Relatório documentado Trabalho de Instalação Redes de Computadores

Trabalho de Redes - Grupo I

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Máquinas Virtuais Utilizadas:
192.168.1.17 (Maquina 1) _ Servidor de Horas e DNS
192.168.1.18 (Maquina 2) _ Servidor Web e FTP

Etapa 2:

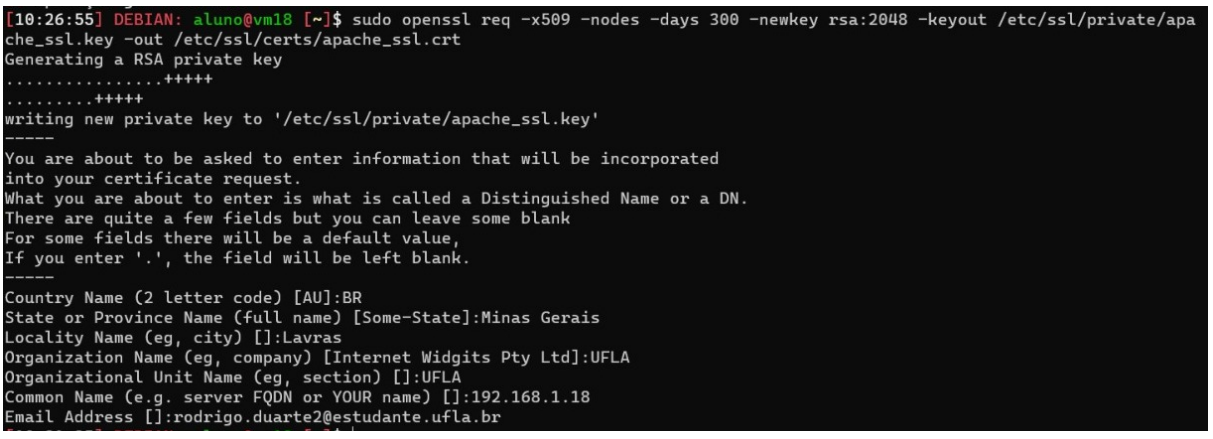
Correção HTTPs e Servidor de Horas:

Instalação do servidor HTTPs:

apt-get install apache2 openssl build-essential -y

Após isso, devemos criar uma chave de certificado

sudo openssl req -x509 -nodes -days 300 - newkey rsa:2048 -keyout /etc/ssl/private/apache_ssl.key -out /etc/ssl/certs/apache_ssl.crt



Depois rodamos estes dois comandos a fim de habilitar as configurações no apache e no site criado.

sudo a2enmod ssl
sudo a2ensite default-ssl.conf

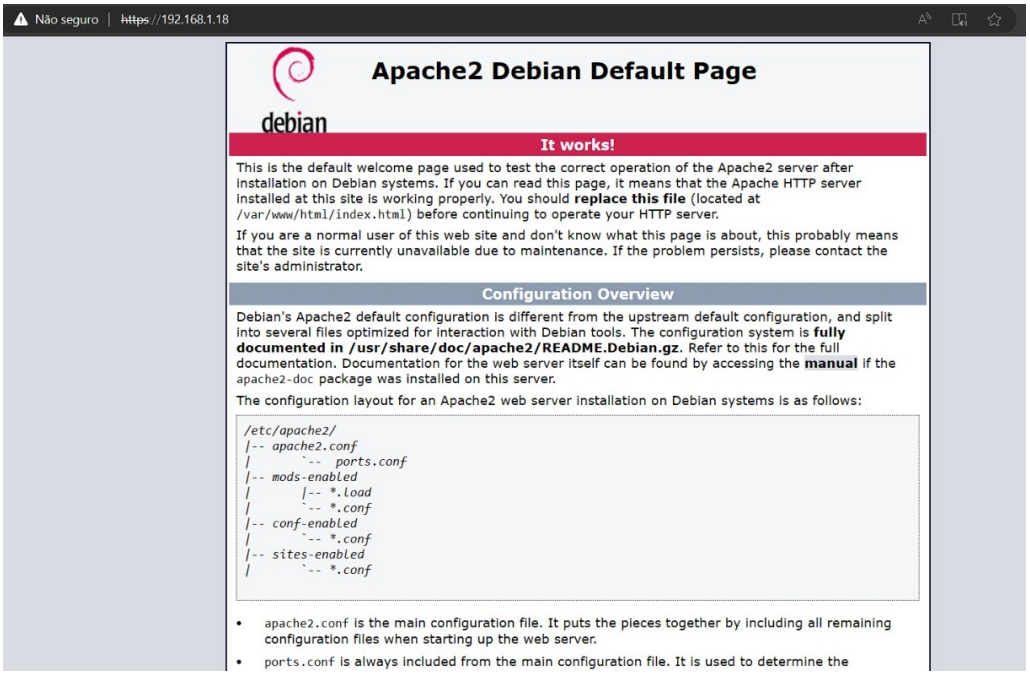
e reiniciamos o serviço para aplicar as mudanças
systemctl reload apache2

