



Déploiement et paramétrage de PfSense

PfSense est un routeur/pare-feu open source basé sur le système d'exploitation FreeBSD. Il utilise le pare-feu à états Packet Filter, des fonctions de routage et de NAT lui permettant de connecter plusieurs réseaux informatiques. Le déployer dans un réseau local virtualisé permet d'avoir à disposition une solution de routeur/pare-feu très complète. L'idée de ce TP est de monter un routeur fonctionnel pour connecter un réseau local virtualisé à Internet

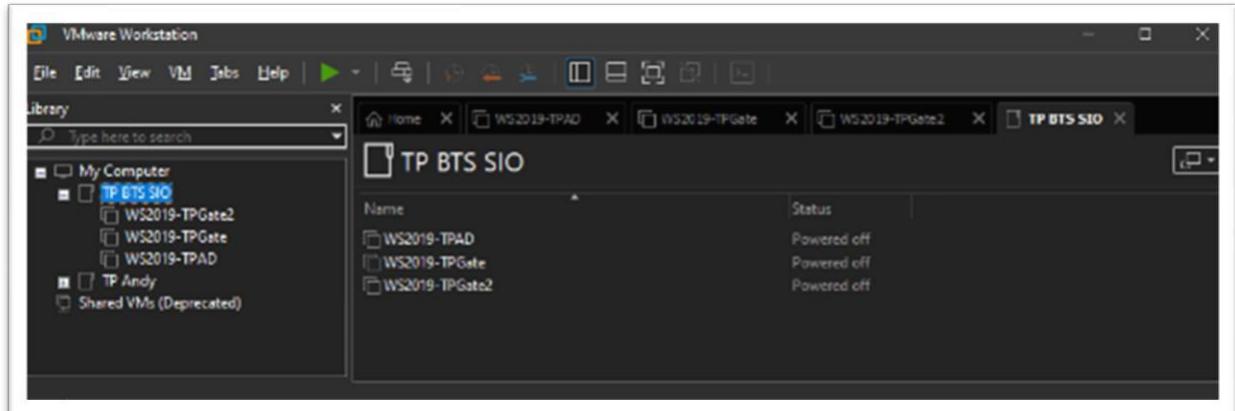
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Création d'une machine virtuelle sous VMWare Workstation

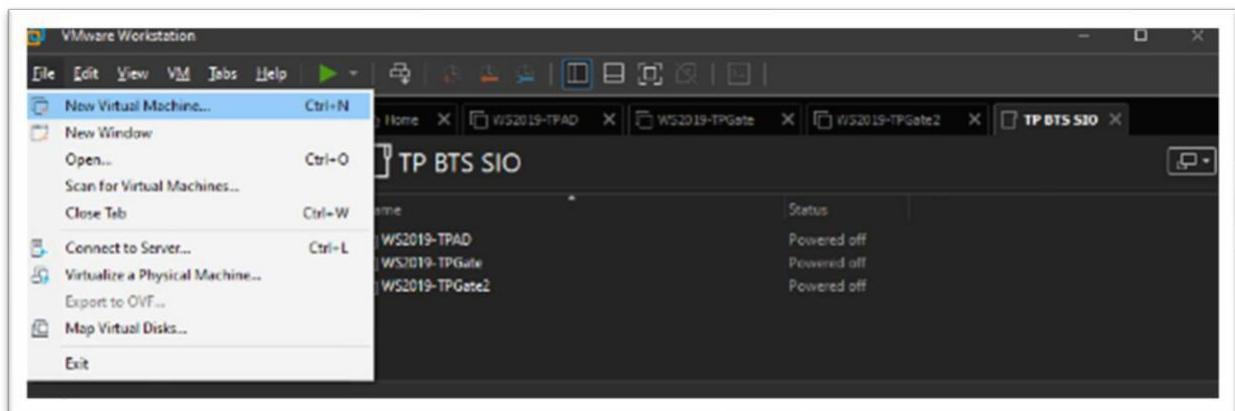
Créer une nouvelle machine virtuelle

Choisir un emplacement pour la nouvelle machine virtuelle. Ici, dans mon dossier "TP BTS SIO"



Menu "File"

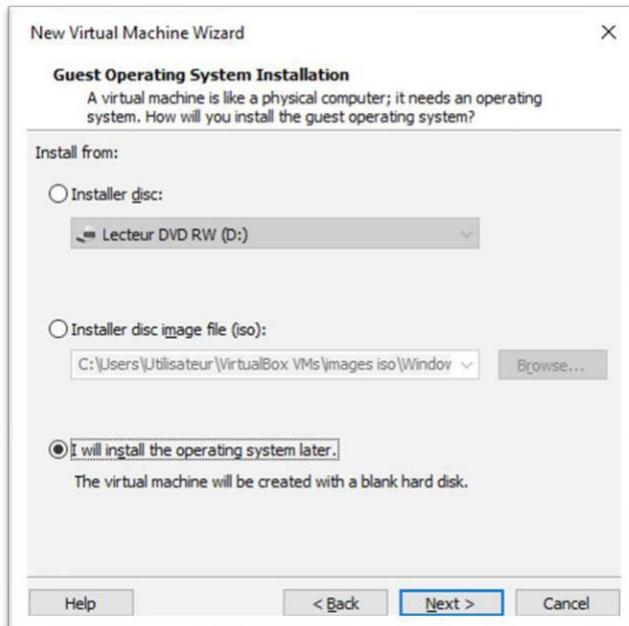
Sélectionner "New Virtual Machine"



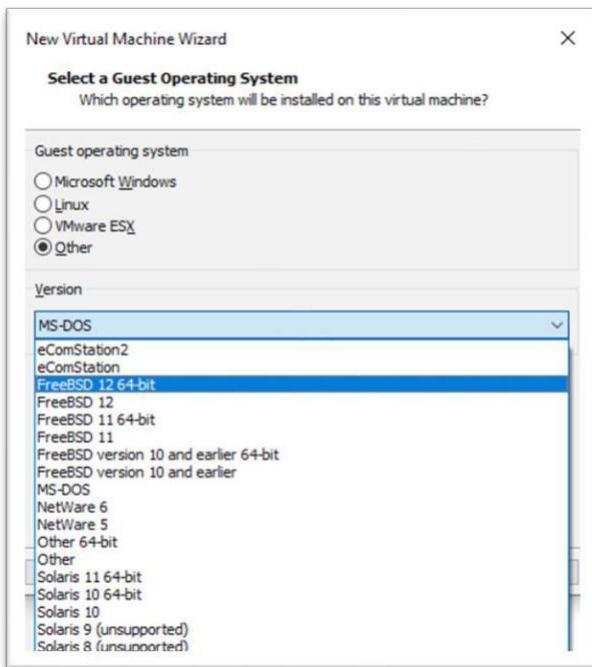
Sélectionner l'option "Typical"



Sélectionner "I will Install the operating system later"



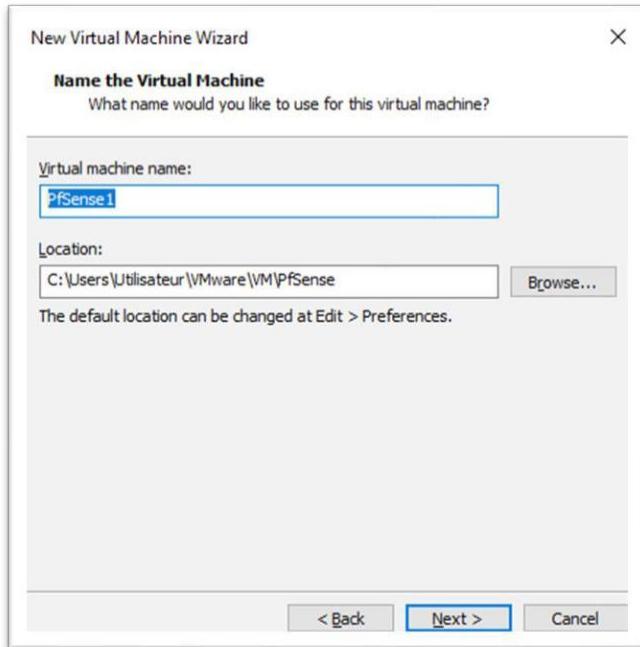
Choisir l'option "Other" et sélectionner la version FreeBSD qui convient à l'ordinateur sur lequel VMWare est installé. Ici "FreeBSD 12 64-bit"



FreeBSD est un système d'exploitation libre UNIX, développé par l'université de Berkeley, en Californie (BSD = Berkeley Software Distribution). Il est conçu pour faire fonctionner les plates-formes de type serveur, station de travail et les systèmes embarqués modernes. Une importante communauté l'a développé continuellement pendant plus de trente ans. Ses fonctionnalités réseau, de sécurité et de stockage avancées ont fait de FreeBSD la plate-forme choisie par certains des sites Web les plus visités ainsi que pour la plupart des systèmes embarqués orientés réseau et des systèmes de stockage les plus répandus.

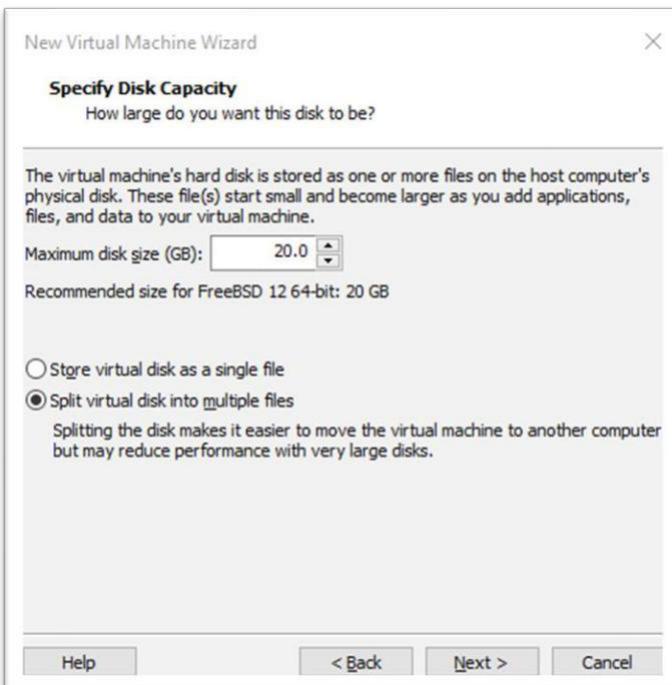
Donner un nom à la machine virtuelle et choisir son dossier d'installation.

Ici, PfSense1

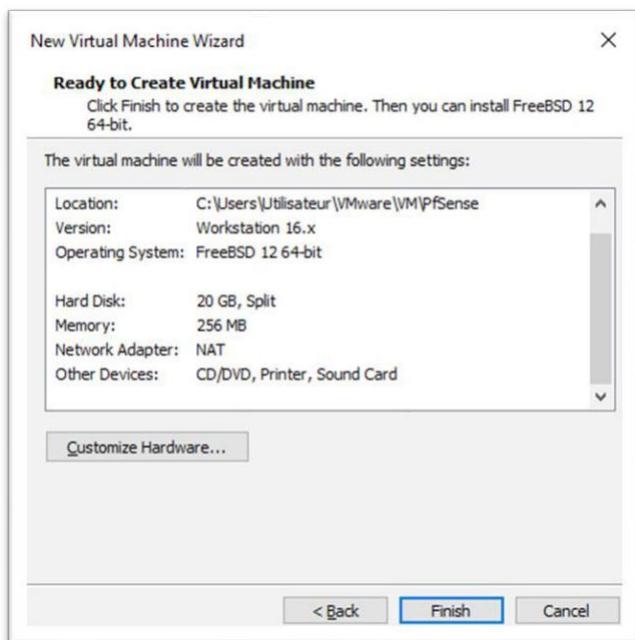


Taille du disque. Laisser 20 Go même si un Firewall-routeur n'a guère plus besoin de 1 Go. VMWare gère l'espace de stockage de façon dynamique jusqu'à la taille maximum que l'on attribue à la machine virtuelle. Ici 20 Go.

Choisir l'option "Split virtual disk into multiple files"

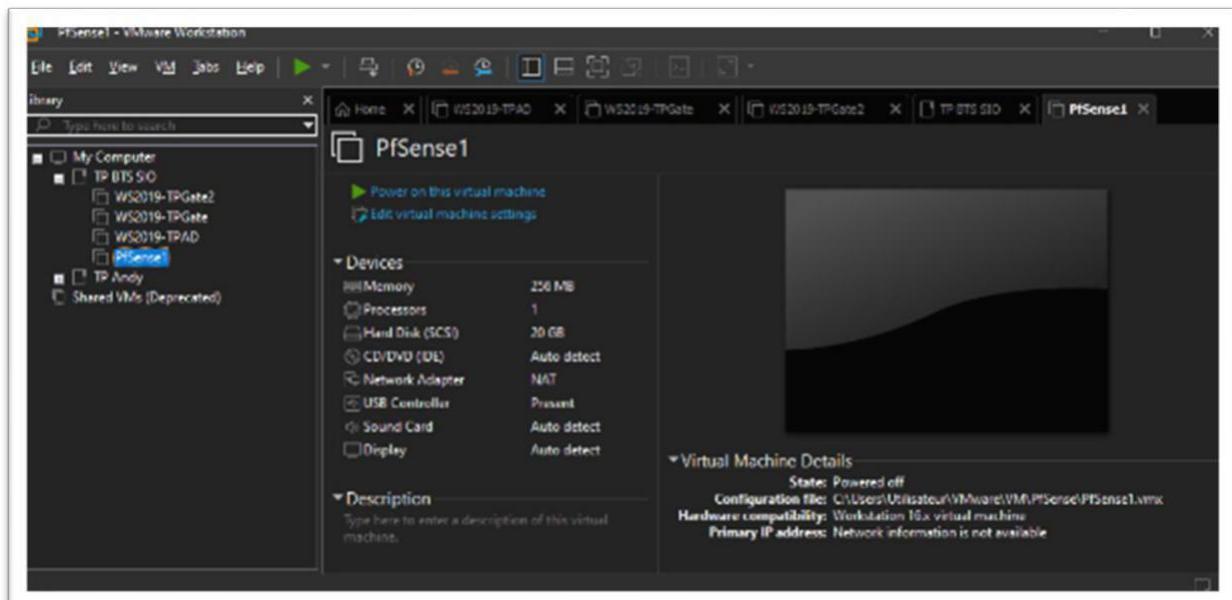


Cliquer sur Finish pour terminer l'installation



Configurer la nouvelle machine virtuelle

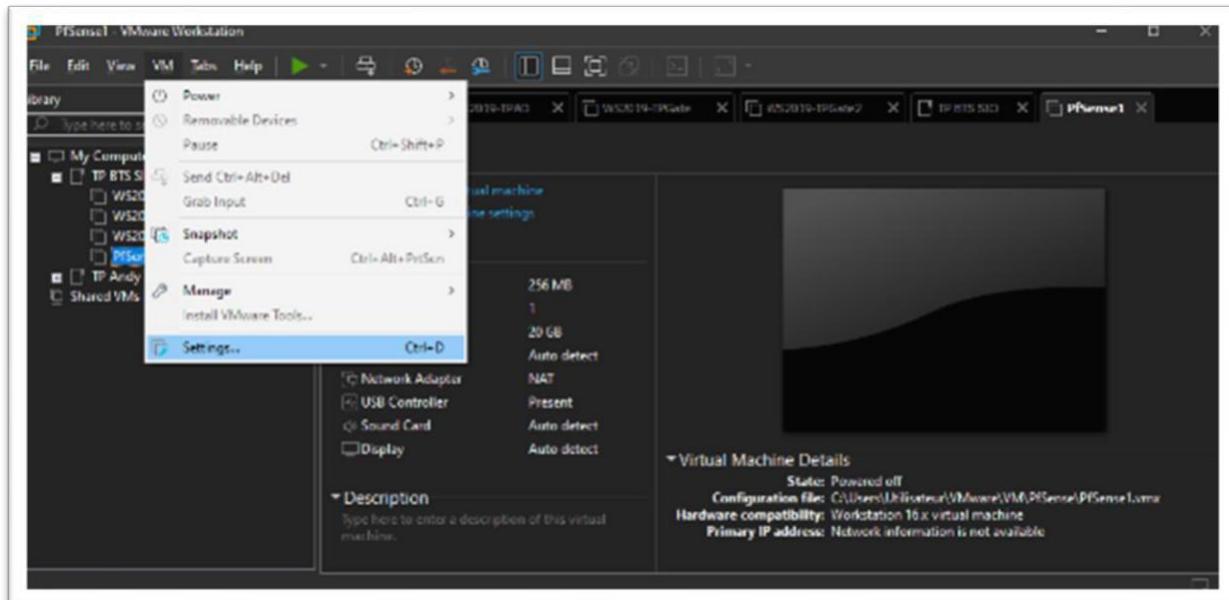
Replacer la machine virtuelle dans le bon dossier si nécessaire.



