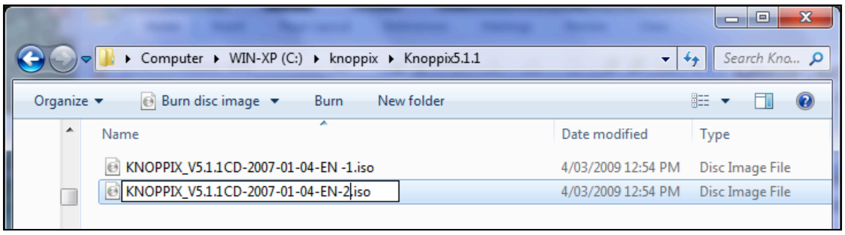
## SECTION 1: INTRODUCTION

A. In this exercise you will configure and understand IPSec. The network to network setup will allow you to connect two office Host Pc's in each network into one Virtual Private Network (VPN). For the simplicity purposes, you will configure IPSec between two hosts running in the same network, however the basic configuration and understanding of this exercise will help you understand how IPSec works and you can work out other possible IPSec configurations.

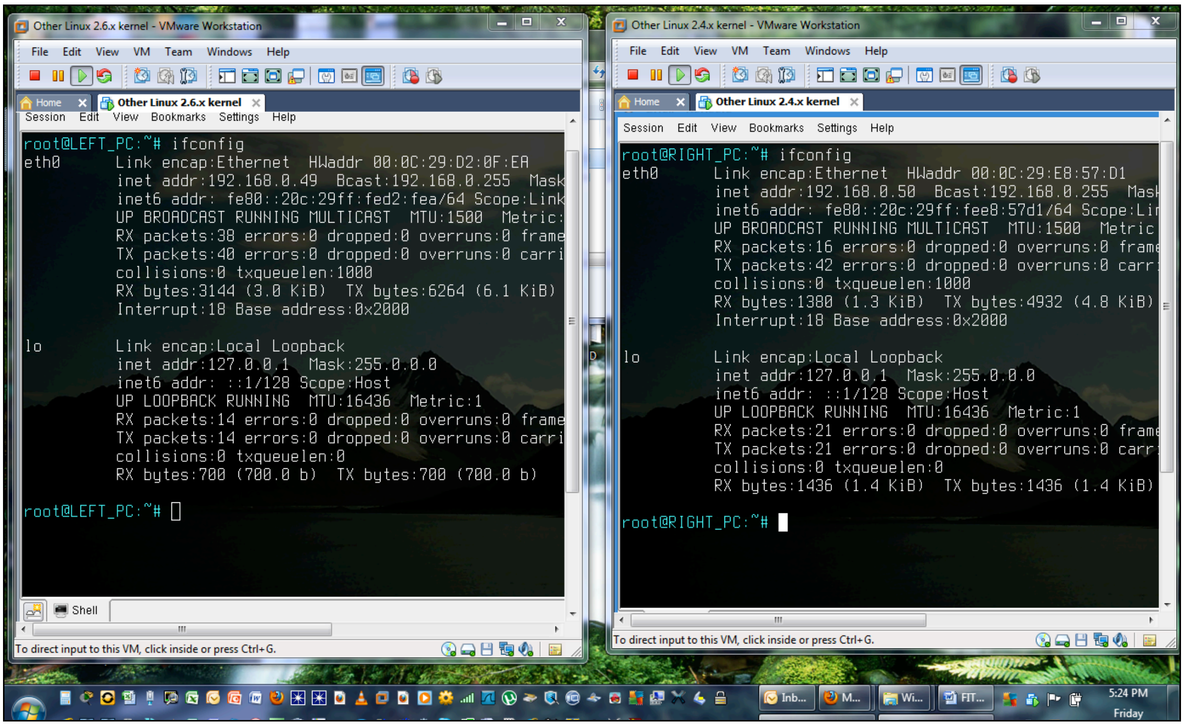


| Name | Date modified | Type |
|---|---|---|
| KNOPPIX_V5.1.1CD-2007-01-04-EN -1.iso | 4/03/2009 12:54 PM | Disc Image File |
| KNOPPIX_V5.1.1CD-2007-01-04-EN-2.iso | 4/03/2009 12:54 PM | Disc Image File |

B. Each student need to duplicate the copy of the iso file as

- ✓ "KNOPPIX_V5.1.1CD-2007-01-04-EN-1.iso" and "KNOPPIX_V5.1.1CD-2007-01-04-EN -2.iso".