Testes
após a reiniciar o serviço testamos se a sintaxe de configuração está correta e o status do servidor:

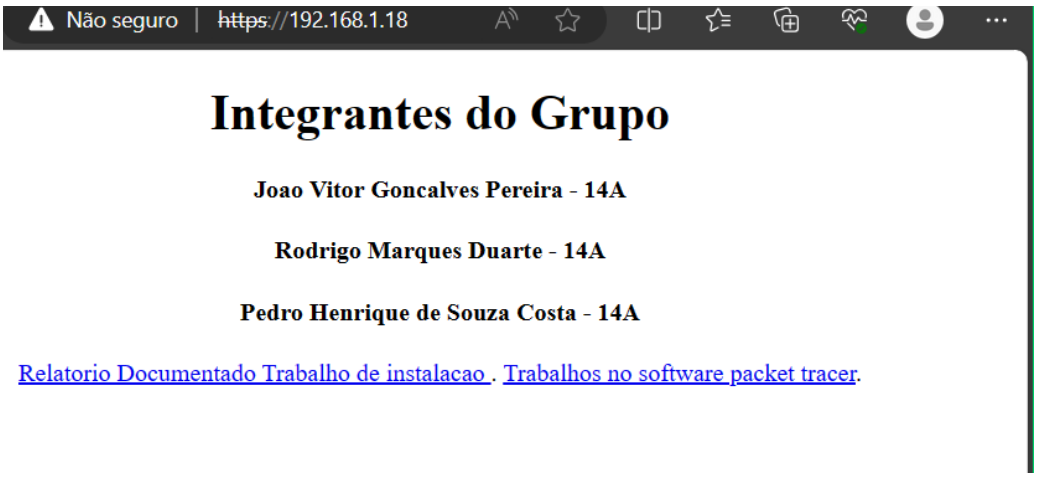
```
[13:14:26] DEBIAN: aluno@vm18 [/etc/apache2/sites-available]$ sudo apache2ctl configtest
Syntax OK
[13:14:39] DEBIAN: aluno@vm18 [/etc/apache2/sites-available]$  sudo service apache2 restart
[13:14:54] DEBIAN: aluno@vm18 [/etc/apache2/sites-available]$ sudo service apache2 status
● apache2.service - The Apache HTTP Server
     Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
     Active: active (running) since Sat 2023-11-25 13:14:54 -03; 7s ago
       Docs: https://httpd.apache.org/docs/2.4/
    Process: 97369 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
   Main PID: 97373 (apache2)
      Tasks: 55 (limit: 1115)
     Memory: 17.4M
        CPU: 73ms
     CGroup: /system.slice/apache2.service
             ├─97373 /usr/sbin/apache2 -k start
             ├─97374 /usr/sbin/apache2 -k start
             └─97375 /usr/sbin/apache2 -k start

nov 25 13:14:54 vm18 systemd[1]: Starting The Apache HTTP Server...
nov 25 13:14:54 vm18 systemd[1]: Started The Apache HTTP Server.
```

teste:

https://192168.1.18



Verificamos que a página padrão do apache é encontrada com êxito
Depois de alterado o html



