pfSense

- Installation de pfSense 2.5
- Installation, attribution de cartes et adresses IP
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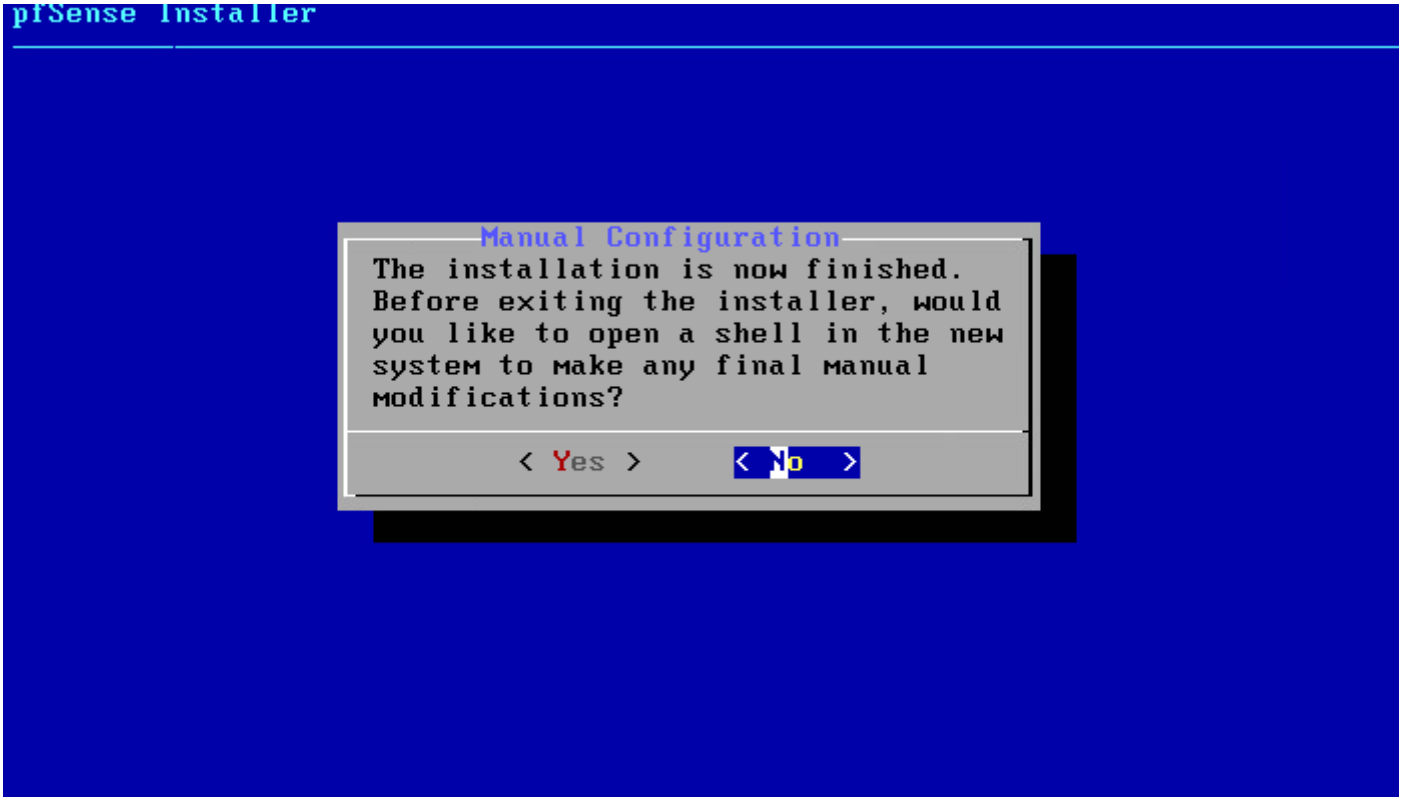
- Paramétrage via l'interface web
- Ajouter l'agent Zabbix
- Mise à jour
- Paramètres généraux
- Règles de pare-feu
- Plugins
- Reverse-proxy

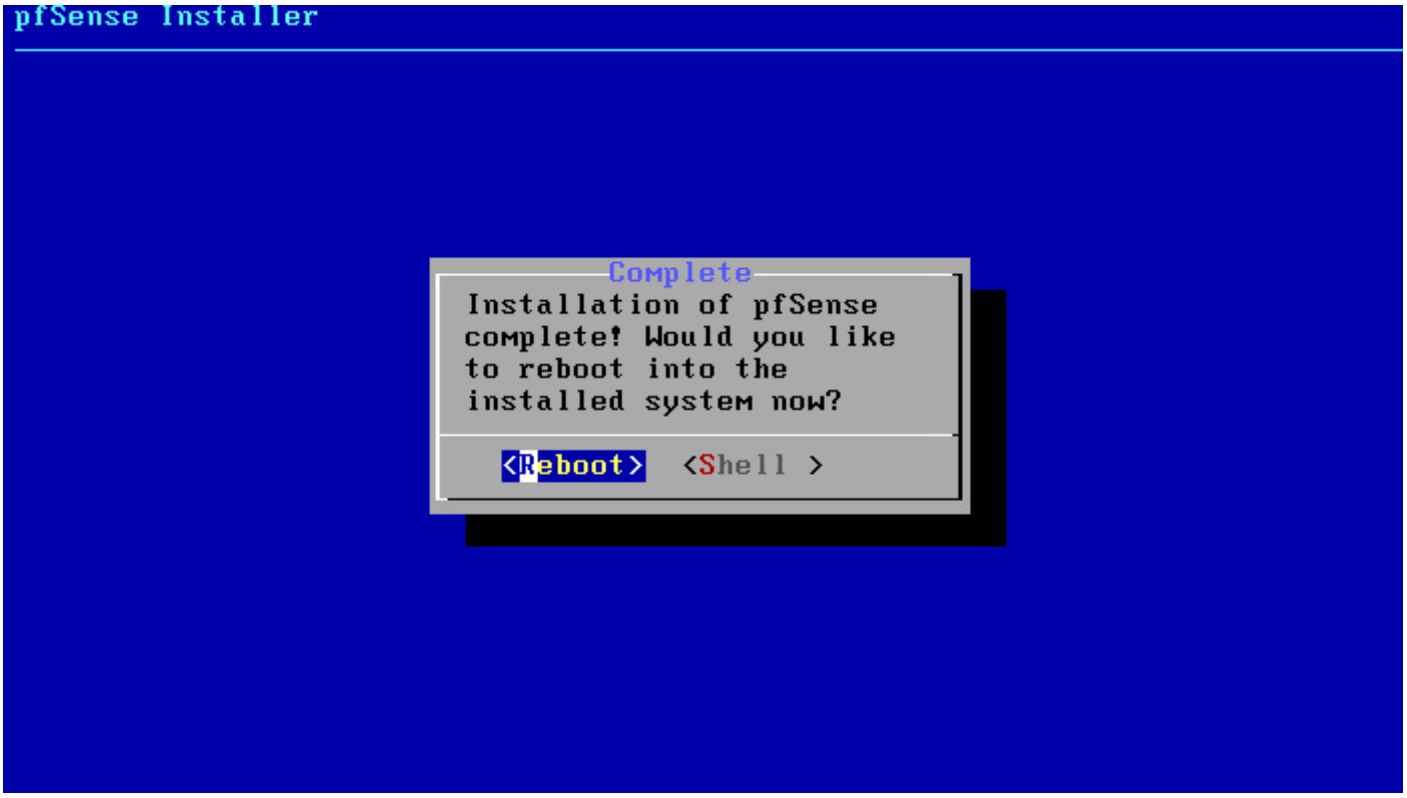
Installation de pfSense 2.5

On commence par définir la langue du clavier (French), puis on installe en mode Auto.

On clique sur "No" ici.



On reboot.



Je n'ai pas de VLAN. On peut en ajouter plus tard via l'interface Web.

```
Starting device manager (devd)...done.
Loading configuration......done.
Updating configuration....done.
Warning: Configuration references interfaces that do not exist: em0 em1

Network interface mismatch -- Running interface assignment option.
vmx0: link state changed to UP
vmx1: link state changed to UP
vmx2: link state changed to UP
vmx3: link state changed to UP
vmx4: link state changed to UP

Valid interfaces are:

vmx0    00:0c:29:95:38:aa (down) VMware VMXNET3 Ethernet Adapter
vmx1    00:0c:29:95:38:8c (down) VMware VMXNET3 Ethernet Adapter
vmx2    00:0c:29:95:38:b4 (down) VMware VMXNET3 Ethernet Adapter
vmx3    00:0c:29:95:38:96 (down) VMware VMXNET3 Ethernet Adapter
vmx4    00:0c:29:95:38:a0 (down) VMware VMXNET3 Ethernet Adapter

Do VLANs need to be set up first?
If VLANs will not be used, or only for optional interfaces, it is typical to
say no here and use the webConfigurator to configure VLANs later, if required.

Should VLANs be set up now [y|n]?
```

