DNS - Domain Name System

- Domain Name System (DNS) is a network service that maps, or resolves, domain names to their respective IP addresses.
- DNS performs the function of the **/etc/hosts** file.
- Port -53
- A query is a request for name resolution to a DNS server. There are two types of queries:

Checked hostname and ip

```
Similar Command 13.   "hostname"
[root@vivek ~]# hostname -f
vivek.gandhi.com
[root@vivek ~]# hostname -i
192.168.254.133
[root@vivek ~]#
```

Install the application bind*

```
[root@vivek ~]# yum install bind*
Updating Subscription Management repositories.
Unable to read consumer identity
This system is not registered to Red Hat Subscription Management. You
Last metadata expiration check: 1 day, 2:24:45 ago on Sun 27 Feb 2022
Package bind-export-libs-32:9.11.13-3.el8.x86_64 is already installed
Package bind-libs-32:9.11.13-3.el8.x86_64 is already installed.
Package bind-libs-lite-32:9.11.13-3.el8.x86_64 is already installed.
Package bind-license-32:9.11.13-3.el8.noarch is already installed.
Package bind-utils-32:9.11.13-3.el8.x86_64 is already installed.
Dependencies resolved.
```

```
[root@vivek ~]# yum install caching* -y
Updating Subscription Management repositories.
Unable to read consumer identity
This system is not registered to Red Hat Subscription Management. Yo
Last metadata expiration check: 1 day, 2:26:15 ago on Sun 27 Feb 202
Package bind-32:9.11.13-3.el8.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
```

DNS Service start

```
[root@vivek ~]# systemctl start named
[root@vivek ~]# systemctl enable named
Created symlink /etc/systemd/system/multi-user.target.wants/named.se
[root@vivek ~]# systemctl status named
● named.service - Berkeley Internet Name Domain (DNS)
   Loaded: loaded (/usr/lib/systemd/system/named.service; enabled; v
   Active: active (running) since Mon 2022-02-28 03:10:29 EST; 12s a
```

take a backup of the original configuration file /etc/named.conf

```
[root@vivek ~]# cp /etc/named.conf /etc/named.conf.orig
```

open /etc/named.conf configuration file for editing

```
[root@vivek etc]# vi /etc/named.com
[root@vivek etc]# vim /etc/named.conf
[root@vivek etc]#
```

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configuration section

```
options {
        listen-on port 53 { 192.168.254.133; };
        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; 192.168.254.0/24; };
```

Create the forward and reverse DNS ZONE

```
[root@vivek etc]# vim /etc/named.rfc1912.zones
[root@vivek etc]#
zone "gandhi.com" IN {
        type master;
        file "vivek.flz";
        allow-update { none; };
};


zone "254.168.192.in-addr.arpa" IN {
        type master;
        file "vivek.rlz";
        allow-update { none; };
};
```

Copy file to create vivek flz

```
[root@vivek etc]# cd /var/named
[root@vivek named]# ls
chroot  chroot_sdb  data  dynamic  named.ca  named.empty  named.localhost  named.loopback  slaves
[root@vivek named]# cp named.localhost vivek.flz
[root@vivek named]#
```

Create and configure file

```
[root@vivek named]# vim vivek.flz
[root@vivek named]# vim vivek.flz
$TTL 1D
@       IN SOA vivek.gandhi.com.        root@gandhi.com. (
                                        0       ; serial
                                        1D      ; refresh
                                        1H      ; retry
                                        1W      ; expire
                                        3H )    ; minimum
        IN      NS      vivek.gandhi.com.
vivek   IN      A       192.168.254.133
client  IN      A       192.168.254.139
```

Create and configure file

```
[root@vivek named]# vim vivek.rlz
$TTL 1D
@       IN  SOA  vivek.gandhi.com.        root@gandhi.com. (
                                          0       ; serial
                                          1D      ; refresh
                                          1H      ; retry
                                          1W      ; expire
                                          3H )    ; minimum
        IN     NS        vivek.gandhi.com.
vivek   IN     A         192.168.254.133
133     IN     PTR       vivek.gandhi.com.
139     IN     PTR       pooja.gandhi.com.
```