Instalação Servidor FTP (VM: 192.168.1.18)

Primeiro foi executado a instalação do Very Secure FTP daemon:

```
sudo apt install vsftpd
```

Depois de instalado o serviço vsftp, temos que permitir o acesso anônimo no arquivo vsftp.conf, alterando anonymous_enable=NO para anonymous_enable=YES (em passos futuros “corrigimos” esse trecho, desabilitando o acesso anônimo e habilitando para os usuários da rede) :

```
sudo nano /etc/vsftp.conf
```

Criamos uma nova pasta root para o servidor FTP:

```
sudo mkdir -p /srv/files/ftp
```

Mudamos o diretório home do usuário FTP:

```
sudo usermod -d /srv/files/ftp ftp
```

Reiniciamos o serviço do vsftpd:

```
sudo systemctl restart vsftpd.service
```

Dando permissão para envio (upload) de arquivo, restringir o acesso dos usuários somente as suas pastas:

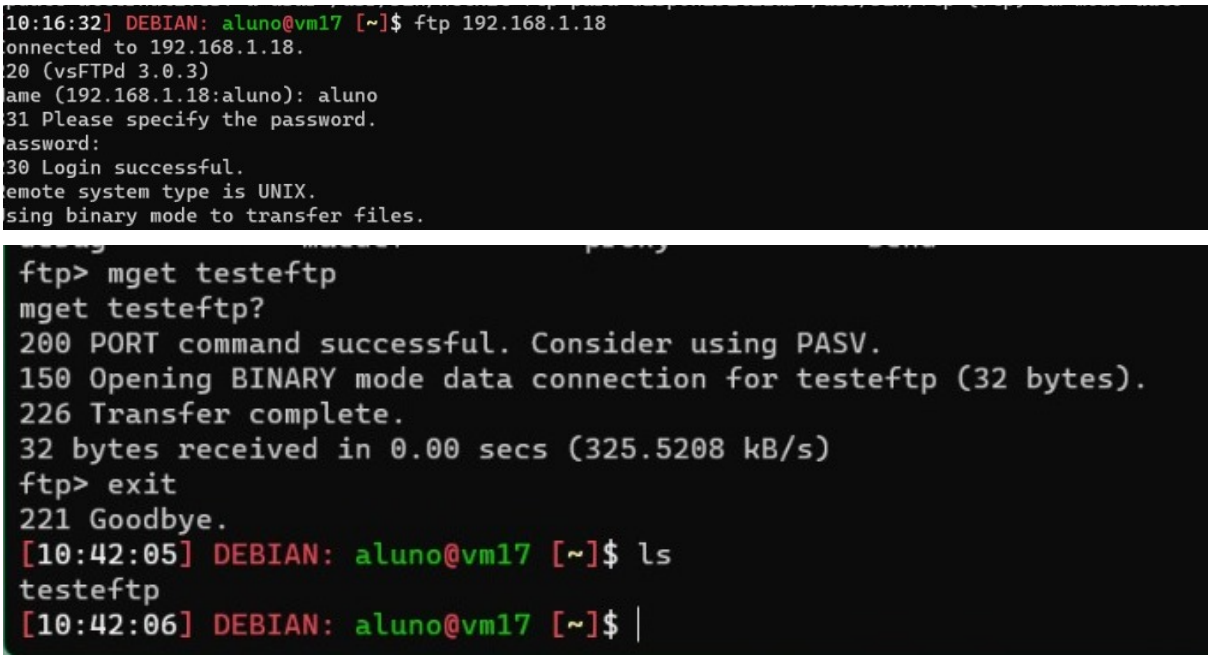
```
sudo nano /etc/vsftpd.conf
```

e alteramos os seguintes itens: write_enable=NO para write_enable=YES e descomentar chroot_local_users=YES