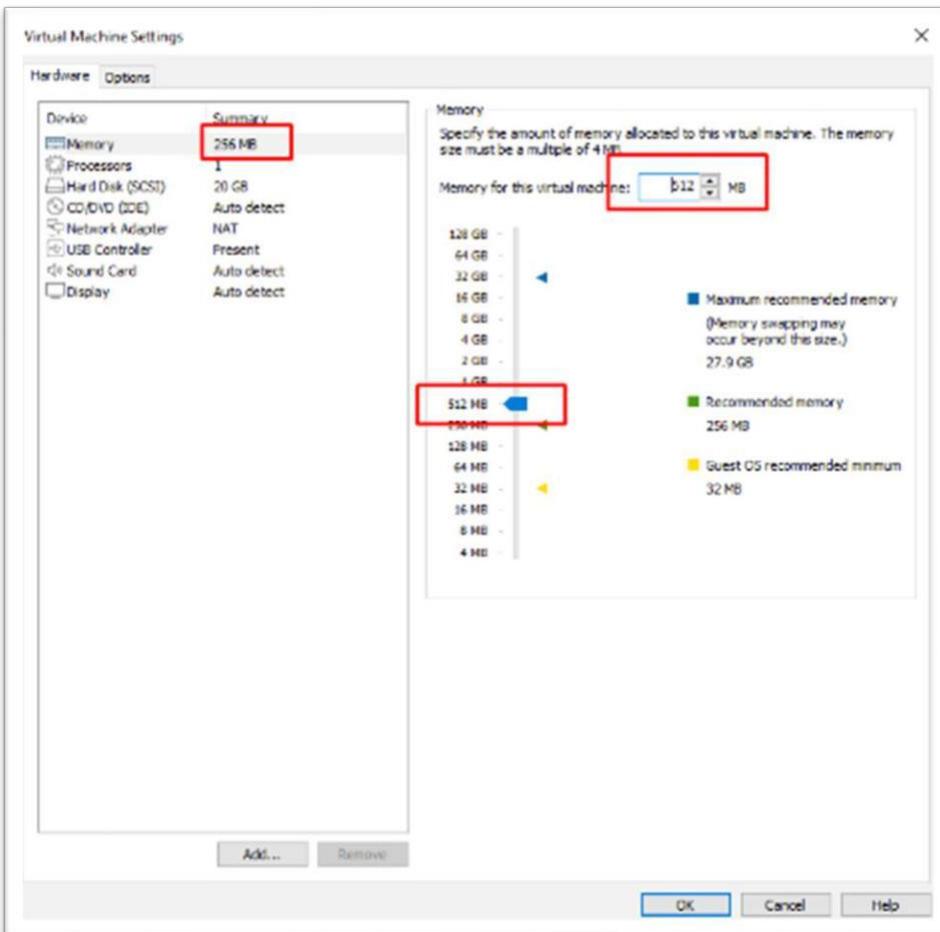
Sélectionner la machine virtuelle PfSense

Menu "VM"

Sélectionner "Settings..."

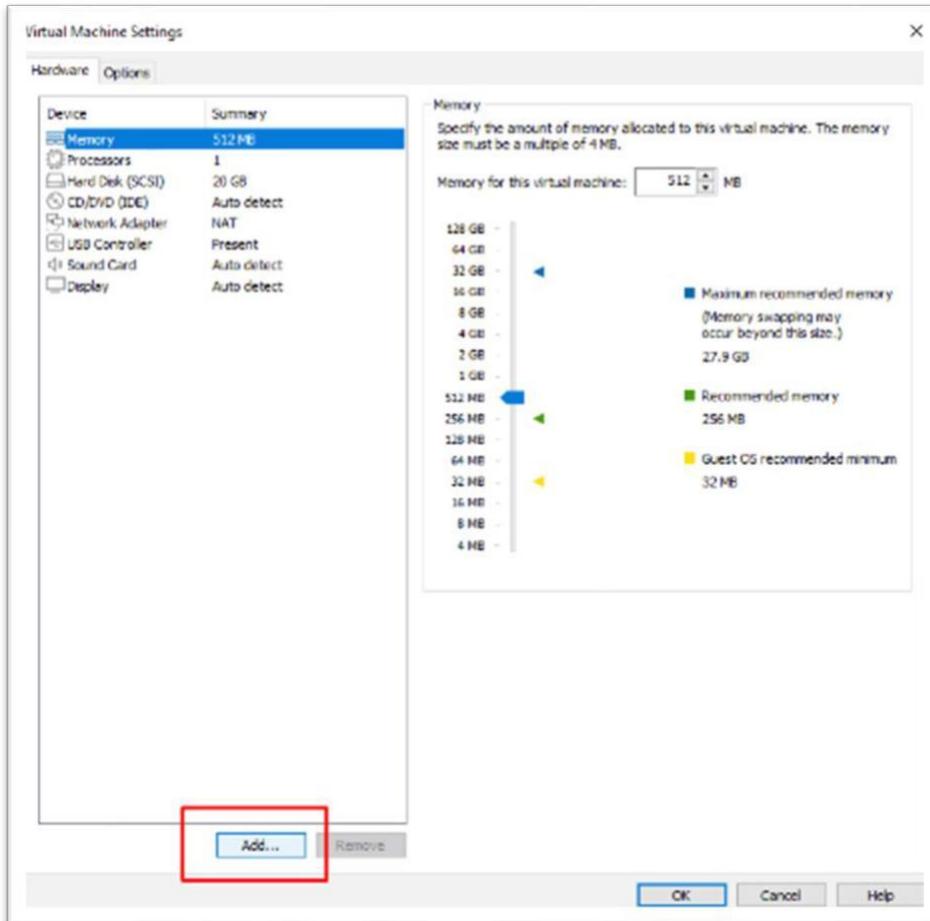


Dans l'onglet "Hardware", sélectionner "Memory" et allouer 512MB de RAM à la machine virtuelle



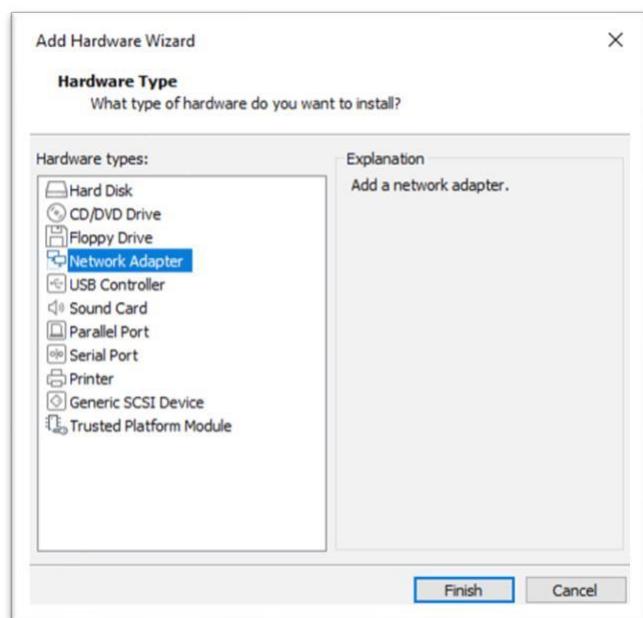
Ajouter une deuxième carte réseau

Cliquer sur le bouton "Add..."

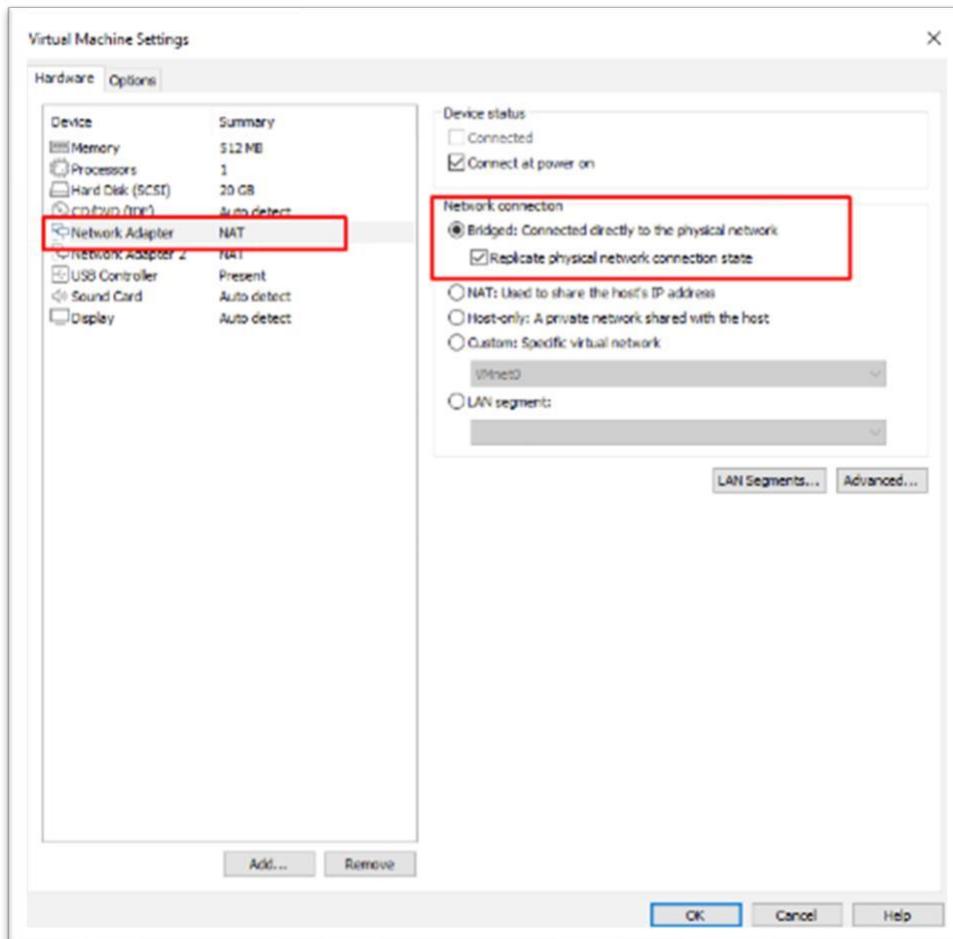


Sélectionner Network Adapter

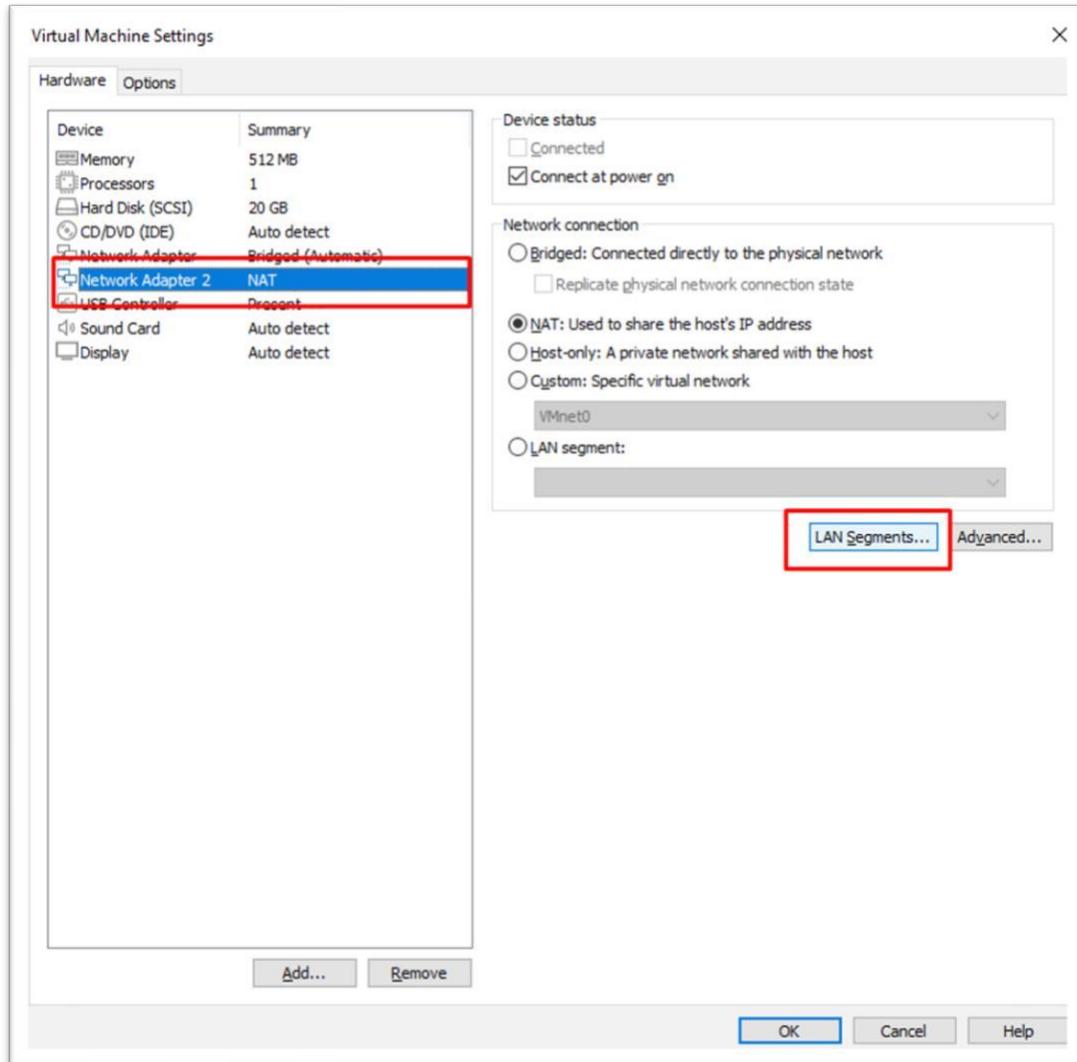
Cliquer sur "Finish"



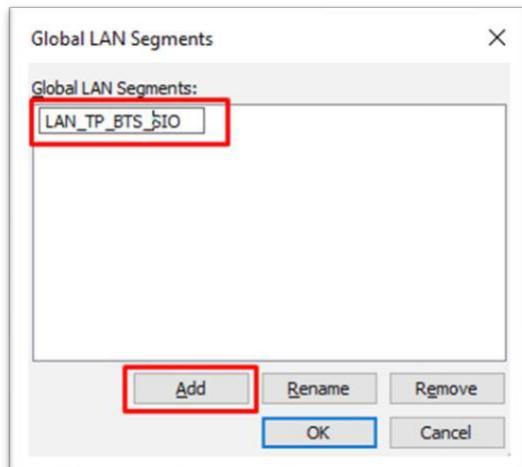
Sur la première carte réseau, "Network Adapter", Définir la rubrique "Network connection" sur "Bridged" et cochez l'option "Replicate physical network connection state".



