

# **EL-HAMDAOUI MAROUANE**

## **IAGI | CI-2 | 2025/2026**

### **TP 1 : La virtualisation des machines**

Le matériel nécessaire pour ce TP est :

- Un PC avec 20 GB d'espace libre, 8 GB de RAM de préférence.
- Deux images ISO pour windows XP ou Centos.

#### **I.Création de la machine virtuelle Windows XP**

1. Installez l'hyperviseur de type 2 : Oracle VM VirtualBox
2. Créez une machine virtuelle pour Windows XP avec ces paramètres :

*Name :* XP-VM-1  
*Memory :* 512 MB  
*Hard Disk :* créer un nouveau Virtual Hard Disk  
*Hard Disk File Type :* choisissez VDI (référez-vous à l'annexe)  
*Storage on physical hard disk :* dynamically allocated (référez-vous à l'annexe)  
*File location :* laisser par défaut  
*File size :* 10 GB

3. Démarrez cette machine, VirtualBox vous demandera de choisir le disque de démarrage, cliquez sur l'icône pour parcourir et choisir l'image iso de système d'exploitation de windows XP.
4. Clonez cette machine dans une nouvelle dont les paramètres sont :

*Name :* XP-VM-2  
*Mac Adress Policy :* Generate new Mac Addresses ...  
*Additionnal options :* Laisser vide  
*Path :* laisser par défaut

#### **II.Configuration des services réseaux**

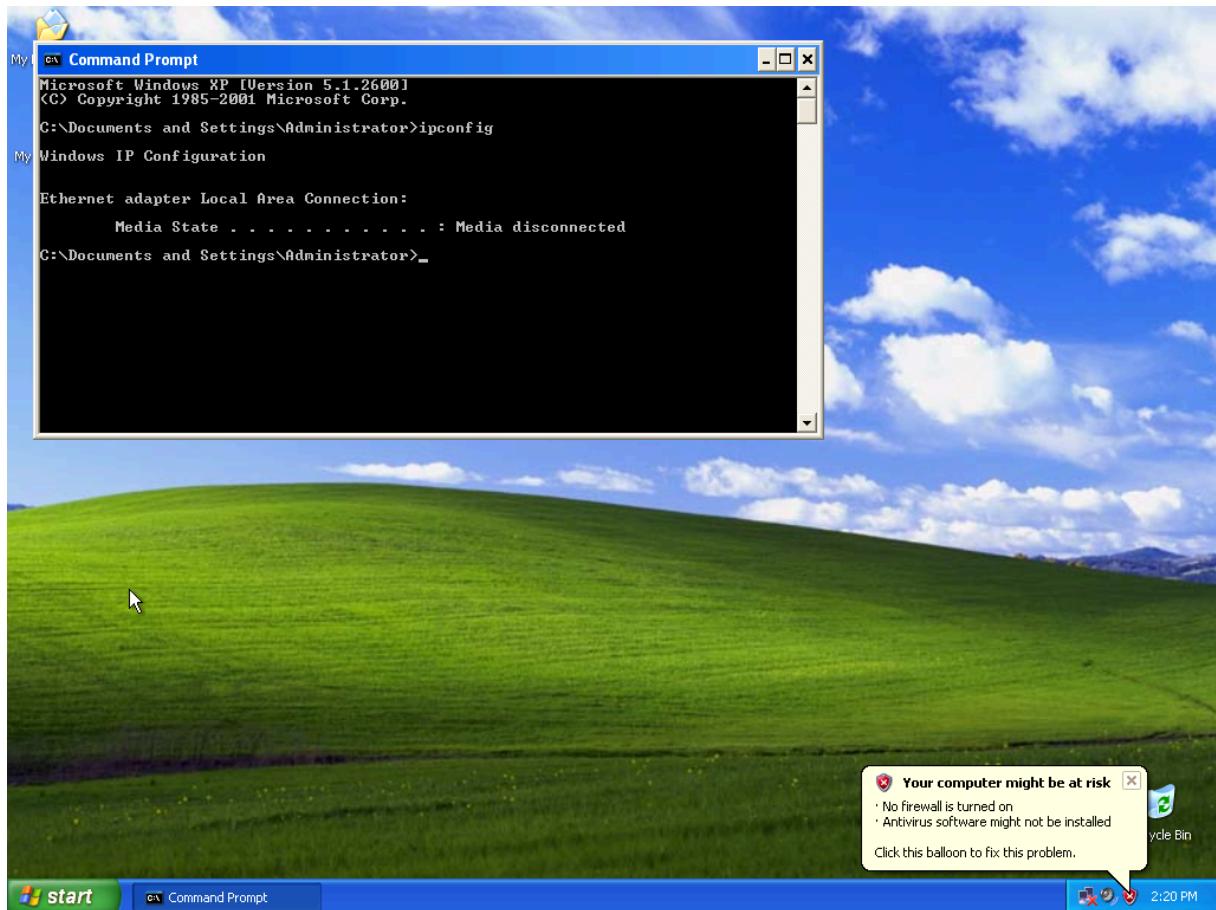
5. Dans la configuration des deux machines virtuelles changer les modes des deux machines puis testez les pings et remplissez les deux tableaux suivants :

