#### Linux

#### **Ubuntu Server**

# Configuração de 3 IP's na mesma placa de rede no Ubuntu (14, 16 e 18) Server

Professor:

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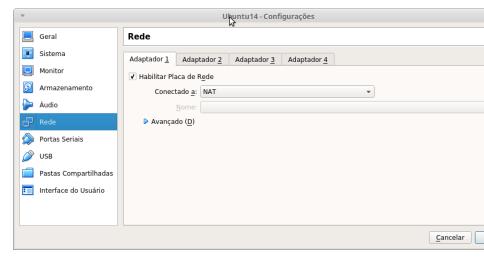
Outubro/2018

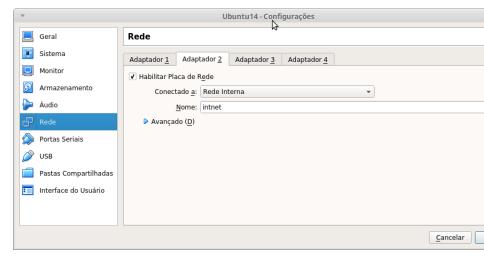


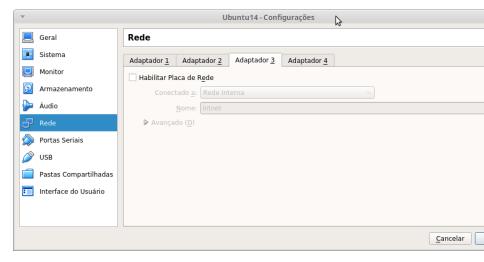
#### Sumário

- 1-Instalação das duas (2) placas de rede no Virtualbox
- 2-Configuração de 3 IP's na mesma placa de rede no Ubuntu Server
- 3-Tabela de rotas no Ubuntu Server
- 4-Testes de Conectividade ping

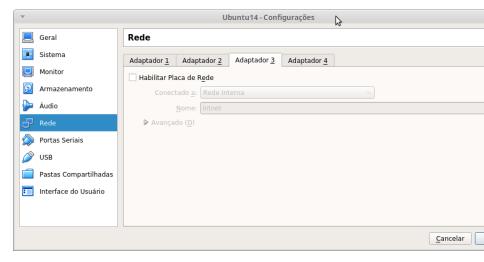
Éwerton Rômulo 2/42 Outubro/2018 2 / 42







5/42



6/42

Configuração de 3 IP's na mesma placa de rede no Ubuntu 14

root@asoa:/home/asoa# nano /etc/network/interfaces\_

Éwerton Rômulo 8/42 Outubro/2018 8

```
This file describes the network interfaces available on your system
 and how to activate them. For more information, see interfaces (5).
 The loopback network interface
auto lo
iface lo inet loopback
# The primary network interface
auto eth0
iface eth0 inet dhcp
auto eth1
iface eth1 inet static
  address 192,168,13,1
  netmask 255,255,255.0
auto eth1:0
iface eth1:0 inet static
  address 10.10.10.1
  netmask 255.255.255.0
auto eth1:1
iface eth1:1 inet static
  address 172.16.1.1
  netmask 255,255,255.0
```

9/42

```
root@asoa:/home/asoa# ifconfig
         Link encap:Ethernet HWaddr 08:00:27:3e:a8:0b
eth0
         inet addr:10.0.2.15 Bcast:10.0.2.255 Mask:255.255.255.0
         inet6 addr: fe80::a00:27ff:fe3e:a80b/64 Scope:Link
         UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
         RX packets:78 errors:0 dropped:0 overruns:0 frame:0
         TX packets:91 errors:0 dropped:0 overruns:0 carrier:0
         collisions:0 txqueuelen:1000
         RX butes:9232 (9.2 KB) TX butes:8294 (8.2 KB)
eth1
         Link encap:Ethernet HWaddr 08:00:27:3b:f5:9f
         inet addr:192.168.13.1 Bcast:192.168.13.255 Mask:255.255.255.0
         inet6 addr: fe80::a00:27ff:fe3b:f59f/64 Scope:Link
         UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
         RX packets:0 errors:0 dropped:0 overruns:0 frame:0
         TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
         collisions:0 txqueuelen:1000
         RX butes:0 (0.0 B) TX butes:648 (648.0 B)
eth1:0
         Link encap:Ethernet HWaddr 08:00:27:3b:f5:9f
         inet addr:10.10.10.1 Bcast:10.10.10.255 Mask:255.255.255.0
         UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
eth1:1
         Link encap:Ethernet HWaddr 08:00:27:3b:f5:9f
         inet_addr:172.16.1.1 Bcast:172.16.1.255 Mask:255.255.255.0
         UP BROADCAST RUNNING MULTICAST MTU:1500
                                                  Metric:1
```

Configuração de 3 IP's na mesma placa de rede no Ubuntu 16

root@ubuntu:/home/ubuntu# nano /etc/network/interfaces

Éwerton Rômulo 12/42 Outubro/2018 12 / 42

```
This file describes the network interfaces available on your system
 and how to activate them. For more information, see interfaces(5).
source /etc/network/interfaces.d/*
# The loopback network interface
auto lo
iface lo inet loopback
auto emp0s3
iface env0s3 inet dhcv
auto env0s8
iface env0s8 inet static
         address 192.168.13.1
         netmask 255.255.255.0
auto emp0s8:0
iface emp0s8:0 inet static
        address 10.10.10.1
        netmask 255.255.255.0
auto enp0s8:1
iface emp0s8:1 inet static
        address 172.16.1.1
        netmask 255.255.255.0
```

