WHAT IS DNS?

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* DNS is stands for domain name system

* DNS is like a phonebook

* It is used on the internet to translate domain name to IP address and IP address to domain name

HOW DNS WORK?

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* It is used to convert human-readable domain name (www.google.com) into computer-friendly IP address

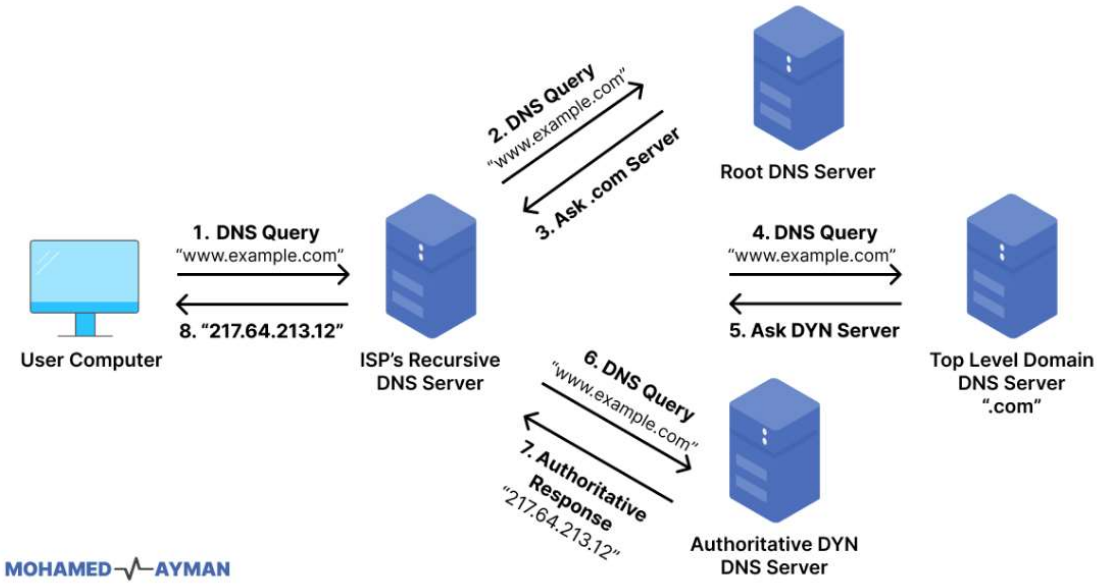
* There are some server involved in loading a webpage,there are

1.DNS resolver

2.Root name server

3.TLD name server (top level domain)

4.Authoritative name server


2. DNS Query
"www.example.com"
3. Ask .com Server
Root DNS Server
1. DNS Query
"www.example.com"
8. "217.64.213.12"
User Computer
ISP's Recursive
DNS Server
4. DNS Query
"www.example.com"
5. Ask DYN Server
Top Level Domain
DNS Server
".com"
6. DNS Query
"www.example.com"
7. Authoritative
Response
"217.64.213.12"
Authoritative DYN
DNS Server
MOHAMED AYMAN

RECORDS IN DNS

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* A - Address record (Ipv4)

* AAAA - Address record (Ipv6)

