GCC 125 - Rede de Computadores

Integrantes: Henrique Silva Rabelo 14A, Luiz Eduardo Jacó Andrade 14A, Pedro Eduardo Garcia 14A

VMS: 192.168.1.34 e 192.168.1.35 (.35 sendo o servidor)

INSTALAÇÃO SERVIÇO DE FILE TRANSFER PROTOCOL (FTP):

SERVIDOR do Serviço FTP - 192.168.1.35:

VM 192.168.1.35 - Máquina com o servidor web, como pedido no trabalho.

Passo 1: Primeiro foi executado a instalação do Very Secure FTP daemon:

Terminal:

```
$ sudo apt install vsftpd
```

Passo 2: 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) :

Terminal:

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

Passo 3: Decidimos organizar criando uma nova pasta root para o servidor FTP:

Terminal:

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

Passo 4: Mudamos o diretório home do usuário FTP:

Terminal:

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

Passo 5: Reiniciamos o serviço do vsftpd:

Terminal:

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

Passo 6: Dando permissão para envio (upload) de arquivo, restringir o acesso dos usuários somente as suas pastas:

Terminal:

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

e alteramos os seguintes itens:

write_enable=NO para write_enable=YES e descomentar chroot_local_users=YES

Passo 7: Instalamos o cliente ftp (fins de testes):

Terminal:

```
$ sudo apt install ftp
```

Problema encontrado: Não estávamos conseguindo acesso ao ftp com usuário "aluno" e senha correspondente da rede, encontramos a solução no passo a seguir.

Passo 8: Modificações citadas do Passo 2 foram realizadas aqui, retiramos o acesso anônimo e adicionamos o acesso aos usuários da rede:

Terminal:

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

Como pode ser observado:

```
#
# Allow anonymous FTP? (Disabled by default).
anonymous_enable=NO
#
```

```
allow_writeable_chroot=YES
```

"CLIENTE" do serviço de FTP 192.168.1.34:

Passo 1: Instalamos o cliente ftp:

Terminal:

```
$ sudo apt install ftp
```

Testes realizados:

Teste de acesso realizado na máquina que não possui o serviço FTP (nosso caso máquina 192.168.1.34) e teste de get:

```
$ ssh aluno@192.168.1.34
aluno@192.168.1.34's password:
Linux debian 5.10.0-10-amd64 #1 SMP Debian 5.10.84-1 (2021-12-08) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sun Sep 18 18:27:12 2022 from 192.168.2.36
[18:29:15] DEBIAN: aluno@debian [~]$ ls
[18:29:17] DEBIAN: aluno@debian [~]$ ftp 192.168.1.35
Connected to 192.168.1.35.
220 (vsFTPd 3.0.3)
Name (192.168.1.35:aluno): aluno
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> ls
200 PORT command successful. Consider using PASV.
150 Here comes the directory listing.
-rw-r--r--    1 0        0              40 Sep 18 16:53 testeComDns.txt
226 Directory send OK.
ftp> get testeComDns.txt
local: testeComDns.txt remote: testeComDns.txt
200 PORT command successful. Consider using PASV.
150 Opening BINARY mode data connection for testeComDns.txt (40 bytes).
226 Transfer complete.
40 bytes received in 0.00 secs (454.2151 kB/s)
ftp> exit
221 Goodbye.
[18:29:55] DEBIAN: aluno@debian [~]$ ls
testeComDns.txt
[18:29:56] DEBIAN: aluno@debian [~]$ |
```

Teste de put feito da máquina 192.168.1.34:

```
$ ssh aluno@192.168.1.34
aluno@192.168.1.34's password:
Linux debian 5.10.0-10-amd64 #1 SMP Debian 5.10.84-1 (2021-12-08) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sun Sep 18 18:29:15 2022 from 192.168.2.36
[18:45:27] DEBIAN: aluno@debian [~]$ ls
testeComDns.txt  testeFtpPut.txt
[18:45:47] DEBIAN: aluno@debian [~]$ ftp 192.168.1.35
Connected to 192.168.1.35.
220 (vsFTPd 3.0.3)
Name (192.168.1.35:aluno): aluno
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> ls
200 PORT command successful. Consider using PASV.
150 Here comes the directory listing.
-rw-r--r--    1 0        0              40 Sep 18 16:53 testeComDns.txt
226 Directory send OK.
ftp> put testeFtpPut.txt
local: testeFtpPut.txt remote: testeFtpPut.txt
200 PORT command successful. Consider using PASV.
150 Ok to send data.
226 Transfer complete.
19 bytes sent in 0.00 secs (272.8630 kB/s)
ftp> ls
200 PORT command successful. Consider using PASV.
150 Here comes the directory listing.
-rw-r--r--    1 0        0              40 Sep 18 16:53 testeComDns.txt
-rw-------    1 1003     1003           19 Sep 18 18:46 testeFtpPut.txt
226 Directory send OK.
ftp> |
```

