



***6DISS Workshop - Rabat***

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***DNS***

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## Laboratory Exercise: DNS

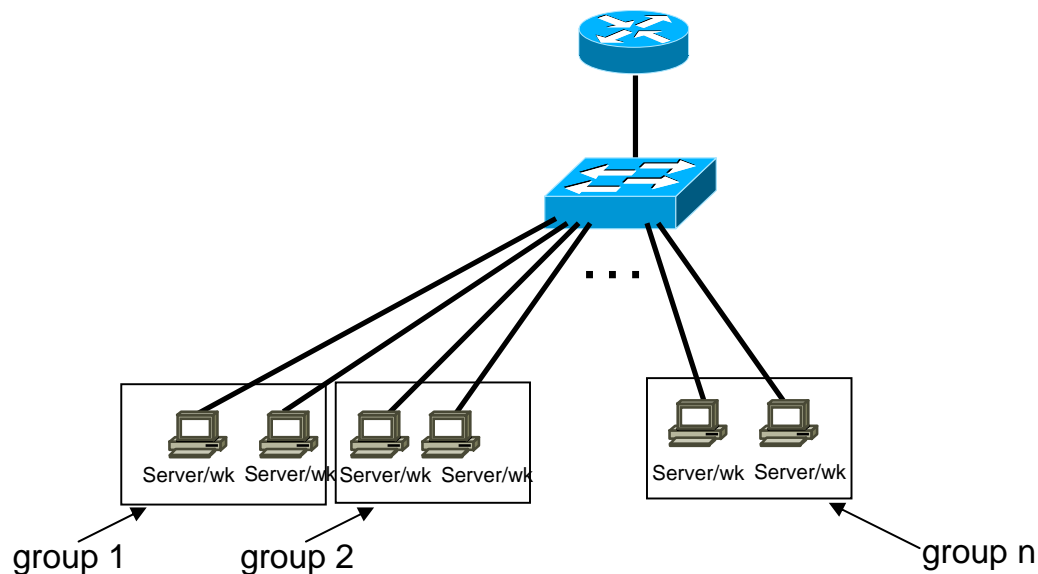
### Objectives

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 by DHCPv4.*

## Scenario

*A laptop with Linux Ubuntu is running BIND 9. The access to the DNS server is allowed via ssh (port 22) at the addresses **2001:DB8:CAFE:1111::53** 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/named.conf` via the following syntax:*

### **Forward zone: Example**

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

*In order to add IPv6 DNS entries for PC X in group Y, the zone file `groupY.rabat.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/rabat/` directory of DNS Server create and populate the file correspondent to your zone (`groupY.rabat.6diss.org`). For your host’s name use `pcx`. For example: **pc1.group4.rabat.6diss.org** (**Tip:** See configuration examples at the end of the document and `group7` file in DNS server)
- **Step 2:** Validate the zone file using the command `named-checkzone`
- **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.

## 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.org

```
workshop.org. IN SOA server.workshop.org. root.server.workshop.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.org. IN NS  server.workshop.org.

;
; Host addresses
;
localhost.workshop.org.    IN A    127.0.0.1
server.workshop.org.      IN A    192.168.38.5
pc28.workshop.org.        IN A    192.168.28.10
pc18.workshop.org.        IN A    192.168.28.10
;
; Multi-homed hosts
;
router1.workshop.org.     IN A    10.0.12.1
router1.workshop.org.     IN A    10.0.13.1

;
; Aliases
;
www                        IN CNAME server

;
; IPv6 host addresses
;
localhost.workshop.org.    IN AAAA  ::1
server.workshop.org.      IN AAAA  2001:DB8:CAFE:38::5
pc28.workshop.org.        IN AAAA  2001:DB8:CAFE:28::10
pc18.workshop.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.org.
root.server.workshop.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.org.

;
; Addresses point to canonical name
;
0.1.0.0.0.0.0.0.0.0.0.0.0.0.0.1.1.1.1.E.F.A.C.8.B.D.0.1.0.0.2.ip6.arpa.    IN PTR
pc28.workshop.org.
5.0.0.0.0.0.0.0.0.0.0.0.0.0.0.1.1.1.1.E.F.A.C.8.B.D.0.1.0.0.2.ip6.arpa.    IN PTR
server.workshop.org.
```