1. DNS

Introduction

**Objective:**

At the end of this guide, you will be learn to set up:

1. Internal DNS Server (int-srv01)
2. Master and Slave DNS Server (ha-prx01 and ha-prx02)

**Login**

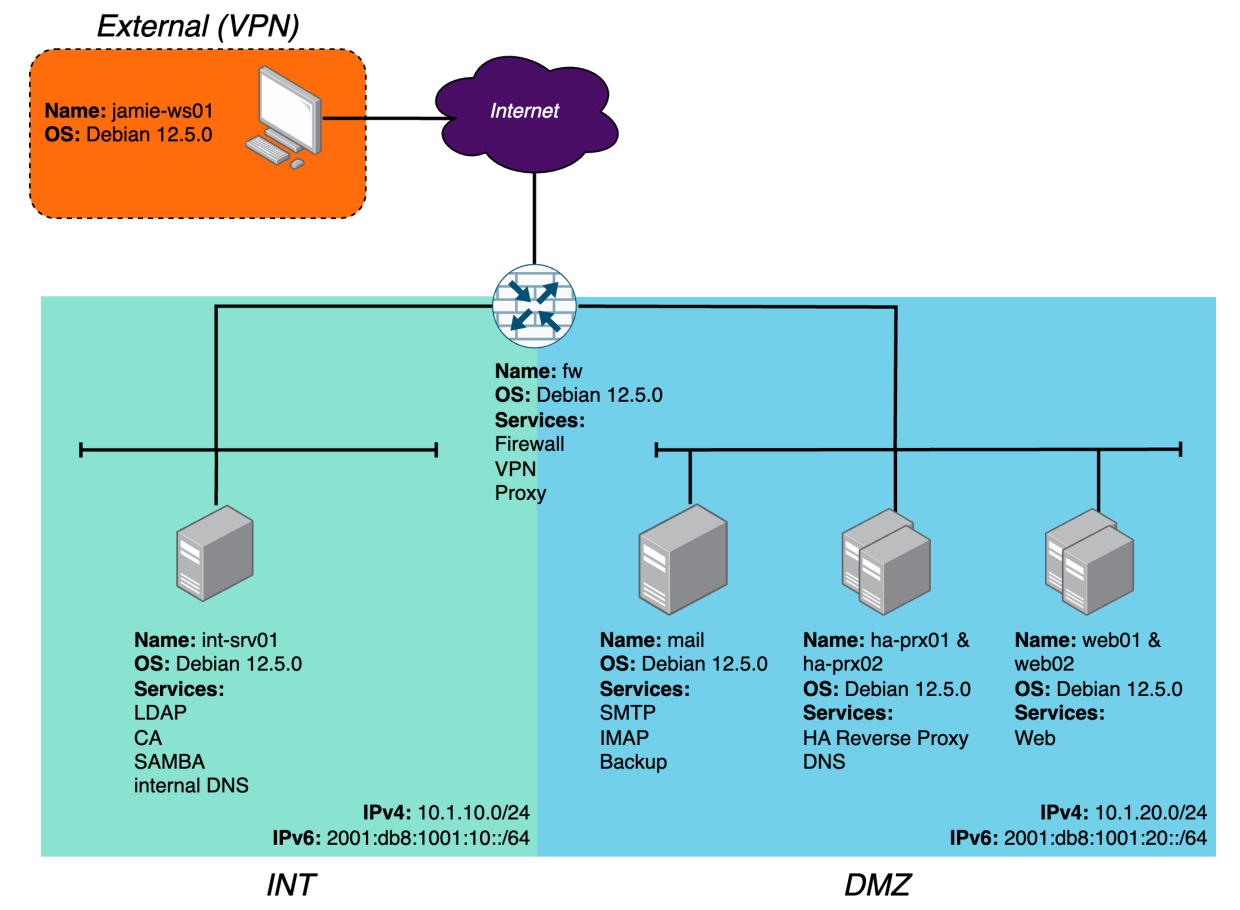
The login credential for all server and client machines:

Username: root / user

Password: Skill39@Lyon

**Network Topology**

This will be the network topology that will be referenced for setting up the infrastructure.



