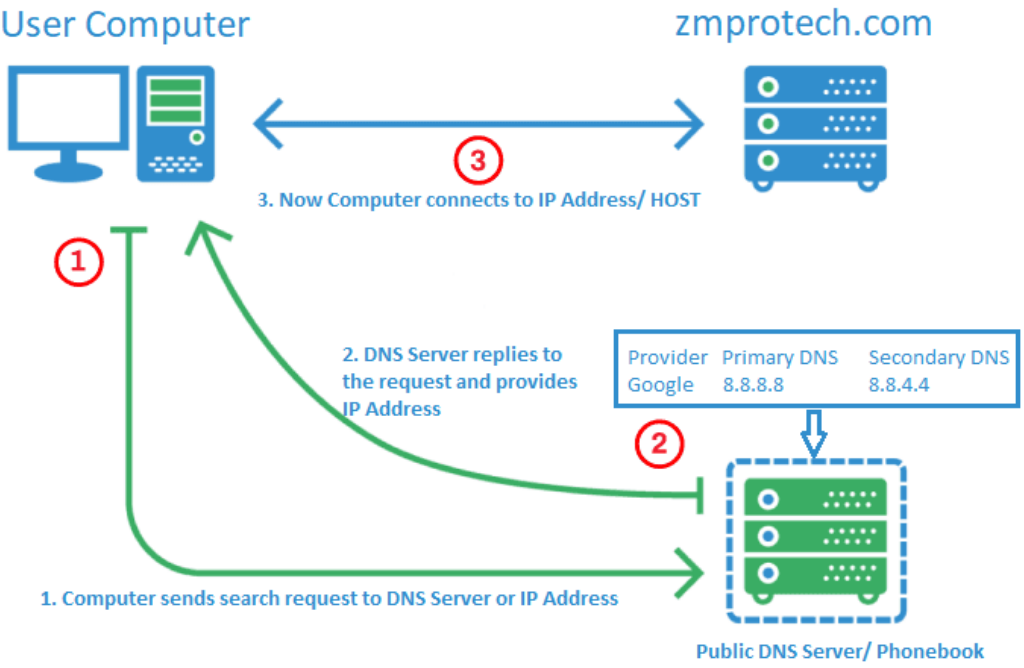
01-09-2021
https://youtu.be/vhx7s3psguU

DNS

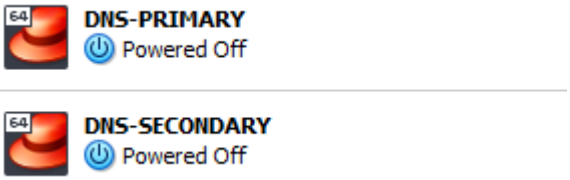
The Domain Name System (*DNS*) is the **phonebook** of the Internet. Humans access information online through domain names, like nytimes.com or espn.com. Web browsers interact through Internet Protocol (IP) addresses. *DNS* translates domain names to IP addresses so browsers can load Internet resources.

888-236-2620	ZM PROTech
IP address	Hostname [Server Name]



DNS Primary Server Setup

Primary DNS Server
Hostname: dnsprimary.zmpt.com
IP: 192.168.56.112

	dnsprimary.zmpt.com dnssecondary.zmpt.com

Setup Hostname

[root@localhost ~]# vi /etc/hostname
dnsprimary.zmpt.com
[root@localhost ~]# init 6

[root@dnsprimary ~]# hostname
dnsprimary.zmpt.com

dnsprimary.zmpt.com 192.168.56.112

[root@dnsprimary network-scripts]# vi /etc/sysconfig/network-scripts/ifcfg-enp0s3

[root@dnsprimary network-scripts]# vi ifcfg-enp0s3

```
TYPE=Ethernet
BOOTPROTO=static
NAME=enp0s3
UUID=b0b60c28-849b-4dde-b3a1-8fa1dbd1cedc
DEVICE=enp0s3
ONBOOT=yes
IPADDR=192.168.56.112
NETMASK=255.255.255.0
```

[root@dnsprimary ~]# init 6

Package needed by DNS

Bind
Bind-utils
Bind-chroot

Berkley Internet Name Domain – USC Berkeley, CA

[root@dnsprimary ~]# yum install *bind bind-utils bind-chroot* -y

[root@dnsprimary ~]# vi /etc/sysconfig/network
NETWORKING=yes

```
HOSTNAME=dnsprimary.zmpt.com

[root@dnsprimary ~]# vi /etc/hosts
192.168.56.112  dnsprimary.zmpt.com
```

