Часть 1.

1. Необходимая конфигурация настроена с помощью двух виртуальных машин с операционной системой Ubuntu.
2. /etc/bind/named.conf

```
include "/etc/bind/named.conf.options";
include "/etc/bind/named.conf.local";
include "/etc/bind/named.conf.default-zones";
include "/etc/bind/named.conf.logging";
```

/etc/bind/named.conf.logging

```
logging{
    channel channel_client {
        file "/var/log/named/client.log" versions 3 size 100m;
        severity debug 3;
        print-time yes;
        print-severity yes;
    };
    channel channel_cname {
        file "/var/log/named/cname.log" versions 3 size 100m;
        severity debug 10;
        print-time yes;
        print-severity yes;
    };
    channel channel_config {
        file "/var/log/named/config.log" versions 3 size 100m;
        severity info;
        print-time yes;
        print-severity yes;
    };
    channel channel_database {
        file "/var/log/named/database.log" versions 3 size 100m;
        severity notice;
        print-time yes;
        print-severity yes;
    };
    channel channel_default {
        file "/var/log/named/default.log" versions 3 size 100m;
        severity debug 10;
        print-time yes;
        print-severity yes;
    };
    channel channel_dispatch {
        file "/var/log/named/dispatch.log" versions 3 size 100m;
        severity debug 1;
        print-time yes;
        print-severity yes;
    };
    channel channel_dnssec {
        file "/var/log/named/dnssec.log" versions 3 size 100m;
        severity debug 10;
        print-time yes;
        print-severity yes;
    };
    channel channel_dnstap {
        file "/var/log/named/dnstap.log" versions 3 size 100m;
        severity debug 10;
        print-time yes;
        print-severity yes;
    };
    channel channel_general {
        file "/var/log/named/general.log" versions 3 size 100m;
        severity debug 5;
        print-time yes;
        print-severity yes;
    };
    channel channel_lame-servers {
        file "/var/log/named/lame-servers.log" versions 3 size 100m;
        severity debug 10;
        print-time yes;
        print-severity yes;
    };
    channel channel_network {
        file "/var/log/named/network.log" versions 3 size 100m;
        severity debug 3;
        print-time yes;
        print-severity yes;
    };
    channel channel_notify {
        file "/var/log/named/notify.log" versions 3 size 100m;
        severity debug 3;
        print-time yes;
        print-severity yes;
    };
    channel channel_queries {
        file "/var/log/named/queries.log" versions 5 size 100m;
        severity info;
        print-time yes;
        print-severity yes;
    };
    channel channel_query-errors {
        file "/var/log/named/query-errors.log" versions 3 size 100m;
        severity info;
        print-time yes;
        print-severity yes;
    };
    channel channel_resolver {
        file "/var/log/named/resolver.log" versions 3 size 100m;
        severity debug 10;
        print-time yes;
        print-severity yes;
    };
    channel channel_security {
        file "/var/log/named/security.log" versions 3 size 100m;
        severity debug 10;
        print-time yes;
        print-severity yes;
    };
    channel channel_unmatched {
        file "/var/log/named/unmatched.log" versions 3 size 100m;
        severity debug 3;
        print-time yes;
        print-severity yes;
    };
    channel channel_update {
        file "/var/log/named/update.log" versions 3 size 100m;
        severity debug 3;
        print-time yes;
        print-severity yes;
    };
    channel channel_update-security {
        file "/var/log/named/update-security.log" versions 3 size 100m;
        severity info;
        print-time yes;
        print-severity yes;
    };
    channel channel_xfer-in {
        file "/var/log/named/xfer-in.log" versions 3 size 100m;
        severity info;
        print-time yes;
        print-severity yes;
    };
    channel channel_xfer-out {
        file "/var/log/named/xfer-out.log" versions 3 size 100m;
        severity info;
        print-time yes;
        print-severity yes;
    };

    category client{
        channel_client;
    };
    category cname{
        channel_cname;
    };
    category config{
        channel_config;
    };
    category dispatch{
        channel_dispatch;
    };
    category database{
        channel_database;
    };
    category default{
        channel_default;
    };
    category dnssec{
        channel_dnssec;
    };
    category dnstap{
        channel_dnstap;
    };
    category general{
        channel_general;
    };
    category lame-servers{
        channel_lame-servers;
    };
    category network{
        channel_network;
    };
    category notify{
        channel_notify;
    };
    category queries{
        channel_queries;
    };
    category query-errors{
        channel_query-errors;
    };
    category resolver{
        channel_resolver;
    };
    category security{
        channel_security;
    };
    category unmatched{
        channel_unmatched;
    };
    category update{
        channel_update;
    };
    category update-security{
        channel_update-security;
    };
    category xfer-in{
        channel_xfer-in;
    };
    category xfer-out{
        channel_xfer-out;
    };
};
```