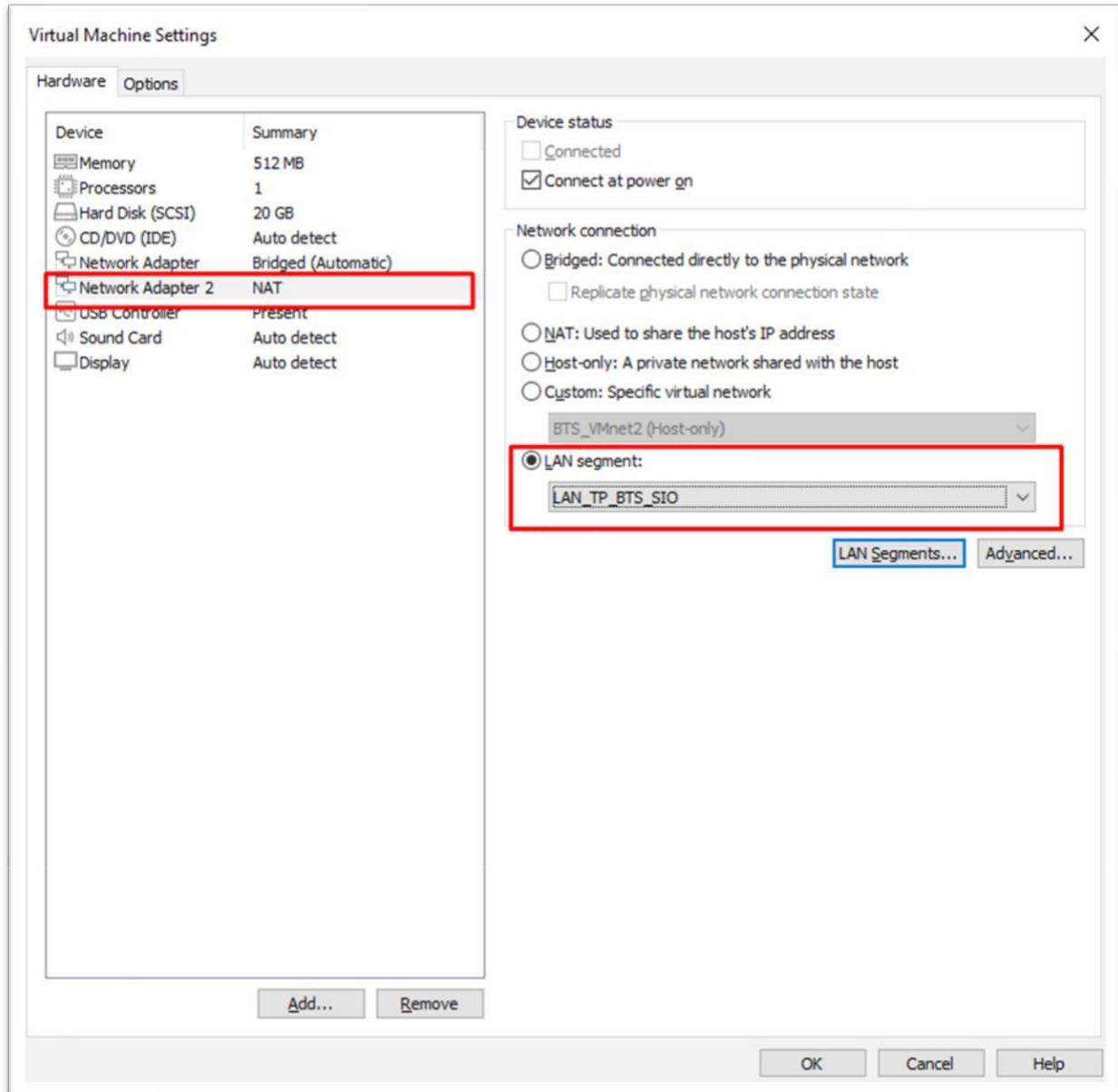
Sélectionner la deuxième carte réseau, "Network Adapter 2", et cliquer sur le bouton "Lan Segment..."



Cliquer sur "Add" et nommer le segment réseau. Ici, "LAN TP BTS SIO"



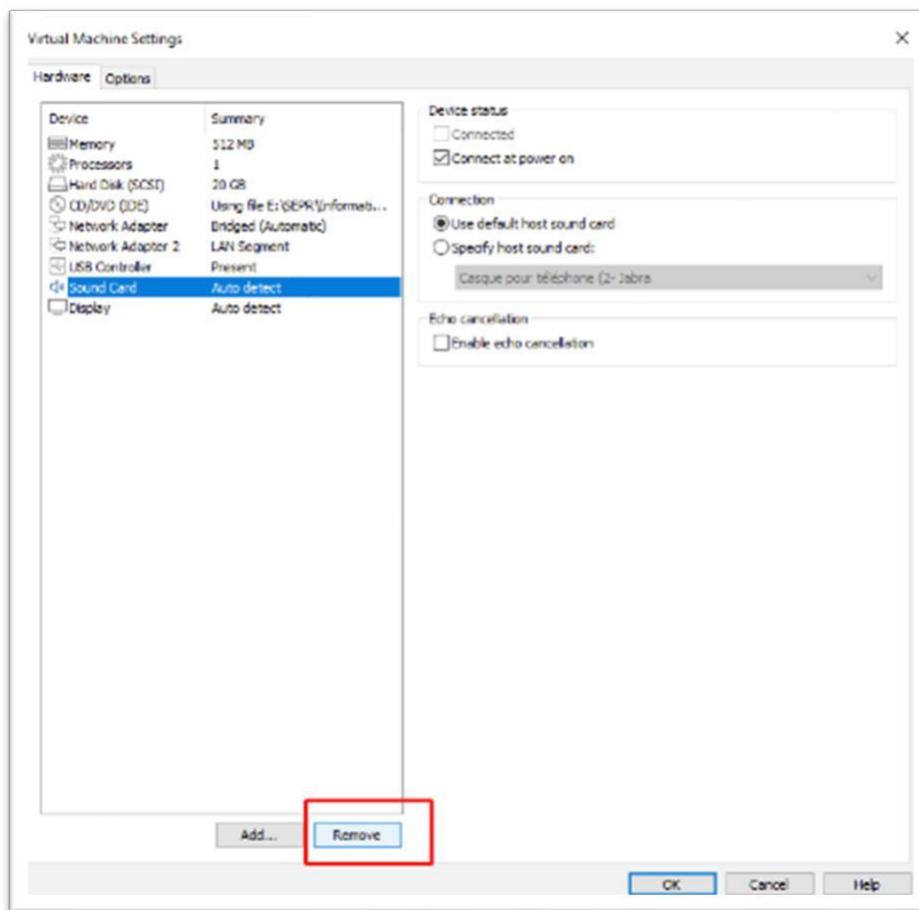
Attribuer ensuite au "Network Adapter 2" l'option "LAN segment" et sélectionner le segment créé dans l'étape précédente. Ici "LAN_TP_BTS_SIO"



Remarque importante :

Il faudra bien connecter les cartes réseaux de toutes les autres machines virtuelles sur ce même segment LAN.

Supprimer la carte son en sélectionnant "Sound Card" puis en cliquant sur le bouton "Remove"



Installation de PfSense

Téléchargement et installation du programme sur la machine virtuelle

Télécharger PfSense sur la page <https://www.pfsense.org/download/>

Sélectionner l'architecture "AMD (64-bit)"

The screenshot shows the pfSense download page. At the top, there are navigation links: Home, Download, Get Started, Cloud, Products, Services, Support, Training, Community, and Downloads. Below these, there's a "Latest Stable Version (Community Edition)" section. Underneath it, a note says: "This is the most recent stable release, and the recommended version for all installations. Refer to the documentation for Upgrade Guides and Installation Guides. For pre-configured systems, see the pfSense® Firewall appliances from Netgate." There are two buttons: "RELEASE NOTES" and "SOURCE CODE". The "RELEASE NOTES" button is highlighted with a red box. On the right, there's a "Subscribe To The Netgate Newsletter" form with fields for Email*, Email Address, and a checkbox for "I understand I am agreeing to receive the newsletter, software announcements, and special offers from Netgate." A "Subscribe" button and a link to "View our privacy policy" are also present. The main content area has a heading "Select Image To Download" with fields for Version (2.5.2), Architecture (selected as "AMD64 (64-bit)", shown in a dropdown menu with "Select" and "Netgate ADI" options), and Mirror (with a dropdown menu showing "Select" and "Netgate ADI"). A blue "DOWNLOAD" button is at the bottom left. The pfSense logo and the Netgate logo are visible on the right.

Sélectionner l'installateur "DVD Image (ISO)"

This screenshot shows the same pfSense download page as above, but with a different selection in the "Installer" dropdown. The "Installer" dropdown now shows "USB Memstick Installer" and "DVD Image (ISO) Installer", with "DVD Image (ISO) Installer" highlighted by a red box. The rest of the interface is identical to the previous screenshot, including the "RELEASE NOTES" button, the "Subscribe To The Netgate Newsletter" form, and the "Select Image To Download" section with the "AMD64 (64-bit)" architecture selected.

Sélectionner le serveur "Frankfurt, Germany"



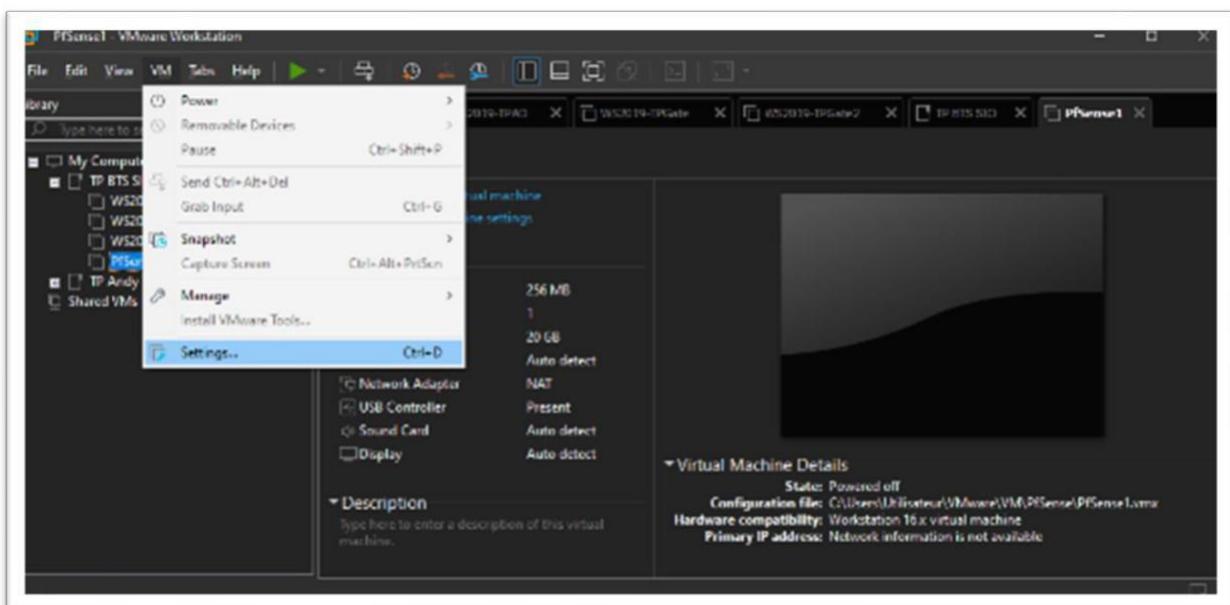
Et cliquer sur le bouton "Download" qui s'est coloré en bleu.

Bien penser à décompresser le fichier téléchargé

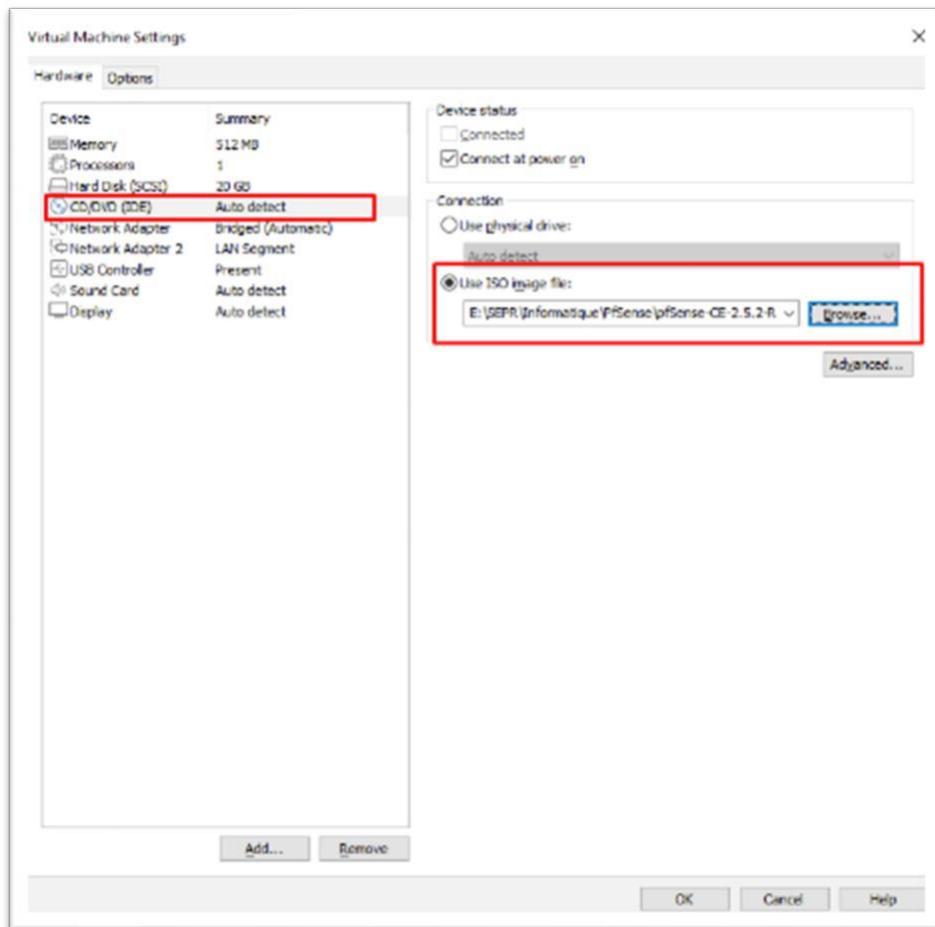
De nouveau, sélectionner la machine virtuelle

Menu "VM"

Sélectionner "Settings..."