Teste de acesso realizado na máquina que possui o serviço FTP (nosso caso máquina 192.168.1.34):

```
$ ssh aluno@192.168.1.35
aluno@192.168.1.35's password:
Linux debian 5.10.0-10-amd64 #1 SMP Debian 5.10.84-1 (2021-12-08) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sun Sep 18 17:49:42 2022 from 192.168.2.37
[19:10:33] DEBIAN: aluno@debian [~]$ ftp 192.168.1.35
Connected to 192.168.1.35.
220 (vsFTPd 3.0.3)
Name (192.168.1.35:aluno): aluno
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> ls
200 PORT command successful. Consider using PASV.
150 Here comes the directory listing.
-rw-r--r--    1 0        0              40 Sep 18 16:53 testeComDns.txt
-rw-------    1 1003     1003           19 Sep 18 18:46 testeFtpPut.txt
226 Directory send OK.
ftp>
```

Pasta /home/aluno em 192.168.35:

```
[19:16:54] DEBIAN: aluno@debian [~]$ cd /home
[19:16:59] DEBIAN: aluno@debian [/home]$ cd /aluno
-bash: cd: /aluno: Arquivo ou diretório inexistente
[19:19:37] DEBIAN: aluno@debian [/home]$ ls
aluno   mendes   moraes
[19:19:40] DEBIAN: aluno@debian [/home]$ cd aluno
[19:19:46] DEBIAN: aluno@debian [~]$ ls
testeComDns.txt   testeFtpPut.txt
[19:19:48] DEBIAN: aluno@debian [~]$
```

São realizados testes de acesso ao ftp com o serviço de DNS ativo na próxima seção (instalação do Servidor DNS).

INSTALAÇÃO DO SERVIDOR DOMAIN NAME SYSTEM (DNS)

SERVIDOR DNS - 192.168.1.34:

VM 192.168.1.34 - Máquina que não possui os outros serviços/servidores. Como pedido na especificação.

Passo 1: Instalamos o Bind (Berkley Internet Naming Daemon), implementação do DNS mais comum em sistemas linux :

Terminal:

```
$ sudo apt install bind9
```

Passo 2: Instalamos dsutils para auxiliar no teste e resolver erros :
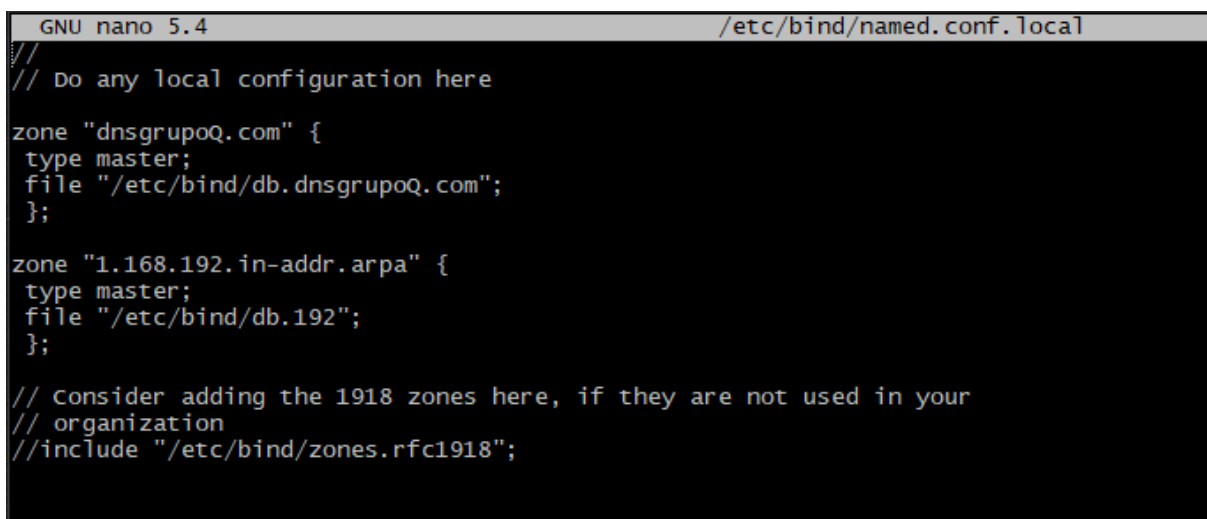
Terminal:

```
$ sudo apt install dnsutils
```

Passo 3: Configuração do servidor DNS como um servidor primário feita no arquivo named.conf.local:

Terminal:

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

e foi adicionado as seguintes linhas resultando em (já tem a zona reversa também que foi adicionada em um passo à frente, esta parte é referente a inserção /etc/bind/db.dns grupo.com):