Pour chaque interface, on définit laquelle désigne laquelle (on peut comparé les adresses MAC sur l'ESXI).

```
vmx1: link state changed to UP
vmx2: link state changed to UP
vmx3: link state changed to UP
vmx4: link state changed to UP

Valid interfaces are:

vmx0    00:0c:29:95:38:aa (down) VMware VMXNET3 Ethernet Adapter
vmx1    00:0c:29:95:38:8c (down) VMware VMXNET3 Ethernet Adapter
vmx2    00:0c:29:95:38:b4 (down) VMware VMXNET3 Ethernet Adapter
vmx3    00:0c:29:95:38:96 (down) VMware VMXNET3 Ethernet Adapter
vmx4    00:0c:29:95:38:a0 (down) VMware VMXNET3 Ethernet Adapter

Do VLANs need to be set up first?
If VLANs will not be used, or only for optional interfaces, it is typical to
say no here and use the webConfigurator to configure VLANs later, if required.

Should VLANs be set up now [y|n]? n

If the names of the interfaces are not known, auto-detection can
be used instead. To use auto-detection, please disconnect all
interfaces before pressing 'a' to begin the process.

Enter the WAN interface name or 'a' for auto-detection
(vmx0 vmx1 vmx2 vmx3 vmx4 or a):
```

```
Enter the WAN interface name or 'a' for auto-detection
(vmx0 vmx1 vmx2 vmx3 vmx4 or a): vmx1

Enter the LAN interface name or 'a' for auto-detection
NOTE: this enables full Firewalling/NAT mode.
(vmx0 vmx2 vmx3 vmx4 a or nothing if finished): vmx3

Enter the Optional 1 interface name or 'a' for auto-detection
(vmx0 vmx2 vmx4 a or nothing if finished): vmx4

Enter the Optional 2 interface name or 'a' for auto-detection
(vmx0 vmx2 a or nothing if finished): vmx0

Enter the Optional 3 interface name or 'a' for auto-detection
(vmx2 a or nothing if finished): vmx2

The interfaces will be assigned as follows:

WAN  -> vmx1
LAN  -> vmx3
OPT1 -> vmx4
OPT2 -> vmx0
OPT3 -> vmx2

Do you want to proceed [y|n]?
```

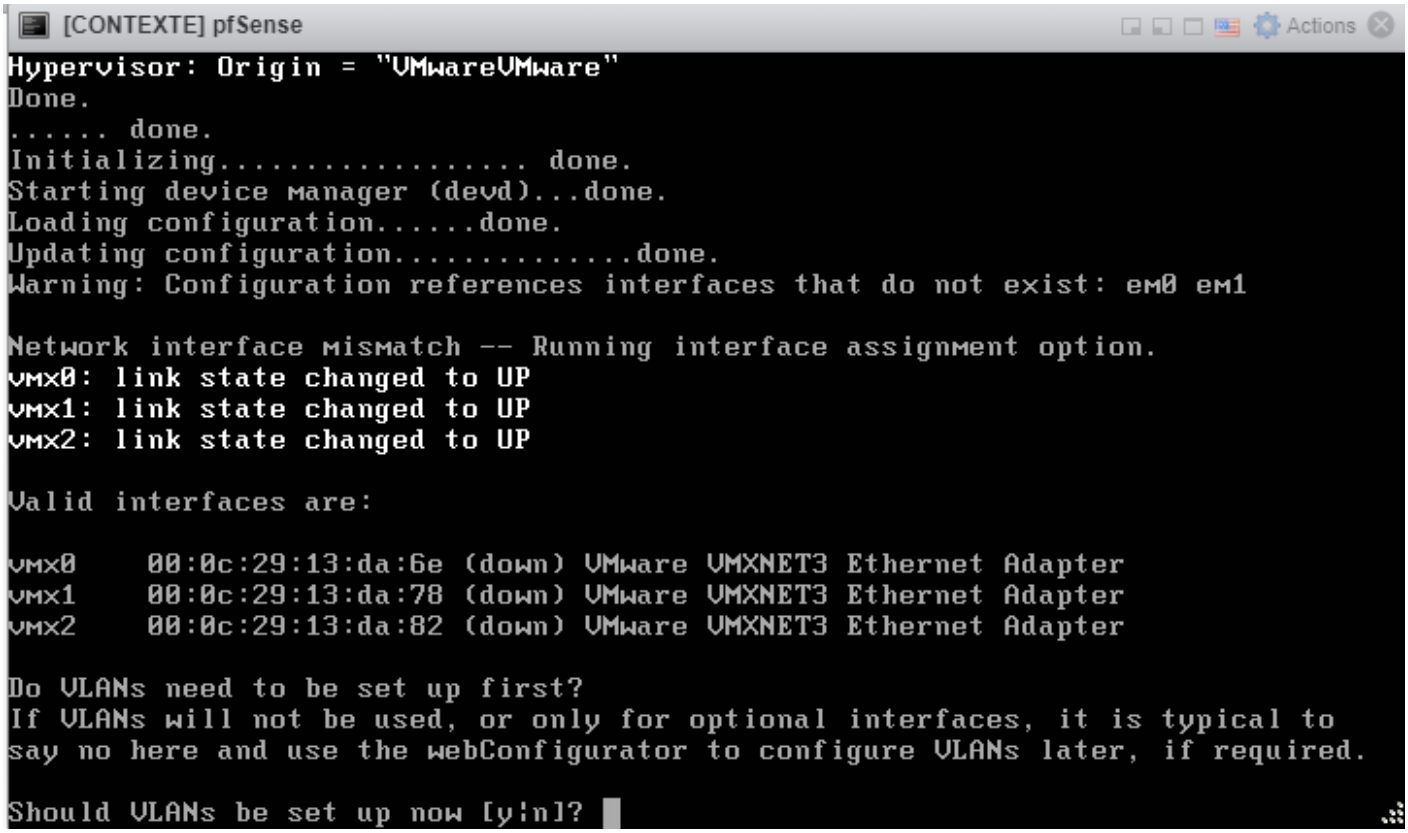
On attribue ensuite les adresses IP en prenant l'option 2.

```
Available interfaces:

1 - WAN (vmx1 - dhcp, dhcp6)
2 - LAN (vmx3 - static)
3 - OPT1 (vmx4)
4 - OPT2 (vmx0)
5 - OPT3 (vmx2)

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

```
1 - WAN (vmx1 - dhcp, dhcp6)
2 - LAN (vmx3 - static)
3 - OPT1 (vmx4)
4 - OPT2 (vmx0)
5 - OPT3 (vmx2)

Enter the number of the interface you wish to configure: 1

Configure IPv4 address WAN interface via DHCP? (y/n) n

Enter the new WAN IPv4 address.  Press <ENTER> for none:
> 192.168.199.10

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 WAN IPv4 subnet bit count (1 to 31):
> 24

For a WAN, enter the new WAN IPv4 upstream gateway address.
For a LAN, press <ENTER> for none:
> 192.168.199.254
```

```
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:
>

Do you want to enable the DHCP server on LAN? (y/n) n
Disabling IPv4 DHCPD...Disabling IPv6 DHCPD...
Do you want to revert to HTTP as the webConfigurator protocol? (y/n) n

Please wait while the changes are saved to LAN...
 Reloading filter...
 Reloading routing configuration...
 DHCPD...

The IPv4 LAN address has been set to 192.168.0.254/24
You can now access the webConfigurator by opening the following URL in your web
browser:
                https://192.168.0.254/

Press <ENTER> to continue.
```

Installation, attribution de cartes et adresses IP



On met non et on attribue les cartes.

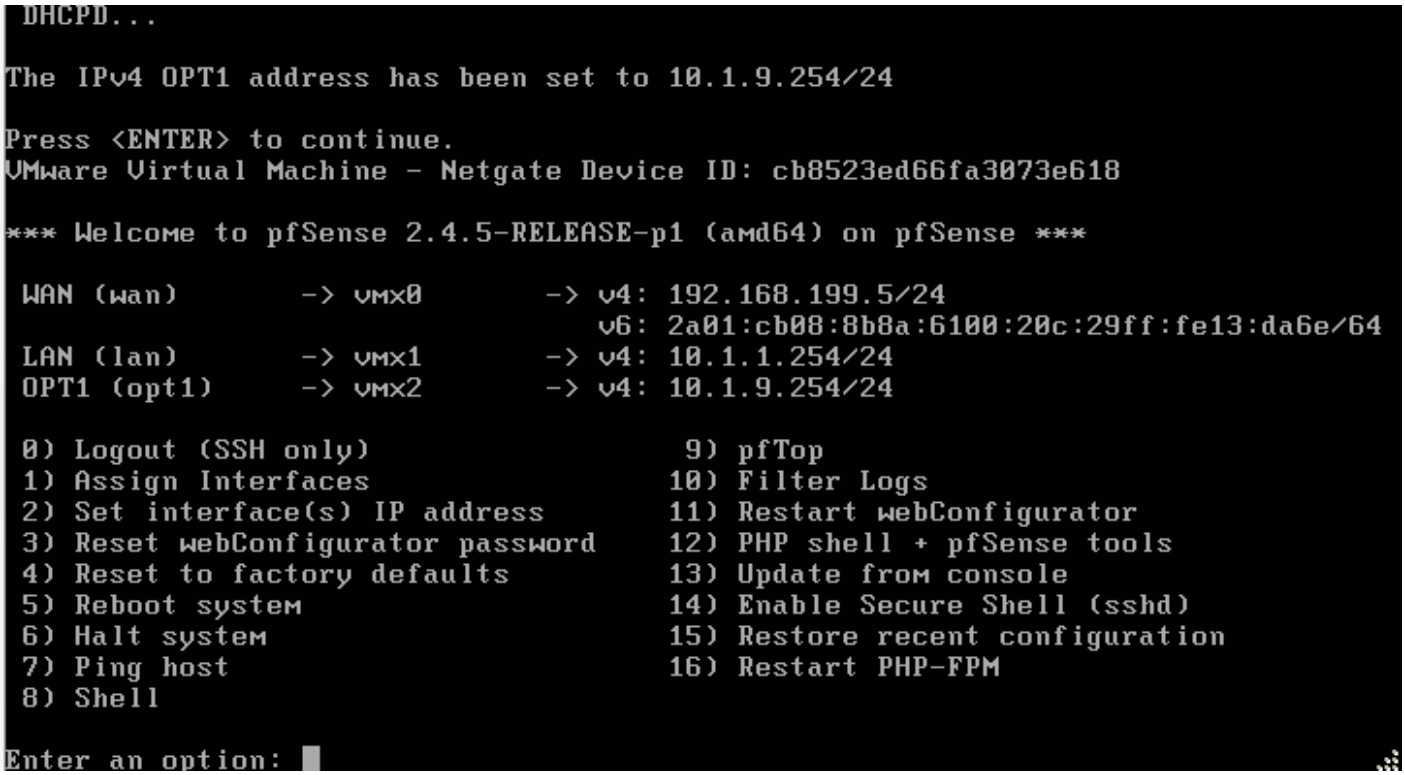
```
Bootup complete

