# STI
# MEI/MIEBOM
# 2021/2022

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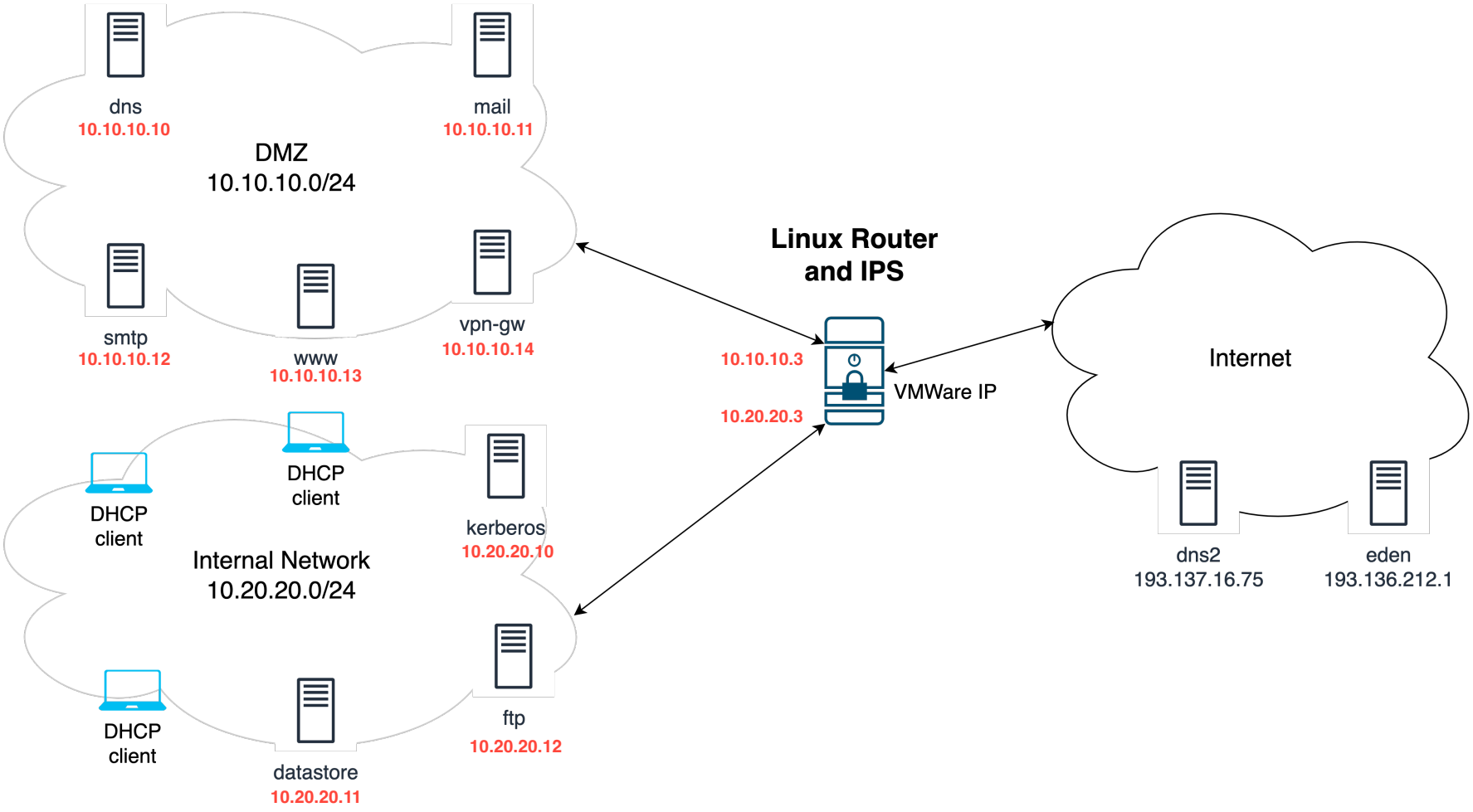
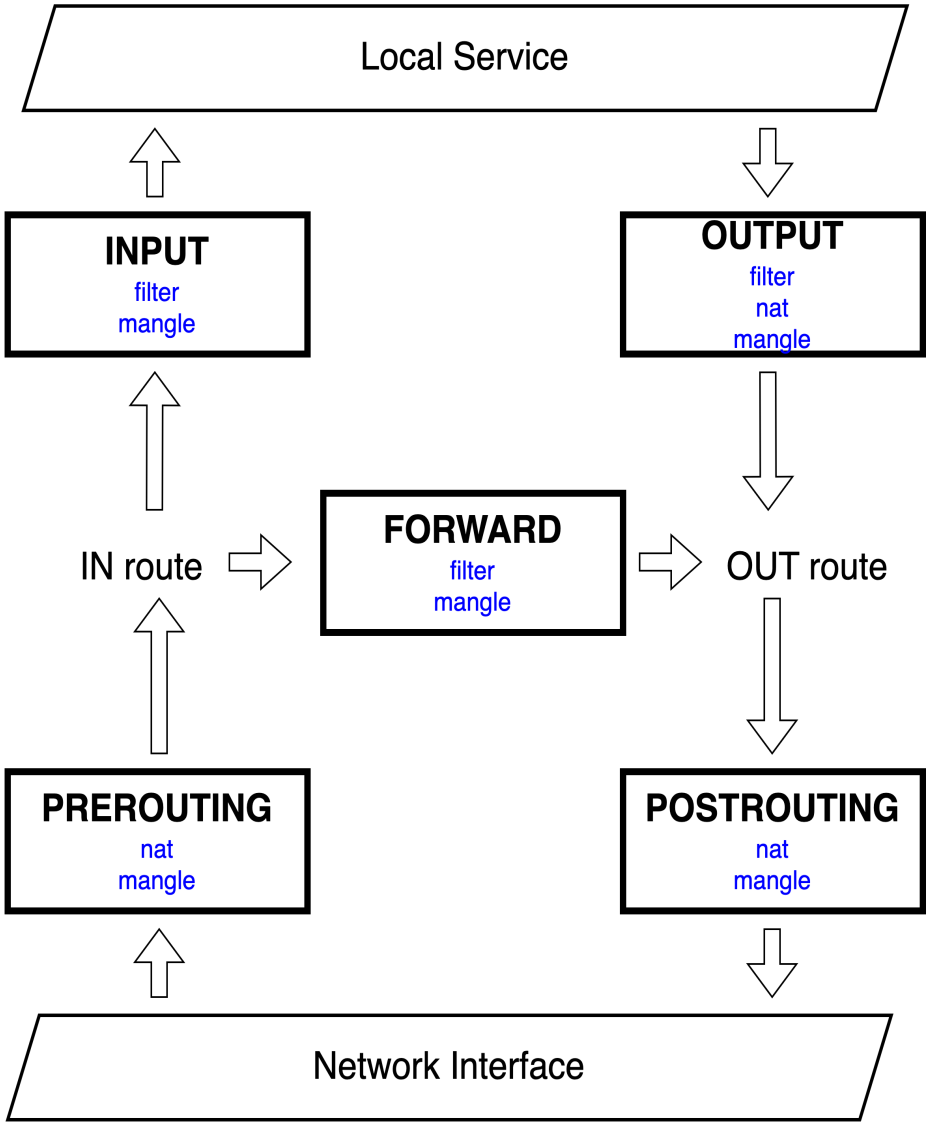
# Practical Assignment #2