13 / 42

```
root@ubuntu:/home/ubuntu# ifconfig
         Link encap:Ethernet HWaddr 08:00:27:07:da:25
enp0s3
         inet addr:10.0.2.15 Bcast:10.0.2.255 Mask:255.255.255.0
         inet6 addr: fe80::a00:27ff:fe07:da25/64 Scope:Link
         HP BROADCAST BUNNING MULTICAST MIH: 1500 Metric: 1
         RX packets:1 errors:0 dropped:0 overruns:0 frame:0
         TX packets:9 errors:0 dropped:0 overruns:0 carrier:0
         collisions:0 txqueuelen:1000
         RX butes:590 (590.0 B) TX butes:990 (990.0 B)
env0s8
         Link encap:Ethernet HWaddr 08:00:27:36:ed:74
         inet_addr:192.168.13.1 Bcast:192.168.13.255 Mask:255.255.255.0
         inet6 addr: fe80::a00:27ff:fe36:ed74/64 Scope:Link
         UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
         RX packets:0 errors:0 dropped:0 overruns:0 frame:0
         TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
         collisions:0 txqueuelen:1000
         RX butes:0 (0.0 B) TX butes:648 (648.0 B)
enp0s8:0 Link encap:Ethernet HWaddr 08:00:27:36:ed:74
         inet addr:10.10.10.1 Bcast:10.10.10.255 Mask:255.255.255.0
         UP BROADCAST RUNNING MULTICAST MTU:1500
                                                   Metric:1
enp0s8:1 Link encap:Ethernet HWaddr 08:00:27:36:ed:74
         inet addr:172.16.1.1 Bcast:172.16.1.255
                                                   Mask: 255.255.255.0
         UP BROADCAST RUNNING MULTICAST MTU: 1500
                                                   Metric:1
```

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Configuração de 3 IP's na mesma placa de rede no Ubuntu 18

15 / 42

root@asoa:/home/asoa# nano /etc/netplan/50–cloud–init.yaml

Éwerton Rômulo 16/42 Outubro/2018 16 / 42

```
This file is generated from information provided by
 the datasource. Changes to it will not persist across an instance.
 To disable cloud-init's network configuration capabilities, write a file
 /etc/cloud/cloud.cfg.d/99-disable-network-config.cfg with the following
 network: {config: disabled}
network:
   ethernets:
        enpOs3:
            addresses: []
            dhcp4: true
            optional: true
       enp0s8:
            addresses: [ 192.168.13.1/24, 172.16.1.1/24, 10.10.10.1/24 ]
            dhcp4: false
            optional: false
   version: 2
```

root@asoa:/home/asoa# ip addr show

Éwerton Rômulo 18/42 Outubro/2018 18/42 Outubro/2018 18/42

```
oot@asoa:/home/asoa# ip addr show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN
   link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00
   inet 127.0.0.1/8 scope host lo
      valid_lft forever preferred_lft forever
   inet6 ::1/128 scope host
      valid_lft forever preferred_lft forever
 : enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 adisc fa_code
   link/ether 08:00:27:72:5d:b2 brd ff:ff:ff:ff:ff
   inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic enp0s3
      valid_lft 86210sec preferred_lft 86210sec
   inet6 fe80::a00:27ff:fe72:5db2/64 scope link
      valid_lft forever preferred_lft forever
 : enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_code.
   link/ether 08:00:27:3a:66:35 brd ff:ff:ff:ff:ff
    inet 192.168.13.1/24 brd 192.168.13.255 scope global enp0s8
      valid_lft forever preferred_lft forever
   inet 172.16.1.1/24 brd 172.16.1.255 scope global enp0s8
      valid_lft forever preferred_lft forever
   inet 10.10.10.1/24 brd 10.10.10.255 scope global enp0s8
      valid_lft forever preferred_lft forever
   inet6 fe80::a00:27ff:fe3a:6635/64 scope link
```

19/42

### 3.1-Tabela de rotas no Ubuntu 14 Server

root@asoa:/hor Kernel IP rout	ne/asoa# netsta ting table	t -r			
Destination	Gateway	Genmask	Flags	MSS Window	irtt Iface
default	10.0.2.2	0.0.0.0	UG -	0 0	0 eth0
10.0.2.0	*	255.255.255.0	U	0 0	0 eth0
10.10.10.0	*	255.255.255.0	U	0 0	0 eth1
172.16.1.0	*	255.255.255.0	U	0 0	0 eth1
192.168.13.0	*	255.255.255.0	U	0 0	0 eth1
root@asoa!/hor	ne/asoa#				

### 3.2-Tabela de rotas no Ubuntu 16 Server

	home/ubuntu# ne	etstat -r			
Kernel IP rout	ting table				
Destination	Gateway	Genmask	Flags	MSS Window	irtt Iface
default	10.0.2.2	0.0.0.0	UG	0 0	0 enp0s3
10.0.2.0	*	255.255.255.0	U	0 0	0 enp0s3
10.10.10.0	*	255.255.255.0	U	0 0	0 enp0s8
172.16.1.0	*	255.255.255.0	U	0 0	0 enp0s8
192.168.13.0	*	255.255.255.0	U	0 0	0 enp0s8
root@ubuntu:/I	home/ubuntu#				•

## 3.3-Tabela de rotas no Ubuntu 18 Server

root@asoa:/hon Kernel IP rout		at -r			
Destination	Gateway	Genmask	Flags	MSS Window	irtt Iface
default	_gateway	0.0.0.0	UG	0 0	0 enpOs3
10.0.2.0	0.0.0.0	255.255.255.0	U	0 0	0 enpOs3
_gateway	0.0.0.0	255.255.255.255	UH	0 0	0 enpOs3
10.10.10.0	0.0.0.0	255.255.255.0	U	0 0	0 enpOs8
172.16.1.0	0.0.0.0	255.255.255.0	U	0 0	0 enpOs8
192.168.13.0	0.0.0.0	255.255.255.0	U	0 0	0 enpOs8
root@asoa:/hom	ne/asoa# _				