FreeBSD/amd64 (pfSense.localdomain) (ttyv0)

VMware Virtual Machine - Netgate Device ID: cb8523ed66fa3073e618

*** Welcome to pfSense 2.4.5-RELEASE-p1 (amd64) on pfSense ***

 WAN (wan)       -> vmx0       -> v4/DHCP4: 192.168.199.109/24
                                  v6/DHCP6: 2a01:cb08:8b8a:6100:20c:29ff:fe13:da
6e/64
 LAN (lan)       -> vmx1       -> v4: 192.168.1.1/24
 OPT1 (opt1)     -> vmx2       ->

 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:
```

On attribue ensuite des adresses IP en choisissant l'option 2.

```
Available interfaces:

1 - WAN (vmx0 - dhcp, dhcp6)
2 - LAN (vmx1 - static)
3 - OPT1 (vmx2)

Enter the number of the interface you wish to configure: 1

Configure IPv4 address WAN interface via DHCP? (y/n) n

Enter the new WAN IPv4 address.  Press <ENTER> for none:
> 192.168.199.5

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 WAN IPv4 subnet bit count (1 to 31):
> 24

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

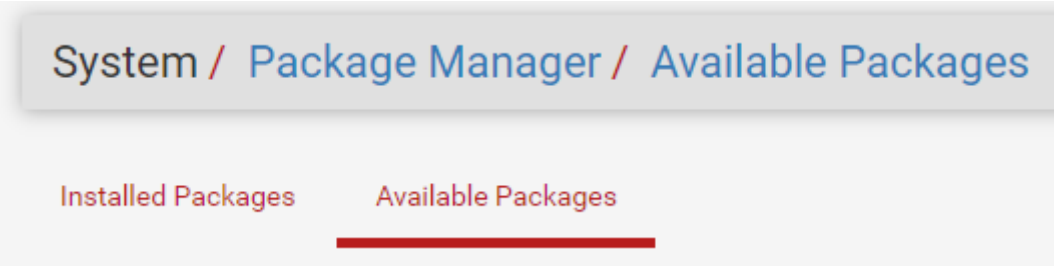
On rentre une passerelle pour l'accès Internet.

On fait de même pour les autres cartes.


DHCPD...
The IPv4 OPT1 address has been set to 10.1.9.254/24
Press <ENTER> to continue.
VMware Virtual Machine - Netgate Device ID: cb8523ed66fa3073e618
*** Welcome to pfSense 2.4.5-RELEASE-p1 (amd64) on pfSense ***
WAN (wan) -> vmx0 -> v4: 192.168.199.5/24
v6: 2a01:cb08:8b8a:6100:20c:29ff:fe13:da6e/64
LAN (lan) -> vmx1 -> v4: 10.1.1.254/24
OPT1 (opt1) -> vmx2 -> v4: 10.1.9.254/24
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) Shell
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
Enter an option:

Ajouter un proxy Zabbix

Sous "System > Package Manager > Available Packages", on recherche Zabbix Proxy. On prend la dernière version.



Ensuite, sous "Services > Zabbix Proxy", on le configure.

On rentre les informations suivantes :

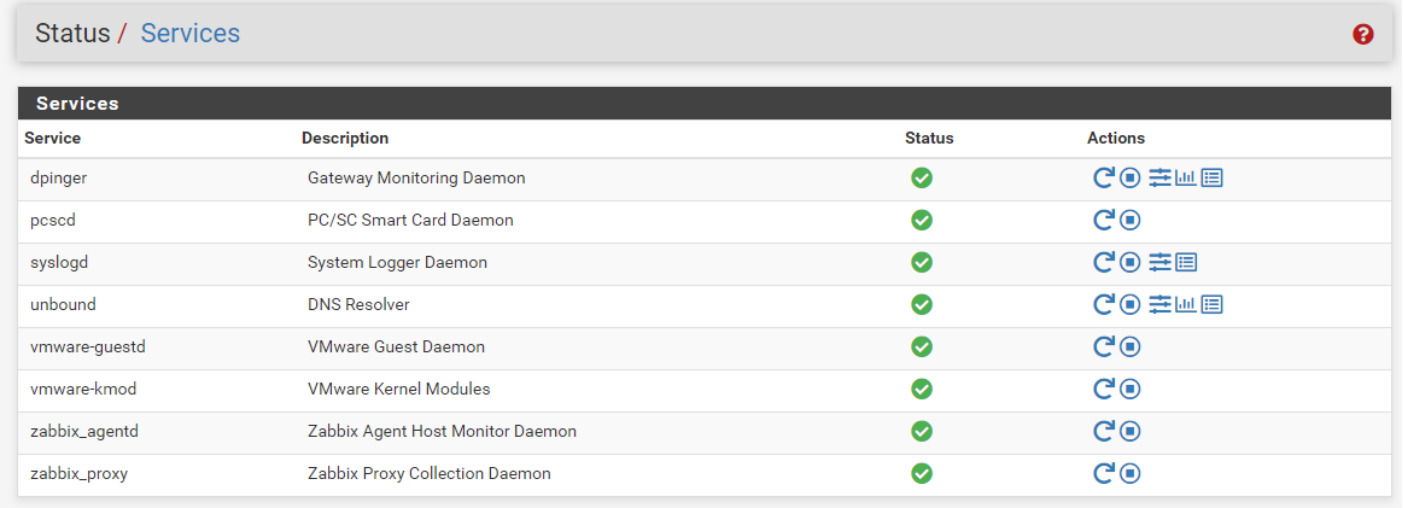
> Server
>
> Server Port
>
> Hostname (nom du proxy, doit correspondre dans Zabbix)
>
> ListenIP (sur quelles interfaces le proxy écoute)
>
> Proxy Mode (Active est par défaut, et préférable)
>
> Config Frequency (fréquence d'actualisation de la configuration, c'est à dire la fréquence de la récupération de configuration de la part du serveur)
>
> TLSConnect : psk
>
> TLS accept : psk
>
> TLS Psk Identity : idendité du proxy psk. Par exemple : homelab. Devra correspondre pour le chiffrement dans Zabbix
>
> TLS PSK : la clé. On peut la générer sur une machine linux via la commande openssl rand -hex 32

On clique ensuite sur "Show Advanced Options" et on rajoute :

