

Momina Atif Dar

P18-0030

Section: B

Setting up DNS server in host machine (Ubuntu)

Setting up hostname:

```
(base) momina@death-eater:~$ hostnamectl
  Static hostname: death-eater
        Icon name: computer-convertible
        Chassis: convertible
        Machine ID: 12a7dd32e98e4a5eb72bee8b7f7c5044
        Boot ID: f4f89dab15524355b3443b44d111e7f5
  Operating System: Ubuntu 18.04.5 LTS
        Kernel: Linux 5.4.0-48-generic
  Architecture: x86-64
(base) momina@death-eater:~$ hostnamectl set-hostname dns1.p180030.com
(base) momina@death-eater:~$ hostnamectl
  Static hostname: dns1.p180030.com
        Icon name: computer-convertible
        Chassis: convertible
        Machine ID: 12a7dd32e98e4a5eb72bee8b7f7c5044
        Boot ID: f4f89dab15524355b3443b44d111e7f5
  Operating System: Ubuntu 18.04.5 LTS
        Kernel: Linux 5.4.0-48-generic
  Architecture: x86-64
```

IP address of host machine:

```
wlp0s20f3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.10.23 netmask 255.255.255.0 broadcast 192.168.10.255
    inet6 fe80::be79:46fc:2667:3c10 prefixlen 64 scopeid 0x20<link>
    ether d0:c6:37:f3:07:96 txqueuelen 1000 (Ethernet)
    RX packets 277444 bytes 385111538 (385.1 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 157047 bytes 20323672 (20.3 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

Modifying `/etc/network/interfaces`:

[illegible]

Restarting networking/NetworkManager service:

```
(base) momina@death-eater:~$ sudo systemctl restart networking
Job for networking.service failed because the control process exited with error
code.
See "systemctl status networking.service" and "journalctl -xe" for details.
(base) momina@death-eater:~$ sudo systemctl restart NetworkManager
(base) momina@death-eater:~$
```

Installing bind:

```
(base) momina@death-eater:~$ sudo apt-get install bind9 bind9utils
Reading package lists... Done
Building dependency tree
Reading state information... Done
bind9 is already the newest version (1:9.11.3+dfsg-1ubuntu1.13).
bind9utils is already the newest version (1:9.11.3+dfsg-1ubuntu1.13).
The following packages were automatically installed and are no longer required:
  gyp libegl1-mesa libfwup1 libjs-async libjs-inherits libjs-node-uuid
  libjs-underscore libllvm9 libmysqlclient20 libuv1-dev
  linux-headers-5.4.0-45-generic linux-hwe-5.4-headers-5.4.0-45
  linux-image-5.4.0-45-generic linux-modules-5.4.0-45-generic
  linux-modules-extra-5.4.0-45-generic node-abbrev node-ansi
  node-ansi-color-table node-archy node-async node-balanced-match
  node-block-stream node-brace-expansion node-builtin-modules
  node-combined-stream node-concat-map node-cookie-jar node-delayed-stream
  node-forever-agent node-form-data node-fs.realpath node-fstream
  node-fstream-ignore node-github-url-from-git node-glob node-graceful-fs
  node-hosted-git-info node-inflight node-inherits node-ini
  node-is-builtin-module node-isexe node-json-stringify-safe node-lockfile
  node-lru-cache node-mime node-minimatch node-mkdirp node-mute-stream
  node-node-uuid node-nopt node-normalize-package-data node-npmlog node-once
```

Files in *bind* directory:

```
(base) momina@death-eater:~$ cd /etc/bind
(base) momina@death-eater:/etc/bind$ ls
bind.keys  db.255    db.root   named.conf.default-zones  rndc.key
db.0       db.empty  named.conf  named.conf.local          zones.rfc1918
db.127     db.local  named.conf.bak  named.conf.options
```

named.conf file:

```
(base) momina@death-eater:/etc/bind$ cat /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";
(base) momina@death-eater:/etc/bind$
```

Modifying *named.conf.local* file:

```
//  
// Do any local configuration here  
//  
  
// Consider adding the 1918 zones here, if they are not used in your  
// organization  
//include "/etc/bind/zones.rfc1918";  
  
zone "p180030.com" IN {  
type master;  
file "/etc/bind/forward.example.com";  
};  
  
zone "10.168.192.in-addr.arpa" IN {  
type master;  
file "/etc/bind/reverse.example.com";  
};  
  
~  
~  
~  
~  
~  
"/etc/bind/named.conf.local" [readonly] 18L, 335C
```

Copying *db.local* to *forward.example.com*:

```
(base) momina@death-eater:/etc/bind$ ls  
bind.keys  db.255    db.root    named.conf.default-zones  rndc.key  
db.0       db.empty  named.conf  named.conf.local          zones.rfc1918  
db.127     db.local  named.conf.bak  named.conf.options  
(base) momina@death-eater:/etc/bind$ sudo cp db.local forward.example.com  
(base) momina@death-eater:/etc/bind$ _
```

Modifying *forward.example.com* file:

```

;
; BIND data file for local loopback interface
;
$TTL      604800
@         IN      SOA      dns1.p180030.com. root.dns1.p180030.com. (
                                2             ; Serial
                                604800        ; Refresh
                                86400         ; Retry
                                2419200       ; Expire
                                604800 )     ; Negative Cache TTL
;
@         IN      NS       dns1.p180030.com.
dns1      IN      A        192.168.10.23
server    IN      A        192.168.10.23
host      IN      A        192.168.10.23
client    IN      A        192.168.10.24
www       IN      A        192.168.10.24
~
~
~
~
~
~
"/etc/bind/forward.example.com" 17L, 383C

```

Copying *forward.example.com* to *reverse.example.com*:

```
(base) nomina@death-eater:/etc/bind$ sudo cp forward.example.com reverse.example.com
```

Modifying *reverse.example.com* file:


```

;
; BIND data file for local loopback interface
;
$TTL      604800
@         IN      SOA      dns1.p180030.com. root.dns1.p180030.com. (
                                2             ; Serial
                                604800        ; Refresh
                                86400         ; Retry
                                2419200       ; Expire
                                604800 )     ; Negative Cache TTL
;
@         IN      NS       dns1.p180030.com.
@         IN      PTR      p180030.com.
server    IN      A        192.168.10.23
host      IN      A        192.168.10.23
client    IN      A        192.168.10.24
www       IN      A        192.168.10.24
23        IN      PTR      server.p180030.com.
24        IN      PTR      client.p180030.com.
~
~
~
~
"/etc/bind/reverse.example.com" 19L, 441C

```

Executing command:

```

(base) momina@dns1:/etc/bind$ sudo systemctl restart NetworkManager
(base) momina@dns1:/etc/bind$ sudo named-checkconf -z /etc/bind/named.conf
zone p180030.com/IN: loaded serial 2
zone 10.168.192.in-addr.arpa/IN: loaded serial 2
zone localhost/IN: loaded serial 2
zone 127.in-addr.arpa/IN: loaded serial 1
zone 0.in-addr.arpa/IN: loaded serial 1
zone 255.in-addr.arpa/IN: loaded serial 1

```

```

(base) momina@dns1:/etc/bind$ sudo named-checkconf -z /etc/bind/named.conf.local
zone p180030.com/IN: loaded serial 2
zone 10.168.192.in-addr.arpa/IN: loaded serial 2

```

```

(base) momina@dns1:/etc/bind$ sudo named-checkconf -z /etc/bind/forward.example.com
/etc/bind/forward.example.com:1: syntax error near ';'
(base) momina@dns1:/etc/bind$ sudo named-checkconf -z /etc/bind/reverse.example.com
/etc/bind/reverse.example.com:1: syntax error near ';'

```

Starting bind:

```

(base) momina@dns1:/etc/bind$ sudo systemctl start bind9
(base) momina@dns1:/etc/bind$ sudo chown -R bind:bind /etc/bind
(base) momina@dns1:/etc/bind$ ll
total 80
drwxr-sr-x  2 bind bind  4096 Oct 17 21:39 ./
drwxr-xr-x 142 root root 12288 Oct 13 11:09 ../
-rw-r--r--  1 bind bind  2761 Aug 18 17:08 bind.keys
-rw-r--r--  1 bind bind   237 Sep 30  2019 db.0
-rw-r--r--  1 bind bind   271 Sep 30  2019 db.127
-rw-r--r--  1 bind bind   237 Sep 30  2019 db.255
-rw-r--r--  1 bind bind   353 Sep 30  2019 db.empty
-rw-r--r--  1 bind bind   270 Sep 30  2019 db.local
-rw-r--r--  1 bind bind  3171 Sep 30  2019 db.root
-rw-r--r--  1 bind bind   383 Oct 17 21:39 forward.example.com
-rw-r--r--  1 bind bind   463 Oct  5 11:52 named.conf
-rw-r--r--  1 bind bind   463 Sep 30  2019 named.conf.bak
-rw-r--r--  1 bind bind   490 Sep 30  2019 named.conf.default-zones
-rw-r--r--  1 bind bind   335 Oct 17 20:44 named.conf.local
-rw-r--r--  1 bind bind   890 Sep 30  2019 named.conf.options
-rw-r--r--  1 bind bind   441 Oct 17 21:32 reverse.example.com
-rw-r-----  1 bind bind    77 Oct  5 11:52 rndc.key
-rw-r--r--  1 bind bind  1317 Sep 30  2019 zones.rfc1918

```

Checking bind status:

```
(base) momina@dns1:/etc/bind$ sudo systemctl status bind9
● bind9.service - BIND Domain Name Server
   Loaded: loaded (/lib/systemd/system/bind9.service; enabled; vendor preset: enabled)
   Active: active (running) since Sat 2020-10-17 21:54:44 PKT; 7s ago
     Docs: man:named(8)
  Process: 16212 ExecStop=/usr/sbin/rndc stop (code=exited, status=0/SUCCESS)
 Main PID: 16215 (named)
    Tasks: 11 (limit: 4915)
   CGroup: /system.slice/bind9.service
           └─16215 /usr/sbin/named -f -u bind

Oct 17 21:54:44 dns1.p180030.com named[16215]: network unreachable resolving 'E.ROOT-SERVERS.NET/AAA
Oct 17 21:54:44 dns1.p180030.com named[16215]: network unreachable resolving 'E.ROOT-SERVERS.NET/AAA
Oct 17 21:54:44 dns1.p180030.com named[16215]: network unreachable resolving 'E.ROOT-SERVERS.NET/AAA
Oct 17 21:54:44 dns1.p180030.com named[16215]: network unreachable resolving 'E.ROOT-SERVERS.NET/AAA
Oct 17 21:54:44 dns1.p180030.com named[16215]: network unreachable resolving 'E.ROOT-SERVERS.NET/AAA
Oct 17 21:54:44 dns1.p180030.com named[16215]: network unreachable resolving 'E.ROOT-SERVERS.NET/AAA
Oct 17 21:54:44 dns1.p180030.com named[16215]: network unreachable resolving 'E.ROOT-SERVERS.NET/AAA
Oct 17 21:54:44 dns1.p180030.com named[16215]: network unreachable resolving 'E.ROOT-SERVERS.NET/AAA
Oct 17 21:54:44 dns1.p180030.com named[16215]: network unreachable resolving 'E.ROOT-SERVERS.NET/AAA
lines 1-20/20 (END)

● bind9.service - BIND Domain Name Server
   Loaded: loaded (/lib/systemd/system/bind9.service; enabled; vendor preset: enabled)
   Active: active (running) since Sat 2020-10-17 21:54:44 PKT; 7s ago
     Docs: man:named(8)
  Process: 16212 ExecStop=/usr/sbin/rndc stop (code=exited, status=0/SUCCESS)
 Main PID: 16215 (named)
    Tasks: 11 (limit: 4915)
   CGroup: /system.slice/bind9.service
```

Enabling bind:

```
(base) momina@dns1:/etc/bind$ sudo systemctl enable bind9
Synchronizing state of bind9.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable bind9
```

Modifying interfaces file:


```
# interfaces(5) file used by ifup(8) and ifdown(8)
auto lo
iface lo inet loopback
auto wlp0s20f3
iface wlp0s20f3 inet static
address 192.168.10.23
netmask 255.255.255.0
dns-search p180030.com
dns-nameserver 192.168.10.23

~
```

Restarting service:

```
(base) momina@dns1:/etc/bind$ systemctl restart NetworkManager
(base) momina@dns1:/etc/bind$ _
```

Modifying resolv.conf:

```
# This file is managed by man:systemd-resolved(8). Do not edit.
#
# This is a dynamic resolv.conf file for connecting local clients to the
# internal DNS stub resolver of systemd-resolved. This file lists all
# configured search domains.
#
# Run "systemd-resolve --status" to see details about the uplink DNS servers
# currently in use.
#
# Third party programs must not access this file directly, but only through the
# symlink at /etc/resolv.conf. To manage man:resolv.conf(5) in a different way,
# replace this symlink by a static file or a different symlink.
#
# See man:systemd-resolved.service(8) for details about the supported modes of
# operation for /etc/resolv.conf.

#nameserver 127.0.0.53
#options edns0

nameserver 192.168.10.23
search p180030.com
~
~
~
"/etc/resolv.conf" 21L, 762C 1,18
```

Final Step:

```
(base) momina@dns1:/etc/bind$ ping dns1
ping: dns1: Name or service not known
(base) momina@dns1:/etc/bind$ ping p180030
ping: p180030: Name or service not known
(base) momina@dns1:/etc/bind$ ping host
ping: host: Name or service not known
(base) momina@dns1:/etc/bind$ ping google.com
ping: google.com: Name or service not known
(base) momina@dns1:/etc/bind$ nslookup google
;; connection timed out; no servers could be reached

(base) momina@dns1:/etc/bind$ nslookup dns1
;; connection timed out; no servers could be reached

(base) momina@dns1:/etc/bind$ ping 192.168.10.23
connect: Network is unreachable
(base) momina@dns1:/etc/bind$ ping p18003.com
ping: p18003.com: Name or service not known
```

Got these errors because of Static IP internet was not working, on the other hand everything works fine.