Éwerton Rômulo 22/42 Outubro/2018 22 / 42

#### 4.1- Testes de Conectividade - Ubuntu 14

Testes de Conectividade - Ubuntu 14 Server

23 / 42

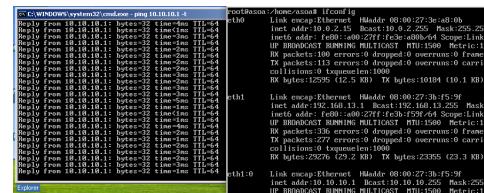
Éwerton Rômulo 23/42 Outubro/2018

#### 4.1- Testes de Conectividade - Rede interna 1 no Ubuntu 14

		5\system32\cmd.er			TTI -C 4					168.13.2: 168.13.2:	
		192.168.13.1: 192.168.13.1:								168.13.2:	
leply	from	192.168.13.1:	bytes=32	time=2ms	TTL=64	64	butes	from	192.	168.13.2:	icm
		192.168.13.1:								168.13.2:	
		192.168.13.1:								168.13.2:	
		192.168.13.1: 192.168.13.1:					_				
		192.168.13.1:								168.13.2:	
		192.168.13.1:								168.13.2:	
eply	from	192.168.13.1:	bytes=32	time<1ms	TTL=64	64	bytes	from	192.	168.13.2:	icm
		192.168.13.1:				64	bytes	from	192.	168.13.2:	icm
		192.168.13.1:				64	butes	from	192.	168.13.2:	icmi
		192.168.13.1: 192.168.13.1:								168.13.2:	
		192.168.13.1:								168.13.2:	
		192.168.13.1:									
		192.168.13.1:								168.13.2:	
		192.168.13.1:								168.13.2:	
eply	from	192.168.13.1:	bytes=32	time=2ms	TTL=64	64	bytes	from	192.	168.13.2:	icm
		192.168.13.1:				64	butes	from	192.	168.13.2:	icm
		192.168.13.1: 192.168.13.1:								168.13.2:	
		192.168.13.1:								168.13.2:	
		192.168.13.1:									
			, 01	1110						168.13.2:	
plovov				CHC Service	STATE OF THE STATE OF	64				168.13.2:	
cplorer						64	bytes	from	192.	168.13.2:	icm

24 / 42

### 4.1- Testes de Conectividade - Rede 1 para 2 no Ubuntu 14



eth1:1

Link encap:Ethernet HWaddr 08:00:27:3b:f5:9f inet addr:172.16.1.1 Bcast:172.16.1.255

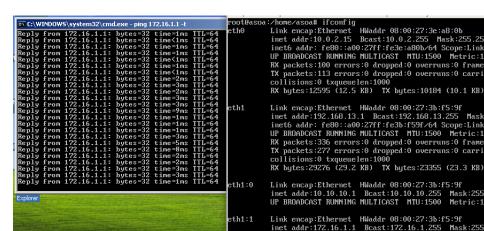
HP BROADCAST RUNNING MULTICAST MIL:1500

Metric:1

Mask:255

Metric:1

### 4.1- Testes de Conectividade - Rede 1 para 3 no Ubuntu 14



UP BROADCAST RUNNING MULTICAST MTU:1500

Metric:1

26 / 42

Éwerton Rômulo 26/42 Outubro/2018

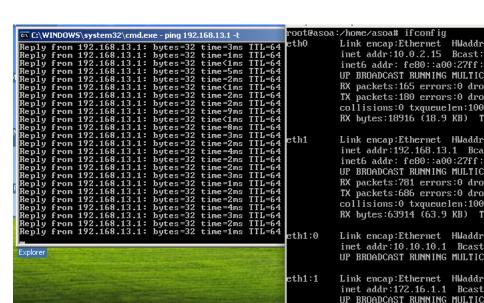
# 4.1- Testes de Conectividade - Rede 1 para Internet no Ubuntu 14

100			1 7
П	C:\WINDOWS\system32\cmd.exe - ping 8.8.8.8 -t		:/home/asoa# ifconfig
	Reply from 8.8.8.8: bytes=32 time=95ms IIL=125 Reply from 8.8.8.8: bytes=32 time=98ms IIL=125 Reply from 8.8.8.8: bytes=32 time=125ms IIL=125 Reply from 8.8.8.8: bytes=32 time=125ms IIL=125 Reply from 8.8.8.8: bytes=32 time=125ms IIL=125 Reply from 8.8.8.8: bytes=32 time=15ms IIL=125 Reply from 8.8.8.8: bytes=32 time=95ms IIL=125 Reply from 8.8.8.8: bytes=32 time=95ms IIL=125 Reply from 8.8.8.8: bytes=32 time=52ms III=125 Reply from 8.8.8.8: bytes=32 time=57ms III=125 Reply from 8.8.8.8: bytes=32 time=57ms III=125 Reply from 8.8.8.8: bytes=32 time=67ms III=125 Reply from 8.8.8.8: bytes=32 time=67ms III=125 Reply from 8.8.8.8: bytes=32 time=54ms III=125 Reply from 8.8.8.8: bytes=32 time=57ms III=125 Reply from 8.8.8.8: by	eth0 eth1	Link encap:Ethernet HWaddr 08:00:27:3e:a8:0b inet addr:10.0.2.15 Boast:10.0.2.255 Mask:255.2 inet6 addr: fe80::a00:27ff:fe3e:a80b/64 Scope:Lin UP BROADCAST RUNNING HULIICAST HTU:1500 Metric: BX packets:114 errors:0 dropped:0 overruns:0 carr collisions:0 txqueuelen:1000 RX bytes:13617 (13.6 KB) TX bytes:11354 (11.3 KB Link encap:Ethernet HWaddr 08:00:27:3b:f5:9f inet addr:192.168.13.1 Bcast:192.168.13.255 Mas inet6 addr: fe80::a00:27ff:fe3b:f59f-64 Scope:Lin UP BROADCAST RUNNING MULIICAST MTU:1500 Metric: BX packets:516 errors:0 dropped:0 overruns:0 fram TX packets:455 errors:0 dropped:0 overruns:0 carr collisions:0 txqueuelen:1000 RX bytes:42568 (42.5 KB) TX bytes:36499 (36.4 KB
J	Reply from 8.8.8.8: bytes=32 time=64ms TTL=125	eth1:0	Link encap:Ethernet HWaddr 08:00:27:3b:f5:9f inet addr:10.10.10.1 Bcast:10.10.10.255 Mask:25 UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:
THE STATE OF THE S		eth1:1	Link encap:Ethernet HWaddr 08:00:27:3b:f5:9f inet addr:172.16.1.1 Bcast:172.16.1.255 Mask:25 UP BRUADCAST RUNNING MULTICAST MTU:1500 Metric:

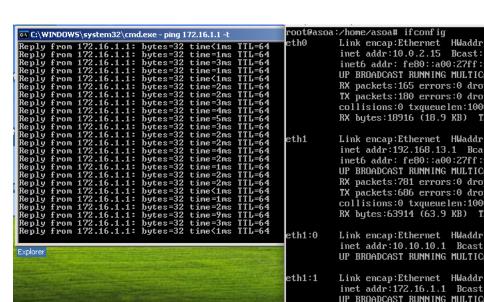
#### 4.1- Testes de Conectividade - Rede interna 2 no Ubuntu 14

```
butes from 10.10.10.2: icmp seg=12
C:\WINDOW5\system32\cmd.exe - ping 10.10.10.1 -t
                                                   64 butes from 10.10.10.2: icmp seg=13
Reply from 10.10.10.1: bytes=32 tim<u>e=7ms TTL=64</u>
                                                     butes from 10.10.10.2: icmp seg=14
                       butes=32 time=1ms
Reply from 10.10.10.1:
                       butes=32 time=4ms TTL=64
                                                     bytes from 10.10.10.2: icmp seg=15
                       bytes=32 time=3ms
                                                     butes from 10.10.10.2: icmp seg=16
                       bytes=32 time=3ms
                                                     butes from 10.10.10.2:
                                                                             icmp seg=17
                       bytes=32 time=7ms TTL=64
                       butes=32 time<1ms TTL=64
                                                     butes from 10.10.10.2:
                                                                             icmp seg=18
                       hutes=32 time=1ms
                                                     bytes from 10.10.10.2:
                                                                             icmp seq=19
                       bytes=32 time<1ms TTL=64
                                                     butes from 10.10.10.2: icmp seg=20
                       butes=32 time<1ms
                       bytes=32 time=4ms
                                                     butes from 10.10.10.2; icmp seg=21
                       bytes=32 time=1ms TTL=64
                                                     bytes from 10.10.10.2:
                                                                             icmp seg=22
                       bytes=32 time=2ms
                                                                             icmp seg=23
                                                      butes from 10.10.10.2:
                       bytes=32 time=4ms
                       bytes=32 time=1ms
                                                     bytes from 10.10.10.2:
                                                                             icmp seg=24
                       bytes=32 time=2ms
                                                     butes from 10.10.10.2: icmp seg=25
                       bytes=32 time=1ms
                                                      butes from 10.10.10.2:
                                                                             icmp seg=26
                       bytes=32 time<1ms TTL=64
                       bytes=32 time=1ms
                                                                             icmp seg=27
                                                     butes from 10.10.10.2:
                       bytes=32 time=3ms
                                                      bytes from 10.10.10.2: icmp_seq=28
                       bytes=32 time=5ms
                                                     butes from 10.10.10.2: icmp seg=29
                       bytes=32 time=3ms
Reply from 10.10.10.1:
                       bytes=32 time=5ms TTL=64
                                                     butes from 10.10.10.2: icmp sea=30
Reply from 10.10.10.1: bytes=32 time=5ms TTL=64
                                                      butes from 10.10.10.2: icmp seg=31
                                                        tes from 10 10 10 2: icmn sem=32
```

### 4.1- Testes de Conectividade - Rede 2 para 1 no Ubuntu 14



### 4.1- Testes de Conectividade - Rede 2 para 3 no Ubuntu 14



#### 4.2- Testes de Conectividade - Ubuntu 16

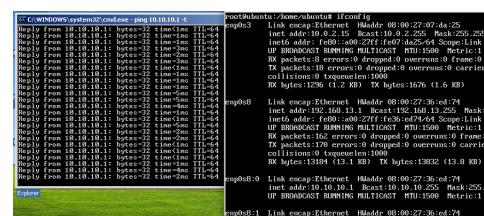
Testes de Conectividade - Ubuntu 16 Server

Éwerton Rômulo 31/42 Outubro/2018

#### 4.2- Testes de Conectividade - Rede interna 1 no Ubuntu 16

C:\WINDOWS\system32\cmd.exe - ping 192.168.13.1 -t	Arquivo		Visualizar	
Reply from 192.168.13.1: bytes=32 time=7ms TTL=64 keply from 192.168.13.1: bytes=32 time=1ms TTL=64 keply from 192.168.13.1: bytes=32 time=2ms TTL=64 keply from 192.168.13.1: bytes=32 time=1ms TTL=64 keply from 192.168.13.1: bytes=32 time=6ms TTL=64 keply from 192.168.13.1: bytes=32 time=1ms TTL	64 bytes	from 192 from 193 from 193	2. 168 .13 .2 .2 .2 .168 .13 .2 .2 .2 .168 .13 .2 .2 .2 .168 .13 .2 .2 .2 .168 .13 .2 .2 .2 .168 .13 .2 .2 .2 .168 .13 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2	icmp_sc

### 4.2- Testes de Conectividade - Rede 1 para 2 no Ubuntu 16



Metric:1

inet addr:172.16.1.1 Bcast:172.16.1.255 Mask:255 HP BROADCAST BUNNING MULTICAST MTH: 1500

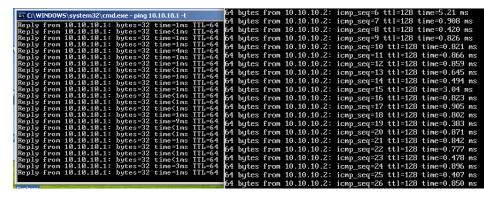
## 4.2- Testes de Conectividade - Rede 1 para 3 no Ubuntu 16

C:\WINDOW5\system32\cmd.exe - ping 172.16.1.1 -t		ntu:/home/ubuntu# ifconfig
puly from 172.16.1.1: bytes 32 time-3ms IIL-6 puly from 172.16.1.1: bytes 32 time-4ms IIL-6 puly from 172.16.1.1: bytes 32 time-1ms IIL-6 puly from 172.16.1.1: bytes 32 time-1ms IIL-6 puly from 172.16.1.1: bytes 32 time-1ms IIL-6 puly from 172.16.1.1: bytes 32 time-2ms IIL-6 puly from 172.16.1.1: bytes 32 time-1ms IIL-6 puly from 172.16.1.1: bytes 32 time-7ms IIL-6 puly from 172.16.1.1: bytes 32 time-7ms IIL-6 puly from 172.16.1.1: bytes 32 time-2ms IIL-6	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Link encap:Ethernet HWaddr 08:00:27:07:da:25 inet addr:10:0.2.15 Bcast:10.0.2.255 Mask:255.25: inet6 addr: fe00::a00:27ff:fe07:da:25/64 Scope:Link UP BBOADCAST RUNNING MULTICAST HTU:15:00 Metric:1 RX packets:18 errors:0 dropped:0 overruns:0 frame:0 TX packets:18 errors:0 dropped:0 overruns:0 carrier collisions:0 txqueuelen:1000 RX bytes:1296 (1.2 kB) TX bytes:1676 (1.6 kB)  Link encap:Ethernet HWaddr 08:00:27:36:ed:74 inet addr:192.168.13.1 Bcast:192.168.13.255 Mask inet6 addr: fe00::a00:27ff:fe36:ed74/64 Scope:Link UP BROADCAST RUNNING MULTICAST MTU:15:00 Metric:1 RX packets:162 errors:0 dropped:0 overruns:0 frame TX packets:162 errors:0 dropped:0 overruns:0 frame TX packets:163 (1.3 kB) TX bytes:13832 (13.8 kB)  Link encap:Ethernet HWaddr 08:00:27:36:ed:74
plovov		inet addr:10.10.10.1 Bcast:10.10.10.255 Mask:255
plorer		UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1

enp0s8:1 Link encap:Ethernet HWaddr 08:00:27:36:ed:74 inet addr:172.16.1.1 Bcast:172.16.1.255 UP BROADCAST RUNNING MULTICAST MTU:1500