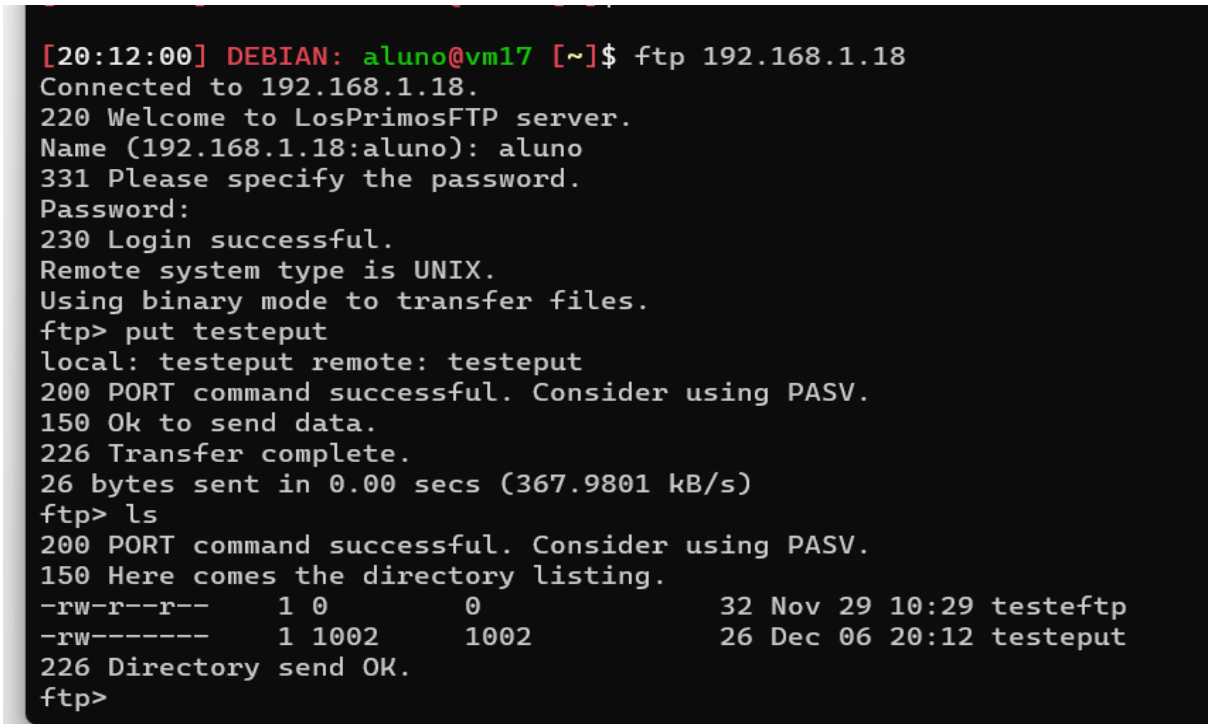
Na VM 192.168.1.17 fizemos a instalação para fins de testes.

```
sudo apt install ftp
```

Teste de Get



Teste de put de arquivo:



Conseguimos habilitar o servidor ftp e prover a transferência de arquivos.

Instalação Servidor DNS

1. Instalamos o Bind9, implementação DNS mais comum em linux:
   sudo apt install bind9

2. Instalamos o dsutils para auxiliar nos testes:
   sudo apt install dnsutils

3. Configuramos o servidor DNS como um servidor primário no arquivo named.conf.local:
   sudo nano /etc/bind/named.conf.local

   Na imagem abaixo é possível ver como ficou (já consta a zona reversa que vai ser adicionada mais a frente):

4. Configuração da zona local do DNS, utilizando o arquivo db.DNSgrupoI.com:

   sudo nano /etc/bind/db.DNSgrupoI.com

   Na imagem abaixo é possível ver o arquivo. Note que ns é referente ao nosso nameserver, www ao servidor web e alguns aliases, server e ftp:

```
  GNU nano 5.4                                        /etc/bind/db.DNSgrupoI.com
;
; BIND data file for local loopback interface
;
$TTL    604800
@       IN      SOA     DNSgrupoI.com.  root.DNSgrupoI.com. (
                        1609202201      ; Serial
                            604800      ; Refresh
                             86400      ; Retry
                           2419200      ; Expire
                            604800 )    ; Negative Cache TTL
        IN      A       192.168.1.17

@       IN      NS      ns
@       IN      A       192.168.1.17
ns      IN      A       192.168.1.17
www     IN      A       192.168.1.18
server  IN      A       192.168.1.17
proxy           CNAME   server
ftp     IN      CNAME   www
```

