

DNS / DHCP

BIND DNS

[1] BIND

```
[root@dlp ~]# dnf -y install bind bind-utils
```

[2] BIND [10.0.0.0/24] [srv.world]

```
[root@dlp ~]# vi /etc/named.conf
.....
.....
# add : set ACL entry for local network
acl internal-network {
    10.0.0.0/24;
};

options {
    # change ( listen all )
    listen-on port 53 { any; };
    # change if need ( if not listen IPv6, set [none] )
    listen-on-v6 { any; };
    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";
    # add local network set on [acl] section above
    # network range you allow to receive queries from hosts
    allow-query     { localhost; internal-network; };
    # network range you allow to transfer zone files to clients
```

```

# add secondary DNS servers if it exist
allow-transfer { localhost; };

.....

.....

recursion yes;

dnssec-enable yes;
dnssec-validation yes;

managed-keys-directory "/var/named/dynamic";

pid-file "/run/named/named.pid";
session-keyfile "/run/named/session.key";

/* https://fedoraproject.org/wiki/Changes/CryptoPolicy */
include "/etc/crypto-policies/back-ends/bind.config";
};

logging {
    channel default_debug {
        file "data/named.run";
        severity dynamic;
    };
};

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

include "/etc/named.rfc1912.zones";
include "/etc/named.root.key";

# add zones for your network and domain name
zone "srv.world" IN {
    type master;
    file "srv.world.lan";
    allow-update { none; };
};

```

```
};

zone "0.0.10.in-addr.arpa" IN {
    type master;
    file "0.0.10.db";
    allow-update { none; };
};

# if you don't use IPv6 and also suppress logs for IPv6 related, possible to change
# set BIND to use only IPv4
[root@dlp ~]# vi /etc/sysconfig/named
# add to the end
OPTIONS="-4"

# For how to write the section [*.*.*.in-addr.arpa], write your network address reversely
like follows

# case of 10.0.0.0/24
# network address    ⇒ 10.0.0.0
# network range      ⇒ 10.0.0.0 - 10.0.0.255
# how to write       ⇒ 0.0.10.in-addr.arpa

# case of 192.168.1.0/24
# network address    ⇒ 192.168.1.0
# network range      ⇒ 192.168.1.0 - 192.168.1.255
# how to write       ⇒ 1.168.192.in-addr.arpa
```

[3] [named.conf]

BIND :

[1] IP
[10.0.0.0/24] [srv.world]

```
[root@dlp ~]# vi /var/named/srv.world.lan
$TTL 86400
@ IN SOA dlp.srv.world. root.srv.world. (
    # any numerical values are OK for serial number but
    # recommendation is [YYYYMMDDnn] (update date + number)
    2021110901 ;Serial
    3600      ;Refresh
    1800      ;Retry
```

```

        604800      ;Expire
        86400      ;Minimum TTL
    )

    # define Name Server
    IN  NS          dlp.srv.world.
    # define Name Server's IP address
    IN  A           10.0.0.30
    # define Mail Exchanger Server
    IN  MX 10       dlp.srv.world.

# define each IP address of a hostname
dlp    IN  A       10.0.0.30
www    IN  A       10.0.0.31

```

[3] BIND

BIND :

[1] BIND

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

[2] Firewallld DNS DNS [53/TCP,UDP]

```
[root@dlp ~]# firewall-cmd --add-service=dns
success
[root@dlp ~]# firewall-cmd --runtime-to-permanent
success
```

[3] DNS DNS [enp1s0]

```
root@dlp ~]# nmcli connection modify enp1s0 ipv4.dns 10.0.0.30
[root@dlp ~]# nmcli connection down enp1s0; nmcli connection up enp1s0
```

[4] [ANSWER SECTION]

```
[root@dlp ~]# dig dlp.srv.world.

; <<>> DiG 9.16.22-RH <<>> dlp.srv.world.
;; global options: +cmd
;; Got answer:
```

```
;; ->HEADER<- opcode: QUERY, status: NOERROR, id: 49661
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: dfa3f5cee693b548010000006189b47fd276e33a7ce318ef (good)
;; QUESTION SECTION:
; dlp.srv.world.                IN      A

;; ANSWER SECTION:
dlp.srv.world.                86400   IN      A      10.0.0.30

;; Query time: 2 msec
;; SERVER: 10.0.0.30#53(10.0.0.30)
;; WHEN: Tue Nov 09 08:36:31 JST 2021
;; MSG SIZE rcvd: 86

[root@dlp ~]# dig -x 10.0.0.30

; <<>> DiG 9.16.22-RH <<>> -x 10.0.0.30
;; global options: +cmd
;; Got answer:
;; ->HEADER<- opcode: QUERY, status: NOERROR, id: 40024
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 7fa0458fcfcb227e010000006189b4a41afc0733b0cca9e3 (good)
;; QUESTION SECTION:
; 30.0.0.10.in-addr.arpa.      IN      PTR

;; ANSWER SECTION:
30.0.0.10.in-addr.arpa. 86400   IN      PTR      dlp.srv.world.

;; Query time: 4 msec
;; SERVER: 10.0.0.30#53(10.0.0.30)
;; WHEN: Tue Nov 09 08:37:08 JST 2021
;; MSG SIZE rcvd: 106
```