**Tableau 1 :**

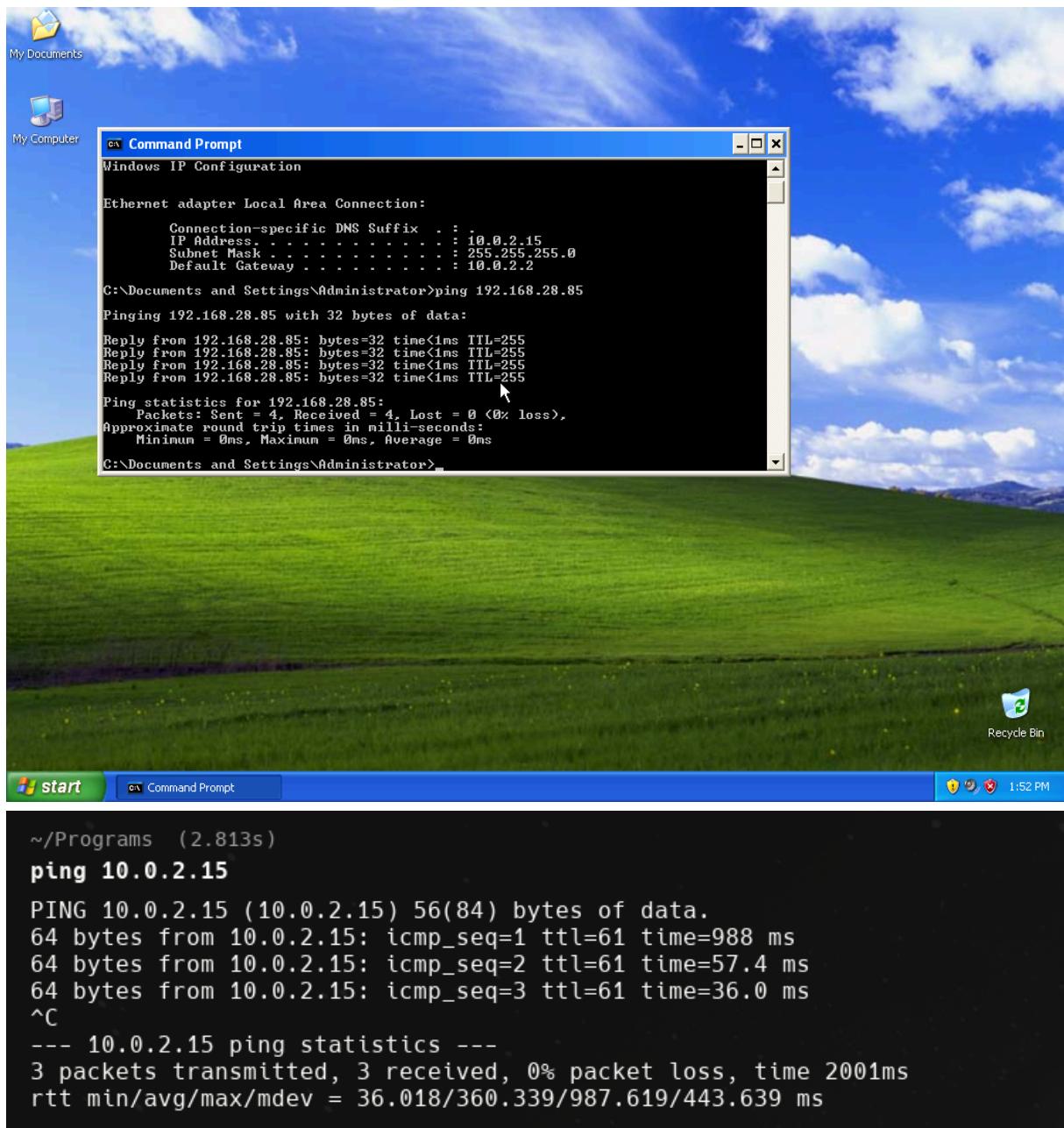
Adresse hôte	IP	Mode XP-VM-1	IP XP-VM-1	Ping Hôte->XP-VM -1	Ping XP-VM-1 -> Hôte
192.168.28.85	Not Attached	N/A	N/A	N/A	N/A
192.168.28.85	NAT		10.0.2.15	56 packets transmitted, 55 received	4 packets transmitted, 4 received
192.168.28.85	Bridge		192.168.28.28	4 packets transmitted, 4 received	4 packets transmitted, 4 received
192.168.28.85	Internal Network		0.0.0.0	N/A	Host unreachable
192.168.28.85	Host-only		192.168.56.101	9 packets transmitted, 9 received	4 packets transmitted, 4 received

## Screenshots:

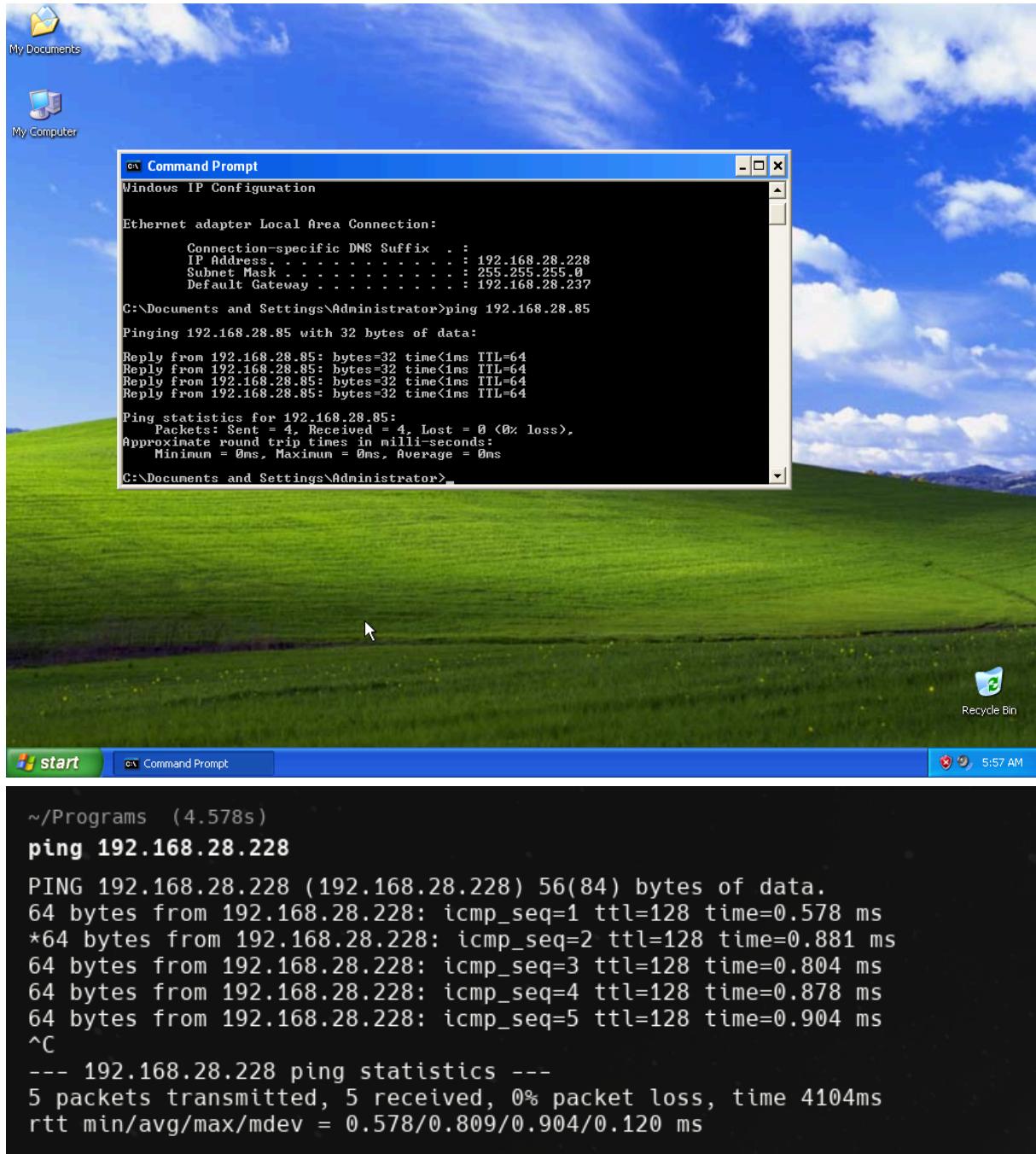
### NOT ATTACHED:



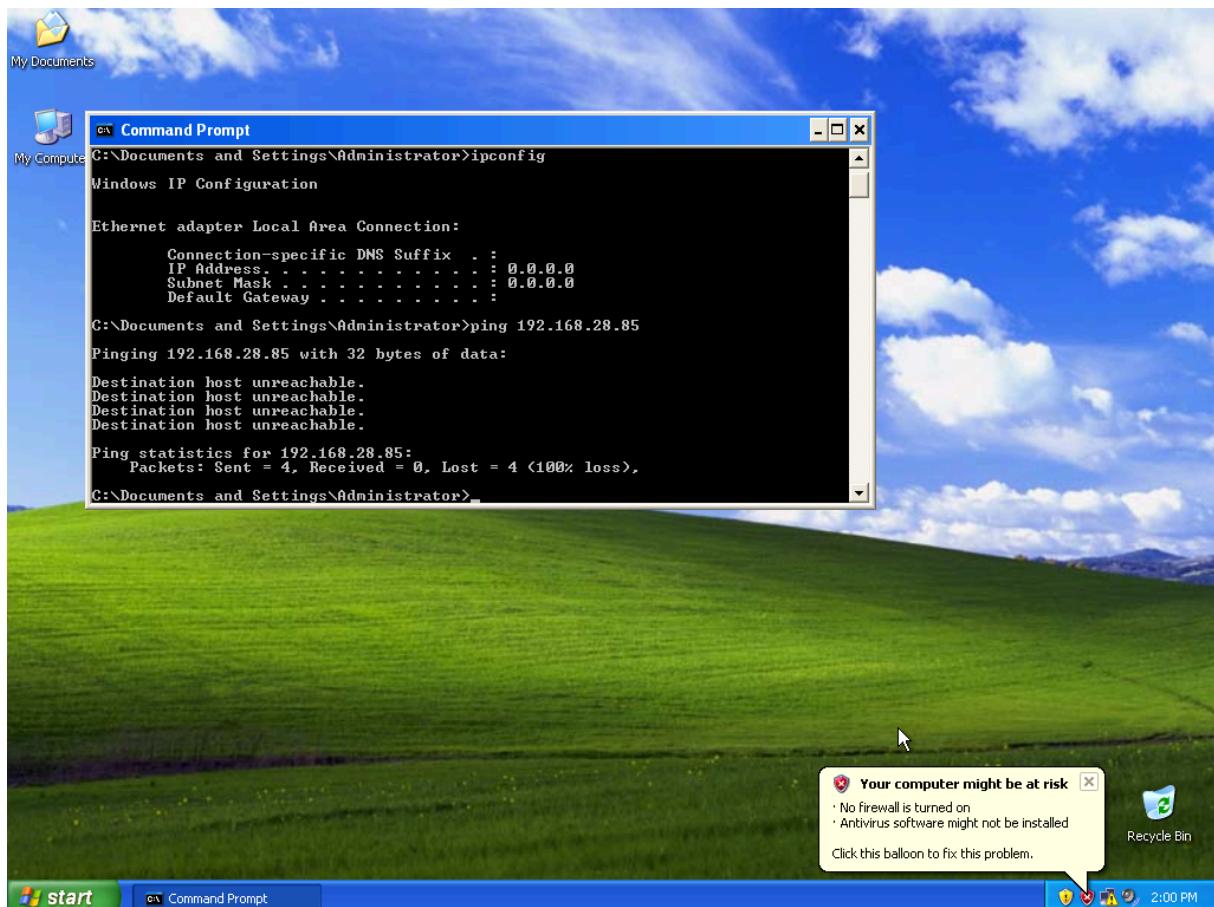
## NAT:



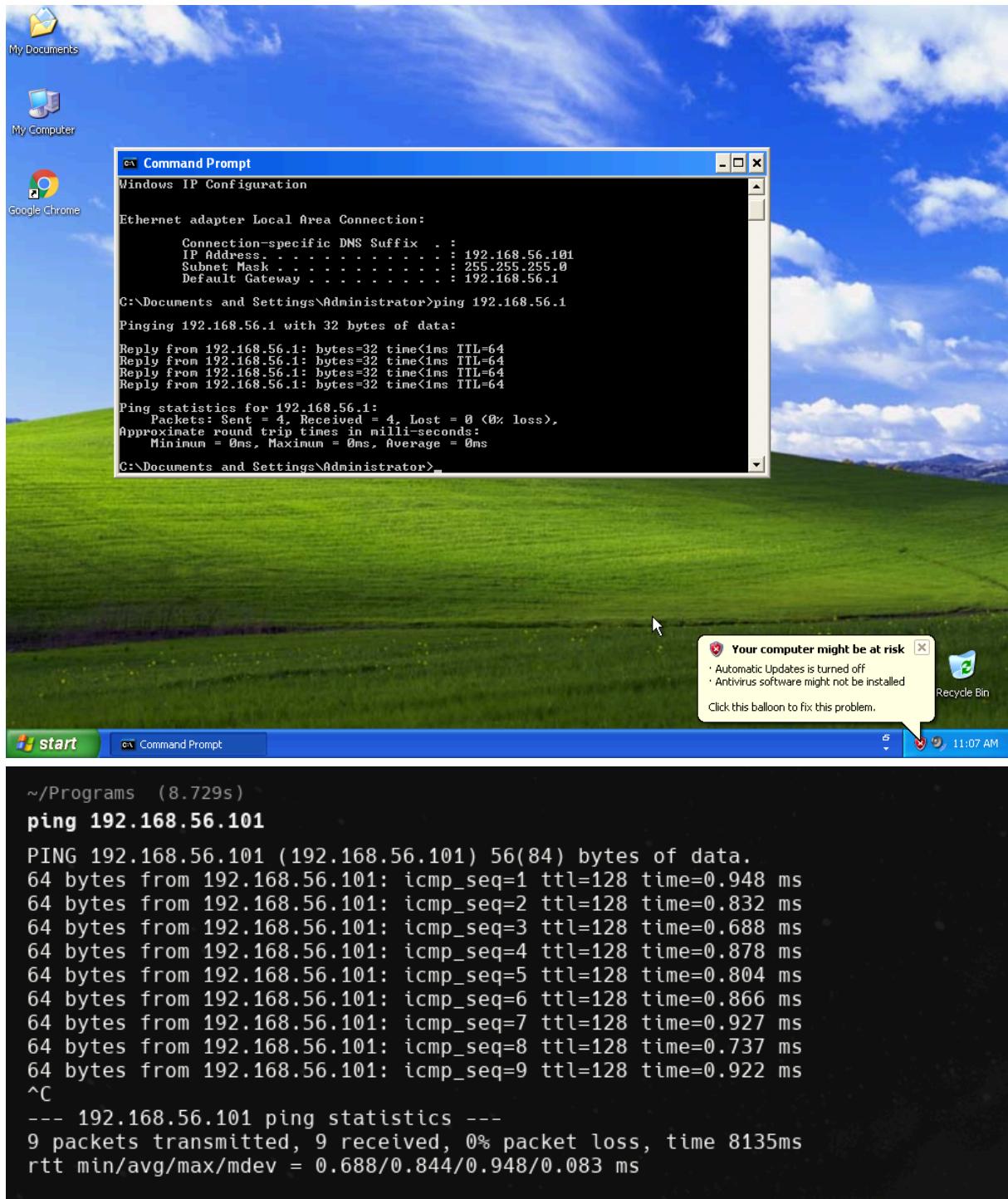
## BRIDGE:



## INTERNAL NETWORK:



## HOST-ONLY:

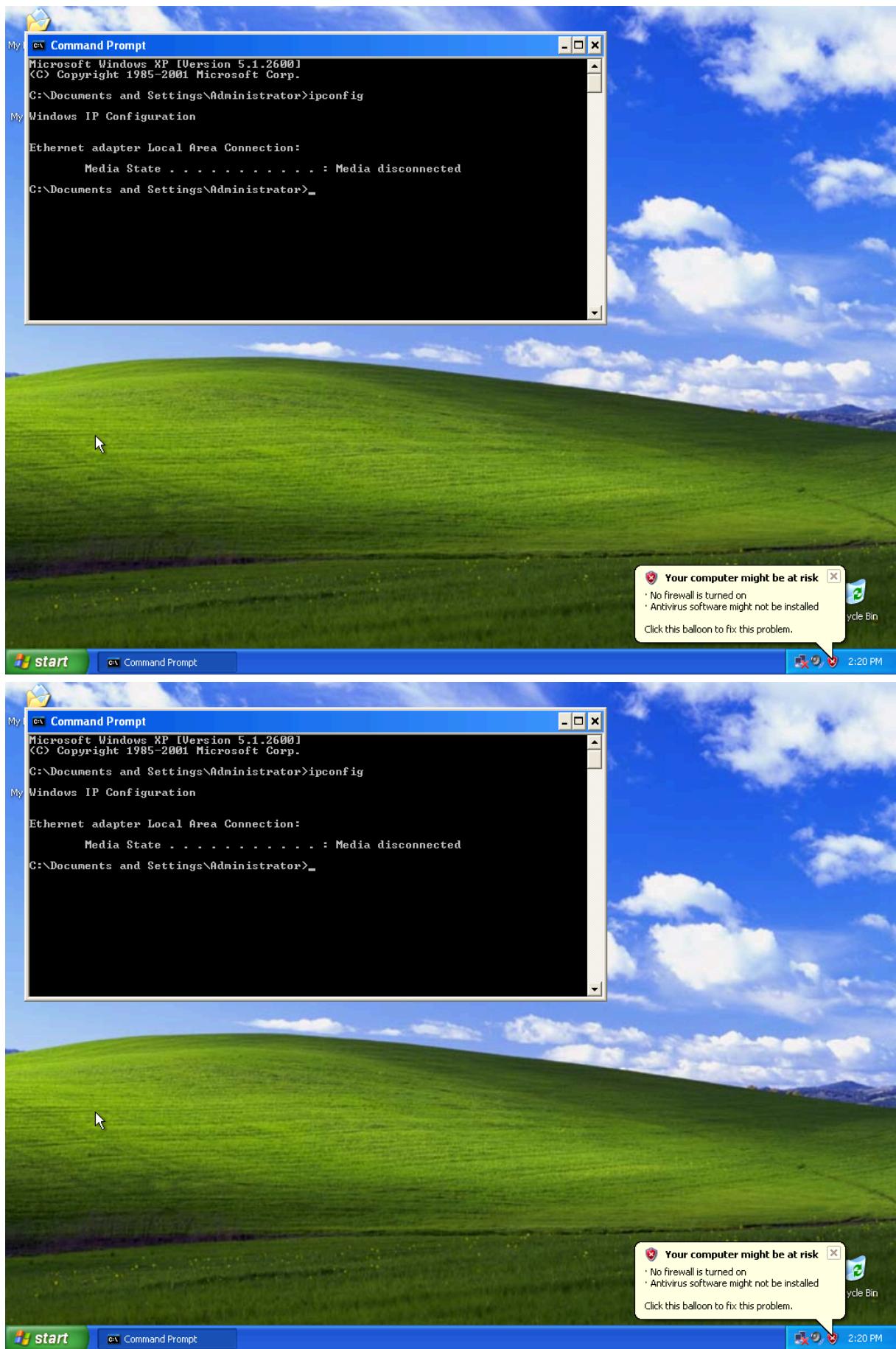


**Tableau 2**

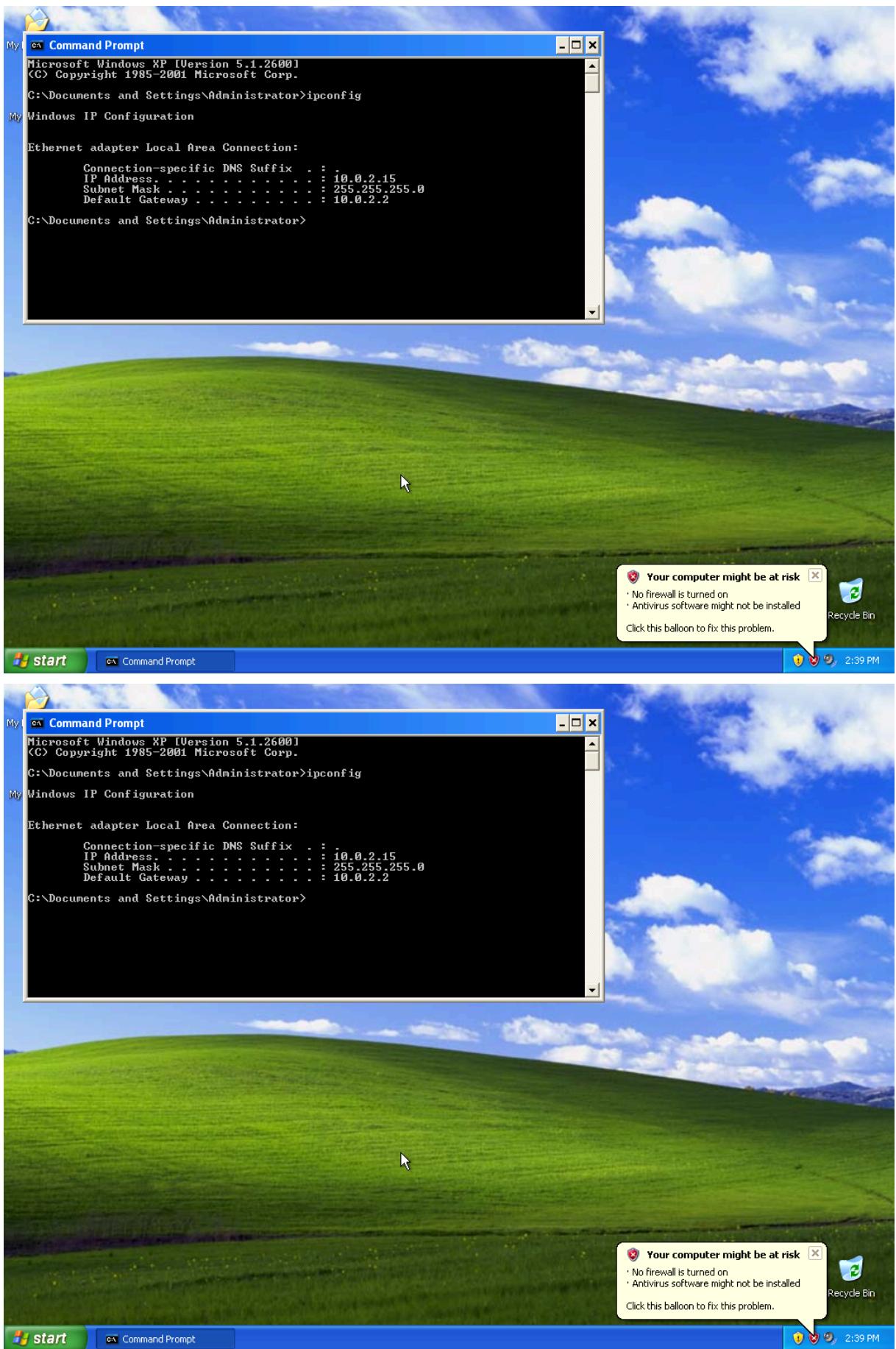
Mode XP-VM-1 et XP-VM-2	IP XP-VM-1	IP XP-VM-2	Ping XP-VM-1->XP -VM-2	Ping XP-VM-2 -> XP-VM-1
Not Attached	N/A	N/A	N/A	N/A
NAT	10.0.2.15	10.0.2.15	N/A	N/A