5. Salvamos e reiniciamos o servidor do Bind9:

   sudo systemctl restart bind9.service

6. Adicionamos a zona reversa no arquivo named.conf.local:

   sudo nano /etc/bind/named.conf.local

```
  GNU nano 5.4                                  /etc/bind/named.conf.local
//
// Do any local configuration here
//

zone "DNSgrupoI.com" {
        type master;
        file "/etc/bind/db.DNSgrupoI.com";
        };

zone "1.168.192.in-addr.arpa" {
        type master;
        file "/etc/bind/db.192";
        };

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

7. Para configurar a zona reversa usamos o arquivo padrão:

   sudo cp /etc/bind/db.127 /etc/bind/db.192
   sudo nano /etc/bind/db.192

```
 GNU nano 5.4                                          /etc/bind/db.192
;
; BIND reverse data file for local loopback interface
;
$TTL    604800
@       IN      SOA     DNSgrupoI.com. root.DNSgrupoI.com. (
                        1609202201      ; Serial
                         604800         ; Refresh
                          86400         ; Retry
                        2419200         ; Expire
                         604800 )       ; Negative Cache TTL
;
@               NS      ns.
17              PTR     server.DNSgrupoI.com.
17              PTR     ns.DNSgrupoI.com
18              PTR     www.DNSgrupoI.com.
```

8. Entramos no arquivo resolv.conf para conseguir acessar o servidor dns:

   sudo nano /etc/resolv.conf

```
 GNU nano 5.4                                          /etc/resolv.conf
domain DNSgrupoI.com
search DNSgrupoI.com
nameserver 192.168.1.17
```

9. Acessamos o arquivo netplan para alterar a precedência do servidor DNS:
10.

    sudo nano /etc/netplan

```
 GNU nano 5.4                                                /etc/netplan
network:
        version: 2
        ethernets:
                ens160:
                        dhcp4: true
                        nameservers:
                                search: [DNSgrupoI.com]
                                addresses: [192.168.1.17]
```

Testes

1. Testamos o status do bind9:

   sudo systemctl status bind9

```
[09:31:27] DEBIAN: aluno@vm17 [~]$ sudo systemctl status bind9
[sudo] senha para aluno:
● named.service - BIND Domain Name Server
     Loaded: loaded (/lib/systemd/system/named.service; enabled; vendor preset: enabled)
     Active: active (running) since Fri 2023-12-01 19:33:37 -03; 1 day 13h ago
       Docs: man:named(8)
   Main PID: 97149 (named)
      Tasks: 5 (limit: 1115)
     Memory: 15.9M
        CPU: 13.604s
     CGroup: /system.slice/named.service
             └─97149 /usr/sbin/named -f -u bind

dez 03 03:11:24 vm17 named[97149]: network unreachable resolving 'net/DNSKEY/IN': 2001:503:a83e::2:30#53
dez 03 03:11:24 vm17 named[97149]: network unreachable resolving 'net/DNSKEY/IN': 2001:503:83eb::30#53
dez 03 03:11:24 vm17 named[97149]: network unreachable resolving 'dns3.easydns.org/A/IN': 2620:49:3::10#53
dez 03 03:11:24 vm17 named[97149]: network unreachable resolving 'dns3.easydns.org/AAAA/IN': 2620:49:3::10#53
dez 03 03:11:24 vm17 named[97149]: network unreachable resolving 'debian.map.fastlydns.net/A/IN': 2a04:4e47:1::32#53
dez 03 03:11:24 vm17 named[97149]: network unreachable resolving 'debian.map.fastlydns.net/AAAA/IN': 2a04:4e47:1::32#53
dez 03 03:11:24 vm17 named[97149]: network unreachable resolving 'debian.map.fastlydns.net/A/IN': 2a04:4e47:2::32#53
dez 03 03:11:24 vm17 named[97149]: network unreachable resolving 'debian.map.fastlydns.net/AAAA/IN': 2a04:4e47:2::32#53
dez 03 03:11:24 vm17 named[97149]: network unreachable resolving 'debian.map.fastlydns.net/A/IN': 2a04:4e47:3::32#53
dez 03 03:11:24 vm17 named[97149]: network unreachable resolving 'debian.map.fastlydns.net/AAAA/IN': 2a04:4e47:3::32#53
```

2. Fizemos testes das configurações

   sudo named-checkzone DNSgrupoI.com /etc/bind/db.DNSgrupoI.com