BIND :

[1] BIND

```
[root@dlp ~]# dnf -y install bind bind-utils
```

[2] BIND
 [172.16.0.80/29] [srv.world]
 [172.16.0.80/29] IP

```
[root@dlp ~]# vi /etc/named.conf
.....
.....
options {
    # change ( listen all )
    listen-on port 53 { any; };
    # change if need ( if not listen IPv6, set [none] )
    listen-on-v6 { any; };
    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";
    # change : receive queries from all hosts
    allow-query      { any; };
    # network range you allow to transfer zone files to clients
    # add secondary DNS servers if it exist
    allow-transfer   { localhost; };

    .....
    .....

    # change : not allow recursive queries
    # answer to zones only this server has their entries
    recursion no;

    dnssec-enable yes;
    dnssec-validation yes;

    managed-keys-directory "/var/named/dynamic";
```

```

pid-file "/run/named/named.pid";
session-keyfile "/run/named/session.key";

/* https://fedoraproject.org/wiki/Changes/CryptoPolicy */
include "/etc/crypto-policies/back-ends/bind.config";
};

logging {
    channel default_debug {
        file "data/named.run";
        severity dynamic;
    };
};

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

include "/etc/named.rfc1912.zones";
include "/etc/named.root.key";

# add zones for your network and domain name
zone "srv.world" IN {
    type master;
    file "srv.world.wan";
    allow-update { none; };
};

zone "80.0.16.172.in-addr.arpa" IN {
    type master;
    file "80.0.16.172.db";
    allow-update { none; };
};

# if you don't use IPv6 and also suppress logs for IPv6 related, possible to change
# set BIND to use only IPv4
[root@dlp ~]# vi /etc/sysconfig/named
# add to the end
OPTIONS="- 4"

```

```
# For how to write the section [*.*.*.*.in-addr.arpa], write your network address reversely
like follows

# case of 172.16.0.80/29
# network address    ⇒ 172.16.0.80
# network range      ⇒ 172.16.0.80 - 172.16.0.87
# how to write       ⇒ 80.0.16.172.in-addr.arpa
```

[3] [named.conf]

[1] IP
[10.0.0.0/24] [srv.world]

```
[root@dlp ~]# vi /var/named/srv.world.lan
$TTL 86400
@ IN SOA dlp.srv.world. root.srv.world. (
    # any numerical values are OK for serial number but
    # recommendation is [YYYYMMDDnn] (update date + number)
    2021110901 ;Serial
    3600       ;Refresh
    1800       ;Retry
    604800     ;Expire
    86400      ;Minimum TTL
)

# define Name Server
IN NS dlp.srv.world.
# define Name Server's IP address
IN A 10.0.0.30
# define Mail Exchanger Server
IN MX 10 dlp.srv.world.

# define each IP address of a hostname
dlp IN A 10.0.0.30
www IN A 10.0.0.31
```

[2] IP
[10.0.0.0/24] [srv.world]

```
[root@dlp ~]# vi /var/named/0.0.10.db
```



```
$TTL 86400
@   IN  SOA      dlp.srv.world. root.srv.world. (
        2021110901  ;Serial
        3600        ;Refresh
        1800        ;Retry
        604800      ;Expire
        86400       ;Minimum TTL
)

# define Name Server
IN  NS      dlp.srv.world.

# define each hostname of an IP address
30   IN  PTR    dlp.srv.world.
31   IN  PTR    www.srv.world.
```

[3] BIND

BIND :

[1] BIND

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

[2] Firewallld DNS DNS [53/TCP,UDP]

```
[root@dlp ~]# firewall-cmd --add-service=dns
success
[root@dlp ~]# firewall-cmd --runtime-to-permanent
success
```

[3] DNS DNS
[enp1s0]

```
[root@dlp ~]# nmcli connection modify enp1s0 ipv4.dns 10.0.0.30
[root@dlp ~]# nmcli connection down enp1s0; nmcli connection up enp1s0
```