Bridge	192.168.28.2 28	192.168.28.242	4 packets transmitted, 4 received	4 packets transmitted, 4 received
Internal Network	0.0.0.0	0.0.0.0	N/A	N/A
Host-only	192.168.56.1 04	192.168.56.105	4 packets transmitted, 4 received	4 packets transmitted, 4 received

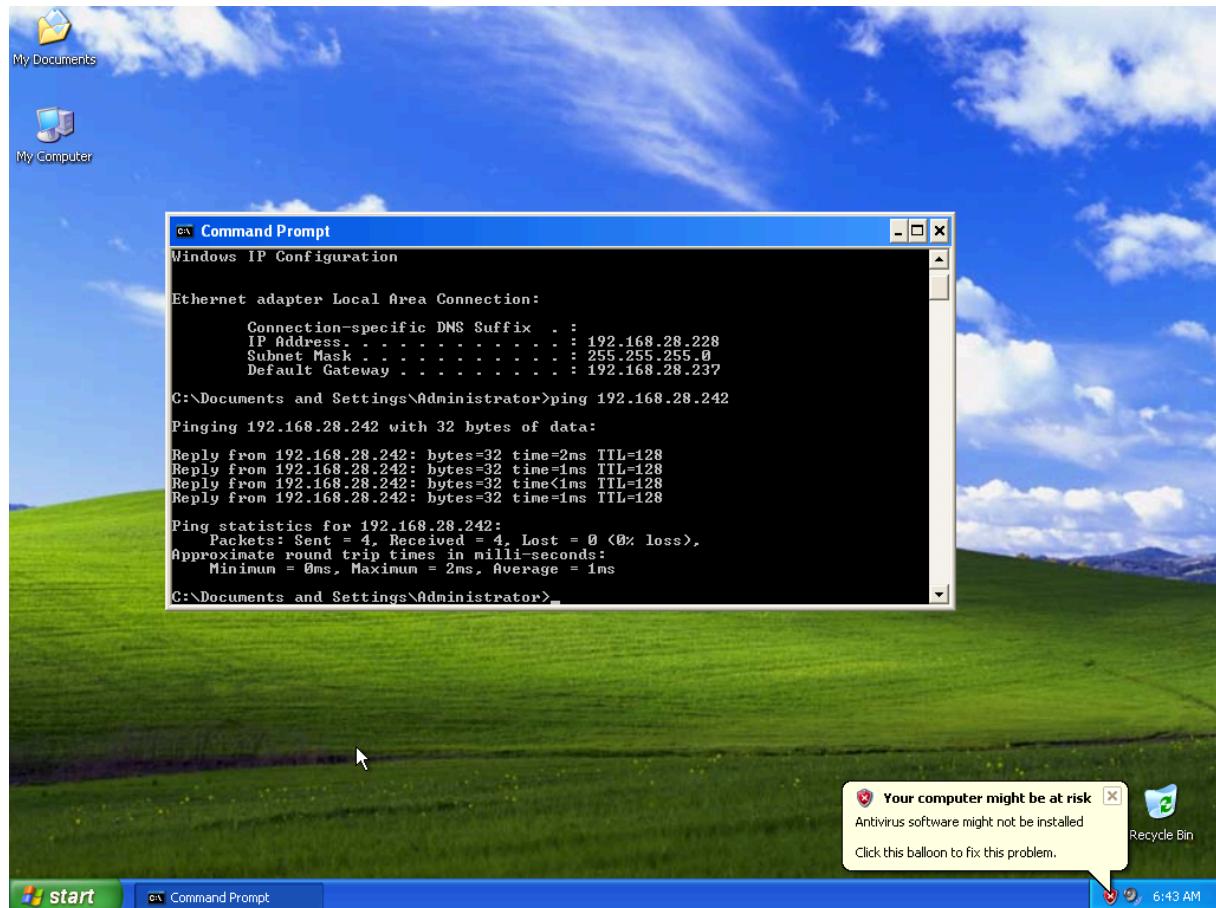
## NOT ATTACHED:

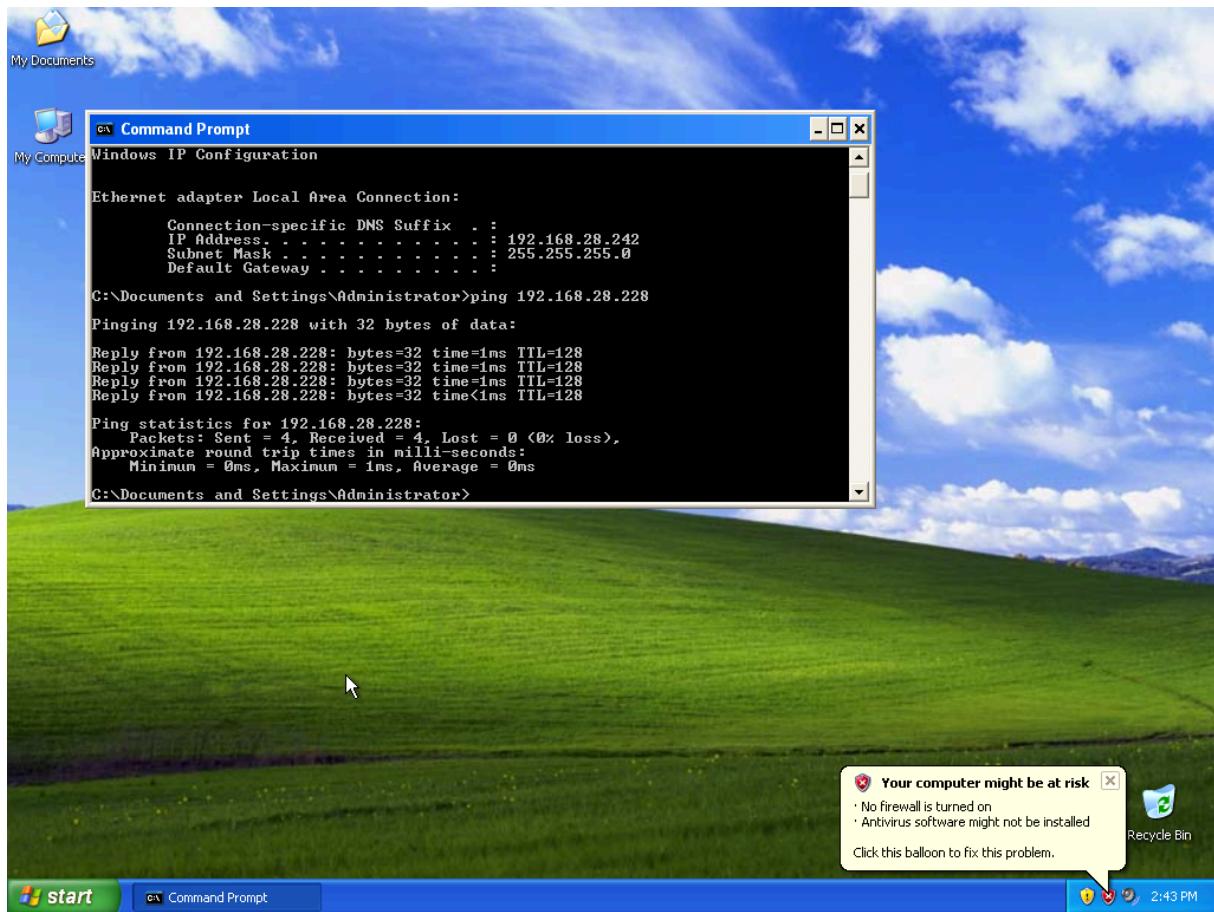


## NAT:



## BRIDGE:





## INTERNAL NETWORK:



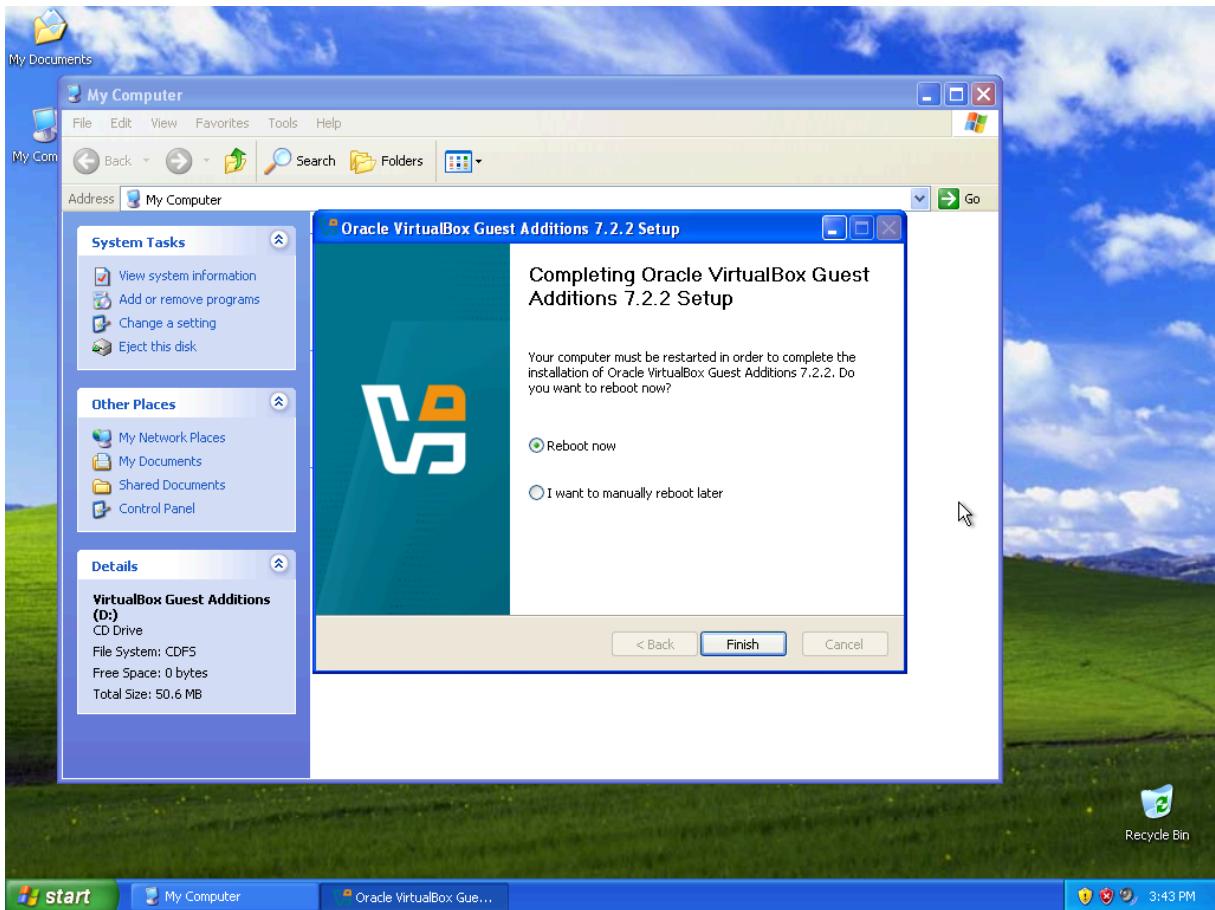
## HOST-ONLY:



### III.Créer un partage entre les machines virtuelles

Afin de pouvoir créer des partages entre les machines virtuelles, vous devez configurer les **VirtualBox Guest Additions**. Les Guest Additions fournissent aux machines virtuelles de nouvelles fonctionnalités. Pour plus de détails, visitez <https://www.virtualbox.org/manual/ch04.html#guestadd-intro>

