BIND - řízen named.conf (/etc/named.conf nebo /etc/namedb/namedb.conf)

- definice globálních vlastností
- definice zón (master, slave)
- každá zóna vyžaduje soubor definice zón (zone file)
- soubory definic zón umístěny ve /var/named nebo dle parametru directory v named.conf

Obsah named.conf

komentáře /* ------------- */ nebo // nebo #

Klausule podporované BIND jsou:

- acl – Access Control Lists. Definují seznam hostů nebo skupin hostů
- controls – definují práva hostů a skupin, jejich lkíče
- include – zahrnutí externích souborů
- key – definice sdílených klíčů (DDNS)
- loging – logování zpráv BIND
- **options** – definice prostředí (parametry)
- server – definice vlastností serveru
- view – definice funkčnosti s ohledem na hostitelskou adresu
- **zone** – definice zóny

logy - syslog, -var/log/messages

```
logging {
    [ channel channel_name {
      ( file path name
          [ versions ( number | unlimited ) ]
          [ size size_spec ]
        | syslog syslog_facility
        | stderr
        | null );
      [ severity (critical | error | warning | notice |
                  info | debug [ level ] | dynamic ); ]
      [ print-category yes | no; ]
      [ print-severity yes | no; ]
      [ print-time yes | no; ]
    }; ]
    [ category category_name {
      channel_name ; [ channel_name ; ... ]
    }; ]
    ...
};

logging{
  channel simple_log {
    file "/var/log/named/bind.log" versions 3 size 5m;
    severity warning;
    print-time yes;
    print-severity yes;
    print-category yes;
  };
  category default{
    simple_log;
  };
};
```

Typy zón

- master – server má master kopii dat pro zónu (autoritativní odpovědi)
- forward – fowardování dotayů na **forwarders** servery
- hint – počáteční množina root serverů
- slave – replikace master zone (parametr SOA.refresh – slave žádá mastera,
- SOA.expiry – konec odpovědí pro zónu
- stub – totéž co slave, replikace NS záznamů (specifika BIND)

```
zone "example.com" in {
    type slave;
    file "slave.example.com";
    masters {147.228.67.100; 147.228.67.200};
};
```

Příkazy - zóna

```
allow-notify { address_match_list }; [ Opt, View, Zone ]
  allow-query { address_match_list }; [ Opt, View, Zone ]
  allow-transfer { address_match_list }; [ Opt, View, Zone ]
  allow-update { address_match_list }; [ Zone ]
  allow-update-forwarding { address_match_list }; [ Opt, View, Zone ]
  also-notify { ip_addr [port ip_port] ; ... ] }; [ Opt, View, Zone ]
  alt-transfer-source ( ipv4 | * ) [ port ( integer | * )]; [ Opt, View,
Zone ]
  alt-transfer-source-v6 ( ipv6 | * ) [ port ( integer | * ) ]; [ Opt,
View, Zone ]
  check-names ( fail | warn | ignore ); [ Zone ]
  database "database-name params"; [ Zone ]
  delegation-only ( yes | no ) ; [ Zone ]
  dialup dialup_options; [ Opt, View, Zone ]
  file "file_name" ; [ Zone ]
  forward ( only | first ); [ Opt, View, Zone ]
  forwarders { ipv4_addr | ipv6_addr [port ip_port] ; ... ] }; [ Opt,
View, Zone ]
  ixfr-from-differences ( yes | no); [ Opt, View, Zone ]
  key-directory path_name; [ Opt, View, Zone ]
  masters [port ip_port] { ( masters_list | ip_addr
      [port ip_port] [key key] ) ; [...] } ; ] [ Zone ]
  max-journal-size size_in_bytes; [ Opt, View, Zone ]
  max-refresh-time seconds ; [ Opt, View, Zone ]
  max-retry-time seconds ; [ Opt, View, Zone ]
  max-transfer-idle-in minutes; [ Opt, View, Zone ]
  max-transfer-idle-out minutes; [ Opt, View, Zone ]
  max-transfer-time-in minutes; [ Opt, View, Zone ]
  max-transfer-time-out minutes; [ Opt, View, Zone ]
  min-refresh-time seconds ; [ Opt, View, Zone ]
  min-retry-time seconds ; [ Opt, View, Zone ]
  multi-master ( yes | no ) ; [ Opt, View, Zone ]
  notify ( yes | no | explicit ); [ Opt, View, Zone ]
  notify-source (ip4_addr | *) [port ip_port] ; [ Opt, View, Zone ]
  notify-source-v6 (ip6_addr | *) [port ip_port] ; [ Opt, View, Zone ]
  sig-validity-interval number ; [ Opt, View, Zone ]
  sig-validity-interval days ; [ Opt, View, Zone ]
  transfer-source (ip4_addr | *) [port ip_port] ; [ Opt, View, Zone ]
  transfer-source-v6 (ip6_addr | *) [port ip_port] ; [ Opt, View, Zone ]
  type zone_type; [ Zone ]
  update-policy { update_policy_rule [...] }; [ Zone ]
  use-alt-transfer-source ( yes | no ); [ Opt, View, Zone ]
  zone-statistics ( yes | no ) ; [ Opt, View, Zone ]
```