These two files should be used to start two virtual machines Knoppix#1 and Knoppix#2 to work together to setup IPSec. For each host, the following information is needed. Please note the following information for both hosts:


Other Linux 2.6.x kernel - VMware Workstation
File Edit View VM Team Windows Help
Home
Other Linux 2.6.x kernel
Session Edit View Bookmarks Settings Help
Shell
To direct input to this VM, click inside or press Ctrl+G.
Other Linux 2.4.x kernel - VMware Workstation
File Edit View VM Team Windows Help
Home
Other Linux 2.4.x kernel
Session Edit View Bookmarks Settings Help
To direct input to this VM, click inside or press Ctrl+G.
5:24 PM
Friday

```
root@LEFT_PC:~# ifconfig
eth0      Link encap:Ethernet  HWaddr 00:0C:29:D2:0F:EA
          inet addr:192.168.0.49  Bcast:192.168.0.255  Mask
          inet6 addr: fe80::20c:29ff:fed2:fea/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:
          RX packets:38 errors:0 dropped:0 overruns:0 frame
          TX packets:40 errors:0 dropped:0 overruns:0 carri
          collisions:0 txqueuelen:1000
          RX bytes:3144 (3.0 KiB)  TX bytes:6264 (6.1 KiB)
          Interrupt:18 Base address:0x2000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:14 errors:0 dropped:0 overruns:0 frame
          TX packets:14 errors:0 dropped:0 overruns:0 carri
          collisions:0 txqueuelen:0
          RX bytes:700 (700.0 b)  TX bytes:700 (700.0 b)

root@LEFT_PC:~#
```

```
root@RIGHT_PC:~# ifconfig
eth0      Link encap:Ethernet  HWaddr 00:0C:29:E8:57:D1
          inet addr:192.168.0.50  Bcast:192.168.0.255  Mask
          inet6 addr: fe80::20c:29ff:fee8:57d1/64 Scope:Li
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric
          RX packets:16 errors:0 dropped:0 overruns:0 frame
          TX packets:42 errors:0 dropped:0 overruns:0 carr
          collisions:0 txqueuelen:1000
          RX bytes:1380 (1.3 KiB)  TX bytes:4932 (4.8 KiB)
          Interrupt:18 Base address:0x2000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:21 errors:0 dropped:0 overruns:0 frame
          TX packets:21 errors:0 dropped:0 overruns:0 carr
          collisions:0 txqueuelen:0
          RX bytes:1436 (1.4 KiB)  TX bytes:1436 (1.4 KiB)

root@RIGHT_PC:~#
```

|  | Host1 | Host2 |
|---|---|---|
| IP Address |  |  |
| Name |  |  |

C. **The following instructions will assist you in setting up IPSec-transport mode. Launch Knoppix VMware Workstation on your desktop as instructed before.**

1. Download the respective **setkey-config** files on the **LEFT_PC and the RIGHT_PC** by clicking on the LAB-04 page Link under the Virtual machines Knoppix:

    - **ex04-setkey-config-leftpc.txt**
    - **ex04-setkey-config-rightpc.txt**

2. **Each of these config files need to be converted from DOS to Unix using the command:**

    - **dos2unix <file name>**

3. Edit these files individually to replace the IP addresses used in these files with the actual IP addresses assigned to your Left and Right PC in the VM's.

4. Load the respective config files in the VM's using the **setkey** command.

    *root@LEFT_PC:~ # **setkey –f ex04-setkey-config-leftpc.txt***

    *root@LEFT_PC:~ # **setkey –f ex04-setkey-config-rightpc.txt***

5. Check on each VM if the config file has loaded successful by listing the SAD (security association database) and the SPD (Security Parameter database).

    *# **setkey –D***
    ***# setkey –DP***

6. Using **tcpdump** command check and verify that the **ping**s traffic is secured by IPSec.

***# tcpdump –i eth0 or tcpdump –i eth1 (This command is used depending on the interface is either eth0 or eth1***

7. For the configuration files you can generate your own keys by using the following command for 128 bit and 192 bit keys:
    **<u>128 bit:</u>**
    dd if=/dev/random count=16 bs=1| xxd –ps
    **<u>192 bit:</u>**
    dd if=/dev/random count=24 bs=1| xxd –ps