# DMZ DNS Server

We will be setting up the following as DNS Servers for dmz.worldskills.org zone:

1. Primary DNS Server (Master): ha-prx01
2. Secondary DNS Server (Slave): ha-prx02

## Primary/Secondary DNS Server

The Primary DNS Server, also known as Master DNS Server, holds the original zone data. Only one Master Zone could exist on one DNS server at a time. This Zone keeps zone updates, such as the mappings of domain names with their IP addresses

**Do the below steps on ha-prx01**

apt install bind9 bind9-doc bind9-utils dnsutils -y

cp /etc/bind/db.local /etc/bind/dmz.worldskills.org

cp /etc/bind/db.empty /etc/bind/db.ipv4

cp /etc/bind/db.empty /etc/bind/db.ipv6

vim /etc/bind/named..conf.local

| zone "dmz.worldskills.org" IN {  type master;  file "/etc/bind/dmz.worldskills.org";  allow-transfer {  10.1.20.22;  10.1.10.10;  127.0.0.1;  2001:db8:1001:10::10;  2001:db8:1001:20::22;  };  also-notify {  10.1.20.22;  10.1.10.10;  127.0.0.1;  2001:db8:1001:10::10;  2001:db8:1001:20::22;  };  };    zone "20.1.10.in-addr.arpa" IN {  type master;  file "/etc/bind/rev.dmz.worldskills.org";  allow-transfer {  10.1.20.22;  10.1.10.10;  127.0.0.1;  };  also-notify {  10.1.20.22;  10.1.10.10;  127.0.0.1;  };  };  zone "0.2.0.0.1.0.0.1.8.b.d.1.0.0.2.ip6.arpa" IN {  type master;  file "/etc/bind/db.ipv6";  allow-transfer {  2001:db8:1001:10::10;  2001:db8:1001:20::22;  };  also-notify {  2001:db8:1001:10::10;  2001:db8:1001:20::22;  };  }; |
| --- |
| vim /etc/bind/dmz.worldskills.org |
| vim /etc/bind/db.ipv4 |
| vim /etc/bind/db.ipv6 |

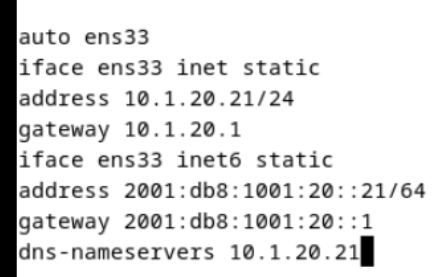
systemctl restart bind9

Test

To test if the DNS Server is working, you can either use nslookup or dig command.

1. nslookup

To be able to resolve the DNS name using nslookup, you will need to add dns-nameservers in the /etc/network/interface file. After editing the file, run systemctl restart networking.



Use nslookup <domain name> to verify that the DNS Server is working. For example, nslookup [dmz.worldskills.org](http://dmz.worldskills.org), nslookup [ha-prx01.dmz.worldskills.org](http://ha-prx01.dmz.worldskills.org) etc.



1. dig

dns-nameservers is not needed for dig command to work.