Metric:1

#### 4.2- Testes de Conectividade - Rede interna 2 no Ubuntu 16



Éwerton Rômulo 35/42 Outubro/2018 35 / 42

### 4.2- Testes de Conectividade - Rede 2 para 1 no Ubuntu 16

n0s8

Reply from 192.168.13.1: bytes=32 time=2ms Reply from 192.168.13.1: bytes=32 time=2ms Reply from 192.168.13.1: bytes=32 time=6ms Reply from 192.168.13.1: bytes=32 time=6ms Reply from 192.168.13.1: bytes=32 time=2ms Reply from 192.168.13.1: bytes=32 time=2ms Reply from 192.168.13.1: bytes=32 time=4ms Reply from 192.168.13.1: bytes=32 time=4ms Reply from 192.168.13.1: bytes=32 time=2ms Reply from 192.168.13.1: bytes=32 time=2ms Reply from 192.168.13.1: bytes=32 time=1ms	TTL=64 TTL=64 TTL=64 TTL=64 TTL=64 TTL=64 TTL=64 TTL=64 TTL=64
Reply from 192.168.13.1: bytes=32 time=6ms Reply from 192.168.13.1: bytes=32 time=3ms Reply from 192.168.13.1: bytes=32 time=2ms Reply from 192.168.13.1: bytes=32 time=2ms Reply from 192.168.13.1: bytes=32 time=4ms Reply from 192.168.13.1: bytes=32 time=4ms Reply from 192.168.13.1: bytes=32 time=2ms Reply from 192.168.13.1: bytes=32 time=6ms Reply from 192.168.13.1: bytes=32 time=1ms Reply from 192.168.13.1: bytes=32 time=1ms Reply from 192.168.13.1: bytes=32 time=1ms	TTL=64 TTL=64 TTL=64 TTL=64 TTL=64 TTL=64 TTL=64
Reply from 192.168.13.1: bytes=32 time=3ms Reply from 192.168.13.1: bytes=32 time=2ms Reply from 192.168.13.1: bytes=32 time=1ms Reply from 192.168.13.1: bytes=32 time=1ms Reply from 192.168.13.1: bytes=32 time=4ms Reply from 192.168.13.1: bytes=32 time=1ms	TTL=64 TTL=64 TTL=64 TTL=64 TTL=64 TTL=64
Reply from 192.168.13.1: bytes=32 time=2ns Reply from 192.168.13.1: bytes=32 time=1ns Reply from 192.168.13.1: bytes=32 time=1ns Reply from 192.168.13.1: bytes=32 time=1ns Reply from 192.168.13.1: bytes=32 time=2ns Reply from 192.168.13.1: bytes=32 time=2ns Reply from 192.168.13.1: bytes=32 time=1ns Reply from 192.168.13.1: bytes=32 time<1ns Reply from 192.168.13.1: bytes=32 time=1ns Reply from 192.168.13.1: bytes=32 time=1ns Reply from 192.168.13.1: bytes=32 time=1ns	TTL=64 TTL=64 TTL=64 TTL=64 TTL=64
Reply from 192.168.13.1: bytes=32 time=1ns Reply from 192.168.13.1: bytes=32 time=1ns Reply from 192.168.13.1: bytes=32 time=4ns Reply from 192.168.13.1: bytes=32 time=1ns Reply from 192.168.13.1: bytes=32 time=1ns Reply from 192.168.13.1: bytes=32 time=1ns	TTL=64 TTL=64 TTL=64 TTL=64
Reply from 192.168.13.1: bytes=32 time=1ms Reply from 192.168.13.1: bytes=32 time=4ms Reply from 192.168.13.1: bytes=32 time=2ms Reply from 192.168.13.1: bytes=32 time=2ms Reply from 192.168.13.1: bytes=32 time<1ms Reply from 192.168.13.1: bytes=32 time=1ms Reply from 192.168.13.1: bytes=32 time=1ms	TTL=64 TTL=64 TTL=64
Reply from 192.168.13.1: bytes=32 time=4ms Reply from 192.168.13.1: bytes=32 time=2ms Reply from 192.168.13.1: bytes=32 time=3ms Reply from 192.168.13.1: bytes=32 time<1ms Reply from 192.168.13.1: bytes=32 time=1ms Reply from 192.168.13.1: bytes=32 time=1ms	TTL=64 TTL=64
Reply from 192.168.13.1: bytes=32 time=2ms Reply from 192.168.13.1: bytes=32 time=3ms Reply from 192.168.13.1: bytes=32 time<1ms Reply from 192.168.13.1: bytes=32 time=1ms Reply from 192.168.13.1: bytes=32 time=1ms	TTL=64
Reply from 192.168.13.1: bytes=32 time=3ms Reply from 192.168.13.1: bytes=32 time<1ms Reply from 192.168.13.1: bytes=32 time=1ms Reply from 192.168.13.1: bytes=32 time=1ms	TTI -CA
&ply from 192.168.13.1: bytes=32 time<1ms &ply from 192.168.13.1: bytes=32 time=1ms &ply from 192.168.13.1: bytes=32 time=1ms	1115=64
Reply from 192.168.13.1: bytes=32 time=1ms Reply from 192.168.13.1: bytes=32 time=1ms	TTL=64
	TTL=64
	TTL=64
Reply from 192.168.13.1: bytes=32 time<1ms	TTL=64
Reply from 192.168.13.1: bytes=32 time<1ms	TTL=64
Reply from 192.168.13.1: bytes=32 time=2ms	TTL=64
Reply from 192.168.13.1: bytes=32 time=4ms	TTL=64
Reply from 192.168.13.1: bytes=32 time=4ms	TTL=64
Reply from 192.168.13.1: bytes=32 time=3ms	TTL=64
Reply from 192.168.13.1: bytes=32 time=2ms	TTL=64
Reply from 192.168.13.1: bytes=32 time=4ms	TTL=64
Reply from 192.168.13.1: bytes=32 time=2ms	TTL=64
Reply from 192.168.13.1: bytes=32 time=1ms	TTL=64
Replý from 192.168.13.1: býtes=32 time<1ms	TTL=64

