { null; };
};

// prime the server with knowledge of the root servers
zone "." {
        type hint;
```

```
        file "/var/named/db.root";
};

// be authoritative for the localhost forward and reverse
zones, and for
// broadcast zones as per RFC 1912

zone "localhost" {
        type master;
        file "/var/named/db.local";
};

zone "127.in-addr.arpa" {
        type master;
        file "/var/named/db.127";
};

zone "0.in-addr.arpa" {
        type master;
        file "/var/named/db.0";
};

zone "255.in-addr.arpa" {
        type master;
        file "/var/named/db.255";
};

// add local zone definitions here
include "/var/named/named.conf.local";
```

- **vi /var/named/named.conf.local (masukkan konfigurasi local zone dibawah ini)**

```
//
// Add local zone definitions here.

zone "domainku.com" {
      type master;
```

```
      file "/var/named/db.domainku";
};

zone "25.16.172.in-addr.arpa" {
        type master;
      file "/var/named/domainku.rev";
};
```

- **vi /var/named/named.conf.option (masukkan konfigurasi dibawah ini)**

```
options {
      directory "/var/named/data";
      query-source address * port 53;
      forwarders {
            222.124.24.2;
            202.134.0.155;
            202.134.1.10;
            222.124.24.12;
            222.124.24.3;
      };
};
```

- **vi /var/named/db.0 (masukkan konfigurasi reverse data berikut)**

```
;
; BIND reverse data file for broadcast zone
;
$TTL  604800
@     IN    SOA   localhost. root.localhost. (
                        1           ; Serial
                   604800           ; Refresh
                    86400           ; Retry
                  2419200           ; Expire
                   604800 )   ; Negative Cache TTL
;
@     IN    NS    localhost.
```

- **vi /var/named/db.127**

```
;
; BIND reverse data file for local loopback interface
;
$TTL  604800
@     IN    SOA   localhost. root.localhost. (
                        1           ; Serial
                   604800           ; Refresh
                    86400           ; Retry
                  2419200           ; Expire
                   604800 )   ; Negative Cache TTL
;
@     IN    NS    localhost.
1.0.0 IN    PTR   localhost.

;
```

- **vi /var/named/db.local**

```
;
; BIND data file for local loopback interface
;
$TTL  604800
@     IN    SOA   localhost. root.localhost. (
                        1           ; Serial
                   604800           ; Refresh
                    86400           ; Retry
                  2419200           ; Expire
                   604800 )   ; Negative Cache TTL
;
@     IN    NS    localhost.
@     IN    A     127.0.0.1
```

- **vi /var/named/db.root** (atau gunakan command berikut "**dig > /var/named/db.root** ")

```
; <<>> DiG 9.2.3 <<>> ns . @a.root-servers.net.
;; global options:  printcmd
;; Got answer:
```

```
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 18944
;; flags: qr aa rd; QUERY: 1, ANSWER: 13, AUTHORITY: 0, ADDITIONAL: 13

;; QUESTION SECTION:
;.                      IN    NS

;; ANSWER SECTION:
.                 518400      IN    NS    A.ROOT-SERVERS.NET.
.                 518400      IN    NS    B.ROOT-SERVERS.NET.
.                 518400      IN    NS    C.ROOT-SERVERS.NET.
.                 518400      IN    NS    D.ROOT-SERVERS.NET.
.                 518400      IN    NS    E.ROOT-SERVERS.NET.
.                 518400      IN    NS    F.ROOT-SERVERS.NET.
.                 518400      IN    NS    G.ROOT-SERVERS.NET.
.                 518400      IN    NS    H.ROOT-SERVERS.NET.
.                 518400      IN    NS    I.ROOT-SERVERS.NET.
.                 518400      IN    NS    J.ROOT-SERVERS.NET.
.                 518400      IN    NS    K.ROOT-SERVERS.NET.
.                 518400      IN    NS    L.ROOT-SERVERS.NET.
.                 518400      IN    NS    M.ROOT-SERVERS.NET.

;; ADDITIONAL SECTION:
A.ROOT-SERVERS.NET.     3600000     IN    A     198.41.0.4
B.ROOT-SERVERS.NET.     3600000     IN    A     192.228.79.201
C.ROOT-SERVERS.NET.     3600000     IN    A     192.33.4.12
D.ROOT-SERVERS.NET.     3600000     IN    A     128.8.10.90
E.ROOT-SERVERS.NET.     3600000     IN    A     192.203.230.10
F.ROOT-SERVERS.NET.     3600000     IN    A     192.5.5.241
G.ROOT-SERVERS.NET.     3600000     IN    A     192.112.36.4
H.ROOT-SERVERS.NET.     3600000     IN    A     128.63.2.53
I.ROOT-SERVERS.NET.     3600000     IN    A     192.36.148.17
J.ROOT-SERVERS.NET.     3600000     IN    A     192.58.128.30
K.ROOT-SERVERS.NET.     3600000     IN    A     193.0.14.129
L.ROOT-SERVERS.NET.     3600000     IN    A     198.32.64.12
M.ROOT-SERVERS.NET.     3600000     IN    A     202.12.27.33