- Firewalls using IPTables
- Intrusion detection and prevention using Snort

# Scenario

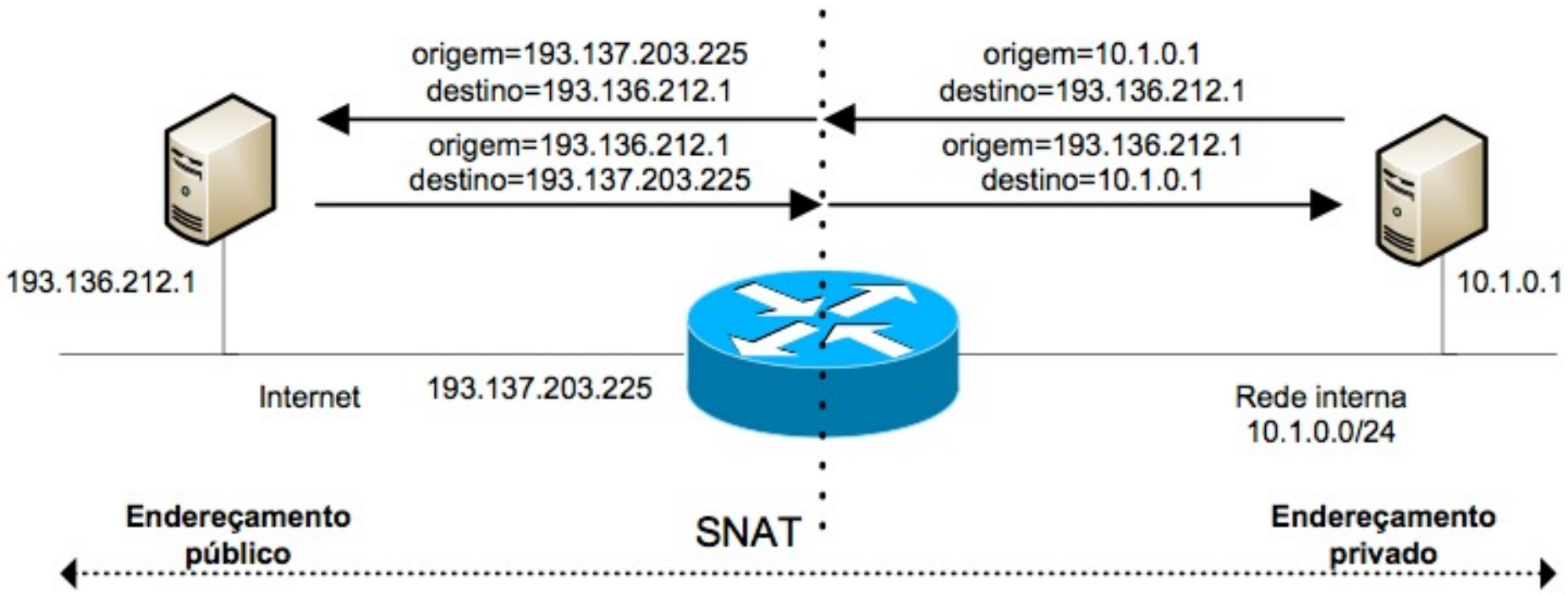

dns
10.10.10.10
mail
10.10.10.11
DMZ
10.10.10.0/24
smtp
10.10.10.12
www
10.10.10.13
vpn-gw
10.10.10.14
Linux Router
and IPS
10.10.10.3
10.20.20.3
VMWare IP
Internet
DHCP
client
DHCP
client
kerberos
10.20.20.10
Internal Network
10.20.20.0/24
DHCP
client
datastore
10.20.20.11
ftp
10.20.20.12
dns2
193.137.16.75
eden
193.136.212.1

# IPTables (filtering and NAT)



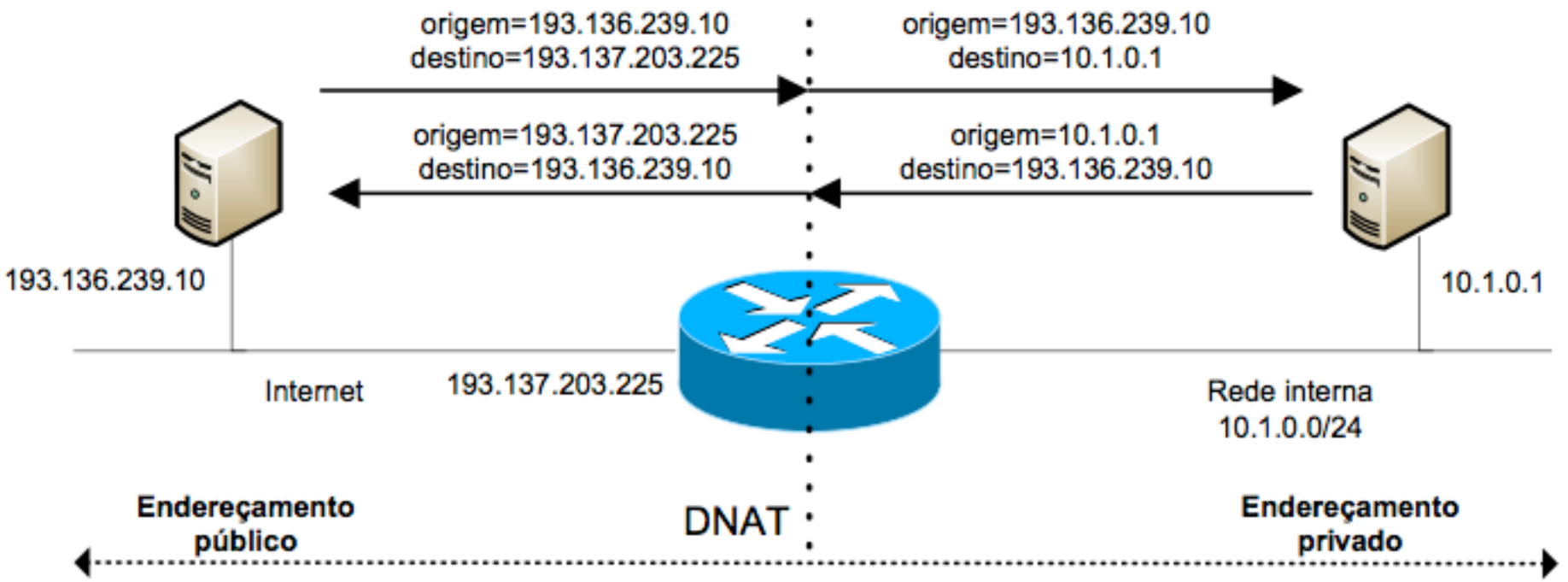
# NAT (SNAT)