oot@ubuntu:/home/ubuntu# ifconfig

Link encap:Ethernet HWaddr 08:00:27:07:da:25
inet addr:10.0.2.15 Bcast:10.0.2.255 Mask:255.2
inet6 addr: fe80::a00:27ff:fe07:da25/64 Scope:Lin
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:
RX packets:16 errors:0 dropped:0 overruns:0 frame
TX packets:29 errors:0 dropped:0 overruns:0 carri
collisions:0 txuqueulen:1000

RX bytes:2833 (2.8 KB) TX bytes:2508 (2.5 KB)

Link encap:Ethernet HWaddr 08:00:27:36:ed:74
inet addr:192.168.13.1 Bcast:192.168.13.255 Mas
inet6 addr: fe80::a00:27ff:fe36:ed74/64 Scope:Lin
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:
RX packets:455 errors:0 dropped:0 overruns:0 fram
TX packets:445 errors:0 dropped:0 overruns:0 carr
collisions:0 txqueuelen:1000

RX bytes:36230 (36.2 KB) TX bytes:36247 (36.2 KB

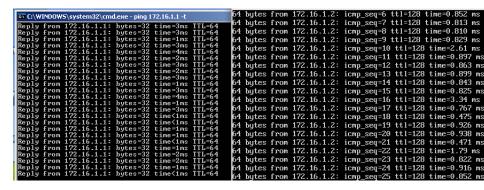
pp0s8:0 Link encap:Ethernet HWaddr 08:00:27:36:ed:74 inet addr:10.10.10.1 Bcast:10.10.10.255 Mask:25 UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:

np0s8:1 Link encap:Ethernet HWaddr 08:00:27:36:ed:74 inet addr:172.16.1.1 Bcast:172.16.1.255 Mask:25 UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:

36 / 42

Éwerton Rômulo 36/42 Outubro/2018

#### 4.2- Testes de Conectividade - Rede interna 3 no Ubuntu 16



#### 4.3- Testes de Conectividade - Ubuntu 18

Testes de Conectividade - Ubuntu 18 Server

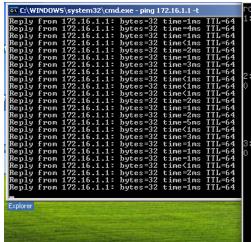
38 / 42

Éwerton Rômulo 38/42 Outubro/2018

#### 4.3- Testes de Conectividade - Rede interna 1 no Ubuntu 18

C:\W	INDOW	5\system32\cmd.e:	ке - ping 192.	.168.13.1 -t					192.168.13.2:		
		192.168.13.1:							192.168.13.2:		
		192.168.13.1:							192.168.13.2:		
		192.168.13.1:				64	bytes	from	192.168.13.2:	icmp_seq=14	ttl=128
		192.168.13.1:				64	hutes	from	192.168.13.2:	icmp_sed=15	tt1=128
		192.168.13.1: 192.168.13.1:							192.168.13.2:		
		192.168.13.1:									
		192.168.13.1:							192.168.13.2:		
		192.168.13.1:							192.168.13.2:		
		192.168.13.1:				64	bytes	from	192.168.13.2:	icmp_seq=19	ttl=128
		192.168.13.1:				64	butes	from	192.168.13.2:	icmp_sea=20	ttl=128
		192.168.13.1:				64	hutes	from	192.168.13.2:	icmp_sed=21	t t 1 = 128
		192.168.13.1: 192.168.13.1:							192.168.13.2:		
		192.168.13.1:									
		192.168.13.1:							192.168.13.2:		
		192.168.13.1:							192.168.13.2:		
		192.168.13.1:				64	bytes	from	192.168.13.2:	icmp_seq=25	ttl=128
		192.168.13.1:				64	bytes	from	192.168.13.2:	icmp_sea=26	ttl=128
		192.168.13.1:							192.168.13.2:		
		192.168.13.1:							192.168.13.2:		
		192.168.13.1: 192.168.13.1:									
		192.168.13.1:							192.168.13.2:		
юрту	11011	172.100.13.1.	ny003-32	C THO (THS	1111-01	64	bytes	from	192.168.13.2:	icmp_seq=30	ttl=128

### 4.3- Testes de Conectividade - Rede 1 para 2 no Ubuntu 18



```
root@asoa:/home/asoa# ip addr show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc no
    link/loopback 00:00:00:00:00:00 brd 00:00:00
    inet 127.0.0.1/8 scope host lo
      valid lft forever preferred lft forever
    inet6 ::1/128 scope host
      valid lft forever preferred lft forever
  enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu
    link/ether 08:00:27:72:5d:h2 brd ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope globa
      valid_lft 86082sec preferred_lft 86082sec
    inet6 fe80::a00:27ff:fe72:5db2/64 scope link
      valid_lft forever preferred_lft forever
  enpOs8: <BROADCAST,MULTICAST,UP,LOWER UP> mtu
    link/ether 08:00:27:3a:66:35 brd ff:ff:ff:ff
    inet 192.168.13.1/24 brd 192.168.13.255 scop
      valid_lft forever preferred_lft forever
    inet 172.16.1.1/24 brd 172.16.1.255 scope gl
      valid_lft forever preferred_lft forever
    inet 10.10.10.1/24 brd 10.10.10.255 scope gl
      valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe3a:6635/64 scope link
```