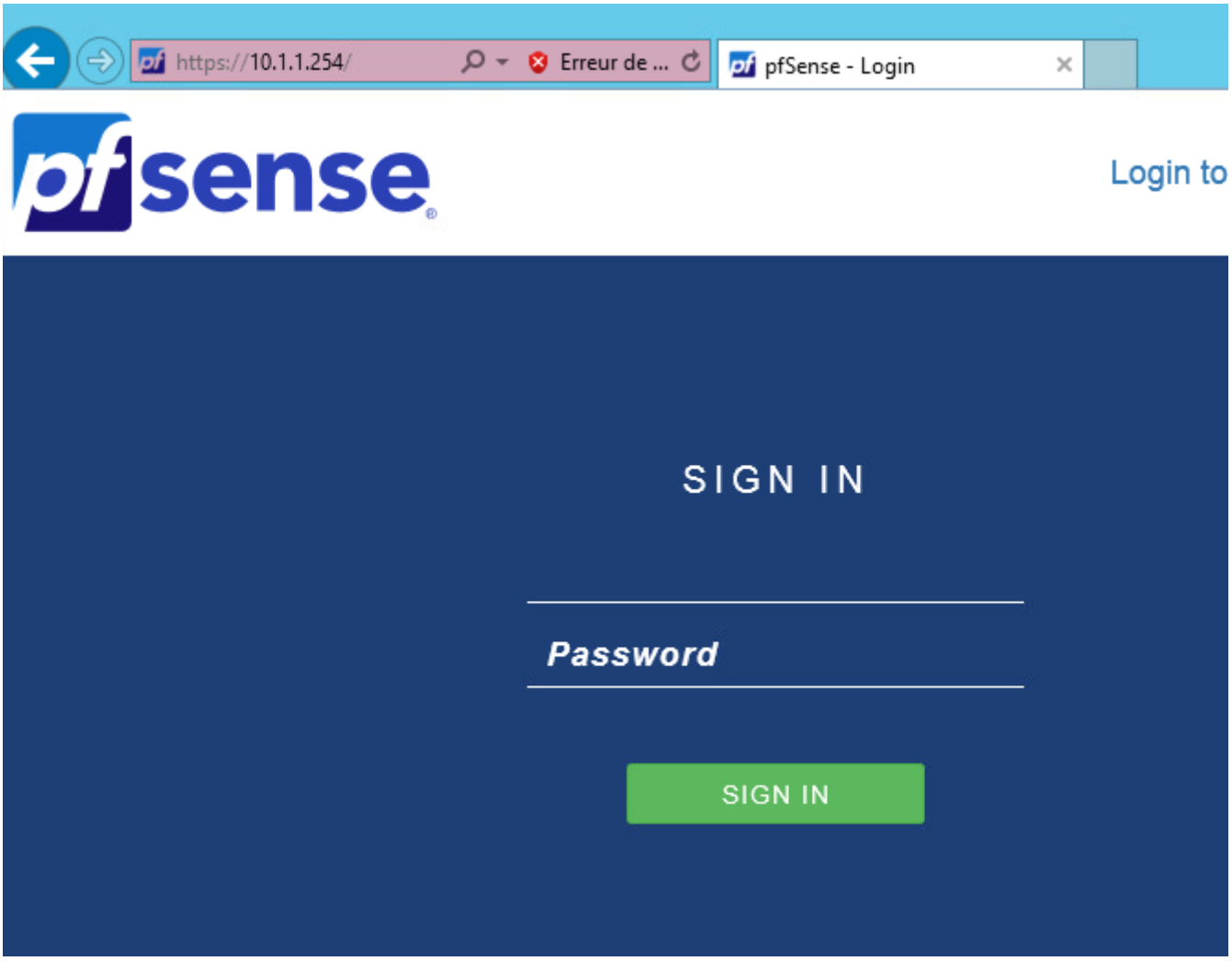
```
StartDiscoverers=10
StartVMwareCollectors=2
VMwareFrequency=60
VMwarePerfFrequency=60
VMwareCacheSize=50M
VMwareTimeout=10
```

Ces valeurs sont utiles si on supervise un hôte VMware.

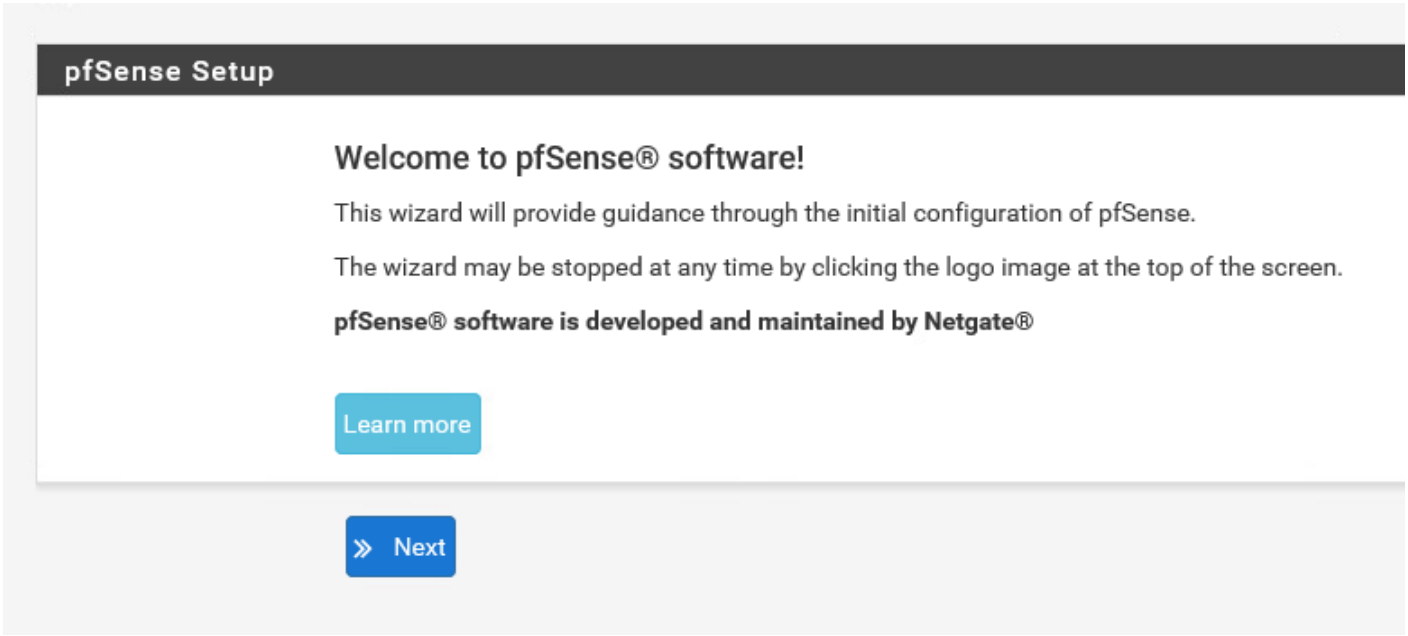
On peut vérifier si le service est démarré sous "Status > Services".