[4] [ANSWER SECTION]

```
[root@dlp ~]# dig dlp.srv.world.

; <<>> DiG 9.16.22-RH <<>> dlp.srv.world.
;; global options: +cmd
```

```
;; Got answer:
;; ->HEADER<<- opcode: QUERY, status: NOERROR, id: 49661
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: dfa3f5cee693b548010000006189b47fd276e33a7ce318ef (good)
;; QUESTION SECTION:
;dlp.srv.world.                IN      A

;; ANSWER SECTION:
dlp.srv.world.                86400   IN      A      10.0.0.30

;; Query time: 2 msec
;; SERVER: 10.0.0.30#53(10.0.0.30)
;; WHEN: Tue Nov 09 08:36:31 JST 2021
;; MSG SIZE rcvd: 86

[root@dlp ~]# dig -x 10.0.0.30

; <<>> DiG 9.16.22-RH <<>> -x 10.0.0.30
;; global options: +cmd
;; Got answer:
;; ->HEADER<<- opcode: QUERY, status: NOERROR, id: 40024
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 7fa0458fcfcb227e010000006189b4a41afc0733b0cca9e3 (good)
;; QUESTION SECTION:
;30.0.0.10.in-addr.arpa.      IN      PTR

;; ANSWER SECTION:
30.0.0.10.in-addr.arpa. 86400   IN      PTR      dlp.srv.world.

;; Query time: 4 msec
;; SERVER: 10.0.0.30#53(10.0.0.30)
;; WHEN: Tue Nov 09 08:37:08 JST 2021
;; MSG SIZE rcvd: 106
```

BIND :

[1] IP
[10.0.0.0/24] [srv.world]

```
[root@dlp ~]# vi /var/named/srv.world.lan
$TTL 86400
@ IN SOA dlp.srv.world. root.srv.world. (
    # any numerical values are OK for serial number but
    # recommendation is [YYYYMMDDnn] (update date + number)
    2021110901 ;Serial
    3600       ;Refresh
    1800       ;Retry
    604800     ;Expire
    86400      ;Minimum TTL
)

# define Name Server
IN NS dlp.srv.world.
# define Name Server's IP address
IN A 10.0.0.30
# define Mail Exchanger Server
IN MX 10 dlp.srv.world.

# define each IP address of a hostname
dlp IN A 10.0.0.30
www IN A 10.0.0.31
```

[2] IP
[10.0.0.0/24] [srv.world]

```
[root@dlp ~]# vi /var/named/0.0.10.db
$TTL 86400
@ IN SOA dlp.srv.world. root.srv.world. (
    2021110901 ;Serial
    3600       ;Refresh
```

```

        1800          ;Retry
        604800       ;Expire
        86400        ;Minimum TTL
    )

    # define Name Server
    IN NS      dlp.srv.world.

# define each hostname of an IP address
30      IN PTR    dlp.srv.world.
31      IN PTR    www.srv.world.

```

[3] BIND

BIND :

[1] BIND

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

[2] FirewallD DNS DNS [53/TCP,UDP]

```

[root@dlp ~]# firewall-cmd --add-service=dns
success
[root@dlp ~]# firewall-cmd --runtime-to-permanent
success

```

[3] DNS DNS
[enp1s0]

```

[root@dlp ~]# nmcli connection modify enp1s0 ipv4.dns 10.0.0.30
[root@dlp ~]# nmcli connection down enp1s0; nmcli connection up enp1s0

```

[4] [ANSWER SECTION]

```

[root@dlp ~]# dig dlp.srv.world.

; <<>> DiG 9.16.22-RH <<>> dlp.srv.world.
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 49661

```

```
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: dfa3f5cee693b548010000006189b47fd276e33a7ce318ef (good)
;; QUESTION SECTION:
;dlp.srv.world.                IN      A

;; ANSWER SECTION:
dlp.srv.world.                86400   IN      A      10.0.0.30

;; Query time: 2 msec
;; SERVER: 10.0.0.30#53(10.0.0.30)
;; WHEN: Tue Nov 09 08:36:31 JST 2021
;; MSG SIZE rcvd: 86

[root@dlp ~]# dig -x 10.0.0.30

; <<>> DiG 9.16.22-RH <<>> -x 10.0.0.30
;; global options: +cmd
;; Got answer:
;; ->HEADER<- opcode: QUERY, status: NOERROR, id: 40024
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 7fa0458fcfcb227e010000006189b4a41afc0733b0cca9e3 (good)
;; QUESTION SECTION:
;30.0.0.10.in-addr.arpa.      IN      PTR

;; ANSWER SECTION:
30.0.0.10.in-addr.arpa. 86400   IN      PTR      dlp.srv.world.

;; Query time: 4 msec
;; SERVER: 10.0.0.30#53(10.0.0.30)
;; WHEN: Tue Nov 09 08:37:08 JST 2021
;; MSG SIZE rcvd: 106
```

BIND :

[named.conf] View
[named.conf]