;; Query time: 81 msec
;; SERVER: 198.41.0.4#53(a.root-servers.net.)
```

```
;; WHEN: Sun Feb  1 11:27:14 2004
;; MSG SIZE  rcvd: 436
```

- **vi /var/named/db.domainku.com**

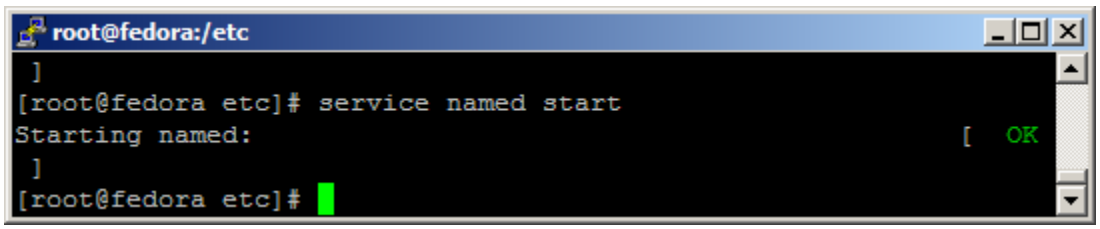
```
$ORIGIN .
$TTL 43200      ; 12 hours
domainku.com            IN SOA  domainku.com. josh.domainku.com. (
                                2006080723 ; serial
                                3600       ; refresh (1 hour)
                                15         ; retry (15 seconds)
                                1209600    ; expire (2 weeks)
                                43200      ; minimum (12 hours)
                                )
              IN          NS      ns1.domainku.com.
            IN          NS    ns2.domainku.com.
              IN          A       172.16.25.10
              IN          MX      5 mx1.domainku.com.

$ORIGIN domainku.com.
dns         IN    CNAME domainku.com.
gate            IN      A       172.16.25.17
ns1         IN    A     172.16.25.10
mx1         IN    A     172.16.25.18
student         IN      A       172.16.25.19
papirus         IN      A       172.16.25.21
proxy       IN    A     172.16.25.1


$ORIGIN student.domainku.com.
ftp               CNAME student.domainku.com.
mail              CNAME student.domainku.com.
news              CNAME student.domainku.com.
server            CNAME student.domainku.com.
www               CNAME student.domainku.com.
```

- **vi /var/named/domainku.rev**

```
$ORIGIN 25.16.172.in-addr.arpa.
$TTL  43200
@      IN    SOA   ns1.domainku.com. josh.domainku.com. (
                   2006080712         ; Serial
                      3600            ; Refresh
                      15        ; Retry
                      1209600   ; Expire
                     43200 )    ; Negative Cache TTL
;
@      IN    NS    ns1.domainku.com.

17     IN    PTR   gate.domainku.com.
18     IN    PTR   server.domainku.com.
19     IN    PTR   student.domainku.com.
1      IN    PTR   proxy.domainku.com.
24     IN    PTR   bintang.domainku.com.
```

- Langkah selanjutnya adalah melakukan pengaktifan DNS anda. Pada shell mode

  Ketik > **service start named**



- Masukkan ip 127.0.0.1 di /etc/resolv.conf sebagai nameserver

  vi /etc/resolv.conf

  ```
  search domainku.com
  nameserver 127.0.0.1
  ```

- Testing DNS menggunakan host dan dig

```
[root@fedora named]# host domainku.com
domainku.com has address 172.16.25.10
domainku.com mail is handled by 5 mx1.domainku.com.
[root@fedora named]# dig domainku.com
```

```
; <<>> DiG 9.3.2 <<>> domainku.com
;; global options:  printcmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 64515
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 2, ADDITIONAL: 1

;; QUESTION SECTION:
;domainku.com.                  IN      A

;; ANSWER SECTION:
domainku.com.           43200   IN      A       172.16.25.10

;; AUTHORITY SECTION:
domainku.com.           43200   IN      NS      ns1.domainku.com.
domainku.com.           43200   IN      NS      ns2.domainku.com.

;; ADDITIONAL SECTION:
ns1.domainku.com.       43200   IN      A       172.16.25.10

;; Query time: 1 msec
;; SERVER: 127.0.0.1#53(127.0.0.1)
;; WHEN: Wed Aug 16 11:58:25 2006
;; MSG SIZE  rcvd: 98

[josh@fedora ~]$ dig axfr domainku.com

; <<>> DiG 9.3.2 <<>> axfr domainku.com
;; global options:  printcmd
domainku.com.                43200    IN         SOA       domainku.com.
josh.domainku.com. 2006080723 3600 15 1209600 43200
domainku.com.           43200   IN      NS      ns1.domainku.com.
domainku.com.           43200   IN      NS      ns2.domainku.com.
domainku.com.           43200   IN      A       172.16.25.10
domainku.com.           43200   IN      MX      5 mx1.domainku.com.
dns.domainku.com.       43200   IN      CNAME   domainku.com.
gate.domainku.com.      43200   IN      A       172.16.25.17
mx1.domainku.com.       43200   IN      A       172.16.25.18
```

```
ns1.domainku.com.       43200   IN      A       172.16.25.10
papirus.domainku.com.   43200   IN      A       172.16.25.21
proxy.domainku.com.     43200   IN      A       172.16.25.1
student.domainku.com.   43200   IN      A       172.16.25.19
ftp.student.domainku.com. 43200 IN      CNAME   student.domainku.com.
mail.student.domainku.com. 43200 IN     CNAME   student.domainku.com.
news.student.domainku.com. 43200 IN     CNAME   student.domainku.com.
server.student.domainku.com. 43200 IN   CNAME   student.domainku.com.
www.student.domainku.com. 43200 IN      CNAME   student.domainku.com.
domainku.com.                43200    IN         SOA       domainku.com.
josh.domainku.com. 2006080723 3600 15 1209600 43200
;; Query time: 2 msec
;; SERVER: 127.0.0.1#53(127.0.0.1)
;; WHEN: Wed Aug 16 12:09:01 2006
;; XFR size: 18 records (messages 1)
```

Troubleshooting konfigurasi DNS dilakukan dengan memantau file log yang ada di /var/log/messages