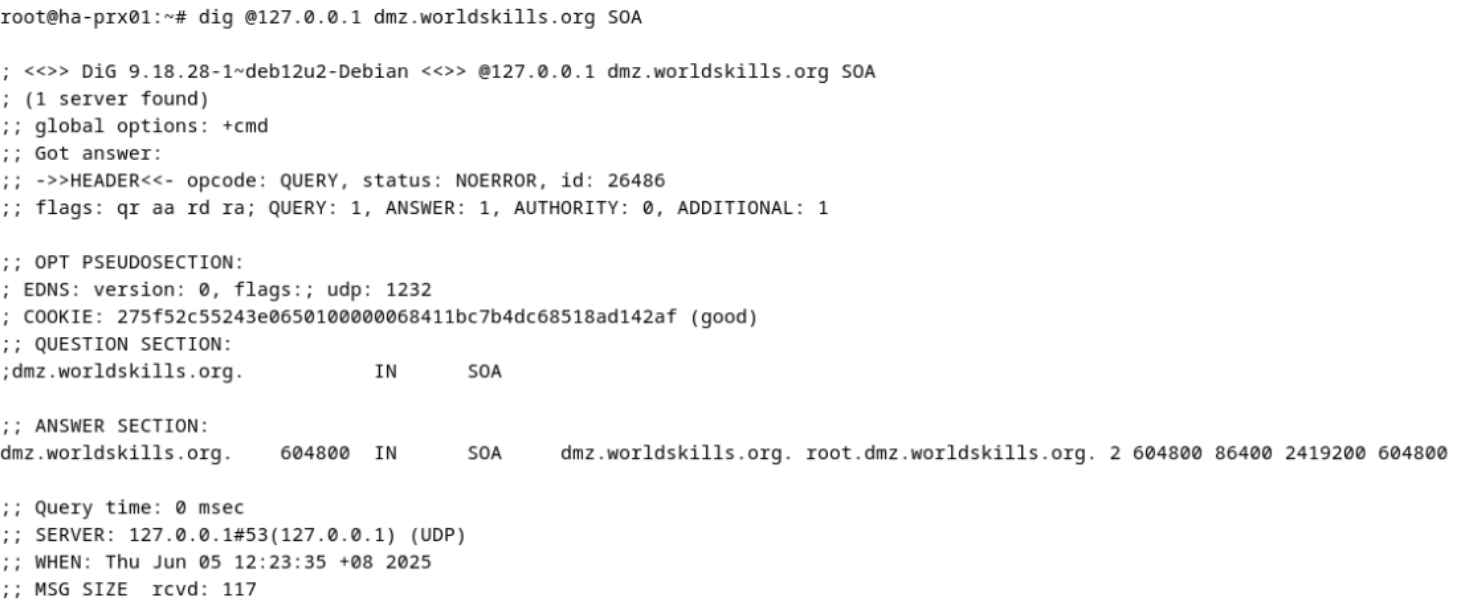
syntax:

* dig @<ip address> <domain name> <type of record>
* dig @<ip address> -x <ip address to resolve>

example:

* dig @127.0.0.1 [dmz.worldskills.org](http://dmz.worldskills.org) SOA
* dig @127.0.0.1 [ha-prx01.dmz.worldskills.org](http://ha-prx01.dmz.worldskills.org) A
  + A record is for IPv4 address and AAAA is for IPv6 address.
* dig @127.0.0.1 -x 10.1.10.21

note: you can also use +short to get a shorter and concise output.



## Secondary/Slave DNS Server

The Secondary DNS Server, also known as Slave DNS Server, acts as a backup DNS Server which continues to respond to queries when the Primary DNS Server is down. The Secondary DNS Server cannot make changes to the zone data and can only retrieve updates from the Primary DNS Server.

**Do the following on ha-prx02**

apt install bind9 bind9-doc bind9-utils dnsutils -y

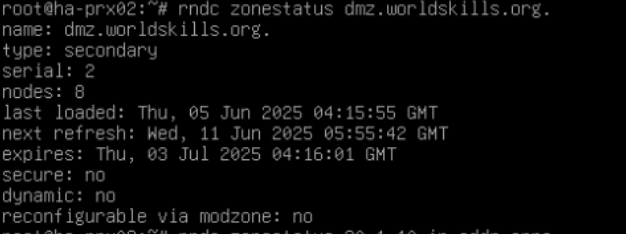
vim /etc/bind/named.conf.local

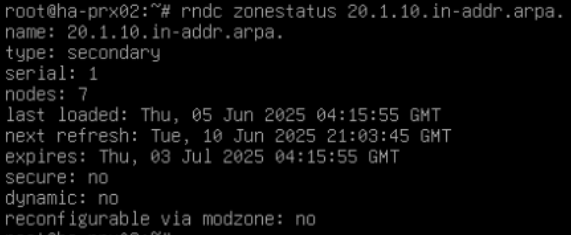
| zone "dmz.worldskills.org" IN {  type slave;  masters { 10.1.20.21; 2001:db8:1001:20::21; };  allow-notify { 10.1.20.21; 2001:db8:1001:20::21; };  };  zone "20.1.10.in-addr.arpa" IN {  type slave;  masters { 10.1.20.21; };  allow-notify { 10.1.20.21; };  };  zone "0.2.0.0.1.0.0.1.8.b.d.0.1.0.0.2.ip6.arpa" IN {  type slave;  masters { 2001:db8:1001:20::21; };  allow-notify { 2001:db8:1001:20::21; };  }; |
| --- |