To check the consistency of zone

```
[root@vivek named]# named-checkzone vivek.gandhi vivek.flz
zone vivek.gandhi/IN: loaded serial 0
OK
[root@vivek named]# named-checkzone vivek.gandhi vivek.rlz
zone vivek.gandhi/IN: loaded serial 0
OK
```

ADD DNS ip in ethe configuration file

```
[root@vivek named]# cd /etc/sysconfig/network-scripts/
[root@vivek network-scripts]# ls
ifcfg-ens160
[root@vivek network-scripts]# vim ifcfg-ens160
```

```
TYPE="Ethernet"
PROXY_METHOD="none"
BROWSER_ONLY="no"
BOOTPROTO="dhcp"
DEFROUTE="yes"
IPV4_FAILURE_FATAL="no"
IPV6INIT="yes"
IPV6_AUTOCONF="yes"
IPV6_DEFROUTE="yes"
IPV6_FAILURE_FATAL="no"
IPV6_ADDR_GEN_MODE="stable-privacy"
NAME="ens160"
UUID="c9f8382b-d8ca-42d3-bfb4-f096fba50f70"
DEVICE="ens160"
ONBOOT="yes"
DNS="192.168.254.133"
~
```

Add the address of DNS server in /etc/resolv.co

```
# Generated by NetworkManager
search localdomain gandhi.com
nameserver 192.168.254.133
~
~
```

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Give permission creating files

```
[root@vivek named]# chown root:named vivek.flz
[root@vivek named]# chown root:named vivek.rlz
[root@vivek named]# ll
total 24
drwxr-x---. 7 root  named   61 Feb 28 03:07 chroot
drwxr-x---. 7 root  named   61 Feb 28 03:07 chroot_sdb
drwxrwx---. 2 named named   23 Feb 28 03:10 data
drwxrwx---. 2 named named   60 Feb 28 04:16 dynamic
-rw-r-----. 1 root  named 2253 Feb 27  2020 named.ca
-rw-r-----. 1 root  named  152 Feb 27  2020 named.empty
-rw-r-----. 1 root  named  152 Feb 27  2020 named.localhost
-rw-r-----. 1 root  named  168 Feb 27  2020 named.loopback
drwxrwx---. 2 named named    6 Feb 27  2020 slaves
-rw-r-----. 1 root  named  222 Feb 28 04:07 vivek.flz
-rw-r-----. 1 root  named  253 Feb 28 04:05 vivek.rlz
```

SERVICE START

```
[root@vivek named]# systemctl restart named
```

Check DNS WORK

```
[root@vivek etc]# nslookup vivek.gandhi.com
Server:         192.168.254.133
Address:        192.168.254.133#53

Name:   vivek.gandhi.com
Address: 192.168.254.133

[root@vivek etc]# nslookup 192.168.254.133
133.254.168.192.in-addr.arpa    name = vivek.gandhi.com.
```

```
[root@vivek etc]# dig vivek.gandhi.com

; <<>> DiG 9.11.13-RedHat-9.11.13-3.el8 <<>> vivek.gandhi.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 5329
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 1, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
; COOKIE: bde9b269363bca95dbe28700621ca0887451a86ed032720f (good)
;; QUESTION SECTION:
;vivek.gandhi.com.              IN      A

;; ANSWER SECTION:
vivek.gandhi.com.      86400   IN      A       192.168.254.133

;; AUTHORITY SECTION:
gandhi.com.            86400   IN      NS      vivek.gandhi.com.

;; Query time: 0 msec
;; SERVER: 192.168.254.133#53(192.168.254.133)
;; WHEN: Mon Feb 28 05:14:32 EST 2022
;; MSG SIZE  rcvd: 103
```

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Firewall configuration change server side

```
[root@vivek etc]# firewall-cmd --permanent --zone=public --add-service=dns
success
[root@vivek etc]# firewall-cmd --reload
success
```

Check client side

```
[root@pooja network-scripts]# nslookup 192.168.254.139
139.254.168.192.in-addr.arpa    name = pooja.gandhi.com.

[root@pooja network-scripts]# nslookup pooja.gandhi.com
Server:         192.168.254.133
Address:        192.168.254.133#53
```