```
[19:34:21] DEBIAN: aluno@vm17 [~]$ sudo named-checkzone DNSgrupoI.com /etc/b
ind/db.DNSgrupoI.com
zone DNSgrupoI.com/IN: loaded serial 1609202201
OK
[19:35:28] DEBIAN: aluno@vm17 [~]$
```

3. Teste de nslookup do nome do server:

   nslookup server

```
[19:34:00] DEBIAN: aluno@vm17 [~]$ nslookup server
Server:         192.168.1.17
Address:        192.168.1.17#53

Name:   server.DNSgrupoI.com
Address: 192.168.1.17
```

4. Teste de nslookup do DNSgrupoI.com:

   nslookup DNSgrupoI.com

```
[19:35:28] DEBIAN: aluno@vm17 [~]$  nslookup DNSgrupoI.com
Server:         192.168.1.17
Address:        192.168.1.17#53

Name:   DNSgrupoI.com
Address: 192.168.1.17
```

5. Teste de nslookup do www.DNSgrupoI.com:

nslookup www.DNSgrupoI.com

```
[09:31:23] DEBIAN: aluno@vm17 [~]$ nslookup www.DNSgrupoI.com
Server:         192.168.1.17
Address:        192.168.1.17#53

Name:   www.DNSgrupoI.com
Address: 192.168.1.18
```

6. Teste de nslookup do ftp.DNSgrupoI.com:

nslookup ftp.DNSgrupoI.com

```
[19:54:38] DEBIAN: aluno@vm17 [~]$ nslookup ftp.DNSgrupoI.com
Server:         192.168.1.17
Address:        192.168.1.17#53

ftp.DNSgrupoI.com       canonical name = www.DNSgrupoI.com.
Name:   www.DNSgrupoI.com
Address: 192.168.1.18
```

7. Teste de nslookup do ip 192.168.1.17:

nslookup 192.168.1.17

```
[19:38:27] DEBIAN: aluno@vm17 [~]$ nslookup 192.168.1.17
17.1.168.192.in-addr.arpa       name = server.DNSgrupoI.com.
17.1.168.192.in-addr.arpa       name = ns.DNSgrupoI.com.1.168.192.in-addr.arpa.
```

8. Teste de nslookup do ip 192.168.1.18:

nslookup 192.168.1.18

```
[19:39:31] DEBIAN: aluno@vm17 [~]$ nslookup 192.168.1.18
18.1.168.192.in-addr.arpa       name = www.DNSgrupoI.com.
```

9. Teste dig consulta ip 192.168.1.17:

dig -x 192.168.1.17

```
[19:40:29] DEBIAN: aluno@vm17 [~]$  dig -x 192.168.1.17

; <<>> DiG 9.16.44-Debian <<>> -x 192.168.1.17
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 59432
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 45b6b99abb3ff99901000000656a610b0636860cde424704 (good)
;; QUESTION SECTION:
;17.1.168.192.in-addr.arpa.     IN      PTR

;; ANSWER SECTION:
17.1.168.192.in-addr.arpa. 604800 IN    PTR     ns.DNSgrupoI.com.1.168.192.in-addr.arpa.
17.1.168.192.in-addr.arpa. 604800 IN    PTR     server.DNSgrupoI.com.