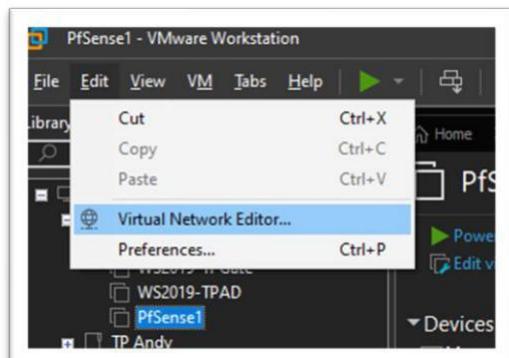


Dans l'onglet "Hardware", sélectionner "CD/DVD", choisir l'option "Use image file" et indiquer le chemin vers le fichier iso.

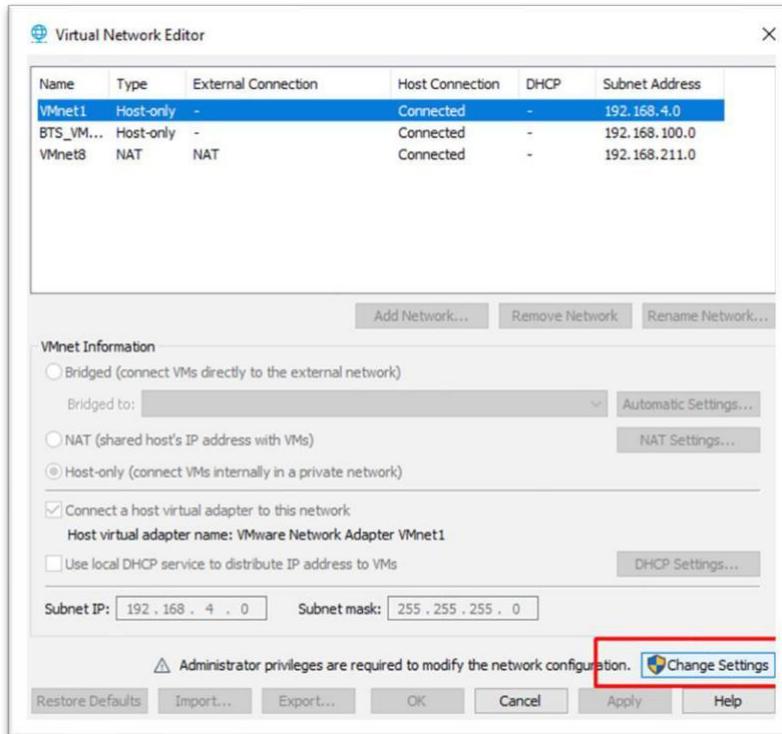


Avant de démarrer la machine virtuelle, vérifier que la carte "Network Adapter" branchée sur la bonne carte réseau de l'ordinateur hôte.

Menu "Edit", sélectionner "Virtual Network Editor..."

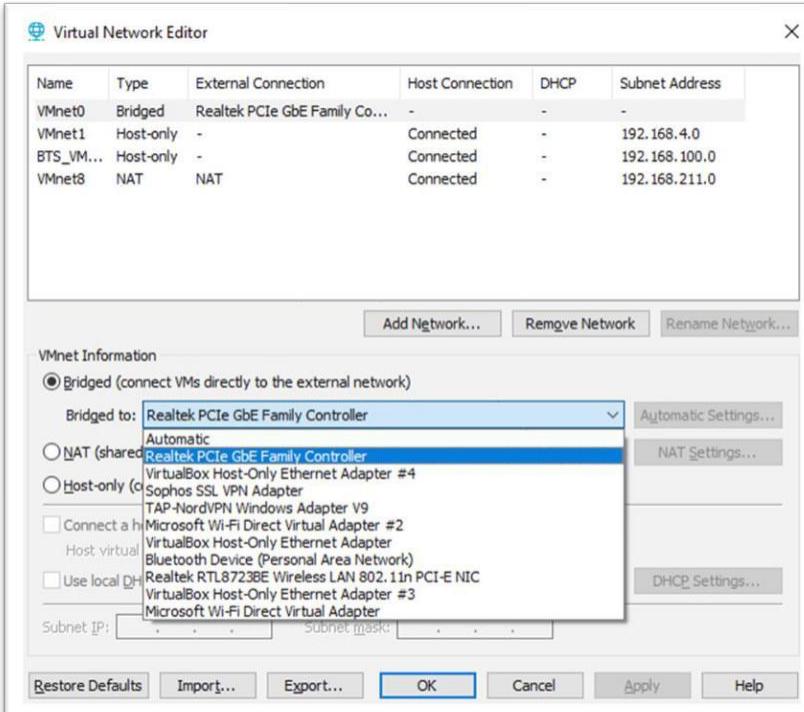


Cliquer sur "Change Settings" et autoriser le programme à prendre les priviléges administrateur.

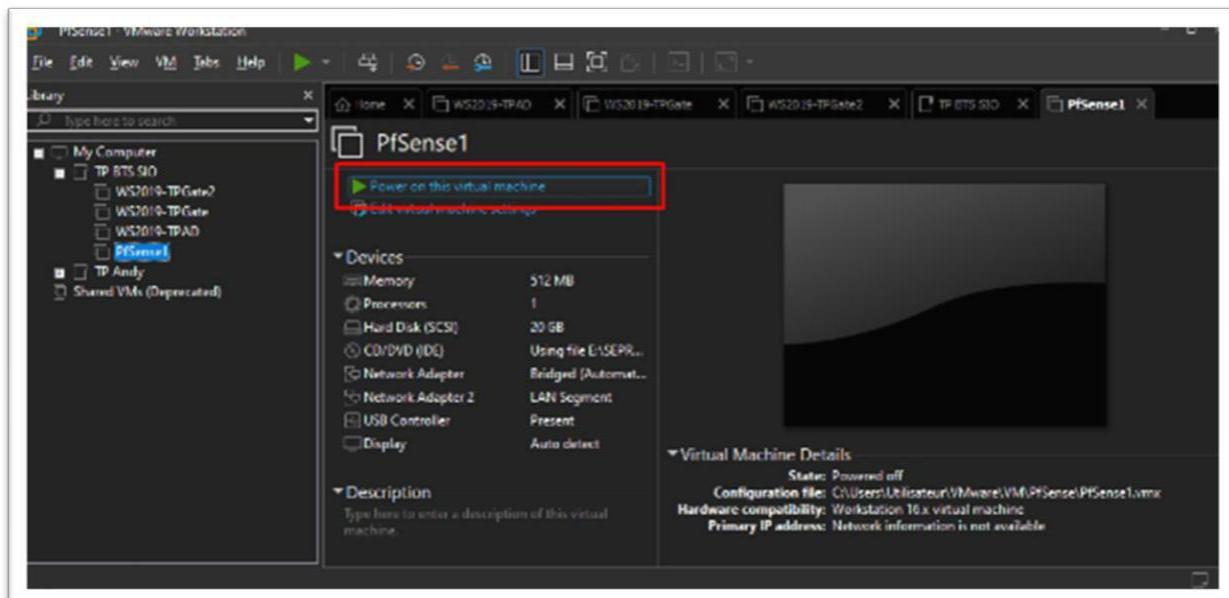


Définir le réseau bridge sur la carte physique connecté à Internet. Ici, je suis connecté en Ethernet donc je choisi ma carte "Realtek PCIe GbE Famillt Controller".

Si la connexion passe sur un réseau WiFi, il faut penser à mettre à jour cette option en sélectionnant la carte WiFi de l'ordinateur hôte



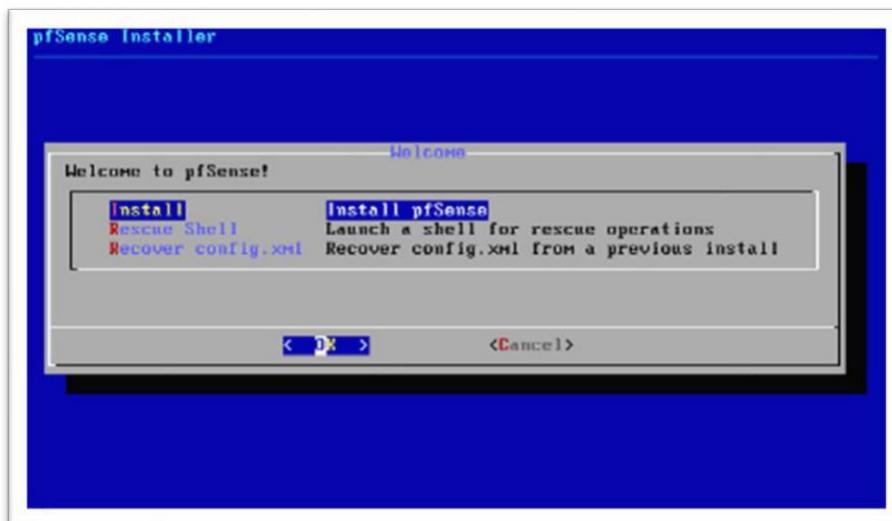
Sélectionner la machine virtuelle et démarrer en cliquant sur "Power on this virtual machine"



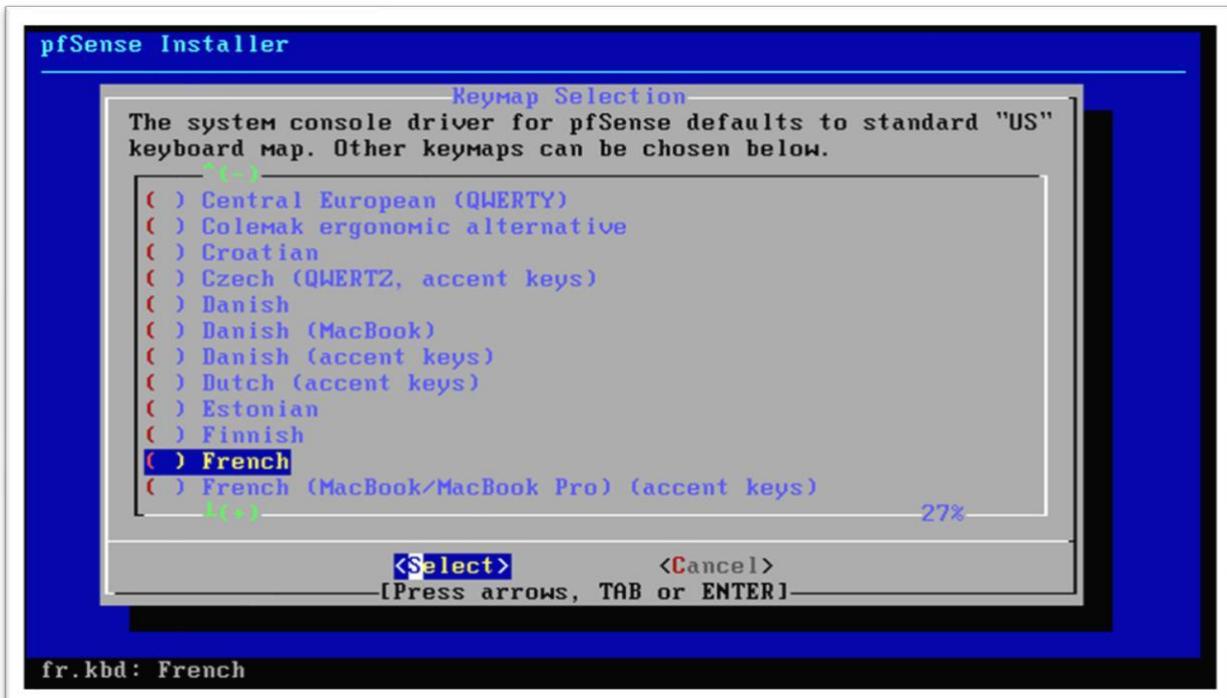
Accepter les conditions en envoyant Entrée sur le mot "Accept"



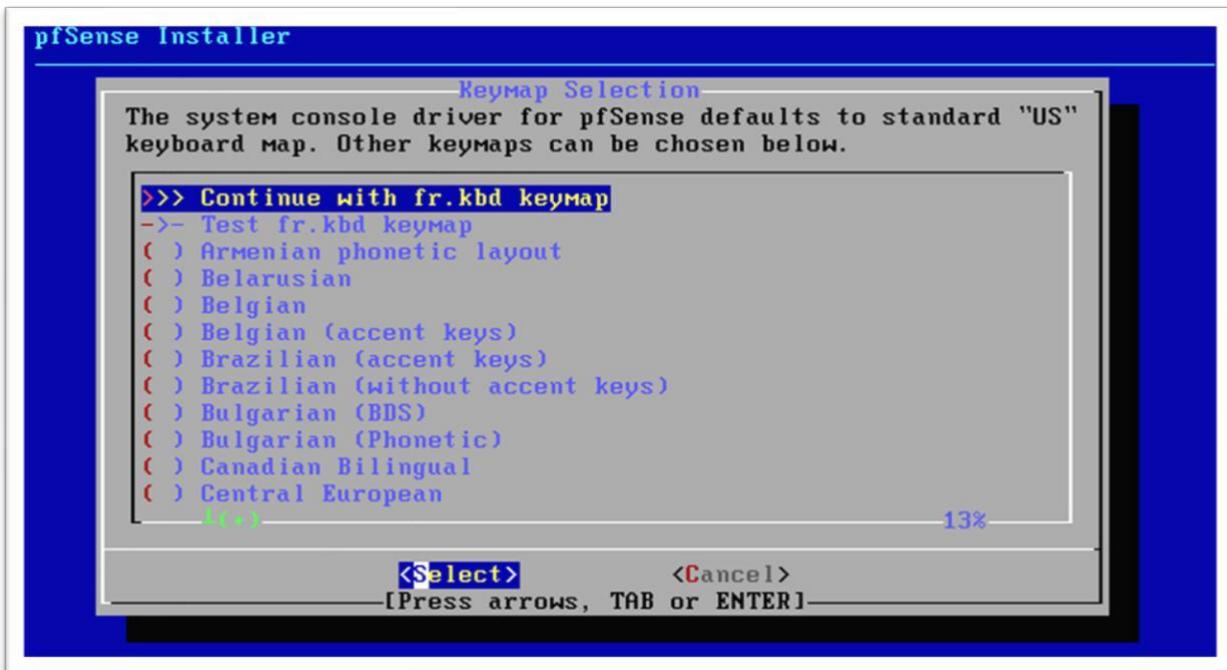
Choisir "Install" et valider



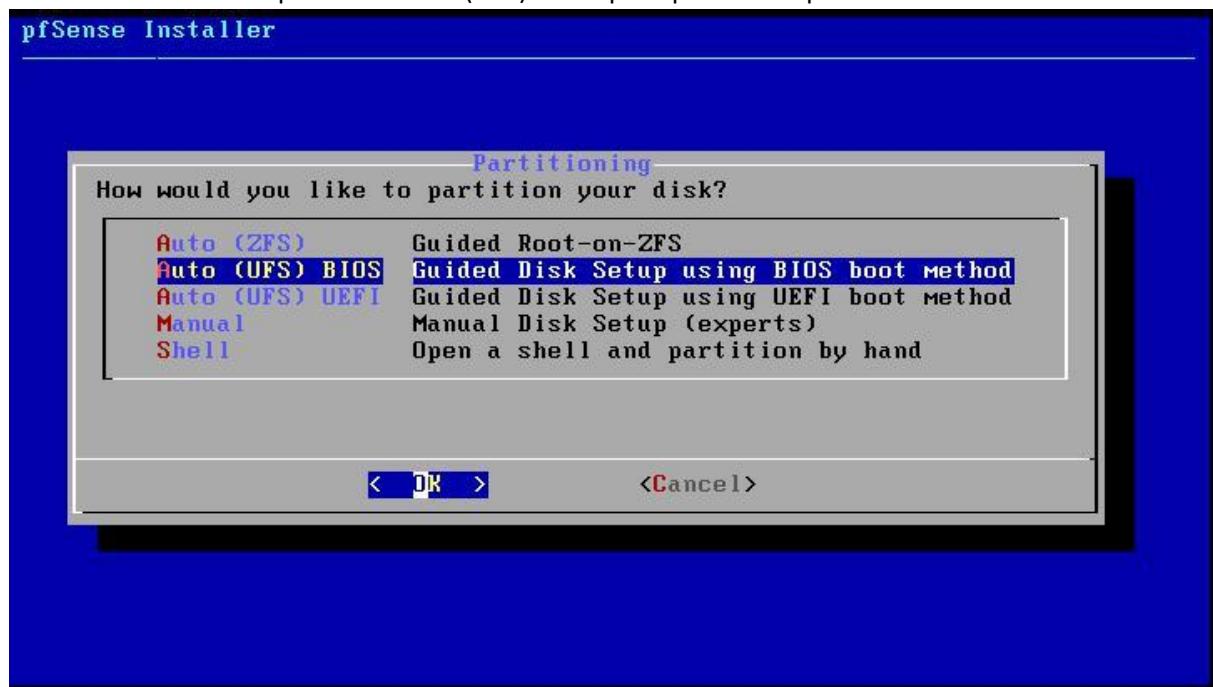
Menu "Keymap Selection", sélectionner la version française du clavier : "French".
Attention, la version French (accent Keys) ne correspond pas au clavier français.