* PTR - Pointer record

* MX - Mail exchange

* SOA - Start of authority record

* NS - Name server record

*SRV - Service location record

*CNAME - Canonical name record

DNS CONFIGURATION

* Port number - 53

* Configuration files

1. /etc/named.conf

2. /etc/named.rfc1912.zone

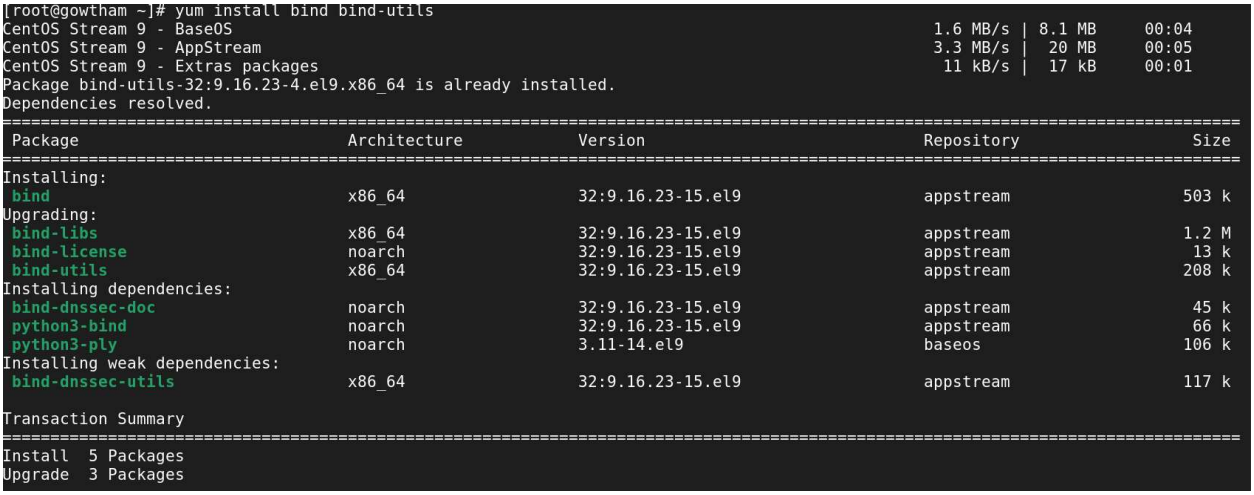
3. /etc/resolv.conf

* service - named

Forward

Step 1: Install bind and bind-utils packages

yum install bind bind-utils



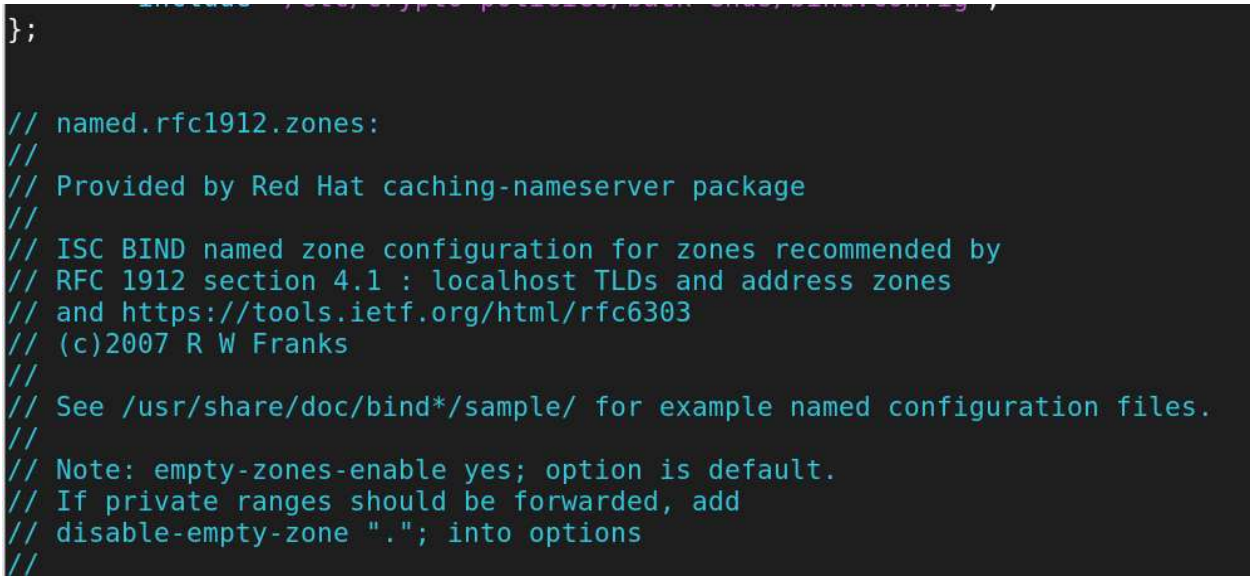
```
[root@gowtham ~]# yum install bind bind-utils
CentOS Stream 9 - BaseOS                                        1.6 MB/s | 8.1 MB     00:04
CentOS Stream 9 - AppStream                                     3.3 MB/s |  20 MB     00:05
CentOS Stream 9 - Extras packages                                11 kB/s |  17 kB     00:01
Package bind-utils-32:9.16.23-4.el9.x86_64 is already installed.
Dependencies resolved.
================================================================================================================================
 Package                        Architecture          Version                      Repository                  Size
================================================================================================================================
Installing:
 bind                           x86_64                32:9.16.23-15.el9            appstream                  503 k
Upgrading:
 bind-libs                      x86_64                32:9.16.23-15.el9            appstream                  1.2 M
 bind-license                   noarch                32:9.16.23-15.el9            appstream                   13 k
 bind-utils                     x86_64                32:9.16.23-15.el9            appstream                  208 k
Installing dependencies:
 bind-dnssec-doc                noarch                32:9.16.23-15.el9            appstream                   45 k
 python3-bind                   noarch                32:9.16.23-15.el9            appstream                   66 k
 python3-ply                    noarch                3.11-14.el9                  baseos                     106 k
Installing weak dependencies:
 bind-dnssec-utils              x86_64                32:9.16.23-15.el9            appstream                  117 k

Transaction Summary
================================================================================================================================
Install  5 Packages
Upgrade  3 Packages
```

Step 2: Modify named.conf file

Delete unwanted entries in `named.conf`.

vi /etc/named.conf

Delete from `logging` to `root.key` (last line).



