



NIS Workshop - Ashgabad

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DNS

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Laboratory Exercise: *DNS*

Objectives

In this laboratory exercise you will complete the following tasks:

- *Create a forward zone*
- *Insert IPv6-related records*
- *Do some A and AAAA queries to the server*

Visual Objective

The following figure shows the topology of the current laboratory. This laboratory is similar with the ones on the first day. Now we have a PC performing as a DNS server.

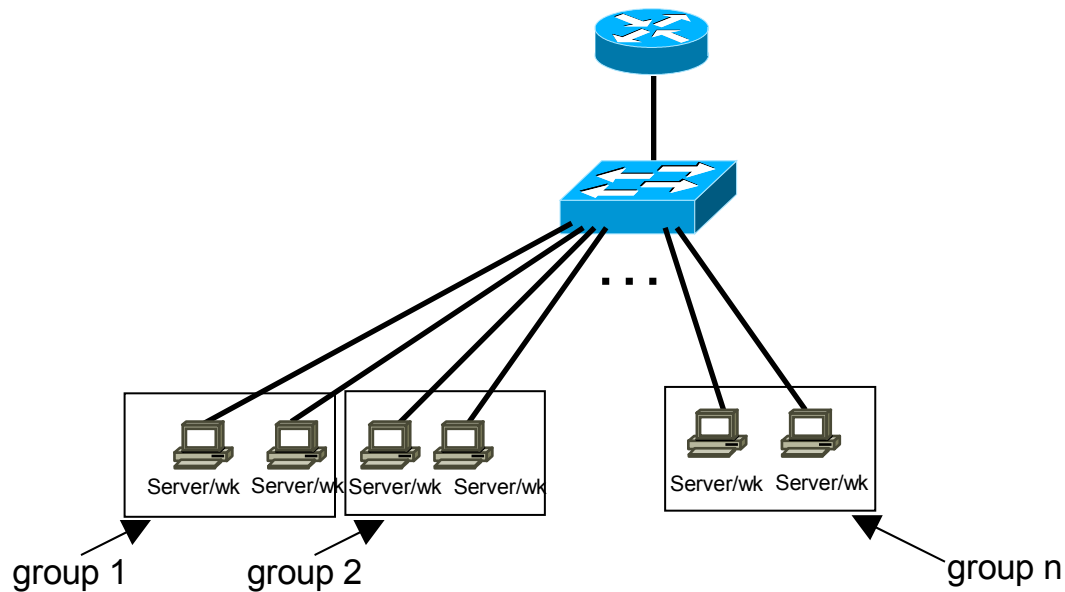


Figure 1: Scenario topology

Setup

Your IPv4 address is assigned statically.

Scenario

*A laptop with FreeBSD is running BIND 9. The DNS server IPv4 address is 194.67.205.95. The access to the DNS server is allowed via ssh (port 22) at the addresses **2001:738:0:ffff:20f:1fff:fea4:ba0a** or 194.67.205.95 (6diss.science.gov.tm) using the login/password: 6diss/6diss.*

In the `/etc/bind/` directory there are already files with IPv4 DNS (A, PTR) records. Trainees should create the relevant IPv6 DNS (AAAA) records. (Students should have basic knowledge of BIND/DNS)

The DNS server is configured via the `/etc/bind/named.conf` file. The “forward” files that contain the DNS entries are defined in the `/etc/bind/named.conf` via the following syntax:

Forward zone: Example

```
zone "group3.workshop.6diss.org" in {
    type master;
    file "/etc/bind/group3";
};
```

In order to add IPv6 DNS entries for PC X in group Y, the zone file `groupY.workshop.6diss.org` has to be created. (The file `/etc/bind/named.conf` already contains the appropriate entries.)

Task 1: Create an IPv6 forward zone file and insert IPv6 records

Complete the following exercise's steps:

- **Step 1:** In `/etc/bind/` directory of DNS Server create and populate the file correspondent to your zone (`groupY.workshop.6diss.org`). For your host's name use **pcX**. For example: **pc1.groupY.workshop.6diss.org** (**Tip:** See configuration examples at the end of the document and `groupY` file in DNS server)
- **Step 2:** Validate the zone file using the command **named-checkzone** (Tip (example): `# named-checkzone groupY.workshop.6diss.org groupY`)
- **Step 3:** Restart DNS server (**Tip:** In order to restart the DNS server, root privileges are required. DNS will be restarted on-demand by the trainer). Use the command `rndc` specifying your zone.

- **Step 4:** Validate DNS queries using your lab PC. Try IPv4 and IPv6 query.

Summary

After completing these exercises, you should be able to:

- *Create a forward zone*
- *Insert IPv6 related records*



Appendix A

Examples BIND files

Forward-zone file for workshop.6diss.org

```
workshop.6diss.org. IN SOA server.workshop.6diss.org. root.server.workshop.6diss.org. (
    1          ; Serial
    10800     ; Refresh after 3 hours
    3600      ; Retry after 1 hour
    604800    ; Expire after 1 week
    86400 )   ; Minimum TTL of 1 day
;
; Name servers
;
workshop.6diss.org. IN NS  server.workshop.6diss.org.
;
; Host addresses
; some examples - these are not reals
localhost.workshop.6diss.org.      IN A      127.0.0.1
server.workshop.6diss.org.         IN A      192.168.38.5
pc28.workshop.6diss.org.           IN A      192.168.28.10
pc18.workshop.6diss.org.           IN A      192.168.28.10
;
; Multi-homed hosts
;
router1.workshop.6diss.org.         IN A      10.0.12.1
router1.workshop.6diss.org.         IN A      10.0.13.1
;
; Aliases
;
www                                  IN CNAME  server
;
; IPv6 host addresses
;
localhost.workshop.6diss.org.       IN AAAA   ::1
server.workshop.6diss.org.          IN AAAA   2001:DB8:CAFE:38::5
pc28.workshop.6diss.org.            IN AAAA   2001:DB8:CAFE:28::10
pc18.workshop.6diss.org.            IN AAAA   2001:DB8:CAFE:18::10
```

Reverse-zone file for workshop.org

```
1.1.1.1.E.F.A.C.8.B.D.0.1.0.0.2.ip6.arpa. IN SOA server.workshop.6diss.org.
root.server.workshop.6diss.org. (
    1          ; Serial
    10800     ; Refresh after 3 hours
    3600      ; Retry after 1 hour
    604800    ; Expire after 1 week
    86400 )   ; Minimum TTL of 1 day
;
; Name servers
;
1.1.1.1.E.F.A.C.8.B.D.0.1.0.0.2.ip6.arpa. IN NS  server.workshop.6diss.org.
;
; Addresses point to canonical name
;
0.1.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.1.1.1.1.E.F.A.C.8.B.D.0.1.0.0.2.ip6.arpa. IN PTR
pc28.workshop.6diss.org.
5.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.1.1.1.1.E.F.A.C.8.B.D.0.1.0.0.2.ip6.arpa. IN PTR
server.workshop.6diss.org.
```