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	Title of Experiment : Install BIND
Date	

Sub titles : Assignment/ Problem Solution, Flow chart/Algorithm, Problem Listing,
Input Screen, Output Screen, Comments (If any)

Aim :- Install DNS server BIND, configure DNS server which resolves domain name or IP address, Install BIND, configure BIND, limit ranges You allow to access if needed.

Theory :-

- DNS (Domain Name Service)
  - DNS is an internet service that maps IP address and Fully qualified domain names (FQDN) to one another.
  - Computers that run DNS are called name servers
  - Ubuntu ships with BIND (Berkley Internet Naming Daemon) the most common program used for maintaining a name server on Linux.
  - The DNS configuration files are stored in the /etc/bind directory. The primary configuration file is /etc/bind/named.conf
  - The include line specified the file name which contains the DNS options.
  - The directory line in the /etc/bind/named.conf options file tells DNS where to look for files.

Remark

Signature

- All files BIND uses will be relative to this directory.
- The file named /etc/bind/db.root describes the root name servers in the world.
- The server : change overtime , so the /etc/bind/db.root file must be maintained now and then. This is usually done as updates to the bind9 package.
- The zone section defines a master server and, it is stored in a file mentioned in the file option.

- Install BIND9 :-
  $ apt-get -y install bind9 bind9utils.

