

# Generation and Analysing Network Attacks using Scapy

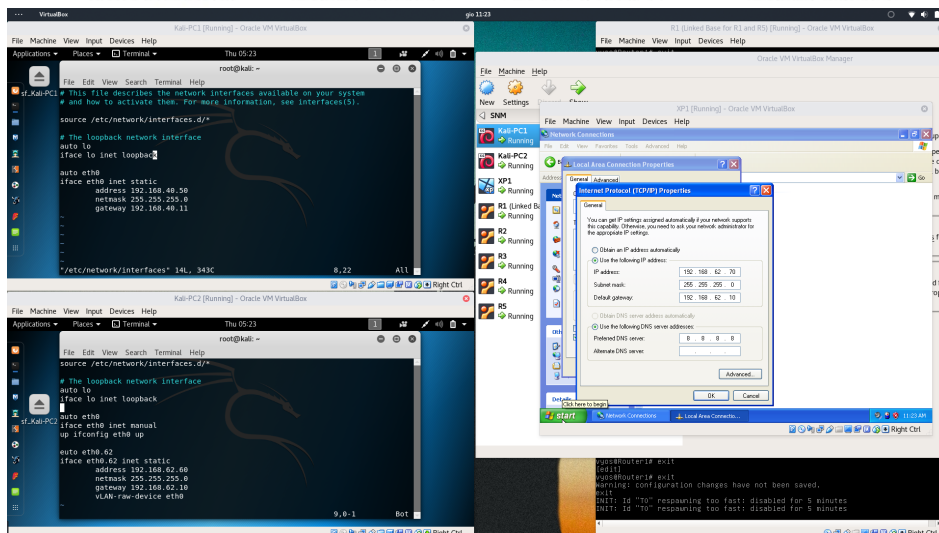
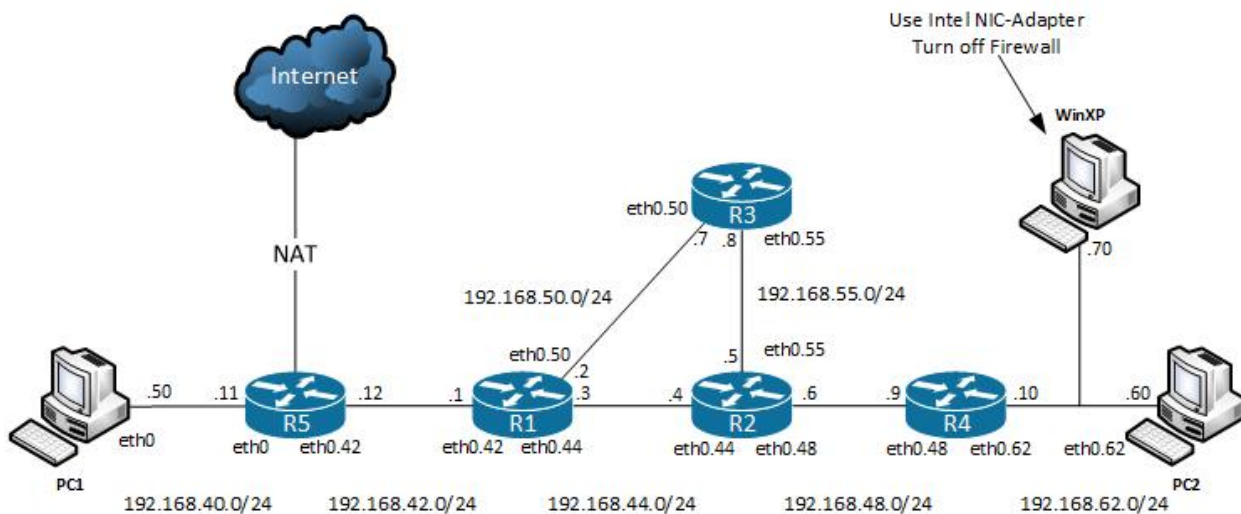
Project of the Secure Network Management course by DECAMP

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## 1 The configuration used



### 1.1 Devices Configuration

#### R5

The Router5 is a clone of the Router1. The network of this router is composed by two enabled adapters:

- Adapter 1: Internal Network (Name: intnet);
- Adapter 2: NAT Network (Name: NatNetwork).

After the start of the machine it is setted with this commands:

```

# Configuring the router 5 (R5)
## Basic configuration
configure
load /live/image/R1/lab16
commit

## Configuring NAT
set interfaces ethernet eth1 address dhcp
commit

edit nat source rule 10
    set translation address masquerade
    set source address 10.0.2.0/24 # The CIDR of the NAT
    set outbound-interface eth1
commit
exit

## Setting the new ethernet eth0 address
delete interfaces ethernet eth0 address 192.168.40.1/24
set interfaces ethernet eth0 address 192.168.40.11/24
commit

## Setting the new ethernet eth0.42 address
delete interfaces ethernet eth0 vif 44
delete interfaces ethernet eth0 vif 50
set interfaces ethernet eth0 vif 42 address 192.168.42.12/24
commit

## Enabling routing-protocol RIP
set protocols rip interface eth0.42
set protocols rip network 192.168.40.0/24
set protocols rip network 192.168.42.0/24
set protocols rip redistribute connected
set protocols rip timers timeout 35
commit

## NAT routing
set protocols rip redistribute static
set protocols rip interface eth0
set protocols rip network 0.0.0.0/0
commit

## RIP of the other subnets
set protocols rip network 192.168.40.0/24
set protocols rip network 192.168.44.0/24
set protocols rip network 192.168.48.0/24
set protocols rip network 192.168.50.0/24
set protocols rip network 192.168.55.0/24
set protocols rip network 192.168.62.0/24
set protocols rip redistribute connected
commit

exit

