Linux Academy

Live! Lab

Configuring BIND 9 DNS

Contents

Lab Connection Information

- Labs may take up to five minutes to build
- The IP address of your server is located on the Live! Lab page
- Username: linuxacademy
- Password: 123456
- Root Password: 123456

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DNS maps IP addresses to fully-qualified domain names (FQDN). Through the use of BIND 9, we can turn a server into a DNS server, also known as **nameservers**.

Prepare the Server

Set Up Apache

Log in to the "Server 1" lab server. A basic Apache server is used to verify DNS during this lab. Install and enable Apache:

```
linuxacademy@linuxacademy1:~$ sudo apt-get install apache2
linuxacademy@linuxacademy1:~$ sudo service apache2 start
  * Starting web server apache2
  *
linuxacademy@linuxacademy1:~$ sudo service apache2 enable
Usage: apache2 {start|stop|graceful-stop|restart|reload|force-
reload|start-htcacheclean|stop-htcacheclean}
```

Check the connection using `telnet`:

```
linuxacademy@linuxacademy1:~$ telnet localhost 33
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
```

Once confirmed, exit telnet and navigate to the */var/www/* directory. Here we want to create a *test.txt* document we can use to check our BIND 9 configuration in Lynx. Ours looks like:

```
<html>
<body>
  www.linuxacademy.lab
</body>
</html>
```

For now, we are done with this server.

Configure /etc/hosts

A BIND 9 server needs at least one static IP address to which to bind zones. Log in to the lab server with the **private IP** of *10.0.0.100*, and open the */etc/hosts* file. We are not configuring our DNS for IPv6 in this lab, so it only necessary to include the following line:

```
10.0.0.100  ip-10-0-0-100.linuxacademy.lab ip-10-0-0-100
```

Test the configuration by running `ping` against the hostnames.

Set Up BIND 9 DNS

Install the required packages:

```
linuxacademy@linuxacademy2:~$ sudo apt-get install bind9 bind9utils
```

We now need to make changes to the name service configuration files, located with the */etc/bind/* directory. These are mostly empty template files.

Open and edit the local configuration file, */etc/bind/named.conf.options*:

```
forwarders {
# Your ISP DNS IP(s) Here
10.0.0.2;  # EC2 DNS for network
8.8.8.8;   # Google DNS
};
```

This allows requests for names not hosted on our nameservers to be forwarded to alternative DNS servers to resolve.

Now open the */etc/bind/named.conf.local* file. This is where we configure the base zones for which are system is responsible. Ensure both forward and reverse lookups are configured:

```
# Forwarding zone
zone “linuxacademy.lab” {
    type master;
    file “/etc/bind/zones/db.linuxacademy.lab”;
};

# Reserve lookup and server info
zone “0.0.10.id-addr.arpa” {
    type master;
    file “/etc/bind/zones/db.10”;
};
```

Although this should finish the forwarding/reverse lookup configuration, we still do not have the referenced files from within the configuration. We need to configure these zone files now.

Zone Configuration

From with the */etc/bind/* directory, create another directory called *zones*:

```
linuxacademy@linuxacademy2:~$ cd /etc/bind
```

```
linuxacademy@linuxacademy2:~$ sudo mkdir zones
linuxacademy@linuxacademy2:~$ cd zones
```

Copy over a template file for the forwarding lookup zone:

```
linuxacademy@linuxacademy2:~$ sudo cp ../db.local db.linuxacademy.lab
```

Edit the file using the values of your BIND 9 and Apache servers' private IPs.

```
;
; BIND data file for local loopback interface
;
$TTL    604330
@       IN      SOA     ip-10-0-0-100.linuxacademy.lab. admin.
linuxacademy.lab. (
                              2         ; Serial
                         604330         ; Refresh
                          86400         ; Retry
                        2419200         ; Expire
                         604330 )       ; Negative Cache TTL
;
linuxacademy.lab.       IN      NS      ip-10-0-0-100.linuxacademy.lab.
linuxacademy.lab.       IN      A       10.0.0.100
ip-10-0-0-100           IN      A       10.0.0.100
ip-10-0-0-33            IN      A       10.0.0.80
www                     IN      A       10.0.0.33
```