[1] [10.0.0.0/24] [172.16.0.80/29] [srv.world]
 [172.16.0.80/29] IP

```
[root@dlp ~]# vi /etc/named.conf
.....
.....
# add : set ACL entry for local network
acl internal-network {
    10.0.0.0/24;
};

options {
    # change ( listen all )
    listen-on port 53 { any; };
    # change if need ( if not listen IPv6, set [none] )
    listen-on-v6 { any; };
    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";
    # add local network set on [acl] section above
    # network range you allow to receive queries from hosts
    allow-query      { localhost; internal-network; };
    # network range you allow to transfer zone files to clients
    # add secondary DNS servers if it exist
    allow-transfer   { localhost; };

    .....
    .....

    recursion yes;

    dnssec-enable yes;
    dnssec-validation yes;

    managed-keys-directory "/var/named/dynamic";
```

```
pid-file "/run/named/named.pid";
session-keyfile "/run/named/session.key";

/* https://fedoraproject.org/wiki/Changes/CryptoPolicy */
include "/etc/crypto-policies/back-ends/bind.config";
};

logging {
    channel default_debug {
        file "data/named.run";
        severity dynamic;
    };
};

# change all lines follows
# set internal network zones
view "internal" {
    match-clients {
        localhost;
        internal-network;
    };
    zone "." IN {
        type hint;
        file "named.ca";
    };
    zone "srv.world" IN {
        type master;
        file "srv.world.lan";
        allow-update { none; };
    };
    zone "0.0.10.in-addr.arpa" IN {
        type master;
        file "0.0.10.db";
        allow-update { none; };
    };
};
include "/etc/named.rfc1912.zones";
include "/etc/named.root.key";
};
```

```
# set external network zones
view "external" {
    # match all except targets defined on [match-clients] on internal section
    match-clients { any; };
    allow-query { any; };
    # not allow recursive queries
    recursion no;
    zone "srv.world" IN {
        type master;
        file "srv.world.wan";
        allow-update { none; };
    };
    zone "80.0.16.172.in-addr.arpa" IN {
        type master;
        file "80.0.16.172.db";
        allow-update { none; };
    };
};
```

[2] [named.conf] Zone

BIND :

[named.conf]

[1] IP
 [10.0.0.0/24] [srv.world]

```
[root@dlp ~]# vi /var/named/srv.world.lan
$TTL 86400
@ IN SOA dlp.srv.world. root.srv.world. (
    # any numerical values are OK for serial number but
    # recommendation is [YYYYMMDDnn] (update date + number)
    2021110901 ;Serial
    3600       ;Refresh
    1800       ;Retry
    604800     ;Expire
    86400      ;Minimum TTL
)

# define Name Server
IN NS dlp.srv.world.
```



```

# define Name Server's IP address
IN A      10.0.0.30

# define Mail Exchanger Server
IN MX 10   dlp.srv.world.

# define each IP address of a hostname
dlp      IN A      10.0.0.30
www      IN A      10.0.0.31

```

[2] IP
[10.0.0.0/24] [srv.world]

```

[root@dlp ~]# vi /var/named/0.0.10.db
$TTL 86400
@ IN SOA      dlp.srv.world. root.srv.world. (
    2021110901 ;Serial
    3600       ;Refresh
    1800       ;Retry
    604800     ;Expire
    86400      ;Minimum TTL
)

# define Name Server
IN NS      dlp.srv.world.

# define each hostname of an IP address
30 IN PTR   dlp.srv.world.
31 IN PTR   www.srv.world.

```

[3] BIND

BIND :

[1] BIND

```

[root@dlp ~]# systemctl enable --now named

```

[2] FirewallD DNS DNS [53/TCP,UDP]

```

[root@dlp ~]# firewall-cmd --add-service=dns
success

```

```
[root@dlp ~]# firewall-cmd --runtime-to-permanent
success
```

[3] DNS DNS
[enpls0]

```
[root@dlp ~]# nmcli connection modify enpls0 ipv4.dns 10.0.0.30
[root@dlp ~]# nmcli connection down enpls0; nmcli connection up enpls0
```

[4] [ANSWER SECTION]

```
[root@dlp ~]# dig dlp.srv.world.

; <<>> DiG 9.16.22-RH <<>> dlp.srv.world.
;; global options: +cmd
;; Got answer:
;; ->HEADER<<- opcode: QUERY, status: NOERROR, id: 49661
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: dfa3f5cee693b548010000006189b47fd276e33a7ce318ef (good)
;; QUESTION SECTION:
; dlp.srv.world.                   IN       A

;; ANSWER SECTION:
dlp.srv.world.           86400   IN       A       10.0.0.30

;; Query time: 2 msec
;; SERVER: 10.0.0.30#53(10.0.0.30)
;; WHEN: Tue Nov 09 08:36:31 JST 2021
;; MSG SIZE rcvd: 86

[root@dlp ~]# dig -x 10.0.0.30

; <<>> DiG 9.16.22-RH <<>> -x 10.0.0.30
;; global options: +cmd
;; Got answer:
;; ->HEADER<<- opcode: QUERY, status: NOERROR, id: 40024
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1
```

```
;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 7fa0458fcfcb227e010000006189b4a41afc0733b0cca9e3 (good)
;; QUESTION SECTION:
; 30.0.0.10.in-addr.arpa.          IN      PTR

;; ANSWER SECTION:
30.0.0.10.in-addr.arpa. 86400    IN      PTR      dlp.srv.world.

;; Query time: 4 msec
;; SERVER: 10.0.0.30#53(10.0.0.30)
;; WHEN: Tue Nov 09 08:37:08 JST 2021
;; MSG SIZE rcvd: 106
```