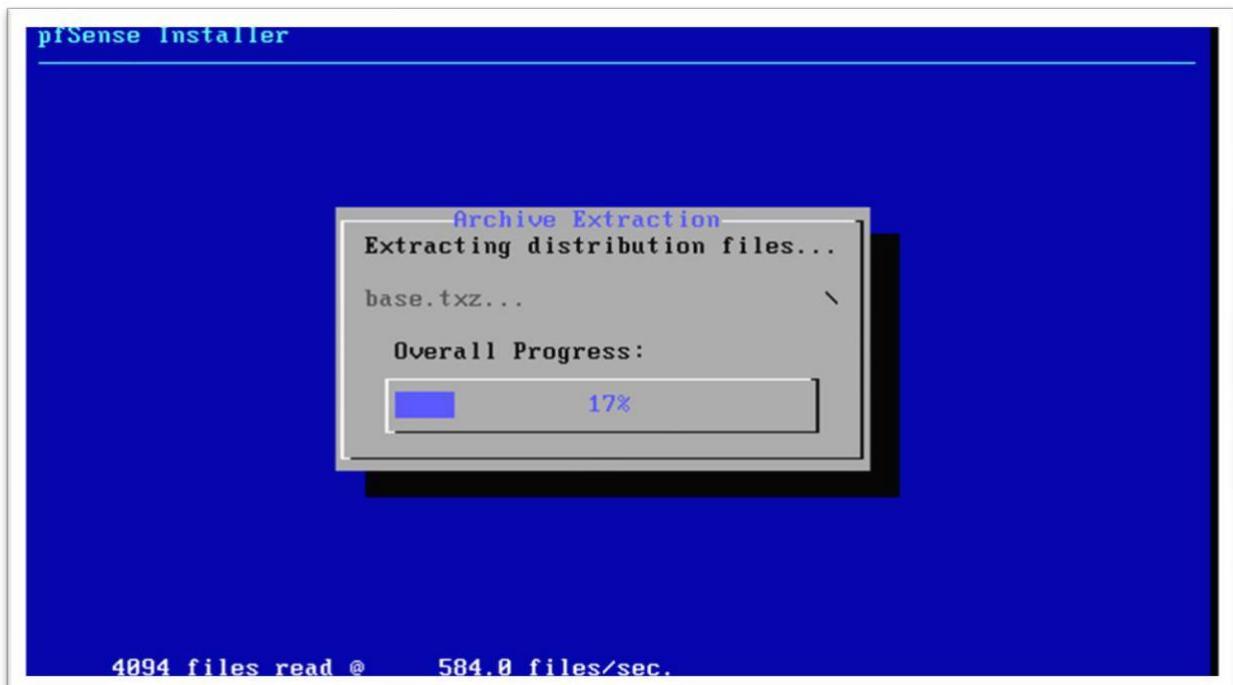
Valider une deuxième fois en sélectionnant "Continue with fr.Kbd keymap"



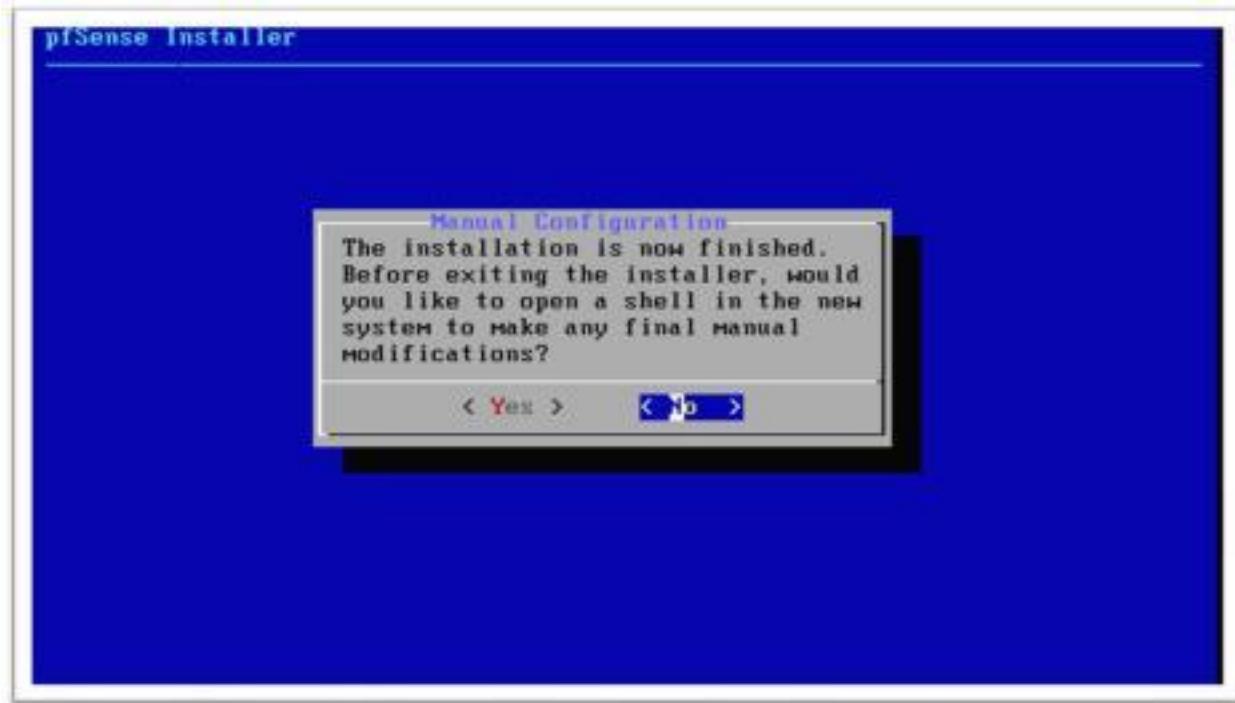
Choisir la méthode de partition "Auto (UFS) BIOS" pour plus de simplicité.



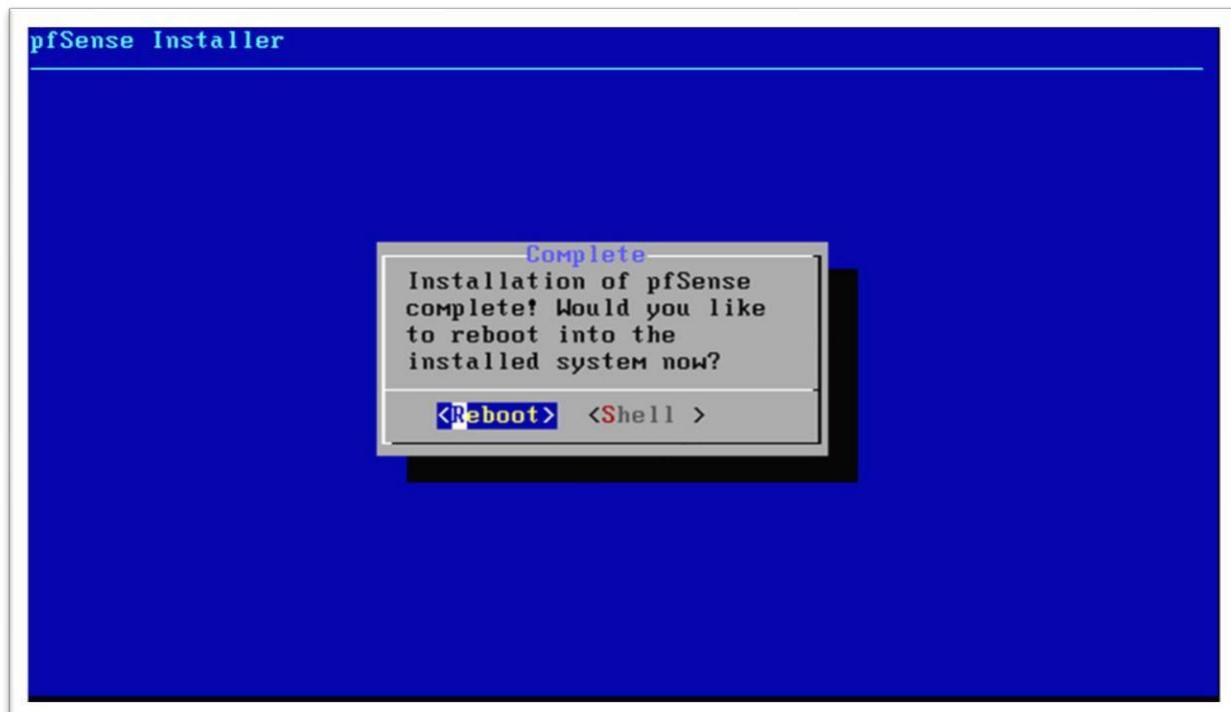
Le programme va s'installer.



L'installation se termine par un message qui demande s'il est besoin d'ouvrir une invite de commande. Choisir "Non".



Redémarrer la machine virtuelle. Sélectionner "Reboot".



Configuration des cartes réseau.

En redémarrant, le système atteint un écran "menu".

Ouvrir un Shell en sélectionnant l'option numéro 8.

```
freeBSD/amd64 (pfSense.home.arpa) (ttyv0)
VMware Virtual Machine - Netgate Device ID: acbd319f0aed1e1a78c0

*** Welcome to pfSense 2.5.2-RELEASE (amd64) on pfSense ***

WAN (wan)      -> em0      -> v4/DHCP4: 192.168.0.40/24
                  v6/DHCP6: 2a01:e34:ec18:49c0:20c:29ff:fe39:155
/64
LAN (lan)      -> em1      -> v4: 192.168.100.1/24
                  v6: FD23:11:1980:192:168:100:1:0/64

8) Logout (SSH only)          9) pfTop
1) Assign Interfaces          10) Filter Logs
2) Set interface(s) IP address 11) Restart webConfigurator
3) Reset webConfigurator password 12) PHP shell + pfSense tools
4) Reset to factory defaults   13) Update from console
5) Reboot system               14) Enable Secure Shell (sshd)
6) Halt system                 15) Restore recent configuration
7) Ping host                   16) Restart PHP-FPM

Enter an option: 8

[2.5.2-RELEASE][root@pfSense.home.arpa]#
```

Passer le clavier en azerty via la commande suivante :

`kbdcontrol -l /usr/share/syscons/keymaps/fr.iso.kbd`

```
VMware Virtual Machine - Netgate Device ID: acbd319f0aed1e1a78c0

*** Welcome to pfSense 2.5.2-RELEASE (amd64) on pfSense ***

WAN (wan)      -> em0      -> v4/DHCP4: 192.168.0.40/24
                  v6/DHCP6: 2a01:e34:ec18:49c0:20c:29ff:fe39:155
/64
LAN (lan)      -> em1      -> v4: 192.168.100.1/24
                  v6: FD23:11:1980:192:168:100:1:0/64

8) Logout (SSH only)          9) pfTop
1) Assign Interfaces          10) Filter Logs
2) Set interface(s) IP address 11) Restart webConfigurator
3) Reset webConfigurator password 12) PHP shell + pfSense tools
4) Reset to factory defaults   13) Update from console
5) Reboot system               14) Enable Secure Shell (sshd)
6) Halt system                 15) Restore recent configuration
7) Ping host                   16) Restart PHP-FPM

Enter an option: 8

[2.5.2-RELEASE][root@pfSense.home.arpa]# kbdcontrol -l /usr/share/syscons/k
eymaps/fr.iso.kbd
[2.5.2-RELEASE][root@pfSense.home.arpa]#
```

Sortir de l'invite de commande et revenir au menu en tapant "exit"

```
VMware Virtual Machine - Netgate Device ID: acbd319f0aed1e1a78c0
*** Welcome to pfSense 2.5.2-RELEASE (amd64) on pfSense ***
WAN (wan)      -> em0      -> v4/DHCP4: 192.168.0.40/24
                  v6/DHCP6: 2a01:e34:ec18:49c0:20c:29ff:fe39:155
/64
LAN (lan)      -> em1      -> v4: 192.168.100.1/24
                  v6: FD23:11:1980:192:168:100:1:0/64

8) Logout (SSH only)          9) pfTop
1) Assign Interfaces          10) Filter Logs
2) Set interface(s) IP address 11) Restart webConfigurator
3) Reset webConfigurator password 12) PHP shell + pfSense tools
4) Reset to factory defaults   13) Update from console
5) Reboot system               14) Enable Secure Shell (sshd)
6) Halt system                 15) Restore recent configuration
7) Ping host                   16) Restart PHP-FPM
8) Shell

Enter an option: 8

[2.5.2-RELEASE]#root@pfSense.home.arpal#root: kbdcontrol -l /usr/share/syscons/k
eymaps/fr.iso.kbd
[2.5.2-RELEASE]#root@pfSense.home.arpal#root: exit#
```

Choisir l'option 2 "Set interface(s) IP address"

```
pfSense 2.5.2-RELEASE amd64 Fri Jul 02 15:33:00 EDT 2021
Bootup complete

FreeBSD/amd64 (pfSense.home.arpal) (ttyv0)

VMware Virtual Machine - Netgate Device ID: acbd319f0aed1e1a78c0
*** Welcome to pfSense 2.5.2-RELEASE (amd64) on pfSense ***
WAN (wan)      -> em0      -> v4/DHCP4: 192.168.0.40/24
                  v6/DHCP6: 2a01:e34:ec18:49c0:20c:29ff:fe39:155
/64
LAN (lan)      -> em1      -> v4: 192.168.1.1/24

8) Logout (SSH only)          9) pfTop
1) Assign Interfaces          10) Filter Logs
2) Set interface(s) IP address 11) Restart webConfigurator
3) Reset webConfigurator password 12) PHP shell + pfSense tools
4) Reset to factory defaults   13) Update from console
5) Reboot system               14) Enable Secure Shell (sshd)
6) Halt system                 15) Restore recent configuration
7) Ping host                   16) Restart PHP-FPM
8) Shell

Enter an option: 2#
```