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

zone "dnsgrupoQ.com" {
 type master;
 file "/etc/bind/db.dnsgrupoQ.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";
```

Passo 4: Configuração da zona local do DNS, editando o aqruivo db.dnsgrupoQ.com como mostrado a seguir:

Terminal:

```
$ sudo nano /etc/bind/db.exemplo.com
```

e foi adicionado as seguintes linhas resultando em:

```
  GNU nano 5.4                                    /etc/bind/db.dnsgrupoQ.com
;
; BIND data file for local loopback interface
;
$TTL     604800
@        IN      SOA      dnsgrupoQ.com. root.dnsgrupoQ.com. (
                          1609202201           ; Serial
                             604800            ; Refresh
                              86400            ; Retry
                           2419200            ; Expire
                             604800 )          ; Negative Cache TTL
         IN      A        192.168.1.34
;

@        IN      NS       ns
@        IN      A        192.168.1.34
ns       IN      A        192.168.1.34
www      IN      A        192.168.1.35
server   IN      A        192.168.1.34
proxy            CNAME    server
ftp      IN      CNAME    www
```

Onde temos, ns referente ao nosso nameserver, www referente ao nosso servidor web, server ao nosso servidor dns e alguns aliases, server e ftp.

Passo 5: Salvamos as alterações e reiniciamos o serviço do BIND9:
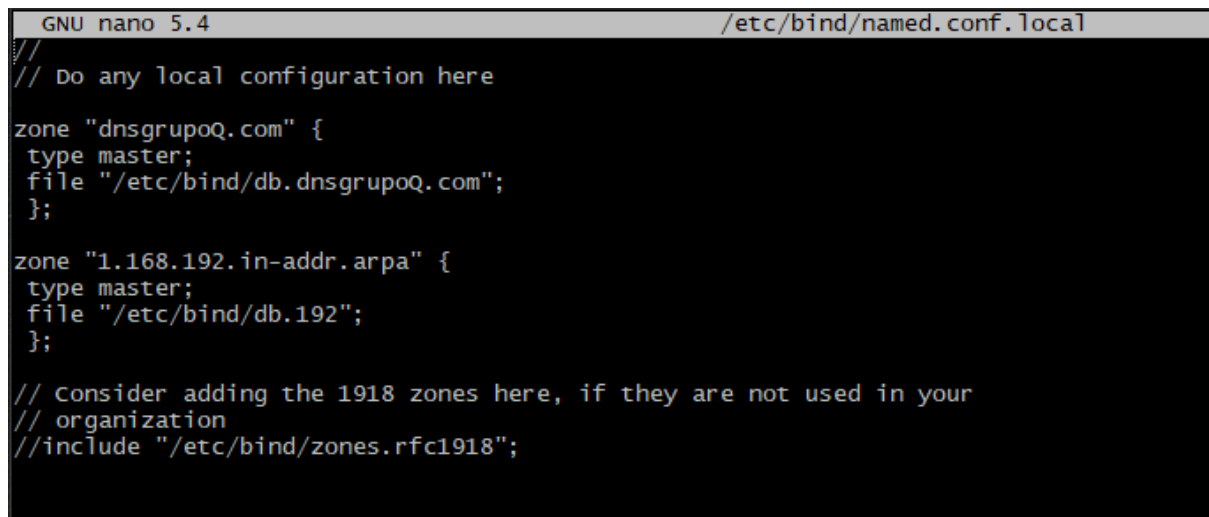
Terminal:

```
$ sudo systemctl restart bind9.service
```

Passo 6: Editamos novamente o arquivo named.conf.local adicionando o nome de sua zona reversa:

Terminal:

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

com a adição das linhas de zona reversa, podemos rever a figura mostrada passo 4

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

zone "dnsgrupoQ.com" {
 type master;
 file "/etc/bind/db.dnsgrupoQ.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";
```

Passo 7: Para configurar o arquivo da zona reversa utilizamos um arquivo de configuração padrão utilizando o comando a seguir:

Terminal:

```
$ sudo cp /etc/bind/db.127 /etc/bind/db.192
```

Passo 8: Editamos o arquivo criado no passo anterior:

Terminal:

`$ sudo nano /etc/bind/db.192`

Resultando no seguinte

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

Passo 9: Salvamos as alterações novamente e reiniciamos o serviço do BIND9:

Terminal:

`$ sudo systemctl restart bind9.service`

Problema encontrado: Não estávamos utilizando o servidor DNS correto, não temos o registro, mas a pesquisa era feita pelo servidor que acreditamos ser o da google (8.8.8.8). A resolução se dá no próximo passo.