BIND : (CNAME)

CNAME

[1] CNAME

```
[root@dlp ~]# vi /var/named/srv.world.lan
$TTL 86400
@ IN SOA dlp.srv.world. root.srv.world. (
    # update serial if update zone file
    2021110902 ;Serial
    3600       ;Refresh
    1800       ;Retry
    604800     ;Expire
    86400      ;Minimum TTL
)
    IN NS      dlp.srv.world.
    IN A       10.0.0.30
    IN MX 10   dlp.srv.world.

dlp IN A       10.0.0.30
www IN A       10.0.0.31

# [Alias] IN CNAME [Original Name]
ftp IN CNAME   dlp.srv.world.
```

```

[root@dlp ~]# rndc reload
server reload successful
# verify resolution
[root@dlp ~]# dig ftp.srv.world.

; <<>> DiG 9.16.22-RH <<>> ftp.srv.world.
;; global options: +cmd
;; Got answer:
;; ->HEADER<- opcode: QUERY, status: NOERROR, id: 44967
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 04c6ca63bc5d1dde010000006189b6eb91495a7eb8875559 (good)
;; QUESTION SECTION:
;ftp.srv.world.                IN      A

;; ANSWER SECTION:
ftp.srv.world.                86400   IN      CNAME   dlp.srv.world.
dlp.srv.world.                86400   IN      A       10.0.0.30

;; Query time: 2 msec
;; SERVER: 10.0.0.30#53(10.0.0.30)
;; WHEN: Tue Nov 09 08:46:51 JST 2021
;; MSG SIZE rcvd: 104

```

BIND : Chroot

Chroot

```

[1] Chroot      [/var/named/chroot]
    [named.conf] [/var/named/chroot/etc/named.conf]
        [/var/named/chroot/var/named/**]
            [/var/named/chroot]

```

```

[root@dlp ~]# dnf -y install bind-chroot
[root@dlp ~]# mkdir /var/named/chroot/usr/lib64/named
[root@dlp ~]# /usr/libexec/setup-named-chroot.sh /var/named/chroot on
[root@dlp ~]# systemctl disable --now named
[root@dlp ~]# systemctl enable --now named-chroot

```

```
Created symlink /etc/systemd/system/multi-user.target.wants/named-chroot.service →  
/usr/lib/systemd/system/named-chroot.service.
```

```
[root@dlp ~]# ll /var/named/chroot/etc  
total 716  
drwxr-x---. 3 root named    23 Nov  2 04:55 crypto-policies  
-rw-r--r--. 2 root root    309 Sep 27 05:32 localtime  
drwxr-x---. 2 root named     6 Nov  2 04:55 named  
-rw-r-----. 1 root named 2390 Nov  9 08:45 named.conf  
-rw-r-----. 1 root named 1029 Nov  2 04:55 named.rfc1912.zones  
-rw-r--r--. 1 root named   686 Nov  2 04:55 named.root.key  
drwxr-x---. 3 root named    25 Nov  2 04:55 pki  
-rw-r--r--. 1 root root   6568 Jul 16 17:35 protocols  
-rw-r-----. 1 root named   100 Nov  9 08:35 rndc.key  
-rw-r--r--. 1 root root 701745 Jul 16 17:35 services
```

```
[root@dlp ~]# ll /var/named/chroot/var/named  
total 24  
-rw-r--r--. 1 root root   313 Nov  9 08:34 0.0.10.db  
drwxr-x---. 7 root named   61 Nov  2 04:55 chroot  
drwxrwx---. 2 named named   23 Nov  9 08:35 data  
drwxrwx---. 2 named named  108 Nov  9 08:47 dynamic  
-rw-r-----. 1 root named 2253 Nov  2 04:55 named.ca  
-rw-r-----. 1 root named  152 Nov  2 04:55 named.empty  
-rw-r-----. 1 root named  152 Nov  2 04:55 named.localhost  
-rw-r-----. 1 root named  168 Nov  2 04:55 named.loopback  
drwxrwx---. 2 named named    6 Nov  2 04:55 slaves  
-rw-r--r--. 1 root root   404 Nov  9 08:46 srv.world.lan
```

BIND

DNS

DNS [ns.server.education] (192.168.100.85) DNS [dlp.srv.world] (172.16.0.85)

[1] DNS

```
[root@dlp ~]# vi /etc/named.conf  
.....  
.....  
options {  
    listen-on port 53 { any; };  
    listen-on-v6 { any; };
```

```

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.secrets";
recursing-file  "/var/named/data/named.recursing";
allow-query    { localhost; internal-network; };
# add secondary server to allow to transfer zone files
allow-transfer { localhost; 192.168.100.85; };

```

.....