Choisir l'interface LAN. Ici, le choix numéro 2

```
*** Welcome to pfSense 2.5.2-RELEASE (amd64) on pfSense ***

WAN (wan)      -> em0      -> v4/DHCP4: 192.168.0.40/24
                           v6/DHCP6: 2a01:e34:ec18:49c0:20c:29ff:fe39:155
/64
LAN (lan)      -> em1      -> v4: 192.168.1.1/24

8) Logout (SSH only)          9) pfTop
1) Assign Interfaces          10) Filter Logs
2) Set interface(s) IP address 11) Restart webConfigurator
3) Reset webConfigurator password 12) PHP shell + pfSense tools
4) Reset to factory defaults   13) Update from console
5) Reboot system               14) Enable Secure Shell (sshd)
6) Halt system                 15) Restore recent configuration
7) Ping host                   16) Restart PHP-FPM
8) Shell

Enter an option: 2

Available interfaces:

1 - WAN (em0 - dhcp, dhcp6)
2 - LAN (em1 - static)

Enter the number of the interface you wish to configure: 2█
```

Entrer l'adresse IP que l'on veut donner à ce routeur. Ici 192.168.100.1

```
v6/DHCP6: 2a01:e34:ec18:49c0:20c:29ff:fe39:155
/64
LAN (lan)      -> em1      -> v4: 192.168.1.1/24

8) Logout (SSH only)          9) pfTop
1) Assign Interfaces          10) Filter Logs
2) Set interface(s) IP address 11) Restart webConfigurator
3) Reset webConfigurator password 12) PHP shell + pfSense tools
4) Reset to factory defaults   13) Update from console
5) Reboot system               14) Enable Secure Shell (sshd)
6) Halt system                 15) Restore recent configuration
7) Ping host                   16) Restart PHP-FPM
8) Shell

Enter an option: 2

Available interfaces:

1 - WAN (em0 - dhcp, dhcp6)
2 - LAN (em1 - static)

Enter the number of the interface you wish to configure: 2

Enter the new LAN IPv4 address. Press <ENTER> for none:
> 192.168.100.1█
```

Entrer l'annotation CIDR du masque de sous-réseau. Ici 24.

```
4) Reset to factory defaults      13) Update from console
5) Reboot system                 14) Enable Secure Shell (sshd)
6) Halt system                   15) Restore recent configuration
7) Ping host                      16) Restart PHP-FPM
8) Shell

Enter an option: 2

Available interfaces:

1 - WAN (em0 - dhcp, dhcp6)
2 - LAN (em1 - static)

Enter the number of the interface you wish to configure: 2

Enter the new LAN IPv4 address. Press <ENTER> for none:
> 192.168.100.1

Subnet masks are entered as bit counts (as in CIDR notation) in pfSense.
e.g. 255.255.255.0 = 24
     255.255.0.0   = 16
     255.0.0.0     = 8

Enter the new LAN IPv4 subnet bit count (1 to 31):
> 24
```

Le programme propose d'entrer la passerelle si cette carte réseau point vers un WAN. Ne rien entrer pour passer ce choix car dans le LAN, c'est précisément le PfSense qui servira de passerelle.

```
8) Shell

Enter an option: 2

Available interfaces:

1 - WAN (em0 - dhcp, dhcp6)
2 - LAN (em1 - static)

Enter the number of the interface you wish to configure: 2

Enter the new LAN IPv4 address. Press <ENTER> for none:
> 192.168.100.1

Subnet masks are entered as bit counts (as in CIDR notation) in pfSense.
e.g. 255.255.255.0 = 24
     255.255.0.0   = 16
     255.0.0.0     = 8

Enter the new LAN IPv4 subnet bit count (1 to 31):
> 24

For a WAN, enter the new LAN IPv4 upstream gateway address.
For a LAN, press <ENTER> for none:
> 
```

Entrer l'adresse IPv6. Utile pour certaines fonctionnalités de Windows Serveur 2019.

Ici : FD23:11:1980:192:168:100:1:0

```
1 - WAN (em0 - dhcp, dhcp6)
2 - LAN (em1 - static)

Enter the number of the interface you wish to configure: 2

Enter the new LAN IPv4 address. Press <ENTER> for none:
> 2

Enter the new LAN IPv4 address. Press <ENTER> for none:
> 192.168.100.1

Subnet Masks are entered as bit counts (as in CIDR notation) in pfSense.
e.g. 255.255.255.0 = 24
      255.255.0.0   = 16
      255.0.0.0     = 8

Enter the new LAN IPv4 subnet bit count (1 to 31):
> 24

For a WAN, enter the new LAN IPv4 upstream gateway address.
For a LAN, press <ENTER> for none:
>

Enter the new LAN IPv6 address. Press <ENTER> for none:
> fd23:11:1980:192:168:100:1:0
```

Masque de sous réseau IPv6. Ici : 64

```
Subnet Masks are entered as bit counts (as in CIDR notation) in pfSense.
e.g. 255.255.255.0 = 24
      255.255.0.0   = 16
      255.0.0.0     = 8

Enter the new LAN IPv4 subnet bit count (1 to 31):
> 24

For a WAN, enter the new LAN IPv4 upstream gateway address.
For a LAN, press <ENTER> for none:
>

Enter the new LAN IPv6 address. Press <ENTER> for none:
> fd23:11:1980:192:168:100:1:0

Subnet Masks are entered as bit counts (as in CIDR notation) in pfSense.
e.g. ffff:ffff:ffff:ffff:ffff:ffff:ffff:ff00 = 120
      ffff:ffff:ffff:ffff:ffff:ffff:ffff:0       = 112
      ffff:ffff:ffff:ffff:ffff:ffff:0:0         =  96
      ffff:ffff:ffff:ffff:ffff:0:0:0           =  80
      ffff:ffff:ffff:ffff:0:0:0:0             =  64

Enter the new LAN IPv6 subnet bit count (1 to 127):
> 64
```

De nouveau la question sur la passerelle. Ne rien rentrer.

```
255.0.0.0      = 8

Enter the new LAN IPv4 subnet bit count (1 to 31):
> 24

For a WAN, enter the new LAN IPv4 upstream gateway address.
For a LAN, press <ENTER> for none:
>

Enter the new LAN IPv6 address. Press <ENTER> for none:
> fd23:11:1980:192:168:100:1:0

Subnet Masks are entered as bit counts (as in CIDR notation) in pfSense.
e.g. ffff:ffff:ffff:ffff:ffff:ffff:ffff:ff00 = 120
     ffff:ffff:ffff:ffff:ffff:ffff:ffff:0       = 112
     ffff:ffff:ffff:ffff:ffff:ffff:0:0         =  96
     ffff:ffff:ffff:ffff:ffff:0:0:0           =  80
     ffff:ffff:ffff:ffff:0:0:0:0             =  64

Enter the new LAN IPv6 subnet bit count (1 to 127):
> 64

For a WAN, enter the new LAN IPv6 upstream gateway address.
For a LAN, press <ENTER> for none:
> █
```

Ne pas activer le DHCP sur le LAN. Répondre "n" pour refuser. Idem pour l'IPv6.

```
For a WAN, enter the new LAN IPv4 upstream gateway address.
For a LAN, press <ENTER> for none:
>

Enter the new LAN IPv6 address. Press <ENTER> for none:
> fd23:11:1980:192:168:100:1:0

Subnet Masks are entered as bit counts (as in CIDR notation) in pfSense.
e.g. ffff:ffff:ffff:ffff:ffff:ffff:ffff:ff00 = 120
     ffff:ffff:ffff:ffff:ffff:ffff:ffff:0       = 112
     ffff:ffff:ffff:ffff:ffff:ffff:0:0         =  96
     ffff:ffff:ffff:ffff:ffff:0:0:0           =  80
     ffff:ffff:ffff:ffff:0:0:0:0             =  64

Enter the new LAN IPv6 subnet bit count (1 to 127):
> 64

For a WAN, enter the new LAN IPv6 upstream gateway address.
For a LAN, press <ENTER> for none:
>

Do you want to enable the DHCP server on LAN? (y/n) n
Disabling IPv4 DHCPD...

Do you want to enable the DHCP6 server on LAN? (y/n) n█
```

Activer le retour à http en tant que protocole de configuration Web. Entrez : "y" pour "oui"

```
Enter the new LAN IPv6 address. Press <ENTER> for none:  
> FD23:11:1980:192:168:100:1:0  
  
Subnet Masks are entered as bit counts (as in CIDR notation) in pfSense.  
e.g. ffff:ffff:ffff:ffff:ffff:ffff:ffff:ff00 = 120  
      ffff:ffff:ffff:ffff:ffff:ffff:ffff:0     = 112  
      ffff:ffff:ffff:ffff:ffff:ffff:0:0       =  96  
      ffff:ffff:ffff:ffff:ffff:0:0:0        =  80  
      ffff:ffff:ffff:ffff:0:0:0:0          =  64  
  
Enter the new LAN IPv6 subnet bit count (1 to 127):  
> 64  
  
For a WAN, enter the new LAN IPv6 upstream gateway address.  
For a LAN, press <ENTER> for none:  
>  
  
Do you want to enable the DHCP server on LAN? (y/n) N  
Disabling IPv4 DHCPD...  
  
Do you want to enable the DHCP6 server on LAN? (y/n) N  
Disabling IPv6 DHCPD...  
  
Do you want to revert to HTTP as the webConfigurator protocol? (y/n) █
```

Un récapitulatif s'affiche. Taper Entrée pour continuer

```
For a WAN, enter the new LAN IPv6 upstream gateway address.  
For a LAN, press <ENTER> for none:  
>  
  
Do you want to enable the DHCP server on LAN? (y/n) n  
Disabling IPv4 DHCPD...  
  
Do you want to enable the DHCP6 server on LAN? (y/n) n  
Disabling IPv6 DHCPD...  
  
Please wait while the changes are saved to LAN...  
Reloading filter...  
Reloading routing configuration...  
DHCPD...  
  
The IPv4 LAN address has been set to 192.168.100.1/24  
  
The IPv6 LAN address has been set to fd23:11:1980:192:168:100:1:0/64  
You can now access the webConfigurator by opening the following URL in your web  
browser:  
      http://192.168.100.1/  
      http://[fd23:11:1980:192:168:100:1:0]/  
  
Press <ENTER> to continue. █
```

Avant de se connecter à l'interface web, il faut autoriser les connexions à destination de l'interface WAN. Pour cela, ouvrir un Shell en sélectionnant l'option numéro 8.

```

FreeBSD/amd64 (pfSense.home.arp) (ttyv0)

VMware Virtual Machine - Netgate Device ID: acbd319f0aed1e1a78c0

*** Welcome to pfSense 2.5.2-RELEASE (amd64) on pfSense ***

WAN (wan)      -> em0      -> v4/DHCP4: 192.168.0.40/24
                           v6/DHCP6: 2a01:e34:ec18:49c0:20c:29ff:fe39:155
/64
LAN (lan)      -> em1      -> v4: 192.168.100.1/24
                           v6: FD23:11:1980:192:168:100:1:0/64

0) Logout (SSH only)          9) pfTop
1) Assign Interfaces          10) Filter Logs
2) Set interface(s) IP address 11) Restart webConfigurator
3) Reset webConfigurator password 12) PHP shell + pfSense tools
4) Reset to factory defaults 13) Update from console
5) Reboot system              14) Enable Secure Shell (sshd)
6) Halt system                15) Restore recent configuration
7) Ping host                  16) Restart PHP-FPM
8) Shell

Enter an option: 8

[2.5.2-RELEASE][root@pfSense.home.arp]# 

```

Autoriser l'accès à l'interface web depuis le WAN via cette commande :

pfSsh.php playback enableallowallwan

```

/64
LAN (lan)      -> em1      -> v4: 192.168.100.1/24
                           v6: FD23:11:1980:192:168:100:1:0/64

v6/DHCP6: 2a01:e34:ec18:49c0:20c:29ff:fe39:155

0) Logout (SSH only)          9) pfTop
1) Assign Interfaces          10) Filter Logs
2) Set interface(s) IP address 11) Restart webConfigurator
3) Reset webConfigurator password 12) PHP shell + pfSense tools
4) Reset to factory defaults 13) Update from console
5) Reboot system              14) Enable Secure Shell (sshd)
6) Halt system                15) Restore recent configuration
7) Ping host                  16) Restart PHP-FPM
8) Shell

Enter an option: 8

[2.5.2-RELEASE][root@pfSense.home.arp]# pfSsh.php playback enableallowallwan
an
Adding allow all rule...
Turning off block private networks (if on)...
Turning off block bogon networks (if on)...
Reloading the filter configuration...

[2.5.2-RELEASE][root@pfSense.home.arp]# 

```

sortir de l'invite de commande en tapant "exit"