```

## R1

```

# Configuring the router 1 (R1)
## Basic configuration
configure

```

```
load /live/image/R1/lab16_rip
commit

## Adding the router R5
set protocols rip network 192.168.42.0/24
commit
exit
```

## R2

```
# Configuring the router 2 (R2)
## Basic configuration
configure
load /live/image/R2/lab16_rip
commit

## Adding the router R5
set protocols rip network 192.168.42.0/24
commit
exit
```

## R3

```
# Configuring the router 3 (R3)
## Basic configuration
configure
load /live/image/R3/lab16_rip
commit

## Adding the router R5
set protocols rip network 192.168.42.0/24
commit
exit
```

## R4

```
# Configuring the router 4 (R4)
## Basic configuration
configure
load /live/image/R4/lab16_rip
commit

## Adding the router R4
set protocols rip network 192.168.42.0/24
commit
exit
```

## Kali-PC1

```
# 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 eth0
iface eth0 inet static
    address 192.168.40.50
    netmask 255.255.255.0
    gateway 192.168.40.11

```

```
echo "nameserver 8.8.8.8" >> /etc/resolv.conf
```

## Kali-PC2

*# 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 eth0
iface eth0 inet manual
up ifconfig eth0 up

```

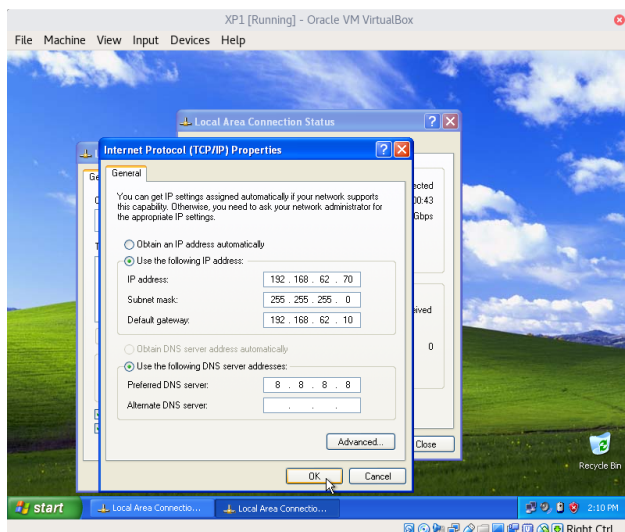
```

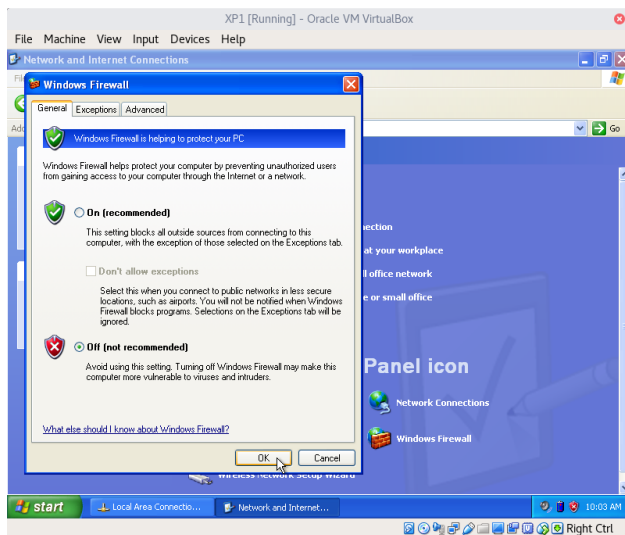
auto eth0.62
iface eth0.62 inet static
    address 192.168.62.60
    netmask 255.255.255.0
    gateway 192.168.62.10
    vLAN-raw-device eth0

```

```
echo "nameserver 8.8.8.8" >> /etc/resolv.conf
```

## XP1





## 1.2 Test to the configuration

Now it's presented a scapy program used to test if the network was working properly before the attacks.

```
#!/usr/bin/env python
from scapy.all import *

# Availability of each subnets
arping("192.168.40.0/24")
arping("192.168.42.0/24")
arping("192.168.44.0/24")
arping("192.168.48.0/24")
arping("192.168.50.0/24")
arping("192.168.55.0/24")
arping("192.168.62.0/24")
# Testing the NAT
arping("www.google.com")
```

## 2 Reconnaissance Attacks

### 2.1 IP Spoofing

### 2.2 Introduction

#### 2.2.1 SCAPY program

```
#!/usr/bin/env python
from scapy.all import *
```

#### 2.2.2 Attacker's messages

#### 2.2.3 Attack's result

#### 2.2.4 How to protect the network

### 2.3 No Flags Set

### 2.4 Introduction

#### 2.4.1 SCAPY program

```
#!/usr/bin/env python
from scapy.all import *
```

#### 2.4.2 Attacker's messages

#### 2.4.3 Attack's result

#### 2.4.4 How to protect the network

### 3 DoS Attacks

#### 3.1 ICMP Redirect

#### 3.2 Introduction

##### 3.2.1 SCAPY program

```
#!/usr/bin/env python
from scapy.all import *
```

##### 3.2.2 Attacker's messages

##### 3.2.3 Attack's result

##### 3.2.4 How to protect the network

#### 3.3 Ping of Death

#### 3.4 Introduction

##### 3.4.1 SCAPY program

```
#!/usr/bin/env python
from scapy.all import *
```

##### 3.4.2 Attacker's messages

##### 3.4.3 Attack's result

##### 3.4.4 How to protect the network