Passo 10: Editamos o arquivo /etc/resolv.conf para que assim pudesse utilizar o nosso servidor dns:

Terminal:

```
$ sudo nano /etc/resolv.conf
```
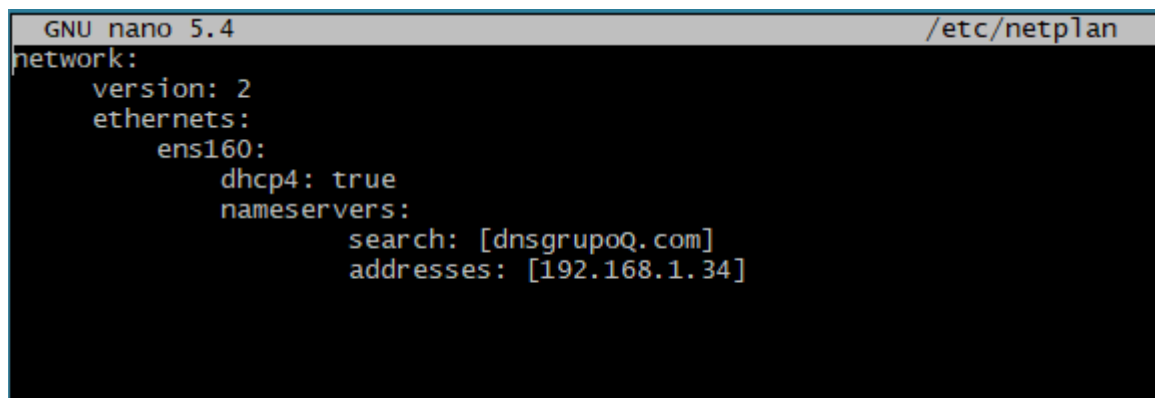
```
  GNU nano 5.4                                          /etc/resolv.conf
domain dnsgrupoQ.com
search dnsgrupoQ.com
nameserver 192.168.1.34
```

Passo 11: Alteramos também a precedência do servidor DNS no arquivo /etc/netplan com mostrado::

Terminal:

```
$ sudo nano /etc/netplan
```

```
  GNU nano 5.4                                          /etc/netplan
network:
     version: 2
     ethernets:
         ens160:
             dhcp4: true
             nameservers:
                     search: [dnsgrupoQ.com]
                     addresses: [192.168.1.34]
```

SERVIDOR WEB - 192.168.1.35:

VM 192.168.1.35 - Máquina que não possui o serviço DNS.

Passo 1: Editamos o arquivo /etc/resolv.conf para que assim pudesse utilizar o nosso servidor dns::

Terminal:

```
$ sudo nano /etc/resolv.conf
```

```
  GNU nano 5.4                                                              /etc/resolv.conf
domain dnsgrupoQ.com
search dnsgrupoQ.com
nameserver 192.168.1.34

domain dnsgrupoQ.com
search www.dnsgrupoQ.com
nameserver 192.168.1.34
```

Testes realizados em VM - 192.168.1.34

Testando as configurações:

Terminal:

```
$ sudo named-checkzone dnsgrupoQ.com
/etc/bind/db.dnsgrupoQ.com
```

```
[20:48:24] DEBIAN: aluno@debian [~]$ sudo named-checkzone dnsgrupoQ.com /etc/bind/db.dnsgrupoQ.com
zone dnsgrupoQ.com/IN: loaded serial 1609202201
OK
```

Testando mais configurações:

Terminal:

```
$ sudo named-checkzone dnsgrupoQ.com
/etc/bind/db.dnsgrupoQ.com
```

```
[20:50:37] DEBIAN: aluno@debian [~]$ sudo named-checkzone 34.1.168.192.in-addr-arpa  /etc/bind/db.192
zone 34.1.168.192.in-addr-arpa/IN: loaded serial 1609202201
OK
```

Testando as configurações do bind:

Terminal:

```
$ sudo systemctl status bind9
```



```
[21:03:00] DEBIAN: aluno@debian [~]$ sudo systemctl status bind9
● named.service - BIND Domain Name Server
     Loaded: loaded (/lib/systemd/system/named.service; enabled; vendor preset: enabled)
     Active: active (running) since Sun 2022-09-18 17:44:42 -03; 3h 18min ago
       Docs: man:named(8)
   Main PID: 71782 (named)
      Tasks: 5 (limit: 1133)
     Memory: 13.9M
        CPU: 1.231s
     CGroup: /system.slice/named.service
             └─71782 /usr/sbin/named -f -u bind

set 18 19:53:57 debian named[71782]: network unreachable resolving 'borges.uol.com.br/AAAA/IN': 2001:12f8:8::10#53
set 18 19:53:57 debian named[71782]: network unreachable resolving 'borges.uol.com.br/A/IN': 2001:12f8:8::10#53
set 18 19:53:57 debian named[71782]: network unreachable resolving 'borges.uol.com.br/AAAA/IN': 2001:12f8:4::10#53
set 18 19:53:57 debian named[71782]: network unreachable resolving 'borges.uol.com.br/A/IN': 2001:12f8:4::10#53
set 18 19:53:57 debian named[71782]: network unreachable resolving 'borges.uol.com.br/AAAA/IN': 2001:12f8:2::10#53
set 18 19:53:57 debian named[71782]: network unreachable resolving 'borges.uol.com.br/A/IN': 2001:12f8:2::10#53
set 18 19:53:57 debian named[71782]: network unreachable resolving 'borges.uol.com.br/AAAA/IN': 2001:12f8:a::10#53
set 18 19:53:57 debian named[71782]: network unreachable resolving 'borges.uol.com.br/A/IN': 2001:12f8:a::10#53
set 18 19:53:57 debian named[71782]: network unreachable resolving 'eliot.uol.com.br/A/IN': 2001:12f8:c::10#53
set 18 19:53:57 debian named[71782]: network unreachable resolving 'eliot.uol.com.br/AAAA/IN': 2001:12f8:c::10#53
[21:03:08] DEBIAN: aluno@debian [~]$
```