Install BIND

```
root@srv:~# hostname
srv.world
root@srv:~# apt-get -y install bind9 bind9utils
Reading package lists... Done
Building dependency tree
Reading state information... Done
........
Processing triggers for ureadahead (0.100.0-19) ...
Processing triggers for ufw (0.35-0ubuntu2) ...
root@srv:~# sudo nano /etc/bind/named.conf
// This is the primary configuration file for the BIND DNS server named.
//
// Please read /usr/share/doc/bind9/README.Debian.gz for information on the
// structure of BIND configuration files in Debian, *BEFORE* you customize
// this configuration file.
//
// If you are just adding zones, please do that in /etc/bind/named.conf.local
#include "/etc/bind/named.conf.options";
#include "/etc/bind/named.conf.local";
#include "/etc/bind/named.conf.default-zones";
include "/etc/bind/named.conf.internal-zones";
include "/etc/bind/named.conf.external-zones";
root@srv:~# sudo nano /etc/bind/named.conf.internal-zones
view "internal" {
match-clients{
localhost;
192.168.56.0/24;
};

zone "srv.world"{
type master;
file"/etc/bind/serv.world.lan";
allow-update{none;};
};
zone "0.56.168.in-addr.arpa"{
type master;
file "/etc/bind/0.56.168.db";
allow-update{none;};
};
include "/etc/bind/named.conf.default-zones";
root@srv:~# sudo nano /etc/bind/named.conf.external-zones
```

```
view "external"{
match-clients{any;};
allow-query{any;};
recursion no;
zone "srv.world"{
type master;
file"/etc/bind/srv.world.wan";
allow-update{none;};
};
zone"80.0.16.172.in-addr.arpa"{
type master;
file"/etc/bind/80.0.16.172.db";
allow-update{none;};
};
};
root@srv:~# sudo nano /etc/bind/named.conf.options
options {
        directory "/var/cache/bind";
        // If there is a firewall between you and nameservers you want
.......
allow-query{localhost;192.168.56.0/24;};
allow-recursion{localhost;192.168.56.0/24;};
....
dnssec-validation auto;
        auth-nxdomain no;    # conform to RFC1035
        listen-on-v6 { none; };
};
root@srv:~# sudo nano /etc/bind/srv.world.lan
  GNU nano 2.5.3      File: /etc/bind/srv.world.lan
$TTL 86400
@ IN SOA dlp.srv.world. root.srv.world. (
2016042101 ;Serial
3600 ;Refresh
1800 ;Retry
604800 ;Expire
86400 ;Minimum TTL
)
# define name server
IN NS dlp.srv.world.
# define name server's IP address
IN A 192.168.56.101
# define mail exchanger
```

```
86400 ;Minimum TTL
)
# define name server
IN NS dlp.srv.world.
# define the range of this domain included
IN PTR srv.world.
IN A 255.255.255.248
# define hostname of an IP address
82 IN PTR dlp.srv.world.
# sudo nano /etc/bind/80.0.16.172.db
root@srv:~# sudo nano /etc/network/interfaces
dns-nameservers
192.168.56.101
root@srv:~# systemctl restart ifup@enp0s8 bind9
root@srv:~# dig dpl.srv.world.
; <<>> DiG 9.10.3-P4-Ubuntu <<>> dpl.srv.world.
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NXDOMAIN, id: 19023
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 1
.....
;; Query time: 575 msec
;; SERVER: 127.0.1.1#53(127.0.1.1)
;; WHEN: Tue Aug 29 13:10:44 IST 2023
;; MSG SIZE  rcvd: 86
root@srv:~# dig -x 192.168.56.101
; <<>> DiG 9.10.3-P4-Ubuntu <<>> -x 192.168.56.101
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NXDOMAIN, id: 31990
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 0, ADDITIONAL: 1
root@srv:~# sudo nano /etc/bind/srv.world.lan
root@srv:~# rndc reload
server reload successful
root@srv:~# dig ftp.srv.world.
; <<>> DiG 9.10.3-P4-Ubuntu <<>> ftp.srv.world.
;; global options: +cmd
;; Got answer:
....
;; Query time: 493 msec
;; SERVER: 127.0.1.1#53(127.0.1.1)
;; WHEN: Tue Aug 29 13:15:07 IST 2023
```

```
IN MX 10 dlp.srv.world.
# define IP address of a hostname
dlp IN A 192.168.56.101
root@srv:~# sudo nano /etc/bind/srv.world.wan
$TTL 86400
@ IN SOA dlp.srv.world. root.srv.world. (
2016042101 ;Serial
3600 ;Refresh
1800 ;Retry
604800 ;Expire
86400 ;Minimum TTL
)
# define name server
IN NS dlp.srv.world.
# define name server's IP address
IN A 172.16.0.82
# define mail exchanger
IN MX 10 dlp.srv.world.
# define IP address of a hostname
dlp IN A 172.16.0.82
root@srv:~# sudo nano /etc/bind/0.56.168.db
$TTL 86400
@ IN SOA dlp.srv.world. root.srv.world. (
2016042101 ;Serial
3600 ;Refresh
1800 ;Retry
604800 ;Expire
86400 ;Minimum TTL
)
# define name server
IN NS dlp.srv.world.
# define the range of this domain included
IN PTR srv.world.
IN A 255.255.255.0
# define hostname of an IP address
101 IN PTR dlp.srv.world.
root@srv:~ $TTL 86400
@ IN SOA dlp.srv.world. root.srv.world. (
2016042101 ;Serial
3600 ;Refresh
1800 ;Retry
604800 ;Expire
```

;; MSG SIZE rcvd: 86

*****Slave DNS Server*******
```
root@srv:~# sudo nano /etc/bind/named.conf.options
    options {
       directory "/var/cache/bind";
....
allow-query{localhost;192.168.56.0/24;};
allow-recursion{localhost;192.168.56.0/24;};
allow-transfer { localhost; 10.0.0.0/24;
172.16.0.80/29;
.....
dnssec-validation auto;
       auth-nxdomain no;    # conform to RFC1035
       listen-on-v6 { none; };
};
root@srv:~# sudo nano /etc/bind/named.conf.external-zones
zone"80.0.16.172.in-addr.arpa"{
type master;
file"/etc/bind/80.0.16.172.db";
allow-update{none;};
};
allow-update{none;};
};
};
zone "srv.world" {
type slave;
masters { 172.16.0.82; };
file "/etc/bind/slaves/srv.world.wan";
};
root@srv:~# mkdir /etc/bind/slaves
root@srv:~# chown bind. /etc/bind/slaves
root@srv:~# rndc reload
server reload successful
root@srv:~# ls /etc/bind/slaves
srv.world.wan
```