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

options {
        listen-on port 53 { 127.0.0.1; 192.168.56.112;};
        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";
        recursing-file  "/var/named/data/named.recursing";
        secroots-file   "/var/named/data/named.secroots";
        allow-query     { localhost; 192.168.56.0/24;};
```

Create forward lookup

```
[root@dnsprimary ~]# cd /var/named/


[root@dnsprimary named]# ls
chroot  dynamic   named.empty     named.loopback
data    named.ca  named.localhost  slaves

[root@dnsprimary named]# cp named.localhost forward.zmpt
[root@dnsprimary named]# vi forward.zmpt
```

```
$TTL 1D
@       IN SOA dnsprimary.zmpt.com. root.zmpt.com. (
                                        1       ; serial
                                        1D      ; refresh
                                        1H      ; retry
                                        1W      ; expire
                                        3H      ; minimum
                                        )
@       IN      NS              dnsprimary.zmpt.com.
```

```
dnsprimary     IN     A      192.168.56.112
```

Create Reverse lookup

[root@dnsprimary named]# cp forward.zmpt reverse.zmpt
[root@dnsprimary named]# vi reverse.zmpt

```
$TTL 1D
@       IN SOA  dnsprimary.zmpt.com. root.zmpt.com. (
                                        1       ; serial
                                        1D      ; refresh
                                        1H      ; retry
                                        1W      ; expire
                                        3H      ; minimum
                                        )
@       IN      NS              dnsprimary.zmpt.com.

dnsprimary      IN      A       192.168.56.112


112     IN      PTR             dnsprimary.zmpt.com.
```

Edit named.conf file again

[root@dnsprimary ~]# vi /etc/named.conf

Copy these lines and paste at the end of file

```
zone "." IN {
        type hint;
        file "named.ca";
};
```

```
########################
```

```
zone "zmpt.com" IN {
        type master;
        file "forward.zmpt";
};


zone "56.168.192.in-addr.arpa" IN {
        type master;
        file "reverse.zmpt";
};


########################
```

Disable firewall

```
[root@dnsprimary ~]# systemctl stop firewalld

[root@dnsprimary ~]# systemctl disable firewalld

Removed symlink /etc/systemd/system/multi-user.target.wants/firewalld.service.
Removed symlink /etc/systemd/system/dbus-org.fedoraproject.FirewallD1.service.

[root@dnsprimary ~]# systemctl status firewalld
```

Enable named

```
[root@dnsprimary ~]# systemctl start named

[root@dnsprimary ~]# systemctl enable named.service
Created symlink from /etc/systemd/system/multi-user.target.wants/named.service to
/usr/lib/systemd/system/named.service.

[root@dnsprimary named]# ps -ef|grep named    < ---to confirm named service is running

named     2067     1  0 Aug22 ?        00:00:00 /usr/sbin/named -u named -c /etc/named.conf
root     14757  1514  0 08:20 pts/0    00:00:00 grep --color=auto named
```

Change the group and ownership

```
[root@dnsprimary ~]# cat /etc/passwd
```

[root@dnsprimary ~]# cat /etc/group

[root@dnsprimary ~]# chgrp named -R /var/named

[root@dnsprimary ~]# chown -Rv root:named /etc/named.conf

-R – recursively, meaning previously created files or folder
-v – Verbose, meaning display as the change is being made

SELinux

[root@dnsprimary named]# restorecon -rv /var/named
[root@dnsprimary named]# restorecon /etc/named.conf

Check forward and reverse lookup zones

[root@dnsprimary named]# named-checkzone zmpt.com /var/named/forward.zmpt
zone zmpt.com/IN: loaded serial 0
OK
[root@dnsprimary named]# named-checkzone zmpt.com /var/named/reverse.zmpt
zone zmpt.com/IN: loaded serial 0
OK

Make entry into Ethernet file

[root@dnsprimary network-scripts]# vi ifcfg-enp0s3

TYPE=Ethernet
BOOTPROTO=static
NAME=enp0s3
UUID=7af95a73-a7bf-4925-8e44-1c4e2219d314
DEVICE=enp0s3
ONBOOT=yes
IPADDR=192.168.56.112
NETMASK=255.255.255.0
DNS="192.168.56.112" #< ---NEW ENTRY

Edit resolve.conf file < ---what is DNS resolution file?

[root@dnsprimary ~]# vi /etc/resolv.conf

search mshome.net zmpt.com
nameserver 192.168.137.1 192.168.56.112

Test the DNS Primary

Dig stands for (Domain Information Groper) is a network administration **command**-line tool for querying Domain Name System (DNS) name servers.