6. Installer les Guest Additions dans la machine virtuelle via le menu Device / Install Guest Additions CD Image.

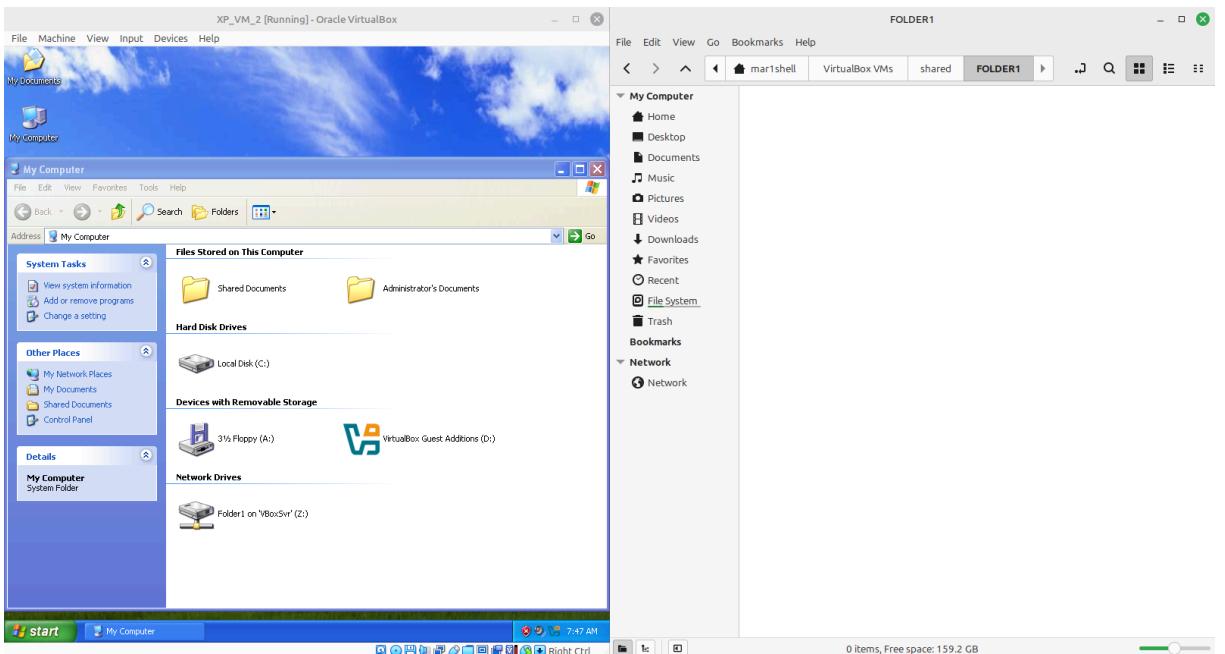


7. Une fois installé, redémarrez votre machine virtuelle.
8. Puis via le menu Devices / Shared Folders / Shared Folders Setting, créez un nouveau Shared Folder :

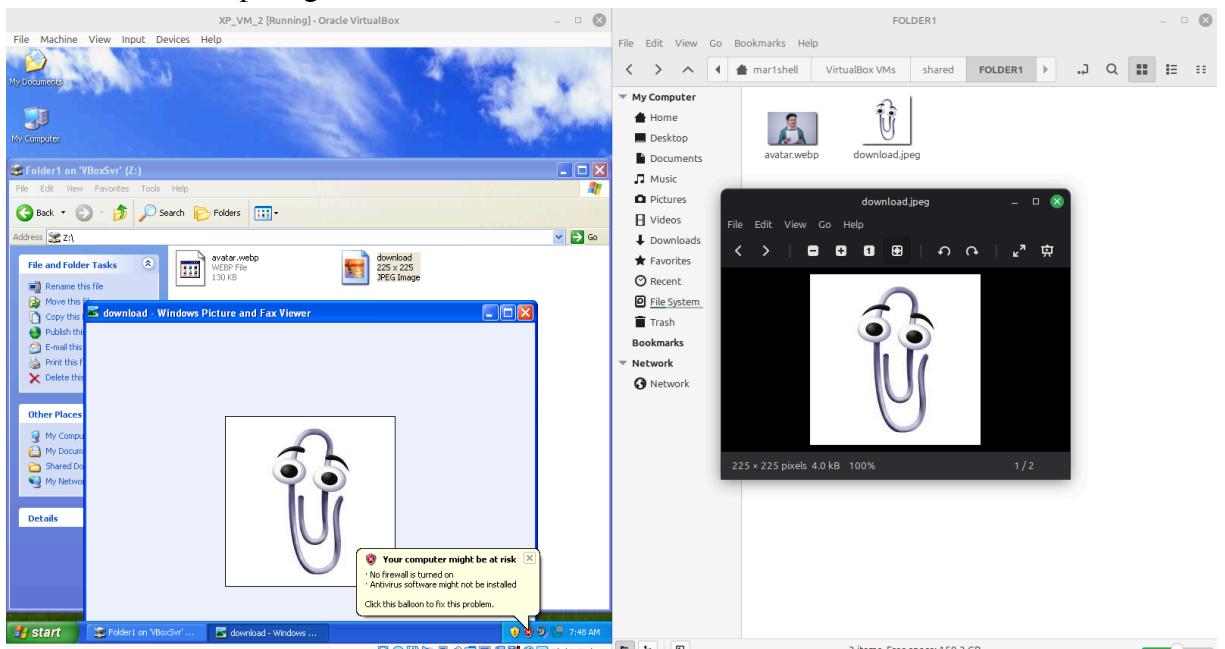
**The folder path** : désigne du dossier à partager sur la machine hôte.

**The folder Name** : désigne le nom du partage

**Make permanent** : permet de créer un partage permanent, sinon le partage disparaît à l'arrêt de la machine virtuelle.



#### 9. Faites des tests de partage de fichiers entre les deux machine hôte et virtuelle.



## IV.Modification de l'espace disque d'une machine virtuelle

#### 10. La modification de l'espace disque qu'exploite un système d'exploitation dans une machine virtuelle passe par deux étapes :

Etape 1 : Modification de l'espace disque de la machine virtuelle : pour ce faire, utilisez l'utilitaire VBoxManage fourni avec VirtualBox (cherchez-le dans le dossier d'installation de VirtualBox), la commande suivante est donc à exécuter dans la console du système hôte :

```
VBoxManage.exe modifyhd "{chemin-vers-le-disque-virtuel}" --resize {taille en Mo}
```