Configuration de base de PfSense

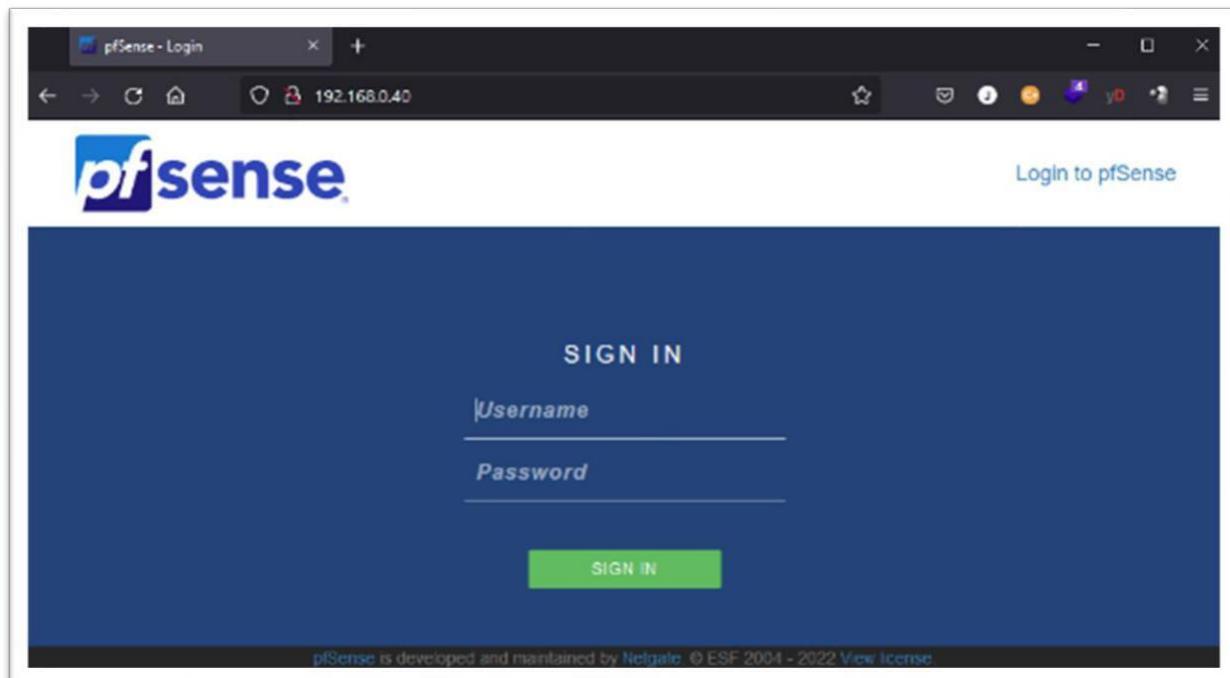
Depuis un navigateur web de l'ordinateur hôte, atteindre l'adresse de l'interface WAN.
L'adresse IP de la machine virtuelle PfSense est affichée au-dessus du menu de celle-ci.

```
** Welcome to pfSense 2.5.2-RELEASE (amd64) on pfSense ***

WAN (wan)      -> em0      -> v4/DHCP4: 192.168.0.40/24
                           v6/DHCP6: 2a01:e34:ec18:49c0:20c:29ff:fe39:15
64
LAN (lan)      -> em1      -> v4: 192.168.100.1/24
                           v6: FD23:11:1988:192:168:100:1:0/64

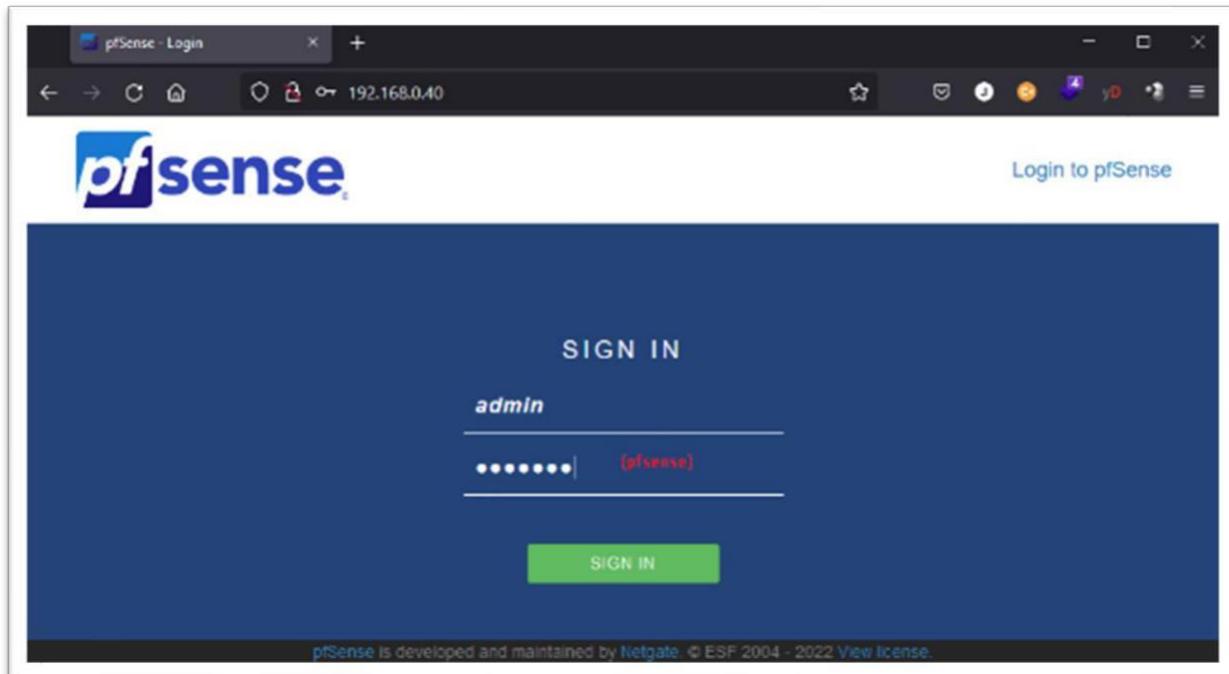
0) Logout (SSH only)
1) Assign Interfaces
2) Set interface(s) IP address
3) Reset webConfigurator password
4) Reset to factory defaults
5) Reboot system
6) Halt system
7) Ping host
8) Help
9) pfTop
10) Filter Logs
11) Restart webConfigurator
12) PHP shell + pfSense tools
13) Update from console
14) Enable Secure Shell (sshd)
15) Restore recent configuration
16) Restart PHP-FPM
```

Ici 192.168.0.40



Se connecter avec le compte par défaut :

- utilisateur : admin
- mot de passe : pfsense



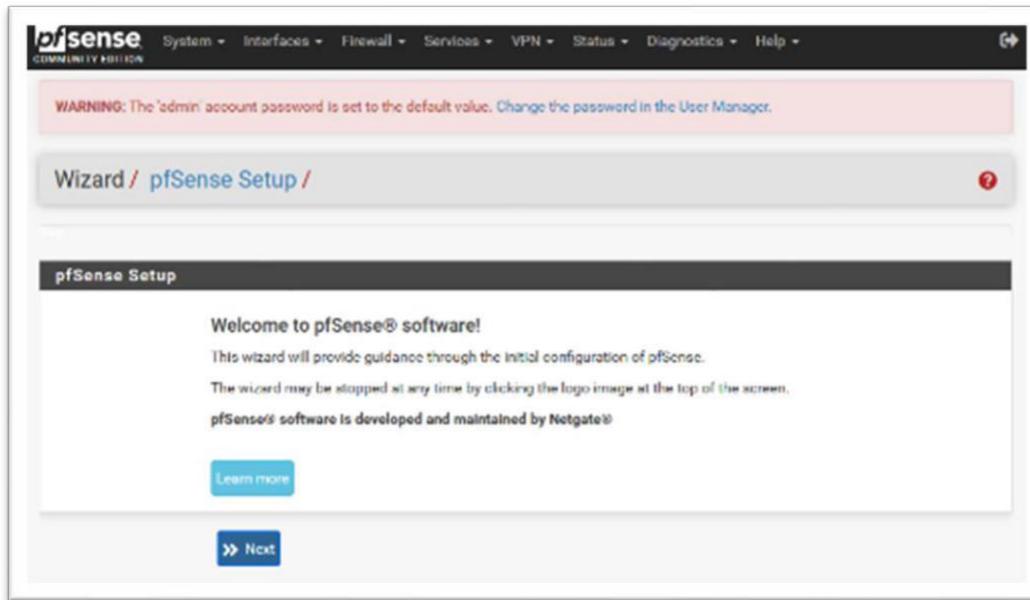
Sur la machine virtuelle, un message indique une connexion réussie

```
VMware Virtual Machine - Netgate Device ID: acbd319f8aed1e1a78c8
*** Welcome to pfSense 2.5.2-RELEASE (amd64) on pfSense ***
WAN (wan)      -> em0          -> v4/DHCP4: 192.168.0.40/24
                           v6/DHCP6: 2a01:e34:ec18:49c0:20c:29ff:fe39:155
/64
LAN (lan)      -> em1          -> v4: 192.168.100.1/24
                           v6: FD23:11:1980:192:168:100:1:8/64

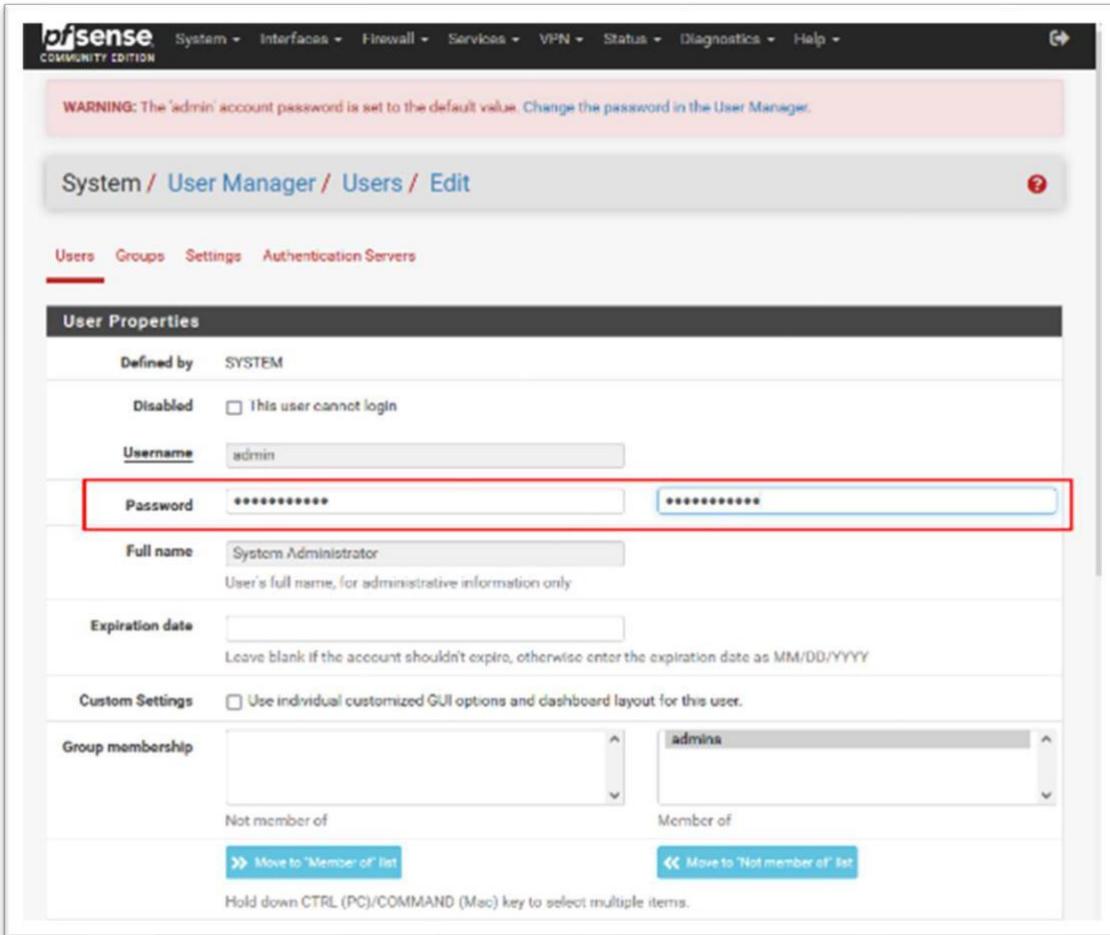
0) Logout (SSH only)          9) pfTop
1) Assign Interfaces           10) Filter Logs
2) Set interface(s) IP address 11) Restart webConfigurator
3) Reset webConfigurator password 12) PHP shell + pfSense tools
4) Reset to factory defaults   13) Update from console
5) Reboot system               14) Enable Secure Shell (sshd)
6) Halt system                 15) Restore recent configuration
7) Ping host                   16) Restart PHP-FPM
8) Shell

Enter an option:
Message from syslogd@pfSense at Feb  5 17:39:08 ...
php-fpm[16176]: /index.php: Successful login for user 'admin' from: 192.168.0.17
(Local Database)
```

L'interface web envoie la navigation vers la procédure de configuration Wizard Setup. En haut de la page, un message conseille de changer le mot de passe par défaut. Cliquer sur le lien "Change the password in the User Manager."



Entrer un nouveau mot de passe. Ici, WS2019-TPAD



Sauvegarder en cliquant sur le bouton save, en bas de la page

The screenshot shows the 'User Manager' section of the PfSense web interface. At the top, there's a table titled 'Effective Privileges' listing two entries: 'admins' and 'User - System: Shell account'. A note below states 'Security notice: This user effectively has administrator-level access'. Below this is the 'User Certificates' section, which is currently empty. The main area is the 'Keys' section, which includes fields for 'Authorized SSH Keys' (containing a placeholder 'Enter authorized SSH keys for this user') and 'IPsec Pre-Shared Key'. At the bottom, a blue 'Save' button is highlighted with a red box.

Cliquer sur le logo PfSense pour atteindre la page d'accueil

The screenshot shows the main PfSense web interface. The top navigation bar includes links for System, Interfaces, Firewall, Services, VPN, Status, Diagnostics, and Help. Below the navigation is a breadcrumb trail: System / User Manager / Users. The main content area displays a table of users with one entry: 'admin' (Full name: System Administrator, Status: ✓, Groups: admins). At the bottom of the table, there are 'Add' and 'Delete' buttons, and the 'Save' button from the previous screenshot is also present.

Le tableau de bord de PfSense inclut une liste d'information sur la configuration matérielle.

The screenshot shows the pfSense Status / Dashboard page. It includes sections for System Information, Netgate Services And Support, and Interfaces.

System Information

| | |
|--|--|
| Name | pfsense.home.appliance |
| User | admin@192.168.0.17 [Local Database] |
| System | VMware Virtual Machine Netgate Device ID: acb8319fbaed1ea79e0 |
| BIOS | Vendor: Phoenix Technologies LTD Version: 6.00 Release Date: Wed Jul 22 2020 |
| Version | 2.5.3-RELEASE (arm64) built on Fri Jul 02 19:30:03 EDT 2021 Frustrated 17.3-STABLE |
| <small>The system is on the latest version. Version information updated at Sun Feb 6 11:39:25 UTC 2022</small> | |
| CPU Type | Intel(R) Core(TM) i7-6700HQ CPU @ 2.60GHz AES-NI CPU Crypto: Yes (inactive) GAT Crypto: No |
| Hardware crypto | |
| Kernel PTI | Enabled |
| MDS Mitigation | Inactive |
| Uptime | 00 Hour 48 Minutes 04 Seconds |
| Current date/time | Sun Feb 6 11:47:11 UTC 2022 |
| DNS server(s) | • 127.0.0.1 • 192.168.0.254 |
| Last config change | Sun Feb 6 11:40:36 UTC 2022 |
| State table size | 0% (0/10000) Slave states |
| MBUF Usage | 0% (1454/1000000) |
| Load average | 0.50, 0.53, 0.70 |
| CPU usage | <div style="width: 2%;">2%</div> |
| Memory usage | <div style="width: 64%;">64% of 104 MiB</div> |
| SWAP usage | <div style="width: 1%;">1% of 1023 MiB</div> |
| Disk usage: | / <div style="width: 7%;">7% of 160.0 GiB</div> |
| | /var/run <div style="width: 4%;">4% of 3.4 MiB - 0.0% in RAM</div> |

Netgate Services And Support

Contract type: Community Support
Community Support Only

NETGATE AND pfSense COMMUNITY SUPPORT RESOURCES

If you purchased your pfSense gateway from Netgate or installed pfSense on your own hardware, you have access to various community support resources. This includes the NETGATE RESOURCE LIBRARY.

You also may upgrade to a Netgate Global Technical Assistance Center (TAC) Support subscription. We're always on! Our team is staffed 24x7x365 and committed to delivering enterprise-class, dedicated support at a price point that is more than competitive when compared to others in our space.

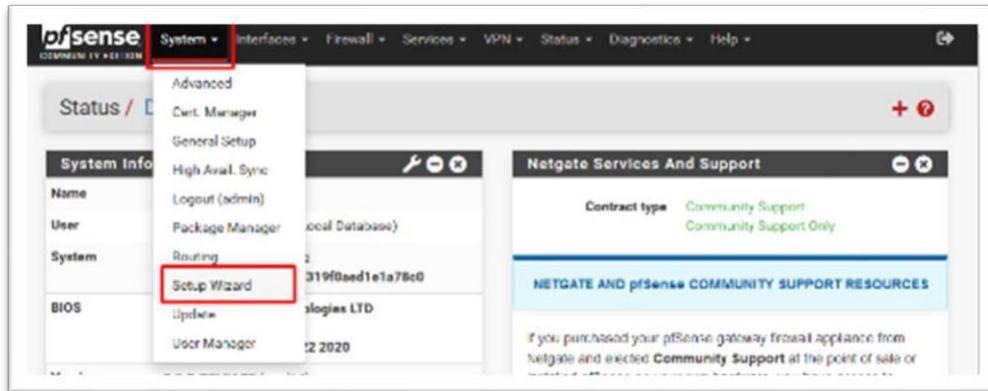
- Upgrade Your Support
- Community Support Resources
- Netgate Global Support FAQ
- Official pfSense Training by Netgate
- Netgate Professional Services
- Visit Netgate.com

If you choose to purchase a Netgate Global TAC Support subscription, you MUST have your Netgate Device ID (NDID) from your firewall in order to validate support for the unit. Write down your NDID and store it in a safe place. You can purchase TAC support here.