iptables -t nat -A POSTROUTING -s 10.1.0.0/24 -d 193.136.212.1 -j SNAT --to-source 193.137.203.225

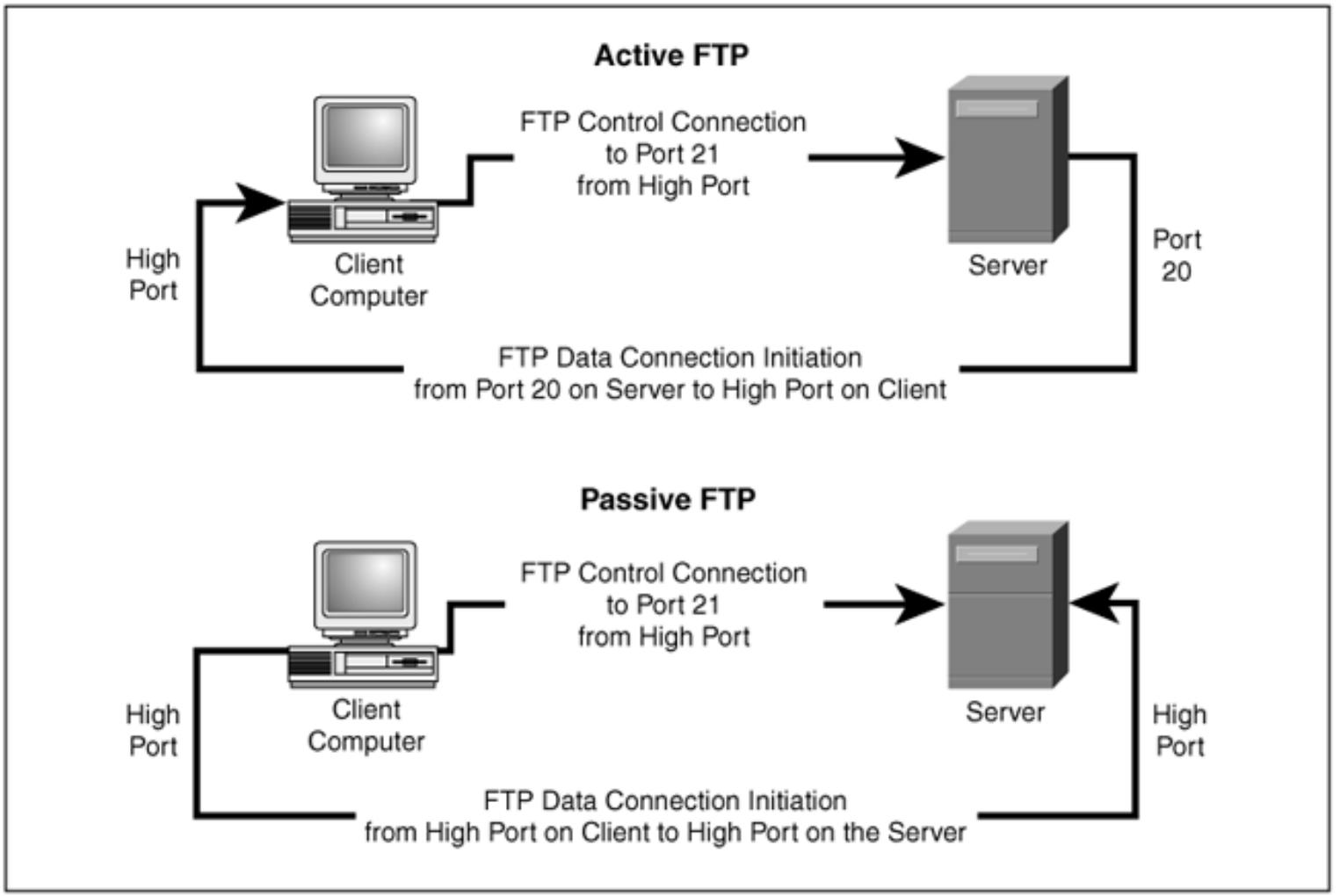


# NAT (DNAT)

iptables -t nat -A PREROUTING -s 193.136.239.10 -d 193.137.203.225 -j DNAT --to-destination 10.1.0.1