valid\_lft forever preferred\_lft forever

### 4.3- Testes de Conectividade - Rede 1 para 3 no Ubuntu 18

```
root@asoa:/home/asoa# ip addr show
C:\WINDOWS\system32\cmd.exe - ping 10.10.10.1 -t
Reply from 10.10.10.1: bytes=32 time=1ms TTL=64
Reply from 10.10.10.1: bytes=32 time=1ms TTL=64
Reply from 10.10.10.1: bytes=32 time<1ms TTL=64
Reply from 10.10.10.1: bytes=32 time<1ms TTL=64
Reply from 10.10.10.1: bytes=32 time=5ms TTL=64
Reply from 10.10.10.1: bytes=32 time<1ms TTL=64
Reply from 10.10.10.1: bytes=32 time=1ms TTL=64
Reply from 10.10.10.1: butes=32 time=1ms TTL=64
Reply from 10.10.10.1: bytes=32 time<1ms TTL=64
Reply from 10.10.10.1: bytes=32 time=1ms TTL=64
Reply from 10.10.10.1: bytes=32 time<1ms TTL=64
Reply from 10.10.10.1: bytes=32 time=3ms TTL=64
Reply from 10.10.10.1: bytes=32 time<1ms TTL=64
Reply from 10.10.10.1: bytes=32 time=1ms TTL=64
Reply from 10.10.10.1: bytes=32 time=2ms TTL=64
Reply from 10.10.10.1: bytes=32 time=1ms TTL=64
Reply from 10.10.10.1: bytes=32 time<1ms TTL=64
Reply from 10.10.10.1: bytes=32 time=1ms TTL=64
Reply from 10.10.10.1: bytes=32 time<1ms TTL=64
Reply from 10.10.10.1: bytes=32 time<1ms TTL=64
Reply from 10.10.10.1: bytes=32 time=2ms TTL=64
Explorer
```

```
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc no
   link/loopback 00:00:00:00:00:00 brd 00:00:00
   inet 127.0.0.1/8 scope host lo
      valid 1ft forever preferred 1ft forever
   inet6 ::1/128 scope host
      valid_lft forever preferred_lft forever
  enpOs3: <BROADCAST,MULTICAST,UP,LOWER UP> mtu
   link/ether 08:00:27:72:5d:b2 brd ff:ff:ff:ff
   inet 10.0.2.15/24 brd 10.0.2.255 scope globa
      valid_lft 86082sec preferred_lft 86082sec
   inet6 fe80::a00:27ff:fe72:5db2/64 scope link
      valid_lft forever preferred_lft forever
  enpOs8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu
   link/ether 08:00:27:3a:66:35 brd ff:ff:ff:ff
   inet 192.168.13.1/24 brd 192.168.13.255 scop
      valid 1ft forever preferred 1ft forever
   inet 172.16.1.1/24 brd 172.16.1.255 scope gl
      valid_lft forever preferred_lft forever
   inet 10.10.10.1/24 brd 10.10.10.255 scope glo
      valid_lft forever preferred_lft forever
   inet6 fe80::a00:27ff:fe3a:6635/64 scope link
```