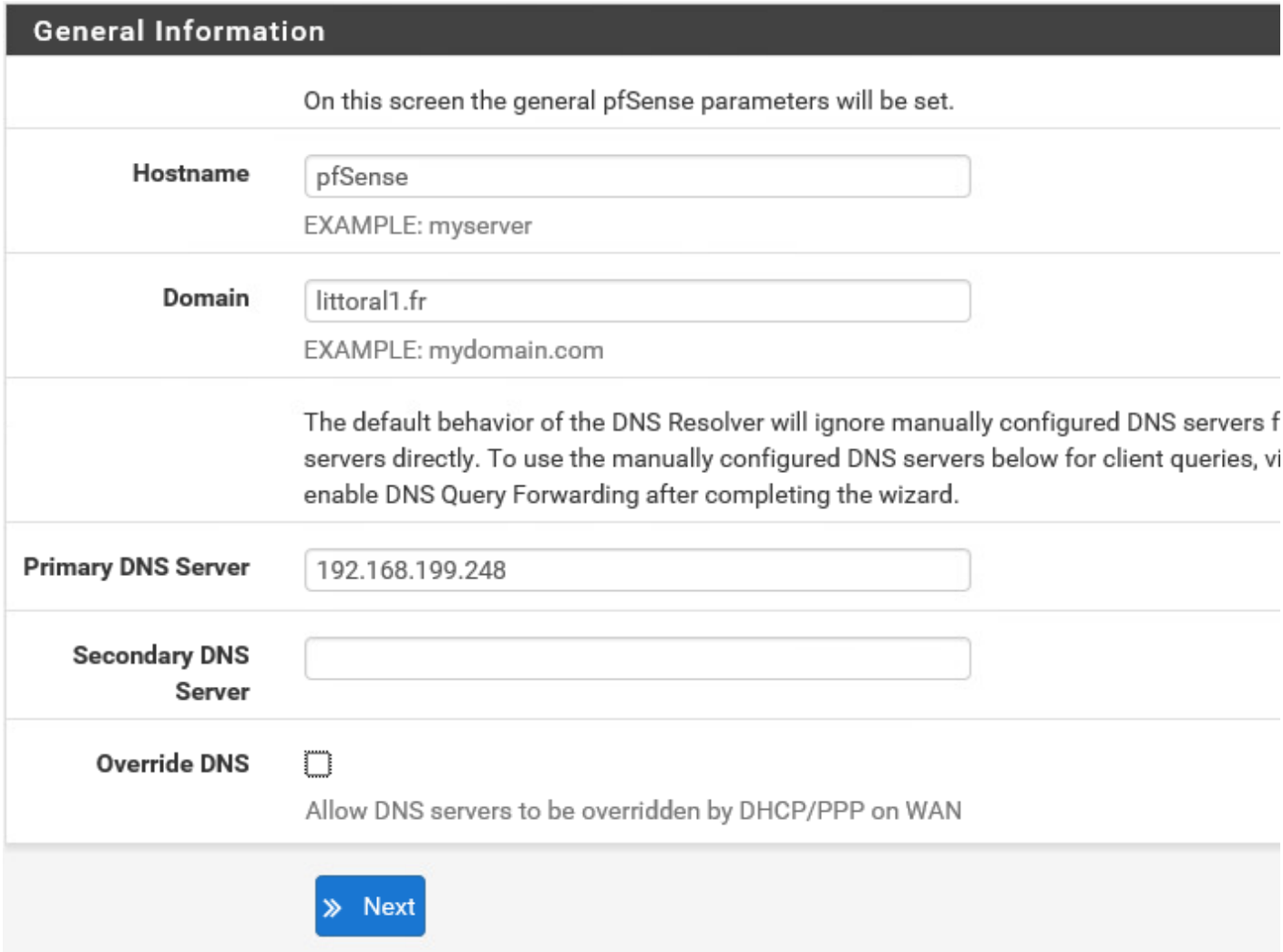


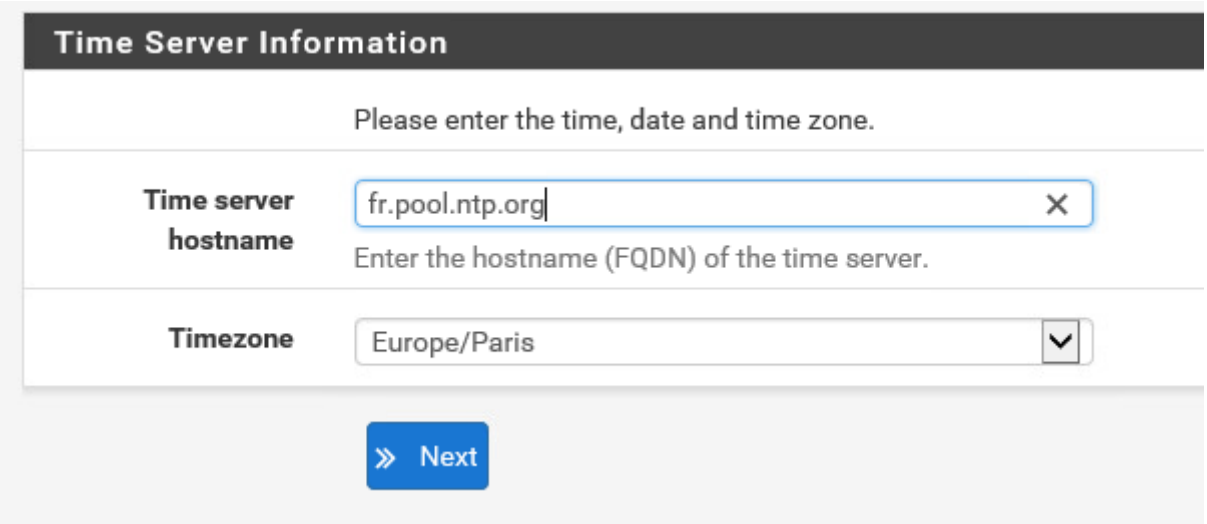
Paramétrage via l'interface web



admin:pfsense


pfSense Setup
Welcome to pfSense® software!
This wizard will provide guidance through the initial configuration of pfSense.
The wizard may be stopped at any time by clicking the logo image at the top of the screen.
pfSense® software is developed and maintained by Netgate®
Learn more
» Next

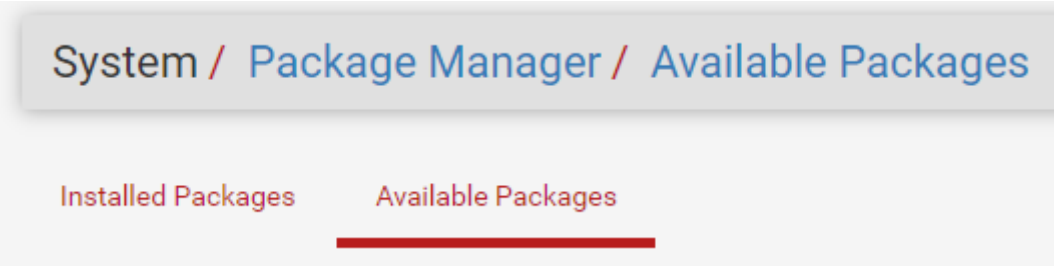

General Information
On this screen the general pfSense parameters will be set.
Hostname
pfSense
EXAMPLE: myserver
Domain
littoral1.fr
EXAMPLE: mydomain.com
The default behavior of the DNS Resolver will ignore manually configured DNS servers f
servers directly. To use the manually configured DNS servers below for client queries, vi
enable DNS Query Forwarding after completing the wizard.
Primary DNS Server
192.168.199.248
Secondary DNS Server
Override DNS
Allow DNS servers to be overridden by DHCP/PPP on WAN
» Next



On vérifie ensuite les informations puis on clique sur "Reload".

Ajouter l'agent Zabbix

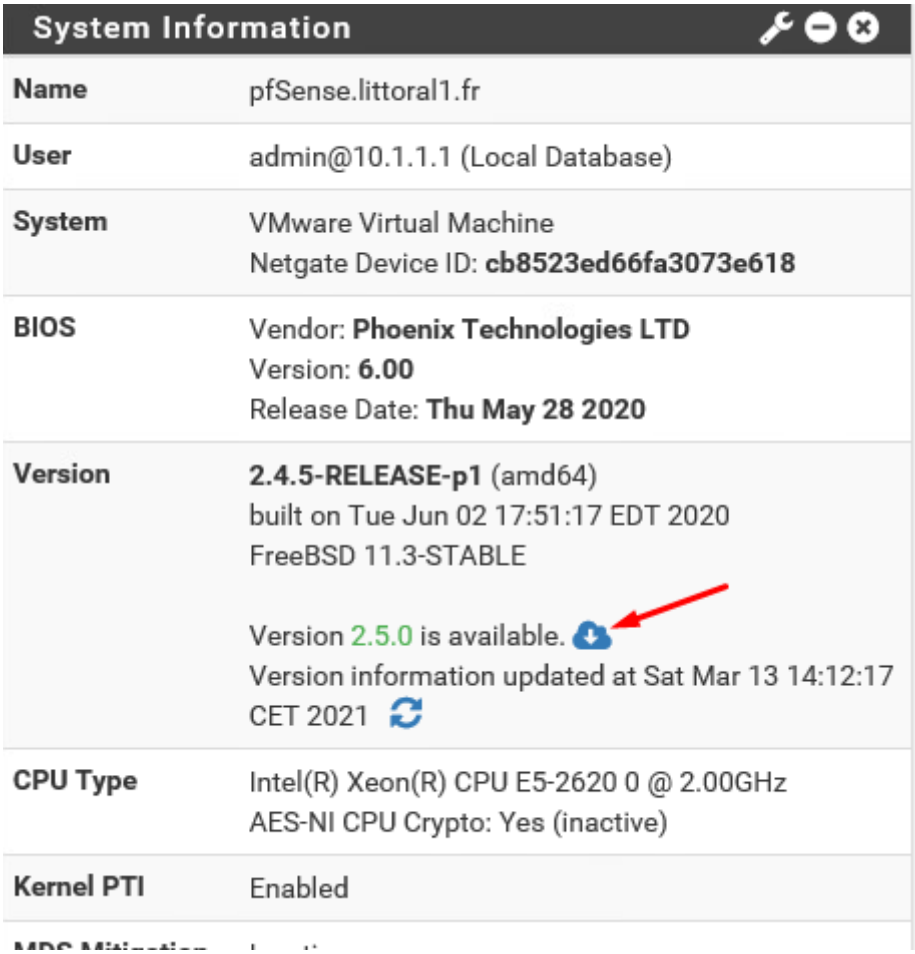
Sous "System > Package Manager > Available Packages", on recherche Zabbix Agent. On prend la dernière version.



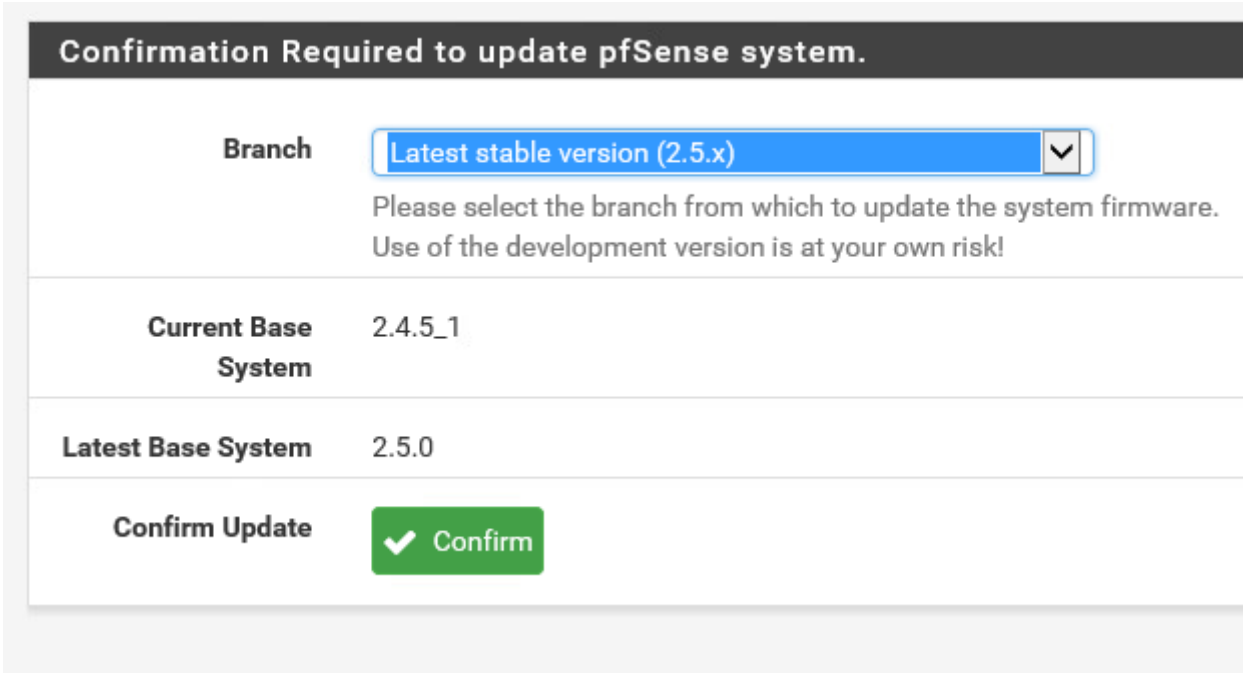
Ensuite, sous "Services > Zabbix Agent", on le configure.