# FTP (Active and Passive modes)




http://codeidol.com/unix/linux-fix/Linux-FTP-Server-Setup/FTP-Overview/

# Snort


**Snort is:**

- A lightweight network IDS
- Real-time traffic logging, content searching/matching and alerting
- Logs in *tcpdump* binary format and ASCII
- Integrates with IPTables for intrusion detection and prevention (inline mode)

**Snort may work in three modes:**

- Packet sniffer (as *tcpdump* or *tethereal/wireshark*)
- Packet logging mode (useful for network traffic debugging)
- Network intrusion detection (from rules defined on a configuration file)

Snort in **packet sniffer mode**, examples:

# Print TCP/IP packet headers on the screen
**snort –v**

# Print TCP/IP packet headers and also the application data
**snort –vd**

# A more descriptive description of the packets (including data link layer headers)
**snort –vde**

# Snort


Snort in **packet logger mode**, examples:

**snort -vde -K ascii -l ./log**

# Log in binary (*tcpdump*) format
**snort -b -l ./log**

# Snort in “playback mode” from log file
**snort -vd -r snort.log**

# Reading the packet log file using tcpdump
**tcpdump -r snort.log**

Snort in **network intrusion detection system mode**, examples:

# Read configuration file for intrusion detection rules
**snort -dev -l log -c snort.conf**

**Detection rules**, a few simple examples:

alert tcp any any -> 10.254.0.0/24 80 (msg:”HTTP packet”;)

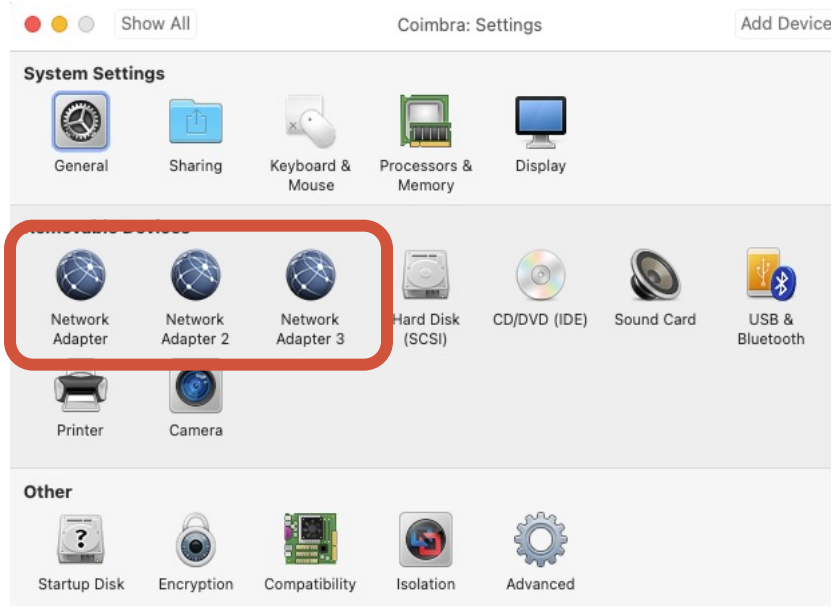
var MY_NETS [10.254.0.0/24,10.1.0.0/24]
log tcp any any -> $MY_NETS any (flags:S; msg:”SYN packet”;)

alert tcp any any -> any 80 (content:”GET”;)

# Starting the exercise

In the **Linux Router and IPS**:

1) Configure 3 network interfaces (use VMWare workstation/Fusion for this purpose)
2) Create networks using VMWare workstation/Fusion
3) Configure the addresses according to the scenario

# Starting the exercise

In the **Linux Router and IPS**:

1) Configure 3 network interfaces (use VMWare workstation/Fusion for this purpose)
2) Configure the addresses according to the scenario

To 'enable' the **networks** consider:

1) One VM emulating the DMZ network (it can be Lisboa VM used in TP1)
2) Another VM emulating the internal network (it can be the Road Warrior VM of TP1)

The diverse services in the networks can be 'emulated' using the **netcat** utility, example:

$ **nc -l -p 8080** # acts as server, binding to port 8080

To connect (as client): **nc 8080**