```
[root@dnsprimary ~]# hostname
dnsprimary.zmpt.com
[root@dnsprimary ~]# dig dnsprimary.zmpt.com

; <<>> DiG 9.11.4-P2-RedHat-9.11.4-26.P2.el7_9.3 <<>> dnsprimary.zmpt.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: SERVFAIL, id: 56635
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;dnsprimary.zmpt.com.          IN      A

;; Query time: 0 msec
;; SERVER: 192.168.56.112#53(192.168.56.112)
;; WHEN: Sat Jan 09 15:32:33 EST 2021
;; MSG SIZE  rcvd: 48
```

Configure DNS Secondary

Primary DNS Server
Hostname: dnsprimary.zmpt.com
IP: 192.168.56.114

Install the required DNS package

```
[root@localhost ~]# yum install bind bind-utils -y
```

Disable the NAT after installation

Setup Hostname

```
[root@localhost ~]# vi /etc/hostname
dnssecondary.zmpt.com
```

Set the static IP

[root@localhost ~]# vi /etc/sysconfig/network-scripts/ifcfg-enp0s3

```
TYPE=Ethernet
BOOTPROTO=static
NAME=enp0s3
DEVICE=enp0s3
ONBOOT=yes
IPADDR=192.168.56.114
NETMASK=255.255.255.0
```

Edit Network file

[root@dnssecondary ~]# vi /etc/sysconfig/network

```
NETWORKING=yes
HOSTNAME=dnssecondary.zmpt.com
```

Edit hosts file

[root@dnssecondary ~]# vi /etc/hosts

192.168.56.114 dnssecondary.zmpt.com #< --TAB between ip and hostname

Reboot

192.168.56.200 dnssecondary.zmpt.com

[root@localhost ~]# init 6

Add information to named.conf

[root@localhost ~]# vi /etc/named.conf

```
options {
        listen-on port 53 { 127.0.0.1; 192.168.56.114;};
        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";
        recursing-file  "/var/named/data/named.recursing";
        secroots-file   "/var/named/data/named.secroots";
        allow-query     { localhost; 192.168.56.0/24;};
```

```
########################

zone "zmpt.com" IN {
        type slave;
        file "slaves/forward.zmpt";
        masters{192.168.56.112;};
};

zone "56.168.192.in-addr.arpa" IN {
        type slave;
        file "slaves/reverse.zmpt";
        masters{192.168.56.112;};
};


########################
```

Start and enable named service

```
[root@dnssecondary ~]# systemctl start named
[root@dnssecondary ~]# systemctl enable named
Created symlink from /etc/systemd/system/multi-user.target.wants/named.service to
/usr/lib/systemd/system/named.service.
```

configure the ethernet file again

```
TYPE=Ethernet
BOOTPROTO=static
NAME=enp0s3
DEVICE=enp0s3
ONBOOT=yes
IPADDR=192.168.56.200
NETMASK=255.255.255.0

DNS1="192.168.56.112"
DNS2="192.168.56.114"
```

Up the DNS resolution file

```
[root@dnssecondary ~]# vi /etc/resolv.conf
```

search zmpt.com
nameserver 192.168.56.112
nameserver 192.168.56.114

Disable firewall

[root@dnssecondary ~]# systemctl stop firewalld

[root@dnssecondary ~]# systemctl disable firewalld
Removed symlink /etc/systemd/system/multi-user.target.wants/firewalld.service.
Removed symlink /etc/systemd/system/dbus-org.fedoraproject.FirewallD1.service.

Configure the permissions and ownership

[root@dnsprimary ~]# cat /etc/passwd
[root@dnsprimary ~]# cat /etc/group

[root@dnsprimary ~]# chgrp named -R /var/named

[root@dnsprimary ~]# chown -Rv root:named /etc/named.conf

-R – recursively, meaning previously created files or folder
-v – Verbose, meaning display as the change is being made

SELinux

[root@dnssecondary ~]# restorecon -rv /var/named/
[root@dnssecondary ~]# restorecon /etc/named.conf

ON DNS Primary

Edit forward lookup zone

- [root@dnsprimary ~]# vi /var/named/forward.zmpt

```
$TTL 1D
@       IN SOA dnsprimary.zmpt.com. root.zmpt.com. (
                                        1       ; serial
                                        1D      ; refresh
                                        1H      ; retry
                                        1W      ; expire
                                        3H      ; minimum
```

```
                                )
@       IN      NS          dnsprimary.zmpt.com.

dnsprimary      IN      A       192.168.56.112
dnssecondary    IN      A       192.168.56.114
```

Edit reverse lookup zone