.....

```

[root@dlp ~]# vi /var/named/srv.world.wan
$TTL 86400
@   IN  SOA      dlp.srv.world. root.srv.world. (
        # update serial if update zone file
        2021110903 ;Serial
        3600       ;Refresh
        1800       ;Retry
        604800     ;Expire
        86400      ;Minimum TTL
)

    IN  NS       dlp.srv.world.
        # add secondary server
    IN  NS       ns.server.education.
    IN  A        172.16.0.82
    IN  MX 10    dlp.srv.world.

dlp    IN  A      172.16.0.82
www    IN  A      172.16.0.83

```

```

[root@dlp ~]# systemctl restart named

```

[2] onDNS

```

[root@ns ~]# vi /etc/named.conf
# add target zone info
# for IP address, it's the Master server's IP address
zone "srv.world" IN {
    type slave;

```

```
masters { 172.16.0.82; };  
file "slaves/srv.world.wan";  
notify no;  
};  
  
[root@ns ~]# systemctl restart named  
[root@ns ~]# ls /var/named/slaves  
srv.world.wan    # zone file transfered
```

DHCP : DHCP

DHCP IP

[1] DHCP IPv4

```
[root@dlp ~]# dnf -y install dhcp-server  
[root@dlp ~]# vi /etc/dhcp/dhcpd.conf  
# create new  
# specify domain name  
option domain-name "srv.world";  
  
# specify DNS server's hostname or IP address  
option domain-name-servers dlp.srv.world;  
  
# default lease time  
default-lease-time 600;  
  
# max lease time  
max-lease-time 7200;  
  
# this DHCP server to be declared valid  
authoritative;  
  
# specify network address and subnetmask  
subnet 10.0.0.0 netmask 255.255.255.0 {  
    # specify the range of lease IP address  
    range dynamic-bootp 10.0.0.200 10.0.0.254;  
    # specify broadcast address  
    option broadcast-address 10.0.0.255;  
    # specify gateway
```

```
option routers 10.0.0.1;  
}
```

```
[root@dlp ~]# systemctl enable --now dhcpd
```

[2] Firewallld DHCP DHCP [67/UDP]

```
[root@dlp ~]# firewall-cmd --add-service=dhcp  
success  
[root@dlp ~]# firewall-cmd --runtime-to-permanent  
success
```

DHCP DHCP Fedora2021/11/09

DHCP DHCP IP

[1] Fedora [enp1s0]

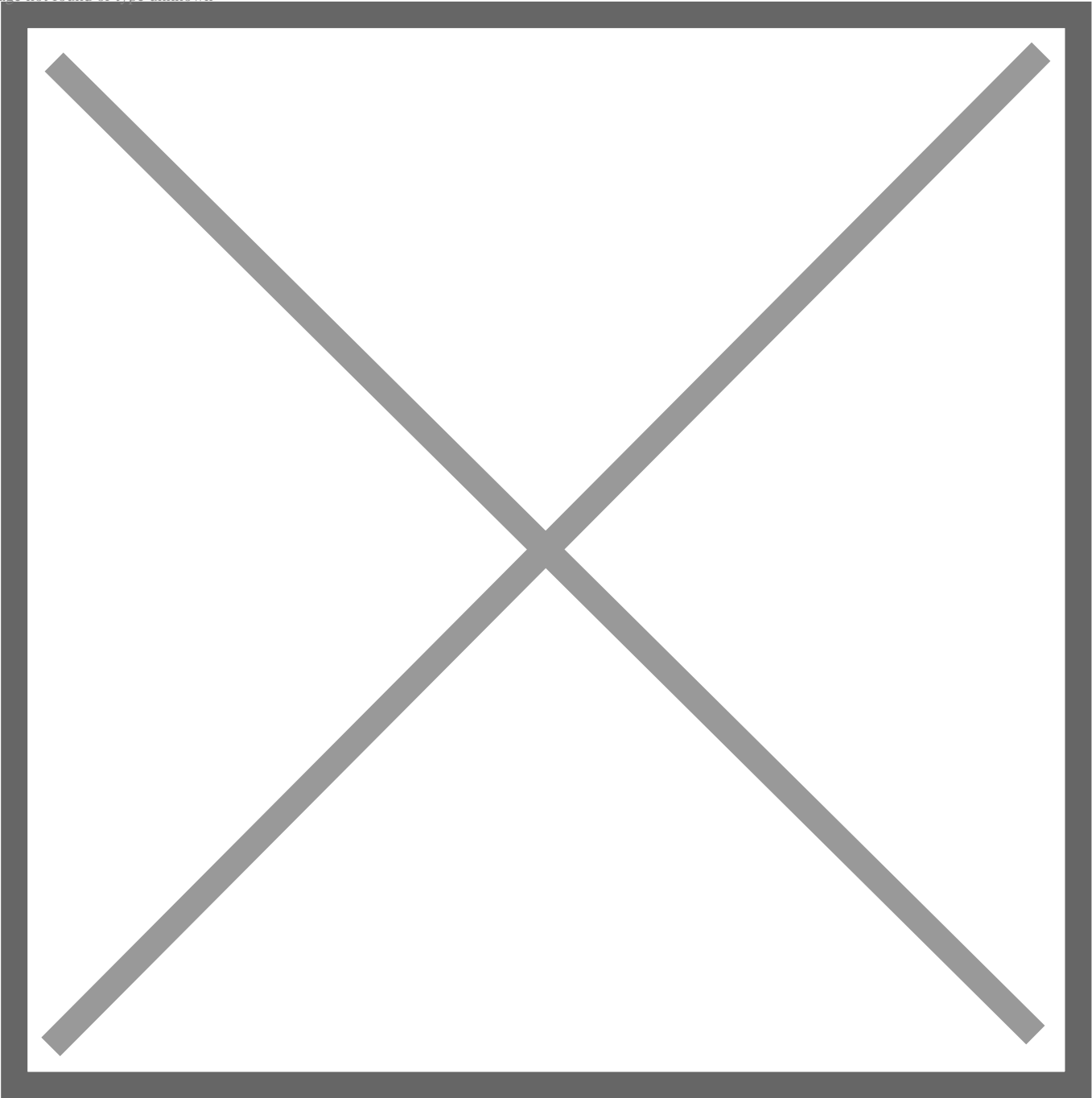
```
# install DHCP client if not installed (generally installed by default)  
[root@client ~]# dnf -y install dhcp-client  
[root@client ~]# nmcli connection modify enp1s0 ipv4.method auto  
[root@client ~]# nmcli connection down enp1s0; nmcli connection up enp1s0
```