Create the reverse zone file:

```
linuxacademy@linuxacademy2:~$ sudo cp ../db.127 db.10
```

Update the contents of the file to match the values of our setup:

```
;
; BIND data file for local loopback interface
;
$TTL    604330
@       IN      SOA     ip-10-0-0-100.linuxacademy.lab. admin.
linuxacademy.lab. (
                              2         ; Serial
                         604330         ; Refresh
                          86400         ; Retry
                        2419200         ; Expire
                         604330 )       ; Negative Cache TTL
;
                        IN      NS      ip-10-0-0-100.
100                     IN      PTR     ip-10-0-0-100.linuxacademy.lab.
33                      IN      PTR     ip-10-0-0-80.linuxacademy.lab.
33                      IN      PTR     www.linuxacademyl.lab.
```

Additionally, update the */etc/resolv.conf* to contain the appropriate nameservers:

```
nameserver 10.0.0.100   # our nameserver
nameserver 10.0.0.2     # AWS nameserver
search     linuxacademy.lab
domain     linuxacademy.lab
```

Now confirm that both the forward and reverse zones are properly configured:

```
linuxacademy@linuxacademy2:$ sudo named-checkzone linuxacademy.lab /etc/
bind/zones/db.linuxacademy.lab
zone linuxacademy.lab/IN: loaded serial 2
OK
linuxacademy@linuxacademy2:$ sudo named-checkzone linuxacademy.lab /etc/
bind/zones/db.10
zone linuxacademy.lab/IN: loaded serial 2
OK
```

Also ensure that the numbers after `serial` are the same for both zones.

Check the Zones

Restart the BIND 9 service:

```
linuxacademy@linuxacademy2:~$ sudo /etc/init.d/bind9 restart
  Stopping domain name service... bind9
waiting for pid 9612 to die                                    [ OK ]
  Starting domain name service... bind9
```

Check for errors:

```
linuxacademy@linuxacademy2:~$ sudo tail -f /var/log/syslog
```

We can now run the `host` command to query the DNS server:

```
linuxacademy@linuxacademy2:~$ host -l linuxacademy.lab
linuxacademy.lab name server ip-10-0-0-100.linuxacademy.lab.
linuxacademy.lab has address 10.0.0.100
ip-10-0-0-33.linuxacademy.lab has address 10.0.0.33
www.linuxacademy.lab has address 10.0.0.33
```

We can also confirm by using `nslookup`:

```
linuxacademy@linuxacademy2:~$ nslookup linuxacademy.lab
Server:         10.0.0.100
Address:    10.0.0.100#53
```

```
Name:    linuxacademy.lab
Address: 10.0.0.100
```

Additionally, we need to check the reverse zone:

```
linuxacademy@linuxacademy2:~$ host 10.0.0.100
100.0.0.10.in-addr.arpa domain name pointer ~
ip-10-0-0-100.linuxacademy.lab
linuxacademy@linuxacademy2:~$ nslookup 10.0.0.100
Server: 10.0.0.100
Address: 10.0.0.100#53
100.0.0.10.in-addr.arpa name=ip-10-0-0-100.linuxacademy.lab
```

Configure the Client

Return to the server on which we installed Apache. Update the */etc/resolv.conf* file:

```
nameserver 10.0.0.100   # our nameserver
nameserver 10.0.0.2     # AWS nameserver
search     linuxacademy.lab
domain     linuxacademy.lab
```

We can now use `nslookup` to confirm the changes:

```
linuxacademy@linuxacademy1:~$ nslookup www.linuxacademy.lab Server:
10.0.0.100
Address: 10.0.0.100#53
Name: www.linuxacademy.lab
Address: 10.0.0.33
```

Our DNS server has now been prepared. We can further test the changes by installing and using Lynx to view the file created at the start of the lab:

```
linuxacademy@linuxacademy1:~$ lynx
http://www.linuxacademy.lab/test.txt
```