On définit les valeurs : Server, Server Active (pour le mode actif), Hostname. Pour le chiffrement, on peut définir les options comme pour le proxy si l'on souhaite chiffrer en local.

Mise à jour



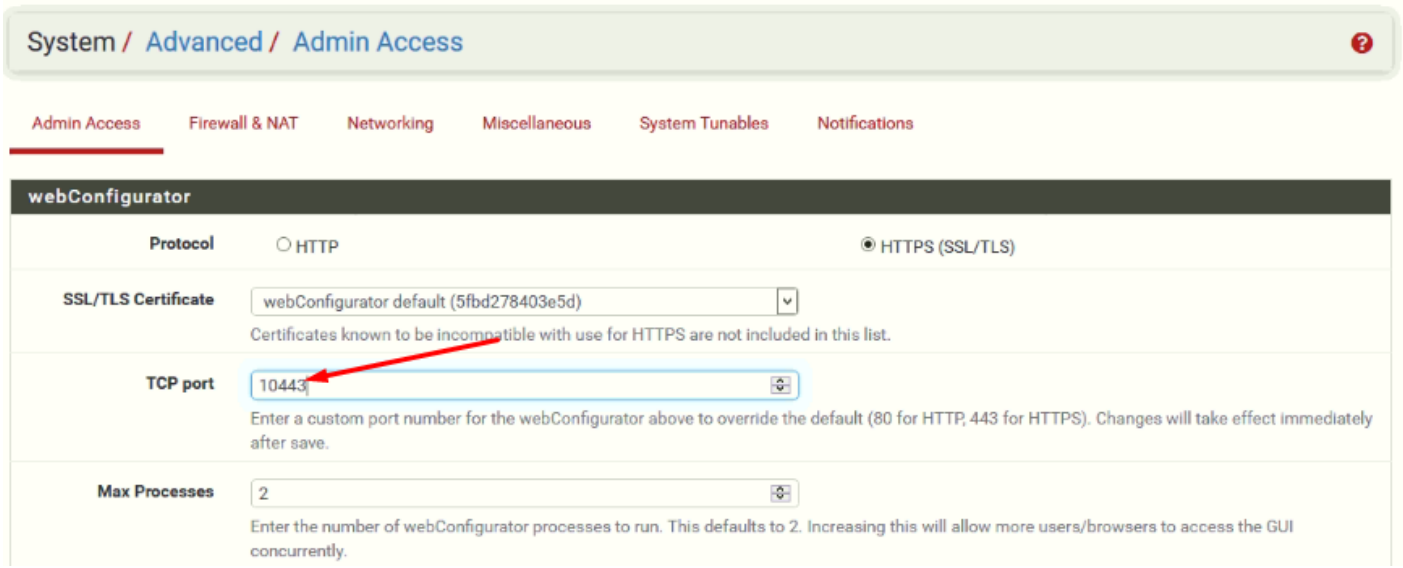
On clique sur le nuage puis on met à jour.

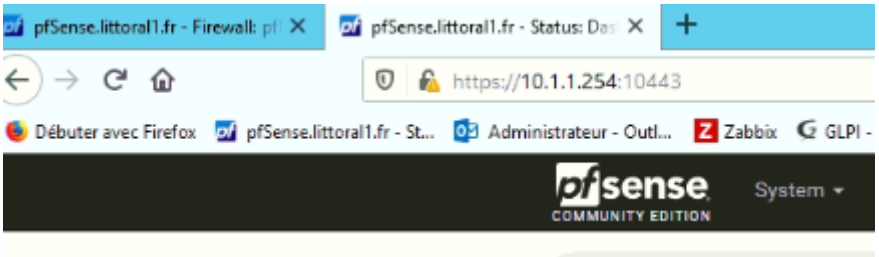


Paramètres généraux

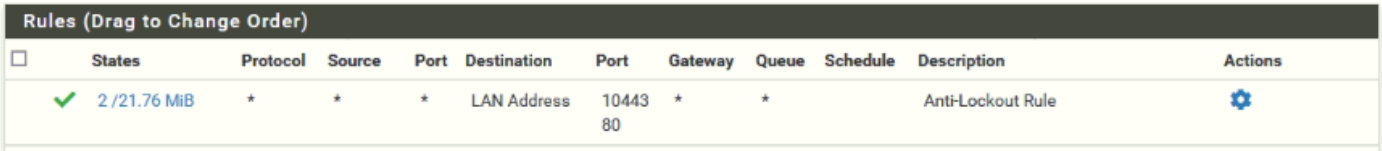
Changement du port par défaut

Dans System > Advanced :

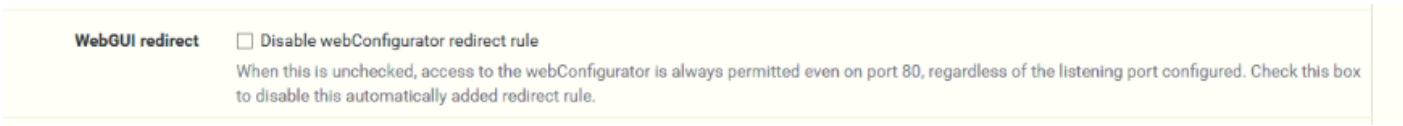




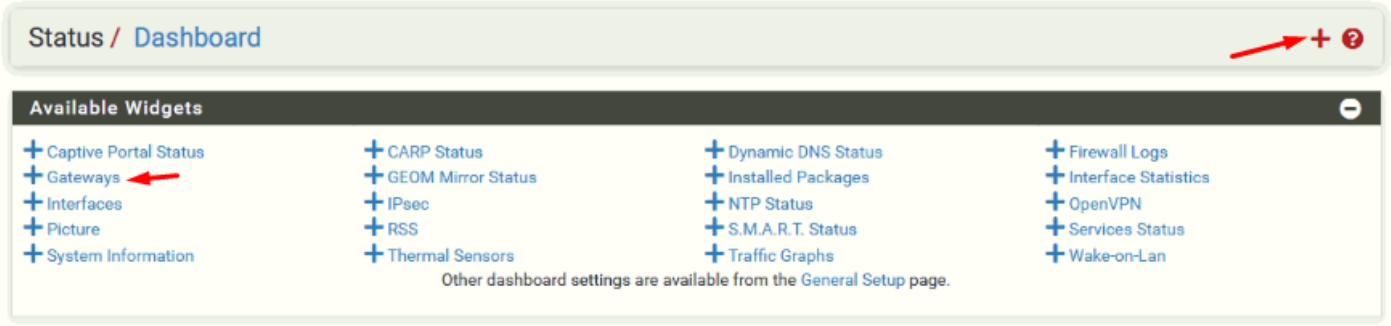
La règle s'est donc modifiée :



On coche également cette case. Par défaut, pfsense redirige le port 80 vers le port https.

