

Generation and Analysing Network Attacks using Scapy

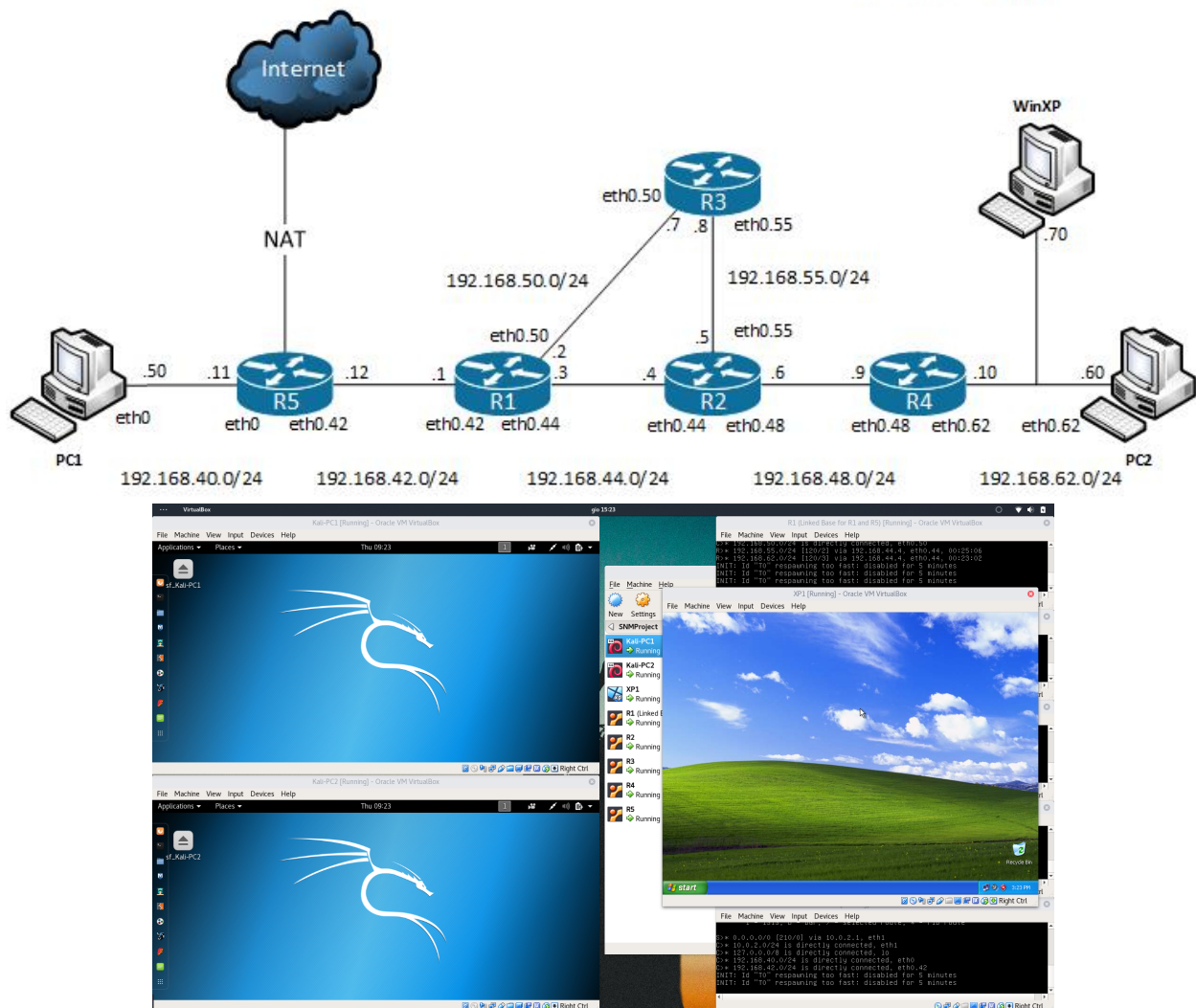
Project of the Secure Network Management course by DECAMP

Pietro Prandini - Stefano Romanello @ UniPD

CC-BY-SA

December 27, 2018

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

## 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 RIP
set protocols rip interface eth0.42
set protocols rip network 192.168.40.0/24
set protocols rip redistribute connected
set protocols rip timers timeout 35
commit