systemctl restart bind9

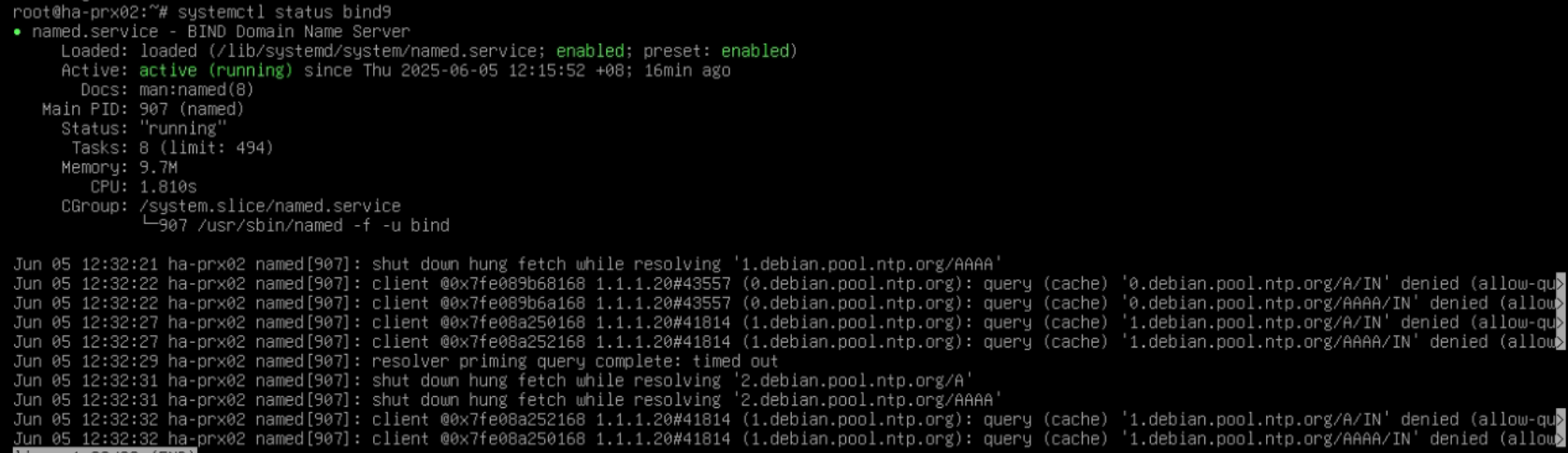
Test

To test if the Slave DNS Server is receiving zone data from the Primary Server, use rndc zonestatus <dns zone>. Notice that the type is secondary.





You can also look at the status of bind9



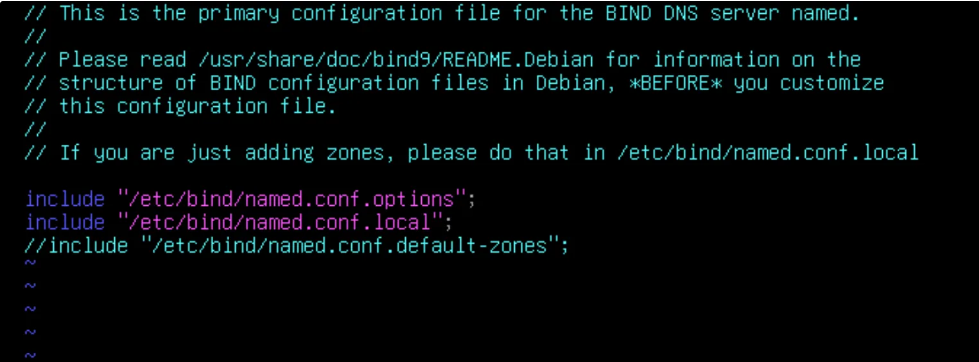
To check if the DNS name can be resolved, use nslookup and dig command.