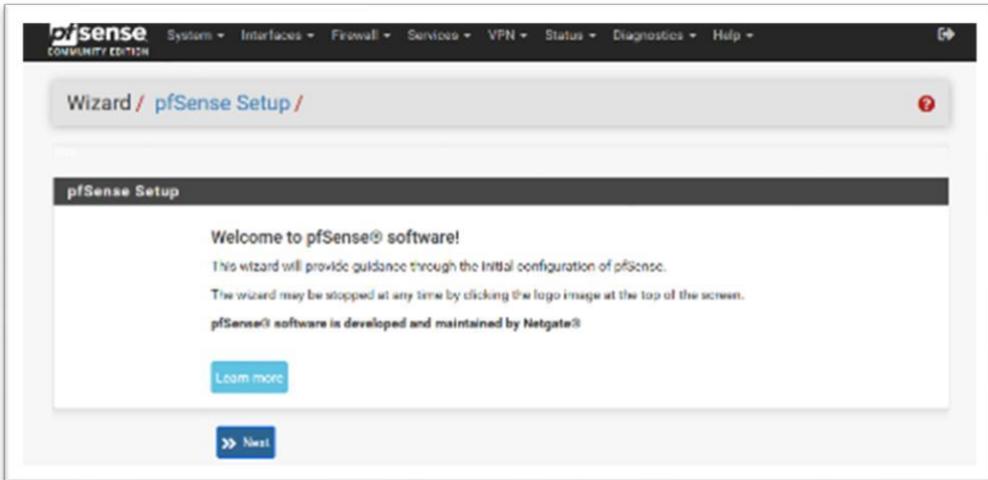
Interfaces

| | | |
|-----|----------------------------|---|
| WAN | 1000baseT • Full-duplex | 192.168.0.40 2eff:1e34:ac1b:49e0:21a:29ff:fe20:155 |
| LAN | 1000baseT • Full-duplex | 192.168.100.1 FD73:11:1680:727:108:100:1:0 |

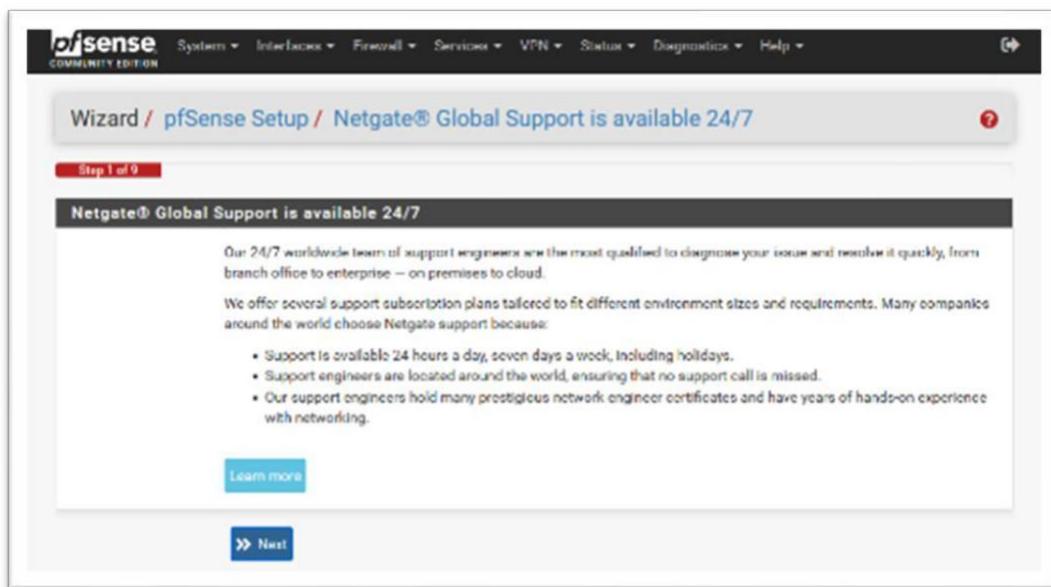
Pour revenir vers la procédure de configuration "Wizard Setup", dérouler le menu "System" et choisir "Setup Wizard".



Cliquer sur "Next"



Puis de nouveau sur "Next"



Renommer la machine virtuelle. Ici, PfSense1
Renseigner le nom du domaine. Ici, bts.local
Renseigner le DNS primaire : Ici, 192.168.100.10
Renseigner le DNS secondaire : Ici, 8.8.8.8
Cliquer sur "Next"

Wizard / pfSense Setup / General Information

Step 2 of 9

General Information

On this screen the general pfSense parameters will be set.

Hostname: pfSense1
EXAMPLE: myserver

Domain: home.arpa
EXAMPLE: mydomain.com

The default behavior of the DNS Resolver will ignore manually configured DNS servers for client queries and query root DNS servers directly. To use the manually configured DNS servers below for client queries, visit Services > DNS Resolver and enable DNS Query Forwarding after completing the wizard.

Primary DNS Server:

Secondary DNS Server:

Override DNS Allow DNS servers to be overridden by DHCP/PPP on WAN

>> Next

Choisir le fuseau horaire. Ici, Europe/Paris"
Cliquer sur "Next"

Wizard / pfSense Setup / Time Server Information

Step 3 of 9

Time Server Information

Please enter the time, date and time zone.

Time server hostname: 2.pfsense.pool.ntp.org
Enter the hostname (FQDN) of the time server.

Timezone: Europe/Paris

>> Next

Définir une interface WAN "static"

Paramétriser :

Adresse IP : 192.168.0.250

Masque de sous-réseau : 24

Passerelle : 192.168.0.254

Cliquer sur "Next, en bas de la page

pfSense
COMMUNITY EDITION

Wizard / pfSense Setup / Configure WAN Interface

Step 4 of 9

Configure WAN Interface

On this screen the Wide Area Network information will be configured.

SelectedType Static

General configuration

MAC Address This field can be used to modify ("spoof") the MAC address of the WAN interface (may be required with some cable connections). Enter a MAC address in the following format: XX:XX:XX:XX:XX:XX or leave blank.

MTU Set the MTU of the WAN interface. If this field is left blank, an MTU of 1492 bytes for PPPoE and 1500 bytes for all other connection types will be assumed.

MSS If a value is entered in this field, then MSS clamping for TCP connections to the value entered above minus 40 (TCP/IP header size) will be in effect. If this field is left blank, an MSS of 1492 bytes for PPPoE and 1500 bytes for all other connection types will be assumed. This should match the above MTU value in most all cases.

Static IP Configuration

| | |
|------------------|---------------|
| IP Address | 192.168.0.250 |
| Subnet Mask | 24 |
| Upstream Gateway | 192.168.0.254 |

Paramétrage du réseau LAN

Adresse IP : 192.168.100.1

Masque de sous-réseau : 24

Cliquer sur "Next"

Wizard / pfSense Setup / Configure LAN Interface

Step 5 of 9

Configure LAN Interface

On this screen the Local Area Network information will be configured.

LAN IP Address: 192.168.100.1
Type dhcp if this interface uses DHCP to obtain its IP address.

Subnet Mask: 24

>> Next

Entrer le mot de passe administrateur

Cliquer sur "Next"

Wizard / pfSense Setup / Set Admin WebGUI Password

Step 6 of 9

Set Admin WebGUI Password

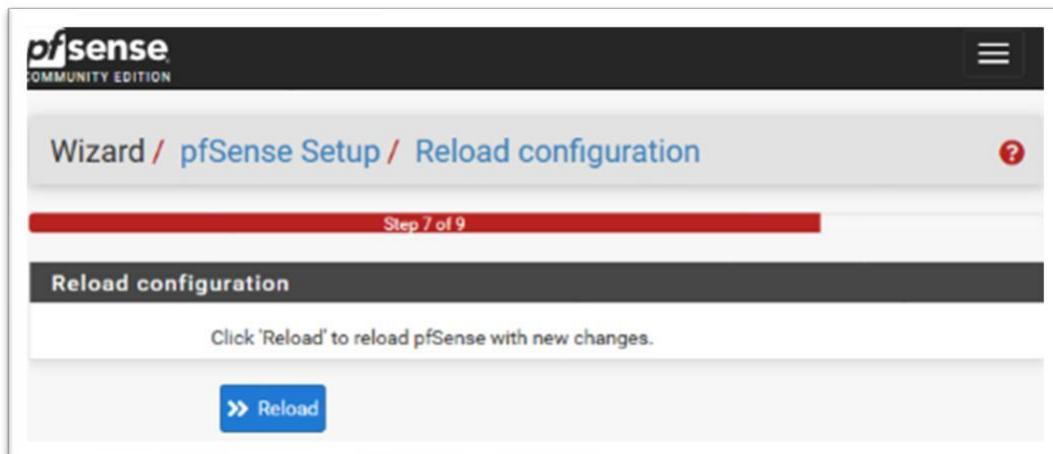
On this screen the admin password will be set, which is used to access the WebGUI and also SSH services if enabled.

Admin Password: *****

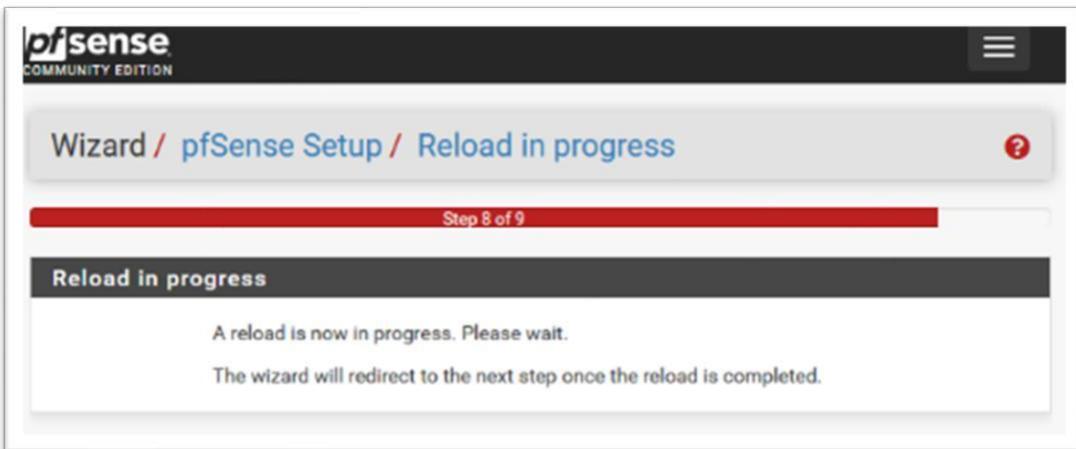
Admin Password AGAIN:

>> Next

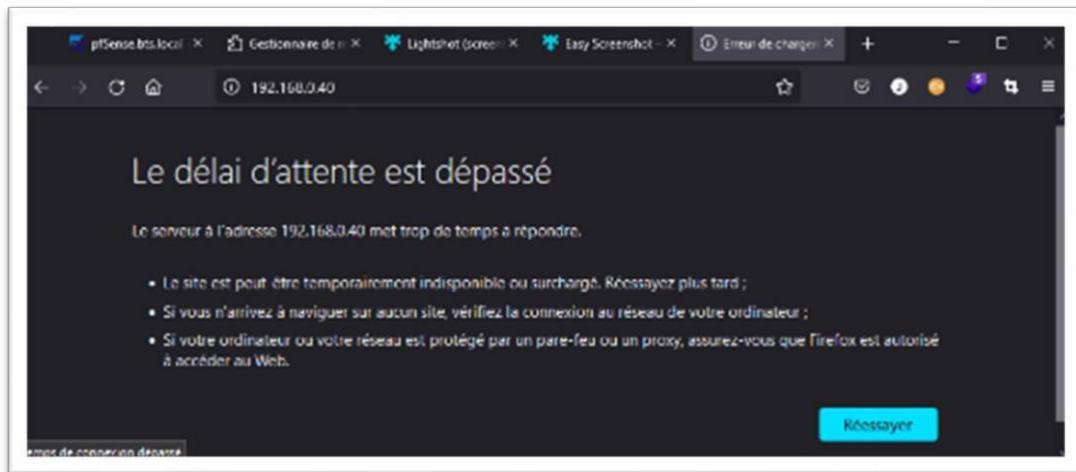
Cliquer sur "Reload" pour charger la nouvelle configuration



Une page demande à l'utilisateur de patienter



Le chargement de la page échoue car l'adresse IP "WAN" du routeur a changé.
Recharger la page en chargeant la nouvelle adresse IP. Ici, 192.168.0.250



Relancer la procédure Wizard Setup.

La configuration aboutit. Une page invite l'utilisateur à vérifier les mises à jour ou à terminer la procédure.

Cliquer sur "Check for Updates" pour vérifier si de nouvelles mises à jour ont été publiées.

The screenshot shows the final step of the pfSense setup wizard. At the top, the pfSense logo and "COMMUNITY EDITION" are visible. A navigation bar at the top right includes a menu icon and a question mark icon. The main title "Wizard / pfSense Setup / Wizard completed." is displayed above a progress bar labeled "Step 9 of 9". A dark banner below the title says "Wizard completed.". The main content area features a message: "Congratulations! pfSense is now configured." followed by a note: "We recommend that you check to see if there are any software updates available. Keeping your software up to date is one of the most important things you can do to maintain the security of your network." A green button labeled "Check for updates" is present. Below this, another message encourages user participation: "Remember, we're here to help." with a link "Click here to learn about Netgate 24/7/365 support services." At the bottom, a section titled "User survey" asks for help in improving the software, with a link to the "Anonymous User Survey". A final section titled "Useful resources." lists links to the product line, store, forum, and newsletter. A blue "Finish" button is located at the bottom left of the content area.

Ici, la version est bien à jour.

The screenshot shows the pfSense System Update interface. At the top, the pfSense logo and 'COMMUNITY EDITION' are visible. Below the header, the navigation path 'System / Update / System Update' is shown. A red question mark icon is in the top right corner. Under the path, there are two tabs: 'System Update' (selected) and 'Update Settings'. A prominent red box highlights the 'Branch' dropdown menu, which is set to 'Latest stable version (2.5.2)'. Below the dropdown, a note reads: 'Please select the branch from which to update the system firmware. Use of the development version is at your own risk!'. Another red box highlights the 'Status' field, which displays 'Up to date.'.

Cliquer sur le logo PfSense pour revenir sur la page d'accueil.

Le routeur est désormais fonctionnel.

Déployer PfSense sur une machine virtuelle est une solution très simple pour connecter un réseau local virtualisé à Internet. De plus, pour faire évoluer l'installation, il donne la possibilité, à posteriori, de paramétrier un pare-feu et d'ouvrir d'autres segments réseau