DHCP DHCP Windows

Windows DHCP Windows 11

[2] [] []

Image not found or type unknown



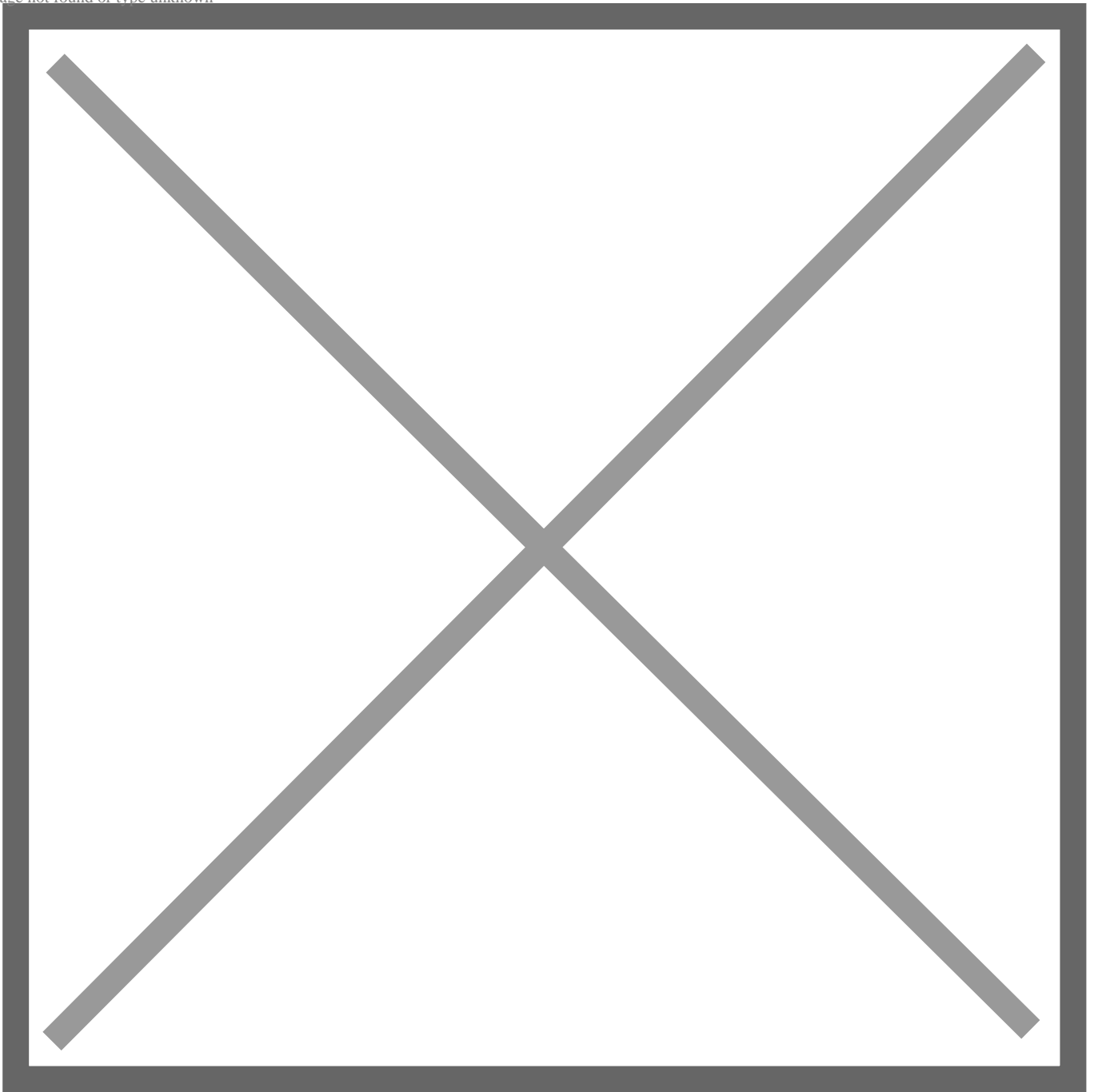
[3] [IP] [DHCP] []