## Internal DNS Server

We will be configuring int-srv01 as the DNS Server for int.worldskills.org zone and Slave DNS Server for dmz.worldskills.org zone.

apt install bind9 bind9-doc bind9-utils -y

vim /etc/bind/named.conf



vim /etc/bind.named.conf.options



vim /etc/bind/named.conf.local

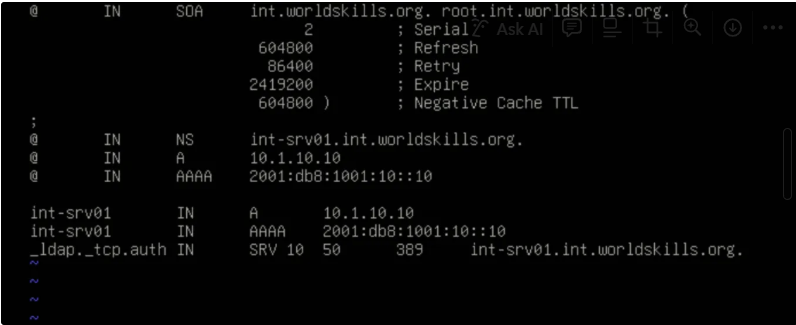


cp /etc/bind/db.local /etc/bind/int.worldskills.org

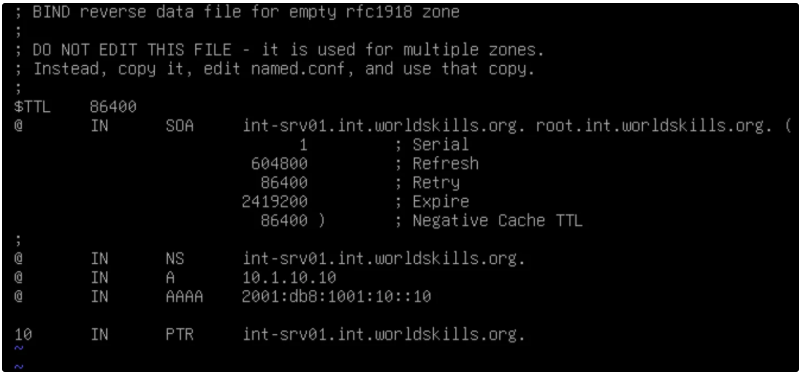
cp /etc/bind/db.empty /etc/bind/rev.int.worldskills.org

cp /etc/bind/db.empty /etc/bind/reverse.ipv6

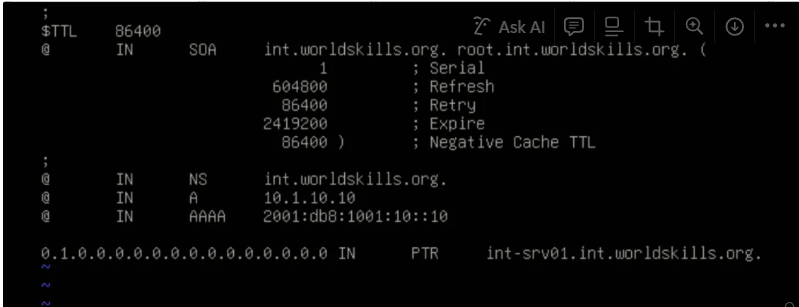
vim /etc/bind/int.worldskills.org



vim /etc/bind/rev.ipv4



vim /etc/bind/rev.ipv6



systemctl restart bind9

Test

To test if the DNS Server is working, repeat the steps that were done in ha-prx01 and ha-prx02.

**Check Service Record**

dig +short @127.0.0.1 \_ldap.\_tcp[.auth.int.wordskills.org](http://.auth.int.wordskills.org) SRV