Požadované zóny

root.servers – (soubor named.root, root.servers, named.ca) – TLD – Top Level Domain servery

```
zone "." in {
      type hint;
      file "root.servers";
};
```

```
;       This file holds the information on root name servers needed to
;       initialize cache of Internet domain name servers
;       (e.g. reference this file in the "cache  .   "
;       configuration file of BIND domain name servers).
;
;       This file is made available by InterNIC
;       under anonymous FTP as
;           file                /domain/named.root
;           on server           FTP.INTERNIC.NET
;       -OR-                    RS.INTERNIC.NET
;
;       last update:    Jan 29, 2004
;       related version of root zone:   2004012900
;
;
; formerly NS.INTERNIC.NET
;
.                          3600000  IN  NS    A.ROOT-SERVERS.NET.
A.ROOT-SERVERS.NET.        3600000      A     198.41.0.4
;
; formerly NS1.ISI.EDU
;
.                          3600000      NS    B.ROOT-SERVERS.NET.
B.ROOT-SERVERS.NET.        3600000      A     192.228.79.201
;
; formerly C.PSI.NET
;


; -------------------------------------------------------------


.                          3600000      NS    C.ROOT-SERVERS.NET.
.                          3600000      NS    L.ROOT-SERVERS.NET.
L.ROOT-SERVERS.NET.        3600000      A     198.32.64.12
;
; operated by WIDE
;
.                          3600000      NS    M.ROOT-SERVERS.NET.
M.ROOT-SERVERS.NET.        3600000      A     202.12.27.33
; End of File
```

localhost – resoluce jména localhost na 127.0.0.1

```
zone "localhost" in{
  type master;
  file "master.localhost";
};
```

```
$TTL    86400 ; 24 hours could have been written as 24h
$ORIGIN localhost.
; line below = localhost 1D IN SOA localhost root.localhost
@  1D  IN       SOA @  root (
                                2006032401 ; serial
                                3H ; refresh
                                15 ; retry
                                1w ; expire
                                3h ; minimum
                               )
@  1D  IN  NS @
   1D  IN  A  127.0.0.1
```

0.0.127.IN-ADDR.ARPA – reverzní mapování pro loopback adresu 127.0.0.1

```
zone "0.0.127.in-addr.arpa" in{
  type master;
  file "localhost.rev";
};
```

```
$TTL    86400 ;
; could use $ORIGIN 0.0.127.IN-ADDR.ARPA.
@       IN     SOA     localhost. root.localhost.  (
                        1997022700 ; Serial
                        3h      ; Refresh
                        15      ; Retry
                        1w      ; Expire
                        3h )    ; Minimum
        IN     NS      localhost.
1       IN     PTR     localhost.
```

převod adresy na jméno

```
zone "ul402.zcu.cz" in {
    type master;
    file "ul402.zcu.cz";
};



$TTL 86400      ; 1 day
$ORIGIN  ul402.zcu.cz.
@        IN SOA ns.ul402.zcu.cz. root.ul402.zcu.cz. (
                2006MMDDnn      ; Serial
                 10800          ; Refresh after 3 hours
                  3600          ; Retry after 1 hour
                604800          ; Expire - 1 Weeks
                 14400 )        ; Minimum TTL of 1 day

# list of your DNS servers
         IN    NS    NS1
         IN    NS    NS2

# list of your mail servers
         IN    MX    10    Mail1
         IN    NS    20    Mail2

# A Records

Router         IN    A     147.228.67.1
Gateway        IN    A     147.228.67.2
Firewall       IN    A     147.228.67.3

NS             IN    A     147.228.67.10
Mail           IN    A     147.228.67.20
www            IN    A     147.228.67.30
```

reverse-map – převod IP adres na jména

```
zone "67.228.147.in-addr.arpa" in {
    type master;
    file "147.228.67.rev";
};
```

```
$TTL 86400      ; 1 day
$ORIGIN   67.228.147.IN-ADDR.ARPA.

@        IN SOA ns.ul402.zcu.cz. root.ul402.zcu.cz. (
                2006MMDDnn       ; Serial
                 10800           ; Refresh after 3 hours
                  3600           ; Retry after 1 hour
                604800           ; Expire - 1 Weeks
                 14400 )         ; Minimum TTL of 1 day

# list of your DNS servers
         IN    NS    NS1
         IN    NS    NS2


# PTR Records
#
7    IN    PTR  NS1
8    IN    PTR  NS2
9    IN    PTR  www
```

Master named.conf

```
// example.com fragment from named.conf
// defines this server as a zone master
zone "example.com" in{
        type master;
        file "pri.example.com";
};
```

Slave named.conf

```
// example.com fragment from named.conf
// defines this server as a zone slave
zone "example.com" in{
        type slave;
        file "sec/sec.example.com";
        masters {192.168.23.17;};
};
```

Caching named.conf

```
// options section fragment of named.conf
// recursion yes is the default and may be omitted
options {
        directory "/var/named";
        version "not currently available";
        recursion yes;
};
// zone section
....
// the DOT indicates the root domain = all domains
zone "." IN {
        type hint;
        file "root.servers";
};
```

Forwarding (doména) named.conf

```
// zone section fragment of named.conf
zone "example.com" IN {
        type forward;
        forwarders {10.0.0.1; 10.0.0.2;};
};
```

Nejjednodušší konfigurace

```
options {
      directory "/var/named";
};
zone "." in {
      type hint;
      file "root.servers";
};
zone "localhost" in {
      type master;
      file "master.localhost";
};
zone "0.0.127.in-addr.arpa" in {
      type master;
      file "master.127.0.0";
};
zone "ul402.zcu.cz" in {
      type master;
      file "master.zcu.cz";
};
zone "67.228.147.in-addr.arpa" in {
      type master;
      file "master.147.228.67";
};
```