DNS Server Configuration

At Server Side:

1. Install DNS server packages as shown below-

```
[root@rhel9-server ~]#
[root@rhel9-server ~]# yum install bind bind-utils
```

2. Set the fully qualified domain name-

```
[root@rhel9-server ~]#
[root@rhel9-server ~]# hostnamectl set-hostname rhel9-server.cricbuzz.com
```

3. Verify it using hostnamectl command-

```
[root@rhel9-server ~]# hostnamectl
 Static hostname: rhel9-server.cricbuzz.com
```

4. Start & enable dns service named-

```
[root@rhel9-server ~]# systemctl enable --now named
[root@rhel9-server ~]#
```

5. Check the service status-

```
[root@rhel9-server ~]# systemctl status named
● named.service - Berkeley Internet Name Domain (DNS)
     Loaded: loaded (/usr/lib/systemd/system/named.service; enabled; vendor preset: disabled)
     Active: active (running) since Fri 2022-11-04 08:21:59 IST; 1h 35min ago
   Main PID: 896 (named)
      Tasks: 5 (limit: 10953)
     Memory: 24.5M
        CPU: 620ms
     CGroup: /system.slice/named.service
             └─896 /usr/sbin/named -u named -c /etc/named.conf
```

6. Take backup of /etc/named.conf file as shown below-

```
[root@rhel9-server ~]#
[root@rhel9-server ~]# cp /etc/named.conf /etc/named.bak
```

7. Now edit named.conf file as shown-

```
options {
#       listen-on port 53 { 127.0.0.1; };
#       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; 192.168.78.0/24; };
```

We have to comment 2nd & 3rd line and add our network in allow-query in last line in above pic. Now go to last section of this file & created forward & reverse lookup zone & save the file as shown below-

```
//Forward Lookup Zone
zone "cricbuzz.com" IN {
type master;
file "cricbuzz.com.db";
allow-update { none; };
allow-query { any; };
};

//Reverse Lookup Zone
zone "78.168.192.in-addr.arpa" IN {
type master;
file "cricbuzz.com.rev";
allow-update { none; };
allow-query { any; };
};
```

8. Now, we will create forward DNS zone file, cricbuzz.com.db (Mentioned in named.conf file) in /var/named directory & add lines shown below–

```
$TTL 86400
@ IN SOA rhel9-server.cricbuzz.com. admin.cricbuzz.com. (
                                        2020011800      ; serial
                                        3600    ; refresh
                                        1800    ; retry
                                        604800  ; expire
                                        86400   ; minimum TTL

)

;Name Server Information
@ IN NS rhel9-server.cricbuzz.com.
;IP Address for NAME Server
rhel9-server IN A 192.168.78.140
;Mail Server MX (Mail Exchanger) Record
cricbuzz.com. IN MX 10 mail.cricbuzz.com.
;A Record for the following Host Name
www IN A 192.168.78.200
mail IN A 192.168.78.250
client1 IN A 192.168.78.146
;CNAME Record
ftp IN CNAME www.cricbuzz.com.
```

Here, 192.168.78.146 is one of client's IP.

9. In the same way, we will create reverse DNS zone file, cricbuzz.com.rev (Mentioned in named.conf file) in /var/named directory & add lines shown below–

```
$TTL 86400
@ IN SOA rhel9-server.cricbuzz.com. admin.cricbuzz.com. (
                                        2020011800      ; serial
                                        3600    ; refresh
                                        1800    ; retry
                                        604800  ; expire
                                        86400   ; minimum TTL

)

;Name Server Information
@ IN NS rhel9-server.cricbuzz.com.
;IP Address for NAME Server
rhel9-server IN A 192.168.78.140
;Reverse Lookup for Name Server
140 IN PTR rhel9-server.cricbuzz.com.
;PTR Record IP Address to Hostname
200 IN PTR www.cricbuzz.com.
250 IN PTR mail.cricbuzz.com.
146 IN PTR client1.cricbuzz.com
```

10. Now, changed the ownership of these two files to named as shown below-

```
[root@rhel9-server named]# chown named:named cricbuzz.com.db
[root@rhel9-server named]#
[root@rhel9-server named]# chown named:named cricbuzz.com.rev
[root@rhel9-server named]#
[root@rhel9-server named]# ls -ll
total 24
-rw-r-----. 1 named named  546 Nov  3 22:15 cricbuzz.com.db
-rw-r--r--. 1 named named  501 Nov  3 22:16 cricbuzz.com.rev
```