Teste de nslookup do nome server:

Terminal:

```
$ nslookup server
```



```
[20:53:19] DEBIAN: aluno@debian [~]$ nslookup server
Server:         192.168.1.34
Address:        192.168.1.34#53

Name:    server.dnsgrupoQ.com
Address: 192.168.1.34
```

Teste de nslookup do dnsgrupoQ.com:

Terminal:

```
$ nslookup dnsgrupoQ.com
```



```
[20:54:05] DEBIAN: aluno@debian [~]$ nslookup dnsgrupoQ.com
Server:         192.168.1.34
Address:        192.168.1.34#53

Name:    dnsgrupoQ.com
Address: 192.168.1.34
```

Teste de nslookup do www.dnsgrupoQ.com:

Terminal:

```
$ nslookup www.dnsgrupoQ.com
```

```
[20:57:28] DEBIAN: aluno@debian [~]$ nslookup www.dnsgrupoQ.com
Server:         192.168.1.34
Address:        192.168.1.34#53

Name:   www.dnsgrupoQ.com
Address: 192.168.1.35
```

Teste de nslookup do tft.dnsgrupoQ.com:

Terminal:

```
$ nslookup tft.dnsgrupoQ.com
```

```
[20:55:35] DEBIAN: aluno@debian [~]$ nslookup ftp.dnsgrupoQ.com
Server:         192.168.1.34
Address:        192.168.1.34#53

ftp.dnsgrupoQ.com       canonical name = www.dnsgrupoQ.com.
Name:   www.dnsgrupoQ.com
Address: 192.168.1.35
```

Teste de nslookup do ip 192.168.1.34:

Terminal:

```
$ nslookup 192.168.1.34
```

```
[20:58:33] DEBIAN: aluno@debian [~]$ nslookup 192.168.1.34
34.1.168.192.in-addr.arpa       name = server.dnsgrupoQ.com.
34.1.168.192.in-addr.arpa       name = ns.dnsgrupoQ.com.
```

Teste de nslookup do ip 192.168.1.35:

Terminal:

```
$ nslookup 192.168.1.35
```

```
[20:59:50] DEBIAN: aluno@debian [~]$ nslookup 192.168.1.35
35.1.168.192.in-addr.arpa       name = www.dnsgrupoQ.com.
```

Teste de dig "consulta" realizado no ip 192.168.1.34:

Terminal:

```
$ dig -x 192.168.1.34
```

```
$ ssh aluno@192.168.1.34
aluno@192.168.1.34's password:
Linux debian 5.10.0-10-amd64 #1 SMP Debian 5.10.84-1 (2021-12-08) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sun Sep 18 19:35:40 2022 from 192.168.2.36
[21:06:12] DEBIAN: aluno@debian [~]$ dig -x 192.168.1.34

; <<>> DiG 9.16.27-Debian <<>> -x 192.168.1.34
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 30402
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: ef6790774fd5ab2d010000006327b27dd20d2c74cd99c8ca (good)
;; QUESTION SECTION:
;34.1.168.192.in-addr.arpa.      IN      PTR

;; ANSWER SECTION:
34.1.168.192.in-addr.arpa. 604800 IN     PTR     ns.dnsgrupoQ.com.
34.1.168.192.in-addr.arpa. 604800 IN     PTR     server.dnsgrupoQ.com.

;; Query time: 0 msec
;; SERVER: 192.168.1.34#53(192.168.1.34)
;; WHEN: Sun Sep 18 21:06:21 -03 2022
;; MSG SIZE  rcvd: 133
```

Teste de dig "consulta" realizado no ip 192.168.1.35:

Terminal:

```
$ dig -x 192.168.1.35
```

```
$ ssh aluno@192.168.1.34
aluno@192.168.1.34's password:
Linux debian 5.10.0-10-amd64 #1 SMP Debian 5.10.84-1 (2021-12-08) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sun Sep 18 21:06:12 2022 from 192.168.2.36
[21:07:19] DEBIAN: aluno@debian [~]$ dig -x 192.168.1.35

; <<>> DiG 9.16.27-Debian <<>> -x 192.168.1.35
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 5662
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 7cc52609df49aa92010000006327b2bbf8ff1dce9674ada3 (good)
;; QUESTION SECTION:
;35.1.168.192.in-addr.arpa.        IN        PTR

;; ANSWER SECTION:
35.1.168.192.in-addr.arpa. 604800 IN     PTR      www.dnsgrupoQ.com.

;; Query time: 0 msec
;; SERVER: 192.168.1.34#53(192.168.1.34)
;; WHEN: Sun Sep 18 21:07:23 -03 2022
;; MSG SIZE  rcvd: 113
```

Teste de dig "consulta" realizado no nome dnsgrupoQ.com:

Terminal:

```
$ dig dnsgrupoQ.com
```

```
$ ssh aluno@192.168.1.34
aluno@192.168.1.34's password:
Linux debian 5.10.0-10-amd64 #1 SMP Debian 5.10.84-1 (2021-12-08) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sun Sep 18 21:08:26 2022 from 192.168.2.36
[21:11:40] DEBIAN: aluno@debian [~]$ dig dnsgrupoQ.com

; <<>> DiG 9.16.27-Debian <<>> dnsgrupoQ.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 30772
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: f175714b19175536010000006327b3c14073949dd5c346df (good)
;; QUESTION SECTION:
;dnsgrupoQ.com.                 IN      A

;; ANSWER SECTION:
dnsgrupoQ.com.          604800  IN      A       192.168.1.34

;; Query time: 0 msec
;; SERVER: 192.168.1.34#53(192.168.1.34)
;; WHEN: Sun Sep 18 21:11:45 -03 2022
;; MSG SIZE  rcvd: 86
```

Teste de dig "consulta" realizado no nome www.dnsgrupoQ.com:

Terminal:

```
$ dig www.dnsgrupoQ.com
```

```
$ ssh aluno@192.168.1.34
aluno@192.168.1.34's password:
Linux debian 5.10.0-10-amd64 #1 SMP Debian 5.10.84-1 (2021-12-08) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sun Sep 18 21:07:19 2022 from 192.168.2.36
[21:08:26] DEBIAN: aluno@debian [~]$ dig www.dnsgrupoQ.com

; <<>> DiG 9.16.27-Debian <<>> www.dnsgrupoQ.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 31677
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: a91419d9a4238c10010000006327b31ff8132f27d15c5b1e (good)
;; QUESTION SECTION:
;www.dnsgrupoQ.com.             IN      A

;; ANSWER SECTION:
www.dnsgrupoQ.com.      604800  IN      A       192.168.1.35

;; Query time: 0 msec
;; SERVER: 192.168.1.34#53(192.168.1.34)
;; WHEN: Sun Sep 18 21:09:03 -03 2022
;; MSG SIZE  rcvd: 90
```

Teste de dig "consulta" realizado no no nome ftp.dnsgrupoQ.com:

Terminal:

```
$ dig ftp.dnsgrupoQ.com
```

```
$ ssh aluno@192.168.1.34
aluno@192.168.1.34's password:
Linux debian 5.10.0-10-amd64 #1 SMP Debian 5.10.84-1 (2021-12-08) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sun Sep 18 21:11:40 2022 from 192.168.2.36
[21:12:46] DEBIAN: aluno@debian [~]$ dig ftp.dnsgrupoQ.com

; <<>> DiG 9.16.27-Debian <<>> ftp.dnsgrupoQ.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 5880
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 5f485857b1d04131010000006327b40574b0d9ba592ca9f1 (good)
;; QUESTION SECTION:
;ftp.dnsgrupoQ.com.              IN      A

;; ANSWER SECTION:
ftp.dnsgrupoQ.com.      604800  IN      CNAME   www.dnsgrupoQ.com.
www.dnsgrupoQ.com.      604800  IN      A       192.168.1.35

;; Query time: 0 msec
;; SERVER: 192.168.1.34#53(192.168.1.34)
;; WHEN: Sun Sep 18 21:12:53 -03 2022
;; MSG SIZE  rcvd: 108
```

Teste de acesso ao servidor ftp pelo nome:

Terminal:

```
$ ftp ftp.dnsgrupoQ.com
```

```
$ ssh aluno@192.168.1.34
aluno@192.168.1.34's password:
Linux debian 5.10.0-10-amd64 #1 SMP Debian 5.10.84-1 (2021-12-08) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sun Sep 18 21:12:46 2022 from 192.168.2.36
[21:14:22] DEBIAN: aluno@debian [~]$ ftp ftp.dnsgrupoQ.com
Connected to www.dnsgrupoQ.com.
220 (vsFTPd 3.0.3)
Name (ftp.dnsgrupoQ.com:aluno): aluno
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> |
```