```
$TTL 1D
@       IN SOA  dnsprimary.zmpt.com. root.zmpt.com. (
                                1       ; serial
                                1D      ; refresh
                                1H      ; retry
                                1W      ; expire
                                3H      ; minimum
                                )
@       IN      NS          dnsprimary.zmpt.com.

dnsprimary      IN      A       192.168.56.112
dnssecondary    IN      A       192.168.56.114

100     IN      PTR         dnsprimary.zmpt.com.
200     IN      PTR         dnssecondary.zmpt.com.
```

Perform Dig and nslookup on both servers

```
[root@dnsprimary ~]# dig dnsprimary.zmpt.com
[root@dnsprimary ~]# dig dnssecondary.zmpt.com

[root@dnsprimary ~]# nslookup dnsprimary.zmpt.com
[root@dnsprimary ~]# nslookup dnssecondary.zmpt.com
```

```
[root@dnsprimary ~]# systemctl restart named
```

```
[root@dnssecondary ~]# dig dnsprimary.zmpt.com
[root@dnssecondary ~]# dig dnssecondary.zmpt.com

[root@dnssecondary ~]# nslookup dnssecondary.zmpt.com
[root@dnssecondary ~]# nslookup dnsprimary.zmpt.com
```

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On any other server

Edit the following files

[root@localhost ~]# vi /etc/sysconfig/network-scripts/ifcfg-enp0s3
[root@localhost ~]# vi /etc/hostname
[root@localhost ~]# vi /etc/networks
[root@localhost ~]# vi /etc/hosts
[root@localhost ~]# vi /etc/resolv.conf

Set static IP DNS info

[root@localhost ~]# vi /etc/sysconfig/network-scripts/ifcfg-enp0s3

TYPE=Ethernet
BOOTPROTO=static
NAME=enp0s3
#UUID=b0b60c28-849b-4dde-b3a1-8fa1dbd1cedc
DEVICE=enp0s3
ONBOOT=yes
IPADDR=192.168.56.150
NETMASK=255.255.255.0
DNS1="192.168.56.100" #< ---Primary DNS
DNS2="192.168.56.200" #< ---Secondary DNS

Set the Hostname

[root@localhost ~]# vi /etc/hostname

ansiblemaster.zmpt.com

Edit Network file

[root@localhost ~]# vi /etc/networks

NETWORKING=yes
HOSTNAME=ansiblemaster.zmpt.com

Edit hosts file

[root@localhost ~]# vi /etc/hosts

192.168.56.150 ansiblemaster.zmpt.com

Edit DNS resolution file

[root@localhost ~]# vi /etc/resolv.conf

#DNS servers info
nameserver 192.168.56.100
nameserver 192.168.56.200

On DNS Master

Edit forward and Reverse lookup zone

Forward lookup zone

[root@dnsprimary ~]# vi /var/named/forward.zmpt

```
$TTL 60
@       IN SOA dnsprimary.zmpt.com. root.zmpt.com. (
                                7       ; serial
                                60      ; refresh
                                60      ; retry
                                604800  ; expire
                                60      ; minimum
                                )
@       IN      NS              dnsprimary.zmpt.com.

dnsprimary      IN      A       192.168.56.100
dnssecondary    IN      A       192.168.56.200

ansiblemaster   IN      A       192.168.56.150
oracle          IN      A       192.168.56.151
database        IN      A       192.168.56.152
production      IN      A       192.168.56.153
```

Reverse lookup zone

[root@dnsprimary ~]# vi /var/named/reverse.zmpt

```
$TTL 60
@       IN SOA  dnsprimary.zmpt.com. root.zmpt.com. (
                                7       ; serial
```

```
                        60      ; refresh
                        60      ; retry
                        604800  ; expire
                        60      ; minimum
                        )
@       IN      NS          dnsprimary.zmpt.com.

dnsprimary      IN      A       192.168.56.100
dnssecondary    IN      A       192.168.56.200
ansiblemaster   IN      A       192.168.56.150
ansiblemaster   IN      A       192.168.56.150
oracle          IN      A       192.168.56.151
database        IN      A       192.168.56.152
production      IN      A       192.168.56.153


100     IN      PTR         dnsprimary.zmpt.com.
200     IN      PTR         dnssecondary.zmpt.com.
150     IN      PTR         ansiblemaster.zmpt.com.
151     IN      PTR         oracle.zmpt.com.
152     IN      PTR         database.zmpt.com.
153     IN      PTR         production.zmpt.com.
```

Successfully demonstrated DNS setup and Ansible commands using the Hostname