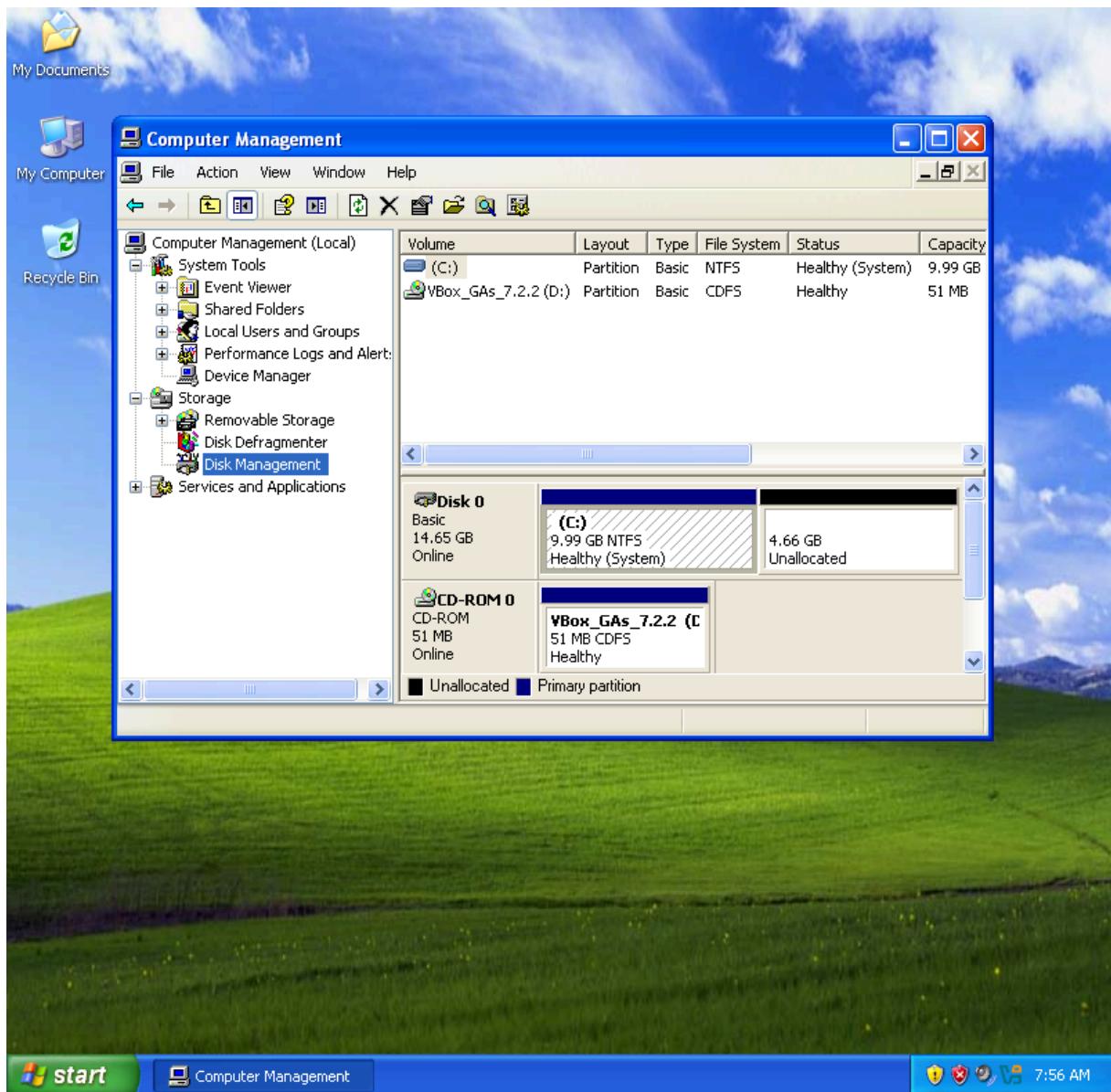
Exemple :

```
VBoxManage.exe modifyhd "C:\...\XP-VM" --resize 15000
```

Etape 2 : Elargissement du disque logique du système d'exploitation. Dans le système de la machine virtuelle (XP dans notre cas), allez dans la gestion du disque (bouton droit sur votre poste de travail, puis gérer, puis disques), et augmentez l'espace du disque.

```
~/Programs (0.139s)
vboxmanage modifyhd "/home/marishell/VirtualBox VMs/XP_VM_2/XP_VM_2.vdi" --resize 15000
0%...10%...20%...30%...40%...50%...60%...70%...80%...90%...100%
```

11. Faites la modification sur un système linux, centos ou ubuntu par exemple.



# Annexe

## File type :

Différents types de fichier fournis par VirtualBox<sup>1</sup> :

- **VDI.** Normally, Oracle VM VirtualBox uses its own container format for guest hard disks. This is called a Virtual Disk Image (VDI) file. This format is used when you create a new virtual machine with a new disk.
- **VMDK.** Oracle VM VirtualBox also fully supports the popular and open VMDK container format that is used by many other virtualization products, such as VMware.
- **VHD.** Oracle VM VirtualBox also fully supports the VHD format used by Microsoft.

Concernant l'occupation de l'espace physique sur le disque de l'hôte, deux options sont fournies par VirtualBox :

- **Fixed-size.** If you create a fixed-size image, an image file will be created on your host system which has roughly the same size as the virtual disk's capacity. So, for a 10 GB disk, you will have a 10 GB file. Note that the creation of a fixed-size image can take a long time depending on the size of the image and the write performance of your hard disk.
- **Dynamically allocated.** For more flexible storage management, use a dynamically allocated image. This will initially be very small and not occupy any space for unused virtual disk sectors, but will grow every time a disk sector is written to for the first time, until the drive reaches the maximum capacity chosen when the drive was created. While this format takes less space initially, the fact that Oracle VM VirtualBox needs to expand the image file consumes additional computing resources, so until the disk file size has stabilized, write operations may be slower than with fixed size disks. However, after a time the rate of growth will slow and the average penalty for write operations will be negligible.

## Network :

Each of the networking adapters can be separately configured to operate in one of the following modes:

- **Not attached.** In this mode, Oracle VM VirtualBox reports to the guest that a network card is present, but that there is no connection. This is as if no Ethernet cable was plugged into the card. Using this mode, it is possible to "pull" the virtual Ethernet cable and disrupt the connection, which can be useful to inform a guest operating system that no network connection is available and enforce a reconfiguration.
- **NAT (Network Address Translation).** If all you want is to browse the Web, download files, and view email inside the guest, then this default mode should be sufficient for you, and you can skip the rest of this section.
- **NAT Network.** A NAT network is a type of internal network that allows outbound connections. See [Section 6.4, “Network Address Translation Service”](#).
- **Bridged networking.** This is for more advanced networking needs, such as network simulations and running servers in a guest. When enabled, Oracle VM VirtualBox connects to one of your installed network cards and exchanges network packets directly, circumventing your host operating system's network stack.
- **Internal networking.** This can be used to create a different kind of software-based network which is visible to selected virtual machines, but not to applications running on the host or to the outside world.

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<sup>1</sup> [https://docs.oracle.com/cd/E97728\\_01/E97727/html/vdiddetails.html](https://docs.oracle.com/cd/E97728_01/E97727/html/vdiddetails.html)

- **Host-only networking.** This can be used to create a network containing the host and a set of virtual machines, without the need for the host's physical network interface. Instead, a virtual network interface, similar to a loopback interface, is created on the host, providing connectivity among virtual machines and the host.
- **Generic networking.** Rarely used modes which share the same generic network interface, by allowing the user to select a driver which can be included with Oracle VM VirtualBox or be distributed in an extension pack.

The following sub-modes are available:

- **UDP Tunnel:** Used to interconnect virtual machines running on different hosts directly, easily, and transparently, over an existing network infrastructure.
- **VDE (Virtual Distributed Ethernet) networking:** Used to connect to a Virtual Distributed Ethernet switch on a Linux or a FreeBSD host. At the moment this option requires compilation of Oracle VM VirtualBox from sources, as the Oracle packages do not include it.