Step 3: Append /etc/named.rfc1912.zone to /etc/named.conf

cat /etc/named.rfc1912.zones >> /etc/named.conf

Step 4: Modify /etc/named.conf

vi /etc/named.conf

Append the following content:

```
options {
        listen-on port 53 { 127.0.0.1;192.168.48.128; };
        listen-on-v6 port 53 { ::1; };
        directory       "/var/named";
        dump-file       "/var/named/data/cache_dump.db";
        statistics-file "/var/named/data/named_stats.txt";
        memstatistics-file "/var/named/data/named_mem_stats.txt";
        secroots-file   "/var/named/data/named.secroots";
        recursing-file  "/var/named/data/named.recursing";
        allow-query     { localhost;any; };
```

```
zone "gowtham.com" IN {
        type master;
        file "forward_zone";
        allow-update { none; };
};
```

Step 5: Create forward_zone file

Navigate to `/var/named` and create `forward_zone` file:

cd /var/named

cp named.localhost forward_zone

Step 6: Change ownership of forward_zone file to “named”

chown named:named forward_zone

```
-rw-r-----. 1 named named  253 Jul  2 15:07 forward_zone
```

Step 7: Modify forward_zone file

vi forward_zone

Append the following content:

```
$TTL 1D
@       IN SOA  gowtham.com. rname.invalid. (
                                        4545    ; serial
                                        1D      ; refresh
                                        1H      ; retry
                                        1W      ; expire
                                        3H )    ; minimum
        NS      gowtham.com.
gowtham.com. IN A 192.168.48.128
server       IN A 192.168.48.128
client       IN A 192.168.48.129
~
```

Step 8: Update /etc/resolv.conf file

search gowtham.com

nameserver 192.168.48.128

Step 9: Restart or reload named service

#systemctl reload named

#systemctl enable named

Step 10: Client-side configuration

Update `/etc/resolv.conf` file on the client:

search glotech.com

nameserver 192.168.44.10

Validation

host glotech.com

nslookup glotech.com

```
[root@gowtham named]# nslookup gowtham.com
Server:         192.168.48.128
Address:        192.168.48.128#53

Name:   gowtham.com
Address: 192.168.48.128
```

Reverse

Step : 1

* Need to edit in the *named.conf* file

```
[root@gowtham named]# vi /etc/named.conf
```

```
zone "1.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.ip6.arpa" IN {
        type master;
        file "named.loopback";
        allow-update { none; };
};

zone "48.168.192.in-addr.arpa" IN {
        type master;
        file "reverse_zone";
        allow-update { none; };
};

zone "0.in-addr.arpa" IN {
        type master;
        file "named.empty";
        allow-update { none; };
};
```

```
[root@gowtham ~]# systemctl reload named.service
```

Step 2: Create reverse_zone file

Navigate to `/var/named` and create `reverse_zone` file:

cd /var/named

cp named.loopback reverse_zone

```
[root@gowtham named]# cp named.loopback reverse_zone
```

Step 2: Change ownership of forward_zone file to “named”

chown named:named reverse_zone

```
-rw-r-----. 1 named named  274 Jul  2 16:16 reverse_zone
```

```
[root@gowtham named]# vi reverse_zone
```

```
$TTL 1D
@       IN SOA gowtham.com. rname.invalid. (
                                        2345    ; serial
                                        1D      ; refresh
                                        1H      ; retry
                                        1W      ; expire
                                        3H )    ; minimum
        NS      gowtham.com.
gowtham.com.   IN A 192.168.48.128
128            IN PTR gowtham
129            IN PTR client
130            IN PTR raja
```

Step:3

* Need to update the file

```
# Generated by NetworkManager
search gowtham.com
nameserver 192.168.48.128
```

```
[root@gowtham named]# systemctl reload named.service
```

Step:4

```
[root@gowtham named]# host 192.168.48.128
128.48.168.192.in-addr.arpa domain name pointer gowtham.48.168.192.in-addr.arpa.
[root@gowtham named]# nslookup 192.168.48.128
128.48.168.192.in-addr.arpa     name = gowtham.48.168.192.in-addr.arpa.
```