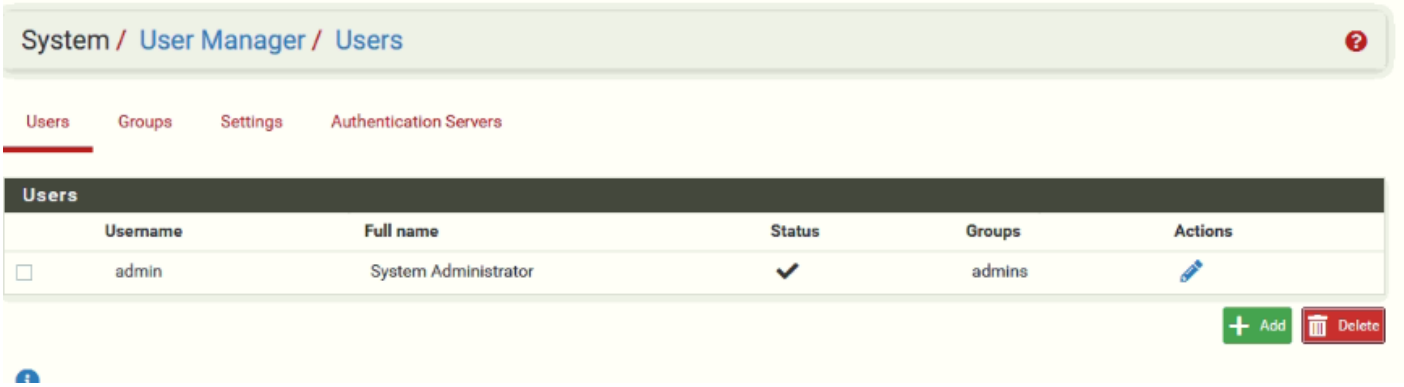


Ajout de widget au menu principal



Création d'un nouveau compte admin

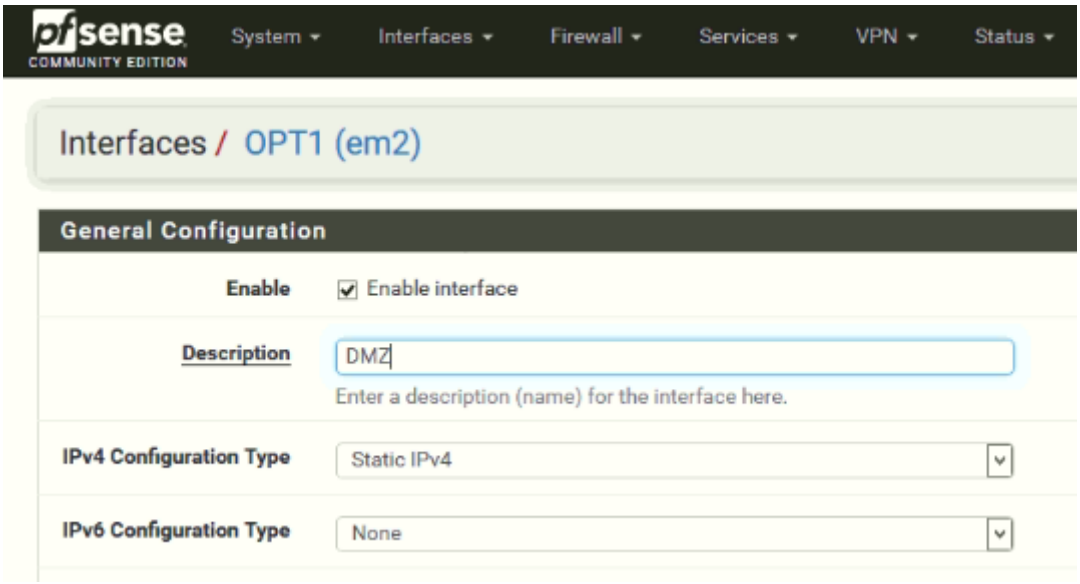
Il est recommandé de créer un autre compte que "admin".



On désactive ensuite le compte admin.

Changement du nom d'interface

Dans Interfaces > Assisgnments :

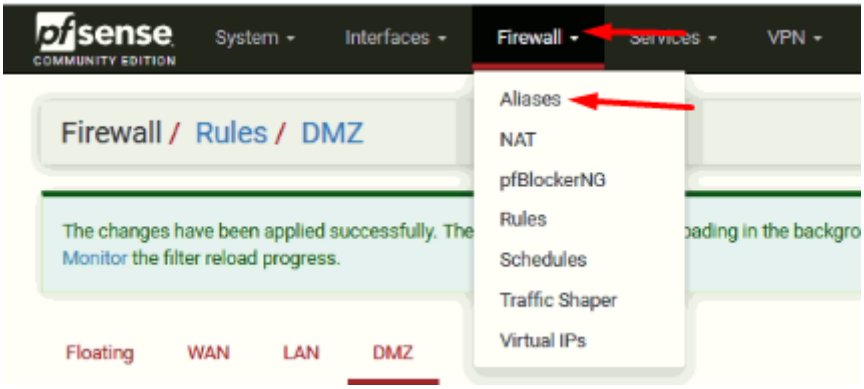


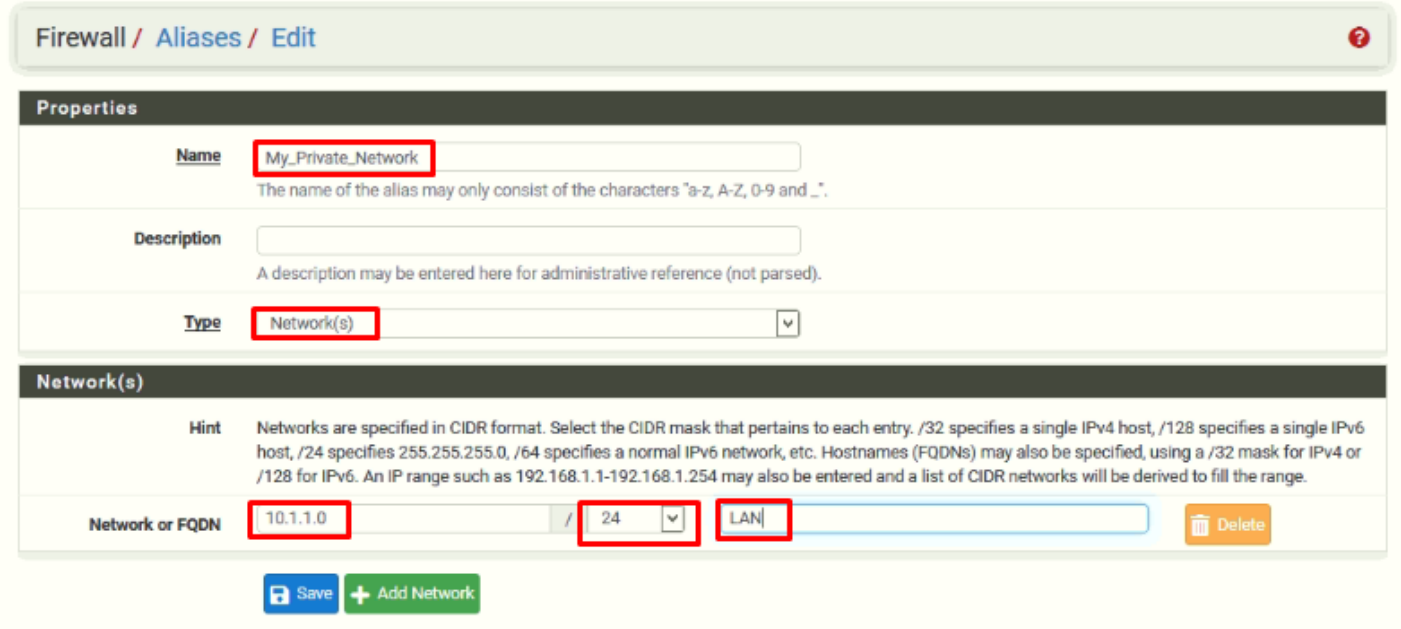
On change la description pour "DMZ".

Règles de pare-feu

Le LAN par défaut autorise tout, le WAN rejete tout et la DMZ aussi.