valid\_lft\_forever\_preferred\_lft\_forever

#### 4.3- Testes de Conectividade - Rede interna 2 no Ubuntu 18

### CRAININGOUNTS\system32\cmd.exe-ping 172.16.1.1-t  ### 64 bytes from 172.16.1.2: icmp_seq=48 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=3ms TTL=64 form 172.16.1.2: icmp_seq=59 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=1ms TTL=64 form 172.16.1.2: icmp_seq=51 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=1ms TTL=64 form 172.16.1.2: icmp_seq=51 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=1ms TTL=64 form 172.16.1.2: icmp_seq=51 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=3ms TTL=64 form 172.16.1.2: icmp_seq=51 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=3ms TTL=64 form 172.16.1.2: icmp_seq=52 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=1ms TTL=64 form 172.16.1.2: icmp_seq=54 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=1ms TTL=64 form 172.16.1.2: icmp_seq=55 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=1ms TTL=64 form 172.16.1.2: icmp_seq=55 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=3ms TTL=64 form 172.16.1.2: icmp_seq=57 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=1ms TTL=64 form 172.16.1.2: icmp_seq=57 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=1ms TTL=64 form 172.16.1.2: icmp_seq=56 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=1ms TTL=64 form 172.16.1.2: icmp_seq=66 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=1ms TTL=64 form 172.16.1.2: icmp_seq=66 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=3ms TTL=64 form 172.16.1.2: icmp_seq=66 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=3ms TTL=64 form 172.16.1.2: icmp_seq=66 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=3ms TTL=64 form 172.16.1.2: icmp_seq=66 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=3ms TTL=64 form 172.16.1.2: icmp_seq=66 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=3ms TTL=64 form 172.16.1.2: icmp_seq=66 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=3ms TTL=64 form 172.16.1.2: icmp_seq=66 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=3ms TTL=64 form 172.16.1.2: icmp_seq=66 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=3ms TTL=64 form 172.16.1.2: icmp_seq=66 ttl=128  ### 8 ### 172.16.1.1: bytes=32 time=3ms TTL=64 form 172.16.1.2: icmp_se									_
Reply from 172.16.1.1: bytes-32 time-1ms TIL-64 64 bytes from 172.16.1.2: icmp_seq=50 ttl=128 Reply from 172.16.1.1: bytes-32 time-1ms TIL-64 64 bytes from 172.16.1.2: icmp_seq=50 ttl=128 Reply from 172.16.1.1: bytes-32 time-1ms TIL-64 64 bytes from 172.16.1.2: icmp_seq=51 ttl=128 Reply from 172.16.1.1: bytes-32 time-1ms TIL-64 64 bytes from 172.16.1.2: icmp_seq=53 ttl=128 Reply from 172.16.1.1: bytes-32 time-3ms TIL-64 64 bytes from 172.16.1.2: icmp_seq=53 ttl=128 Reply from 172.16.1.1: bytes-32 time-1ms TIL-64 64 bytes from 172.16.1.2: icmp_seq=55 ttl=128 Reply from 172.16.1.1: bytes-32 time-1ms TIL-64 64 bytes from 172.16.1.2: icmp_seq=55 ttl=128 Reply from 172.16.1.1: bytes-32 time-1ms TIL-64 64 bytes from 172.16.1.2: icmp_seq=55 ttl=128 Reply from 172.16.1.1: bytes-32 time-1ms TIL-64 64 bytes from 172.16.1.2: icmp_seq=57 ttl=128 Reply from 172.16.1.1: bytes-32 time-1ms TIL-64 64 bytes from 172.16.1.2: icmp_seq=57 ttl=128 Reply from 172.16.1.1: bytes-32 time-1ms TIL-64 64 bytes from 172.16.1.2: icmp_seq=50 ttl=128 Reply from 172.16.1.1: bytes-32 time-1ms TIL-64 64 bytes from 172.16.1.2: icmp_seq=60 ttl=128 Reply from 172.16.1.1: bytes-32 time-1ms TIL-64 64 bytes from 172.16.1.2: icmp_seq=60 ttl=128 Reply from 172.16.1.1: bytes-32 time-1ms TIL-64 64 bytes from 172.16.1.2: icmp_seq=60 ttl=128 Reply from 172.16.1.1: bytes-32 time-1ms TIL-64 64 bytes from 172.16.1.2: icmp_seq=60 ttl=128 Reply from 172.16.1.1: bytes-32 time-1ms TIL-64 64 bytes from 172.16.1.2: icmp_seq=60 ttl=128 Reply from 172.16.1.1: bytes-32 time-1ms TIL-64 64 bytes from 172.16.1.2: icmp_seq=60 ttl=128 Reply from 172.16.1.1: bytes-32 time-1ms TIL-64 64 bytes from 172.16.1.2: icmp_seq=60 ttl=128 Reply from 172.16.1.1: bytes-32 time-3ms TIL-64 64 bytes from 172.16.1.2: icmp_seq=60 ttl=128 Reply from 172.16.1.1: bytes-32 time-3ms TIL-64 64 bytes from 172.16.1.2: icmp_seq=60 ttl=128 Reply from 172.16.1.1: bytes-32 time-3ms TIL-64 64 bytes from 172.16.1.2: icmp_seq=60 ttl=128 Reply from 172.16.1.1: bytes-32 time-3ms TIL-64 64 bytes from 172.16.1.2	C:\WINDOWS\system32\cmd.exe - ping 172.16.1.1 -t								
Reply from 172.16.1.1: bytes=32 time<1ms TTL=64 64 bytes from 172.16.1.2: icmp_seq=51 ttl=128 Reply from 172.16.1.1: bytes=32 time<1ms TTL=64 64 bytes from 172.16.1.2: icmp_seq=52 ttl=128 Reply from 172.16.1.1: bytes=32 time<1ms TTL=64 64 bytes from 172.16.1.2: icmp_seq=53 ttl=128 Reply from 172.16.1.1: bytes=32 time<1ms TTL=64 64 bytes from 172.16.1.2: icmp_seq=53 ttl=128 Reply from 172.16.1.1: bytes=32 time=1ms TTL=64 64 bytes from 172.16.1.2: icmp_seq=55 ttl=128 Reply from 172.16.1.1: bytes=32 time=1ms TTL=64 64 bytes from 172.16.1.2: icmp_seq=55 ttl=128 Reply from 172.16.1.1: bytes=32 time=1ms TTL=64 64 bytes from 172.16.1.2: icmp_seq=55 ttl=128 Reply from 172.16.1.1: bytes=32 time=1ms TTL=64 64 bytes from 172.16.1.2: icmp_seq=55 ttl=128 Reply from 172.16.1.1: bytes=32 time=1ms TTL=64 64 bytes from 172.16.1.2: icmp_seq=56 ttl=128 Reply from 172.16.1.1: bytes=32 time=1ms TTL=64 64 bytes from 172.16.1.2: icmp_seq=59 ttl=128 Reply from 172.16.1.1: bytes=32 time<1ms TTL=64 64 bytes from 172.16.1.2: icmp_seq=60 ttl=128 Reply from 172.16.1.1: bytes=32 time<1ms TTL=64 64 bytes from 172.16.1.2: icmp_seq=60 ttl=128 Reply from 172.16.1.1: bytes=32 time=1ms TTL=64 64 bytes from 172.16.1.2: icmp_seq=60 ttl=128 Reply from 172.16.1.1: bytes=32 time=1ms TTL=64 64 bytes from 172.16.1.2: icmp_seq=60 ttl=128 Reply from 172.16.1.1: bytes=32 time=1ms TTL=64 64 bytes from 172.16.1.2: icmp_seq=62 ttl=128 Reply from 172.16.1.1: bytes=32 time=1ms TTL=64 64 bytes from 172.16.1.2: icmp_seq=62 ttl=128 Reply from 172.16.1.1: bytes=32 time=1ms TTL=64 64 bytes from 172.16.1.2: icmp_seq=64 ttl=128 Reply from 172.16.1.1: bytes=32 time=3ms TTL=64 64 bytes from 172.16.1.2: icmp_seq=64 ttl=128 Reply from 172.16.1.1: bytes=32 time=3ms TTL=64 64 bytes from 172.16.1.2: icmp_seq=64 ttl=128 Reply from 172.16.1.1: bytes=32 time=3ms TTL=64 64 bytes from 172.16.1.2: icmp_seq=64 ttl=128 Reply from 172.16.1.1: bytes=32 time=4ms TTL=64 64 bytes from 172.16.1.2: icmp_seq=66 ttl=128 Reply from 172.16.1.1: bytes=32 time=4ms TTL=64 64 bytes from 172.16.1.2	Reply from 172.16.1.1: bytes=32 time=3ms								
Reply from 172.16.1.1: bytes=32 time<1ms TIL=64 Reply from 172.16.1.1: bytes=32 time=1ms TIL=64 Reply from 172.16.1.1: bytes=32 time=3ms TIL=64 Reply from 172.16.1.2: icmp_seq=64 ttl=128 Reply from 172.16.1.1: bytes=32 time=3ms TIL=64 Reply from 172.16.1.2: icmp_seq=64 ttl=128 Reply from 172.16.1.1: bytes=32 time=3ms TIL=64 Reply from 172.16.1.2: icmp_seq=66 ttl=128 Reply from 172.16.1.1: bytes=32 time=3ms TIL=64 Reply from 172.16.1.2: icmp_seq=66 ttl=128 Reply from 172.16.1.1: bytes=32 time=3ms TIL=64 Re	Reply from 172.16.1.1: bytes=32 time=5ms	TTL=64	64	bytes	from	172.16.1.2:	icmp_seq=50	ttl=128	t.
Reply from 172.16.1.1: bytes=32 time<1ms IIL=64			64	hutes	from	172.16.1.2:	icmo sea=51	111=128	†
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