11. Now check the configuration using below commands-

```
[root@rhel9-server named]# named-checkconf
[root@rhel9-server named]#
[root@rhel9-server named]# named-checkzone cricbuzz.com /var/named/cricbuzz.com.db
zone cricbuzz.com/IN: loaded serial 2020011800
OK
[root@rhel9-server named]#
[root@rhel9-server named]# named-checkzone 192.168.78.140 /var/named/cricbuzz.com.rev
zone 192.168.78.140/IN: loaded serial 2020011800
OK
[root@rhel9-server named]#
[root@rhel9-server named]#
```

Here, 192.168.78.140 is DNS server IP.

12. Add DNS service in firewall to allow-

```
[root@rhel9-server named]# firewall-cmd --permanent --add-service=dns --zone=public
Warning: ALREADY_ENABLED: dns
success
[root@rhel9-server named]#
[root@rhel9-server named]#
[root@rhel9-server named]# firewall-cmd --reload
success
[root@rhel9-server named]#
[root@rhel9-server named]#
[root@rhel9-server named]# firewall-cmd --list-all
public (active)
  target: default
  icmp-block-inversion: no
  interfaces: ens160
  sources:
  services: cockpit dhcpv6-client dns nfs ntp ssh
  ports:
  protocols:
  forward: yes
  masquerade: no
  forward-ports:
  source-ports:
  icmp-blocks:
  rich rules:
[root@rhel9-server named]#
```

At Client Side:

1. Add DNS server IP in /etc/resolv.conf-

```
# Generated by NetworkManager
search cricbuzz.com
nameserver 192.168.78.140
~
```

Or, we can add nameserver using nmtui command (To edit connection)-

```
                    Edit Connection

        Profile name ens160
              Device ens160 (00:0C:29:40:0B:FB)

  = ETHERNET                                                <Show>

  = IPv4 CONFIGURATION <Manual>                             <Hide>
             Addresses 192.168.78.146/24  <Remove>
                       <Add...>
               Gateway 192.168.78.1
           DNS servers 192.168.78.140  <Remove>
                       <Add...>
       Search domains <Add...>

               Routing (No custom routes) <Edit...>
    [ ] Never use this network for default route
    [ ] Ignore automatically obtained routes
    [ ] Ignore automatically obtained DNS parameters

    [ ] Require IPv4 addressing for this connection

  = IPv6 CONFIGURATION <Automatic>                          <Show>

  [X] Automatically connect
  [X] Available to all users

                                                    <Cancel> <OK>
```

2. Now restart NetworkManager-

```
[root@client1 network-scripts]# systemctl restart NetworkManager
[root@client1 network-scripts]#
[root@client1 network-scripts]#
```

3. To verify, we will use nslookup at client side as shown below-

```
[root@client1 ~]# nslookup rhel9-server.cricbuzz.com
Server:         192.168.78.140
Address:        192.168.78.140#53

Name:   rhel9-server.cricbuzz.com
Address: 192.168.78.140

[root@client1 ~]#
[root@client1 ~]# nslookup mail.cricbuzz.com
Server:         192.168.78.140
Address:        192.168.78.140#53

Name:   mail.cricbuzz.com
Address: 192.168.78.250

[root@client1 ~]# nslookup www.cricbuzz.com
Server:         192.168.78.140
Address:        192.168.78.140#53

Name:   www.cricbuzz.com
Address: 192.168.78.200

[root@client1 ~]#
[root@client1 ~]# nslookup 192.168.78.140
140.78.168.192.in-addr.arpa     name = rhel9-server.cricbuzz.com.

[root@client1 ~]#
[root@client1 ~]# nslookup 192.168.78.200
200.78.168.192.in-addr.arpa     name = www.cricbuzz.com.

[root@client1 ~]#
[root@client1 ~]# nslookup 192.168.78.250
250.78.168.192.in-addr.arpa     name = mail.cricbuzz.com.

[root@client1 ~]#
```

4. To verify client DNS, we will use nslookup at Server side as shown below-

```
[root@rhel9-server ~]# nslookup client1.cricbuzz.com
Server:         ::1
Address:        ::1#53

Name:   client1.cricbuzz.com
Address: 192.168.78.146

[root@rhel9-server ~]# nslookup 192.168.78.146
146.78.168.192.in-addr.arpa     name = client1.cricbuzz.com.78.168.192.in-addr.arpa.

[root@rhel9-server ~]#
```