## Configuring NAT
set interfaces ethernet eth1 address dhcp
commit

edit nat source rule 10
    set translation address masquerade
    set source address 192.168.32.0/24 # The CIDR of the NAT
    set outbound-interface eth1
commit
exit

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

exit

```

R1

```

# Configuring the router 1 (R1)
## Basic configuration
configure
load /live/image/R1/lab16
commit

## Considering the new router R5
delete interfaces ethernet eth0 address 192.168.40.1/24
commit
set interfaces ethernet eth0 vif 42 address 192.168.42.1/24
commit

## Enabling the RIP protocol
set protocols rip interface eth0.42

```

```
set protocols rip interface eth0.44
set protocols rip interface eth0.50
commit
```

R2

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

R3

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

R4

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

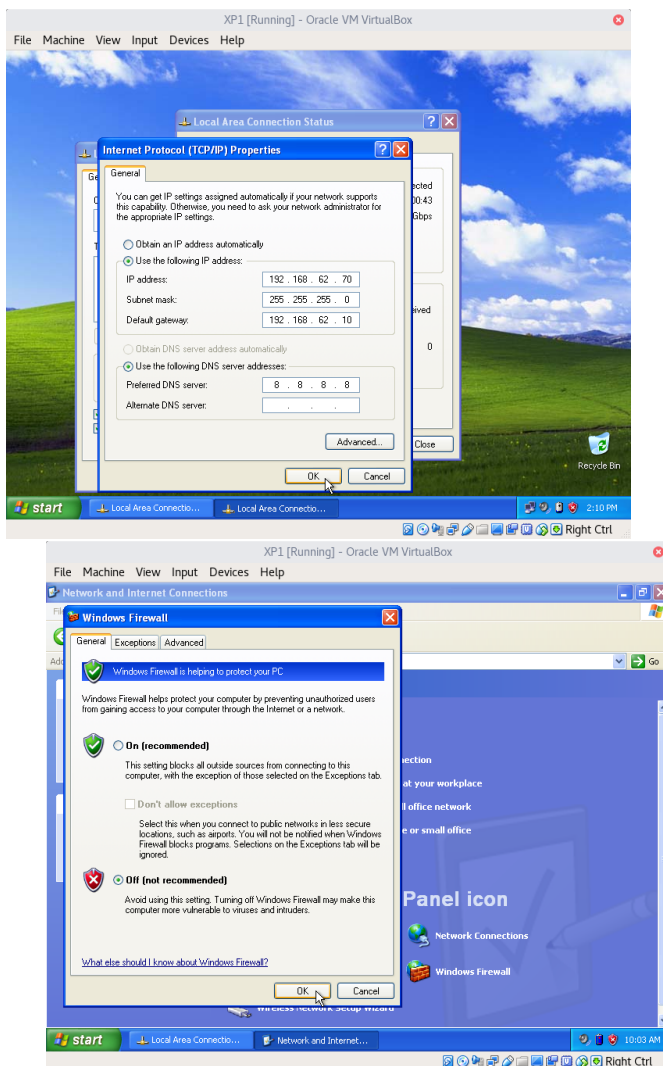
```
auto lo
iface lo inet loopback
```

```
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=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 device
ans,unans = arping("192.168.40.50")
ans.summary()
unans.summary()

ans,unans = arping("192.168.40.11")
ans.summary()
unans.summary()

ans,unans = arping("192.168.42.1")
ans.summary()
unans.summary()

ans,unans = arping("192.168.42.12")
ans.summary()
unans.summary()

ans,unans = arping("192.168.44.3")
ans.summary()
unans.summary()

ans,unans = arping("192.168.44.4")
ans.summary()
unans.summary()

ans,unans = arping("192.168.48.6")
ans.summary()
unans.summary()

ans,unans = arping("192.168.48.9")
ans.summary()
unans.summary()

ans,unans = arping("192.168.50.1")
ans.summary()
unans.summary()

ans,unans = arping("192.168.50.7")
ans.summary()
unans.summary()

ans,unans = arping("192.168.55.8")
ans.summary()
unans.summary()

ans,unans = arping("192.168.55.5")
ans.summary()
unans.summary()

ans,unans = arping("192.168.62.10")
ans.summary()
unans.summary()

ans,unans = arping("192.168.62.60")
ans.summary()
unans.summary()

ans,unans = arping("192.168.62.70")
ans.summary()
```

```

unans.summary()

# Testing the NAT
arping("www.google.com")
ans.summary()
unans.summary()

```

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