3. /etc/bind/named.conf.local

```
//
// Do any local configuration here
//

zone "zone1.local"{
        type master;
        file "/etc/bind/db.zone1.local";
        allow-transfer { 192.168.141.9; };
};

zone "zone2.local"{
        type slave;
        masters { 192.168.141.9; };
};

zone "zone3.local"{
        type master;
        file "/etc/bind/db.zone3.local";
};

zone "xn--80aaakzv5abgkcm.xn--90aenc5bjg.local"{
        type slave;
        masters { 192.168.141.9; };
};

zone "141.168.192.in-addr.arpa"{
        type master;
        file "/etc/bind/db.192.168.141";
        allow-transfer { 192.168.141.9; };
};

zone "fe80:d6f4:71bc:e00a.in-addr.arpa"{
        type slave;
        masters { 192.168.141.9; };
};

// Consider adding the 1918 zones here, if they are not used in your
// organization
//include "/etc/bind/zones.rfc1918";
```

/etc/bind/db.zone1.local

```
$TTL 86400;

@ IN SOA zone1.local. root.zone1.local. (
         2022103037 ; Serial
         600 ; Refresh
         3600 ; Retry
         1w ; Expire
         360 ) ; Negative cache TTL

@ IN NS dns-1.zone1.local.
@ IN A 192.168.141.10
dns2 IN NS ns2.dns2.zone1.local.
ns2.dns2.zone1.local. IN A 192.168.141.9
dns-1 IN A 192.168.141.11
dns-2 IN A 192.168.141.12
dns-3 IN A 192.168.141.13
```

/etc/bind/db.zone3.local

```
$TTL 86400;

@ IN SOA zone3.local. root.zone3.local. (
         2022103006 ; Serial
         600 ; Refresh
         3600 ; Retry
         1w ; Expire
         360 ) ; Negative cache TTL

@ IN NS dns-1.zone3.local.
@ IN A 192.168.141.30
dns-1 IN A 192.168.141.31
dns-2 IN A 192.168.141.32
dns-3 IN A 192.168.141.33
```

/etc/bind/db.192.168.141

```
$TTL 86400;

@ IN SOA dns-1.192.168.141.local. root.192.168.141.local. (
        2022103006 ; Serial
        600 ; Refresh
        3600 ; Retry
        1w ; Expire
        360 ) ; Negative cache TTL

@ IN NS dns-1.192.168.141.local.
1 IN PTR dns-1.zone1.local.
2 IN PTR dns-2.zone2.local.
3 IN PTR dns-3.zone3.local.
```

4. /etc/bind/named.conf.local

```
zone "zone1.local"{
        type slave;
        masters { 192.168.141.8; };
};

zone "dns2.zone1.local"{
        type master;
        allow-transfer { 192.168.141.8; };
        file "/etc/bind/db.ns.dns.local";
};

zone "zone2.local"{
        type master;
        file "/etc/bind/db.zone2.local";
        allow-transfer { 192.168.141.8; };
};

zone "zone3.local"{
        type master;
        file "/etc/bind/db.zone3.local";
};

zone "xn--80aaakzv5abgkcm.xn--90aenc5bjg.local"{
        type master;
        file "/etc/bind/db.sibsut.local";
        allow-transfer { 192.168.141.8; };
};

zone "141.168.192.in-addr.arpa"{
        type slave;
        masters { 192.168.141.8; };
};

zone "9.1.f.a.3.2.c.1.8.2.b.d.2.0.0.0.7.3.0.f.c.5.2.6.7.1.d.f.ip6.arpa"{
        type master;
        file "/etc/bind/db.ip6.reverse";
        allow-transfer { 192.168.141.8; };
};
```

/etc/bind/db.zone2.local

```
$TTL 86400;

@ IN SOA dns-1.zone2.local. root.zone2.local. (
        2022103006 ; Serial
        600 ; Refresh
        3600 ; Retry
        1w ; Expirt
        360) ; Negative cache TTL

@ IN NS dns-1.zone2.local.
@ IN A 192.168.141.20
dns-1 IN A 192.168.141.21
dns-2 IN A 192.168.141.22
dns-3 IN A 192.168.141.23
```

/etc/bind/db.sibsut.local

```
$TTL 86400;

@ IN SOA dns-1.xn--80aaakzv5abgkcm.xn--90aenc5bjg.local. root.xn--80aaakzv5abgkcm.xn--90ae
nc5bjg.local. (
        2022103006 ; Serial
        600 ; Refresh
        3600 ; Retry
        1w ; Expire
        360 ) ; Negative cache TTL

@ IN NS dns-1.xn--80aaakzv5abgkcm.xn--90aenc5bjg.local.
@ IN A 192.168.141.40
dns-1 IN A 192.168.141.41
dns-2 IN A 192.168.141.42
dns-3 IN A 192.168.141.43
```