Image not found or type unknown



[4] [] [(DHCP)]

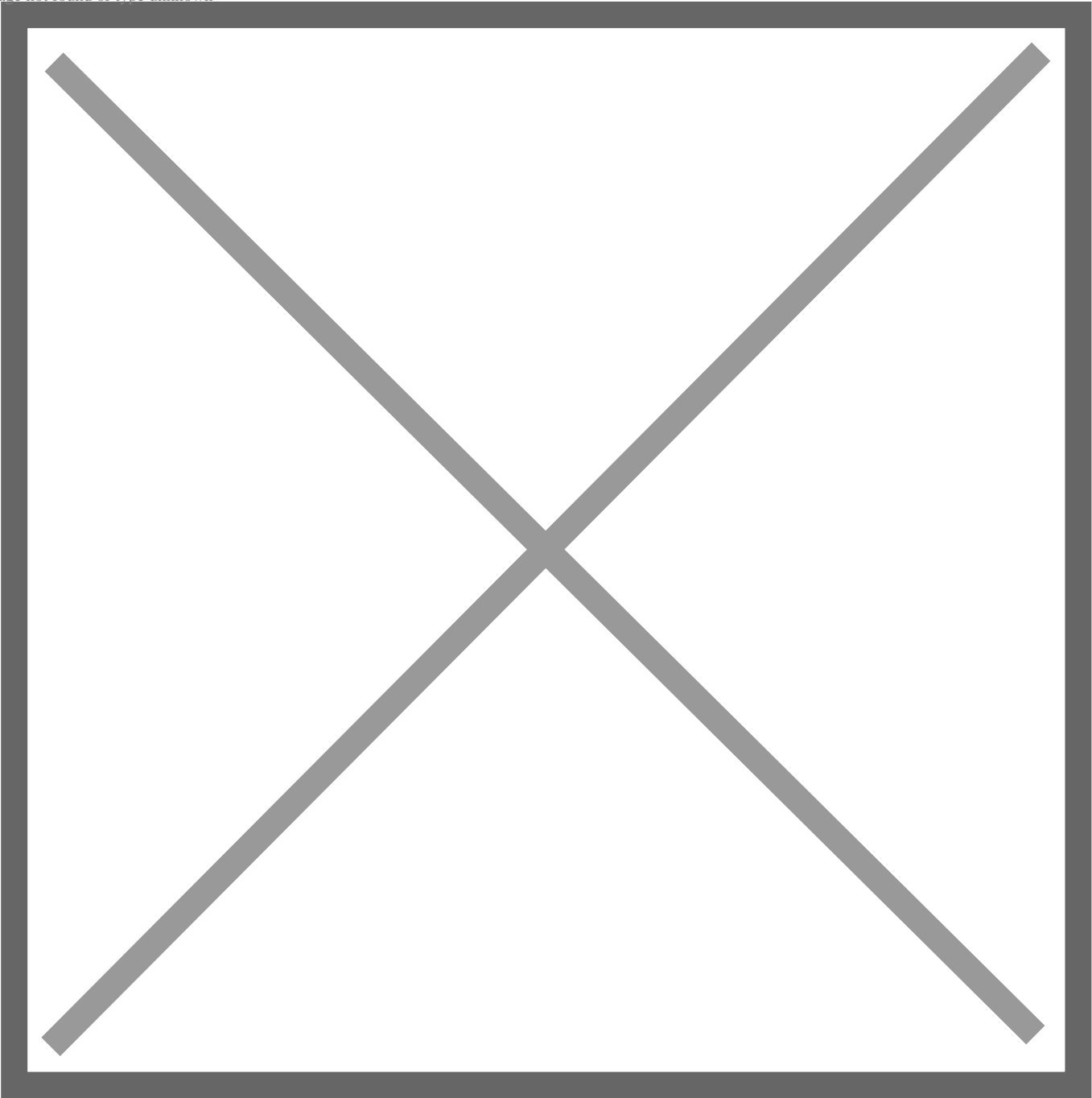
Image not found or type unknown



[5]

IP

Image not found or type unknown



Revision #6

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