Teste de dig "consulta" realizado no no nome www.google.com e www.uol.com:

Terminal:

```
$ dig www.google.com and www.uol.com
```

```
$ ssh aluno@192.168.1.34
aluno@192.168.1.34's password:
Linux debian 5.10.0-10-amd64 #1 SMP Debian 5.10.84-1 (2021-12-08) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sun Sep 18 21:14:22 2022 from 192.168.2.36
[21:26:40] DEBIAN: aluno@debian [~]$ dig www.uol.com.br

; <<>> DiG 9.16.27-Debian <<>> www.uol.com.br
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 39173
;; flags: qr rd ra; QUERY: 1, ANSWER: 4, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: b940419b6b5da29b010000006327b76a95e184f6f06e7f9c (good)
;; QUESTION SECTION:
;www.uol.com.br.                        IN      A

;; ANSWER SECTION:
www.uol.com.br.            60     IN      CNAME    www.uol.com.br.edgesuite.net.
www.uol.com.br.edgesuite.net. 21600 IN  CNAME    a1999.dscb.akamai.net.
a1999.dscb.akamai.net.   20     IN      A        200.143.247.73
a1999.dscb.akamai.net.   20     IN      A        200.143.247.74

;; Query time: 2544 msec
;; SERVER: 192.168.1.34#53(192.168.1.34)
;; WHEN: Sun Sep 18 21:27:22 -03 2022
;; MSG SIZE  rcvd: 180

[21:27:22] DEBIAN: aluno@debian [~]$ dig www.google.com.br

; <<>> DiG 9.16.27-Debian <<>> www.google.com.br
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 40562
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 4a783fad6e71e253010000006327b7727f28d892c5282a6d (good)
;; QUESTION SECTION:
;www.google.com.br.             IN      A

;; ANSWER SECTION:
www.google.com.br.        300     IN      A        142.250.219.3

;; Query time: 180 msec
;; SERVER: 192.168.1.34#53(192.168.1.34)
;; WHEN: Sun Sep 18 21:27:30 -03 2022
;; MSG SIZE  rcvd: 90
```

Testes realizados em VM - 192.168.1.35

Teste de dig "consulta" realizado no ip 192.168.1.34:

Terminal:

```
$ dig -x 192.168.1.34
```

```
aluno@192.168.1.35's password:
Linux debian 5.10.0-10-amd64 #1 SMP Debian 5.10.84-1 (2021-12-08) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sun Sep 18 19:46:09 2022 from 192.168.2.43
[19:47:29] DEBIAN: aluno@debian [~]$ dig -x 192.168.1.34

; <<>> DiG 9.16.22-Debian <<>> -x 192.168.1.34
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 1838
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 4264a274d18d3fe3010000006327a0074f6fab213497bb3a (good)
;; QUESTION SECTION:
;34.1.168.192.in-addr.arpa.       IN       PTR

;; ANSWER SECTION:
34.1.168.192.in-addr.arpa. 604800 IN     PTR      ns.dnsgrupoQ.com.
34.1.168.192.in-addr.arpa. 604800 IN     PTR      server.dnsgrupoQ.com.

;; Query time: 0 msec
;; SERVER: 192.168.1.34#53(192.168.1.34)
;; WHEN: Sun Sep 18 19:47:35 -03 2022
;; MSG SIZE  rcvd: 133
```

Teste de dig "consulta" realizado no ip 192.168.1.35:

Terminal:

```
$ dig -x 192.168.1.35
```

```
aluno@192.168.1.35's password:
Linux debian 5.10.0-10-amd64 #1 SMP Debian 5.10.84-1 (2021-12-08) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sun Sep 18 19:41:39 2022 from 192.168.2.43
[19:46:09] DEBIAN: aluno@debian [~]$ dig -x 192.168.1.35

; <<>> DiG 9.16.22-Debian <<>> -x 192.168.1.35
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 50179
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 6da746a323f9cb1b0100000063279fb3be370d40bac5eea7 (good)
;; QUESTION SECTION:
;35.1.168.192.in-addr.arpa.      IN      PTR

;; ANSWER SECTION:
35.1.168.192.in-addr.arpa. 604800 IN    PTR     www.dnsgrupoQ.com.

;; Query time: 0 msec
;; SERVER: 192.168.1.34#53(192.168.1.34)
;; WHEN: Sun Sep 18 19:46:11 -03 2022
;; MSG SIZE  rcvd: 113
```

Teste de dig "consulta" realizado no nome dnsgrupoQ.com:

Terminal:

```
$ dig dnsgrupoQ.com
```

```
aluno@192.168.1.35's password:
Linux debian 5.10.0-10-amd64 #1 SMP Debian 5.10.84-1 (2021-12-08) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sun Sep 18 19:53:36 2022 from 192.168.2.43
[21:10:06] DEBIAN: aluno@debian [~]$ dig dnsgrupoQ.com

; <<>> DiG 9.16.22-Debian <<>> dnsgrupoQ.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 28809
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 1c365b5897eeba16010000006327b36bc24dd252f6967d97 (good)
;; QUESTION SECTION:
;dnsgrupoQ.com.                    IN      A

;; ANSWER SECTION:
dnsgrupoQ.com.          604800  IN      A       192.168.1.34

;; Query time: 0 msec
;; SERVER: 192.168.1.34#53(192.168.1.34)
;; WHEN: Sun Sep 18 21:10:19 -03 2022
;; MSG SIZE  rcvd: 86
```

Teste de dig "consulta" realizado no nome www.dnsgrupoQ.com:

Terminal:

```
$ dig www.dnsgrupoQ.com
```

```
aluno@192.168.1.35's password:
Linux debian 5.10.0-10-amd64 #1 SMP Debian 5.10.84-1 (2021-12-08) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sun Sep 18 19:33:36 2022 from 192.168.2.43
[19:41:39] DEBIAN: aluno@debian [~]$ dig www.dnsgrupoQ.com

; <<>> DiG 9.16.22-Debian <<>> www.dnsgrupoQ.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 49274
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 7ee27a509fe3722b0100000063279ead60a8e5645b80f7ab (good)
;; QUESTION SECTION:
;www.dnsgrupoQ.com.                IN        A

;; ANSWER SECTION:
www.dnsgrupoQ.com.        604800  IN        A         192.168.1.35

;; Query time: 4 msec
;; SERVER: 192.168.1.34#53(192.168.1.34)
;; WHEN: Sun Sep 18 19:41:49 -03 2022
;; MSG SIZE  rcvd: 90
```

Teste de dig "consulta" realizado no no nome ftp.dnsgrupoQ.com:

Terminal:

```
$ dig ftp.dnsgrupoQ.com
```

```
aluno@192.168.1.35's password:
Linux debian 5.10.0-10-amd64 #1 SMP Debian 5.10.84-1 (2021-12-08) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sun Sep 18 19:51:14 2022 from 192.168.2.43
[19:52:54] DEBIAN: aluno@debian [~]$ dig ftp.dnsgrupoQ.com

; <<>> DiG 9.16.22-Debian <<>> ftp.dnsgrupoQ.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 13053
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 88934ae5ef9ebfc2010000006327a149604da6df14ec477a (good)
;; QUESTION SECTION:
;ftp.dnsgrupoQ.com.             IN      A

;; ANSWER SECTION:
ftp.dnsgrupoQ.com.      604800  IN      CNAME   www.dnsgrupoQ.com.
www.dnsgrupoQ.com.      604800  IN      A       192.168.1.35

;; Query time: 0 msec
;; SERVER: 192.168.1.34#53(192.168.1.34)
;; WHEN: Sun Sep 18 19:52:57 -03 2022
;; MSG SIZE  rcvd: 108
```

Teste de dig "consulta" realizado no no nome www.google.com e www.uol.com:

Terminal:

```
$ dig www.google.com and www.uol.com
```

```
aluno@192.168.1.35's password:
Linux debian 5.10.0-10-amd64 #1 SMP Debian 5.10.84-1 (2021-12-08) x86_64

The programs included with the Debian GNU/Linux system are free software
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sun Sep 18 19:52:54 2022 from 192.168.2.43
[19:53:36] DEBIAN: aluno@debian [~]$ dig www.google.com

; <<>> DiG 9.16.22-Debian <<>> www.google.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 39887
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 1340c0a7f93856bd010000006327a17b1d068f25b61ab5e5 (good)
;; QUESTION SECTION:
;www.google.com.                        IN      A

;; ANSWER SECTION:
www.google.com.         300     IN      A       142.250.79.196

;; Query time: 692 msec
;; SERVER: 192.168.1.34#53(192.168.1.34)
;; WHEN: Sun Sep 18 19:53:47 -03 2022
;; MSG SIZE  rcvd: 87

[19:53:47] DEBIAN: aluno@debian [~]$ dig www.uol.com

; <<>> DiG 9.16.22-Debian <<>> www.uol.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 27945
;; flags: qr rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 212b8f823105f18b010000006327a1861f4ca8b4f865fdb6 (good)
;; QUESTION SECTION:
;www.uol.com.                   IN      A

;; ANSWER SECTION:
www.uol.com.            3600    IN      CNAME   amazonas.uol.com.br.
amazonas.uol.com.br.    60      IN      A       200.147.3.199

;; Query time: 1180 msec
;; SERVER: 192.168.1.34#53(192.168.1.34)
;; WHEN: Sun Sep 18 19:53:58 -03 2022
;; MSG SIZE  rcvd: 117
```