/etc/bind/db.ip6.reverse

```
$TTL 86400;

@ IN SOA dns-1.ip6.reverse.local. root.ip6.reverse.local. (
        2022103006 ; Serial
        600 ; Refresh
        3600 ; Retry
        1w ; Expire
        360 ) ; Negative cache TTL

@ IN NS dns-1.ip6.reverse.local.
1.0.0.0 IN PTR dns-1.zone1.local.
2.0.0.0 IN PTR dns-2.zone2.local.
3.0.0.0 IN PTR dns-3.zone3.local.
```

5. Репликация зоны с помощью команды

```
sudo rsync user@192.168.141.8:/etc/bind/db.zone3.local /etc/bind/db.zone3.local
```

6. [1]

/etc/bind/db.zone1.local

```
$TTL 86400;

@ IN SOA zone1.local. root.zone1.local. (
        2022103037 ; Serial
        600 ; Refresh
        3600 ; Retry
        1w ; Expire
        360 ) ; Negative cache TTL

@ IN NS dns-1.zone1.local.
@ IN A 192.168.141.10
dns2 IN NS ns2.dns2.zone1.local.
ns2.dns2.zone1.local. IN A 192.168.141.9
dns-1 IN A 192.168.141.11
dns-2 IN A 192.168.141.12
dns-3 IN A 192.168.141.13
```

[2]

/etc/bind/named.conf.local

```
zone "dns2.zone1.local"{
        type master;
        allow-transfer { 192.168.141.8; };
        file "/etc/bind/db.ns.dns.local";
};
```

/etc/bind/db.ns.dns.local

```
$TTL 86400;

@ IN SOA dns2.zone1.local. root.zone1.local. (
        2022103006 ; Serial
        600 ; Refresh
        3600 ; Retry
        1w ; Expirt
        360) ; Negative cache TTL

@ IN NS dns2.zone1.local.
@ IN A 192.168.141.90
ns2 IN A 192.168.141.92
```

7. /etc/bind/named.conf.options

```
options {
        directory "/var/cache/bind";
        listen-on { any; };
        listen-on-v6 { any; };

        // If there is a firewall between you and nameservers you want
        // to talk to, you may need to fix the firewall to allow multiple
        // ports to talk.  See http://www.kb.cert.org/vuls/id/800113

        // If your ISP provided one or more IP addresses for stable
        // nameservers, you probably want to use them as forwarders.
        // Uncomment the following block, and insert the addresses replacing
        // the all-0's placeholder.

        recursion yes;
        forwarders {
                192.168.141.9;
                1.1.1.1;
                8.8.8.8;
        };

        //========================================================================
=
        // If BIND logs error messages about the root key being expired,
        // you will need to update your keys.  See https://www.isc.org/bind-keys
        //========================================================================
=
        dnssec-validation auto;
        auth-nxdomain no;
};
```

Часть 2.

1. Base.ldif

```
dn: ou=people,dc=example,dc=com
objectClass: organizationalUnit
ou: people

dn: ou=groups,dc=example,dc=com
objectClass: organizationalUnit
ou: groups
```

user1.ldif

```
dn: uid=user1,ou=people,dc=example,dc=com
objectClass: inetOrgPerson
objectClass: posixAccount
objectClass: shadowAccount
cn: Username Userf
sn: Userf
uid: user1
uidNumber: 10001
gidNumber: 10001
homeDirectory: /home/user1
loginShell: /bin/bash
userPassword: {CRYPT}x
```

2.

Sudo apt install -y libnss-ldap libmap-ldap nscd

/etc/nsswitch.conf

```
# /etc/nsswitch.conf
#
# Example configuration of GNU Name Service Switch functionalit
# If you have the `glibc-doc-reference' and `info' packages ins
# `info libc "Name Service Switch"' for information about this

passwd:         files ldap systemd sss
group:          files ldap systemd sss
shadow:         files ldap systemd sss
gshadow:        files ldap systemd

hosts:          files mdns4_minimal [NOTFOUND=return] dns
networks:       files

protocols:      db files
services:       db files sss
ethers:         db files
rpc:            db files

netgroup:       nis sss
automount:  sss
```

Доп. Задание

/etc/bind/db.zone1.local

```
dnsx IN PTR dns-2.zone1.local.
```

$: nslookup

- set type=ptr
- server 192.168.141.8
- dnsx.zone1.local