;; Query time: 0 msec
;; SERVER: 192.168.1.17#53(192.168.1.17)
;; WHEN: Fri Dec 01 19:41:15 -03 2023
;; MSG SIZE  rcvd: 169
```

10. Teste dig consulta ip 192.168.1.18:

    dig -x 192.168.1.18

```
[19:41:15] DEBIAN: aluno@vm17 [~]$  dig -x 192.168.1.18

; <<>> DiG 9.16.44-Debian <<>> -x 192.168.1.18
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 15367
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: f822c8c549e23d8601000000656a614da8ef726de94f9f38 (good)
;; QUESTION SECTION:
;18.1.168.192.in-addr.arpa.     IN      PTR

;; ANSWER SECTION:
18.1.168.192.in-addr.arpa. 604800 IN    PTR     www.DNSgrupoI.com.

;; Query time: 0 msec
;; SERVER: 192.168.1.17#53(192.168.1.17)
;; WHEN: Fri Dec 01 19:42:21 -03 2023
;; MSG SIZE  rcvd: 113
```

11. Teste dig DNSgrupoI.com:

    dig -x DNSgrupoI.com

```
[19:43:09] DEBIAN: aluno@vm17 [~]$ dig DNSgrupoI.com

; <<>> DiG 9.16.44-Debian <<>> DNSgrupoI.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 21143
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: b16b5e2ebcd9db6401000000656a61c400c8cded1eccfac2 (good)
;; QUESTION SECTION:
;DNSgrupoI.com.                 IN      A

;; ANSWER SECTION:
DNSgrupoI.com.          604800  IN      A       192.168.1.17

;; Query time: 0 msec
;; SERVER: 192.168.1.17#53(192.168.1.17)
;; WHEN: Fri Dec 01 19:44:20 -03 2023
;; MSG SIZE  rcvd: 86
```

12. Teste dig www.DNSgrupoI.com:

    dig www.DNSgrupoI.com

```
[19:44:20] DEBIAN: aluno@vm17 [~]$ dig www.DNSgrupoI.com

; <<>> DiG 9.16.44-Debian <<>> www.DNSgrupoI.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 31500
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 433b6374cfa5d18501000000656a61f701bd687337c4e259 (good)
;; QUESTION SECTION:
;www.DNSgrupoI.com.             IN      A

;; ANSWER SECTION:
www.DNSgrupoI.com.      604800  IN      A       192.168.1.18

;; Query time: 0 msec
;; SERVER: 192.168.1.17#53(192.168.1.17)
;; WHEN: Fri Dec 01 19:45:11 -03 2023
;; MSG SIZE  rcvd: 90
```

13. Teste dig ftp.DNSgrupoI.com

    dig ftp.DNSgrupoI.com

```
[19:45:11] DEBIAN: aluno@vm17 [~]$  dig ftp.DNSgrupoI.com

; <<>> DiG 9.16.44-Debian <<>> ftp.DNSgrupoI.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 34312
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 01c5a31db3091cf801000000656a622fb003d6cdc33ad331 (good)
;; QUESTION SECTION:
;ftp.DNSgrupoI.com.             IN      A

;; ANSWER SECTION:
ftp.DNSgrupoI.com.      604800  IN      CNAME   www.DNSgrupoI.com.
www.DNSgrupoI.com.      604800  IN      A       192.168.1.18

;; Query time: 0 msec
;; SERVER: 192.168.1.17#53(192.168.1.17)
;; WHEN: Fri Dec 01 19:46:07 -03 2023
;; MSG SIZE  rcvd: 108
```

14. Teste dig no www.google.com:

dig www.google.com

```
[19:50:45] DEBIAN: aluno@vm17 [~]$ dig www.google.com

; <<>> DiG 9.16.44-Debian <<>> www.google.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 34952
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 9f43141cba3e37db01000000656a63582ad77528490c739f (good)
;; QUESTION SECTION:
;www.google.com.                        IN      A

;; ANSWER SECTION:
www.google.com.         280     IN      A       142.250.218.4

;; Query time: 0 msec
;; SERVER: 192.168.1.17#53(192.168.1.17)
;; WHEN: Fri Dec 01 19:51:04 -03 2023
;; MSG SIZE  rcvd: 87
```