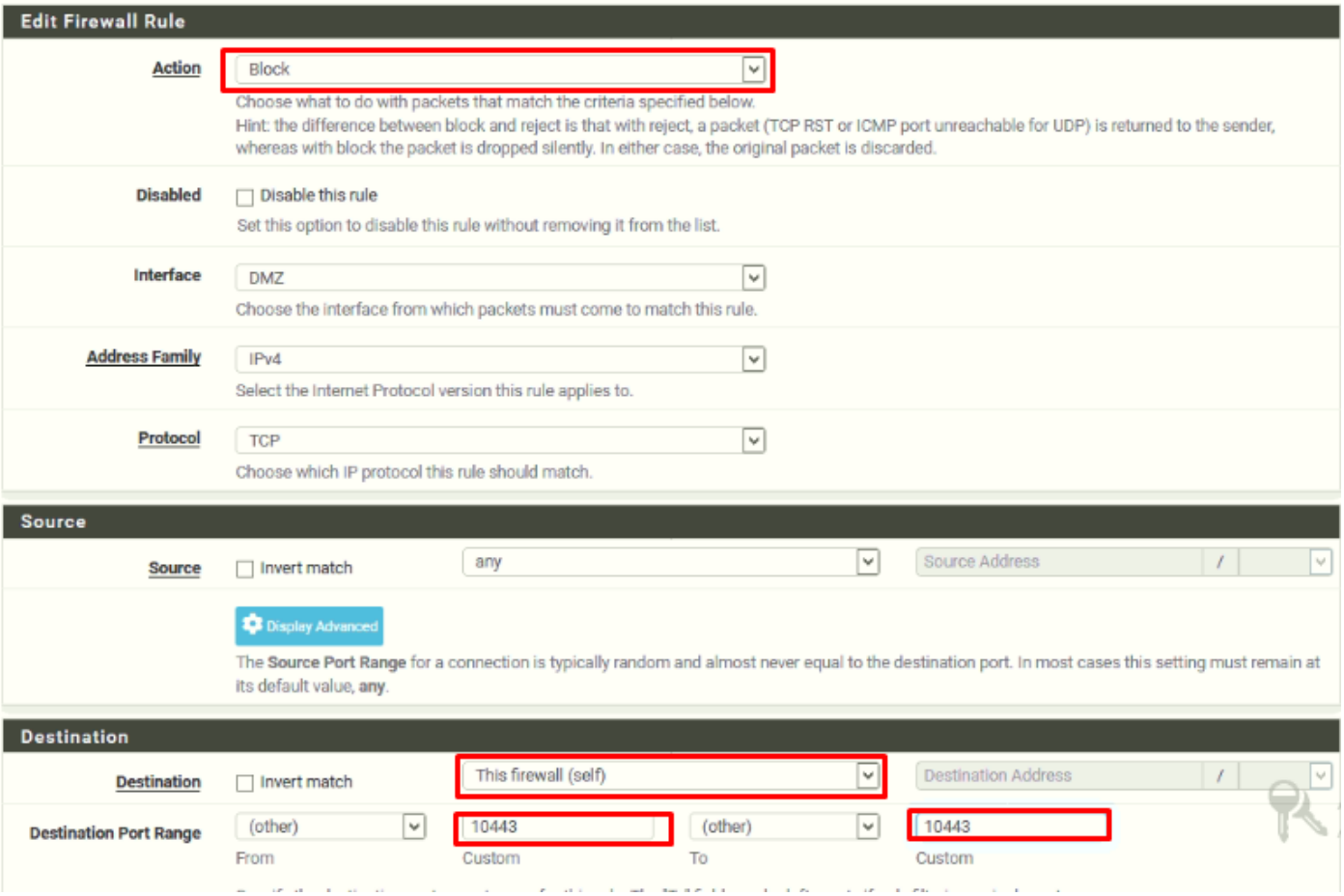
Création d'alias

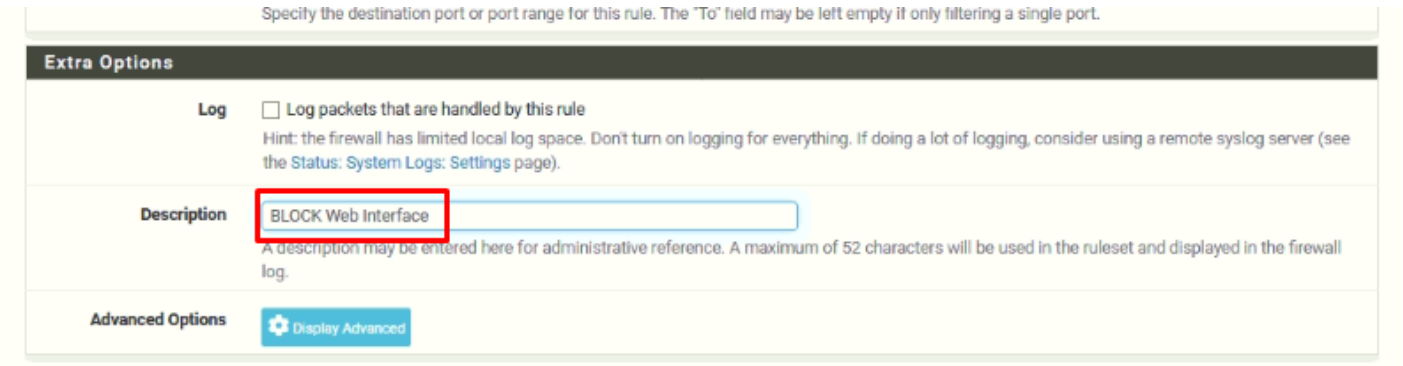




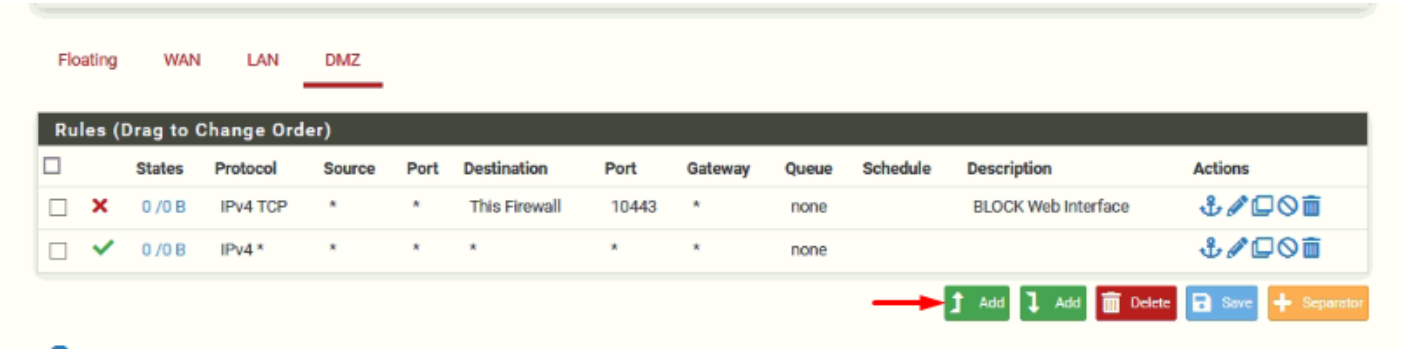
Règles DMZ

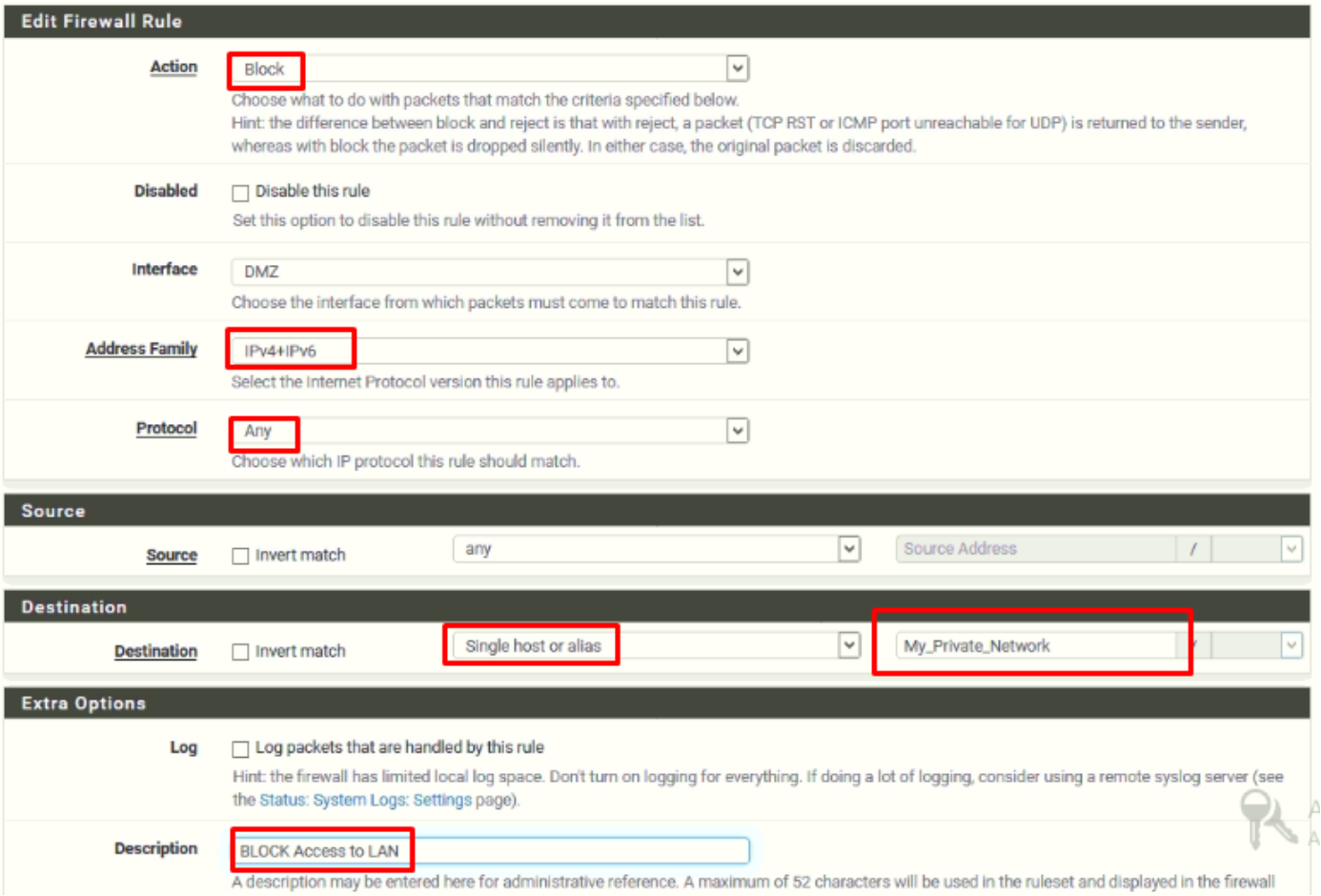
Pour la DMZ, on refuse l'accès au pare-feu (administration).

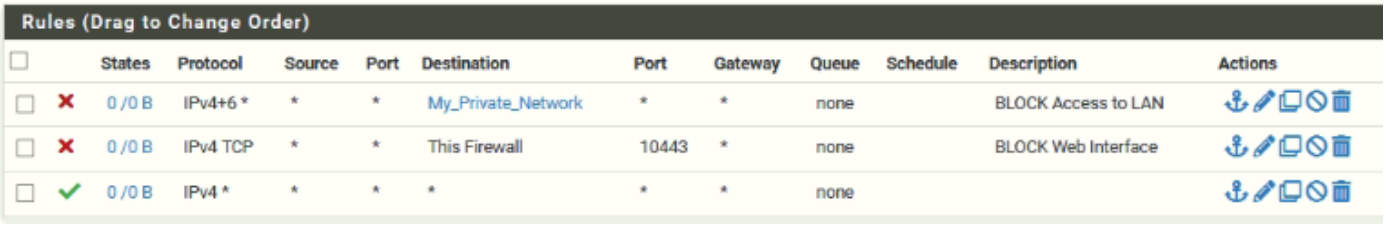




On bloque l'accès au LAN.







Rules (Drag to Change Order)

	States	Protocol	Source	Port	Destination	Port	Gateway	Queue	Schedule	Description	Actions
☐ ✗	0 /0 B	IPv4+6 *	*	*	My_Private_Network	*	*	none		BLOCK Access to LAN	
☐ ✗	0 /0 B	IPv4 TCP	*	*	This Firewall	10443	*	none		BLOCK Web Interface	
☐ ✓	0 /0 B	IPv4 *	*	*	*	*	*	none			

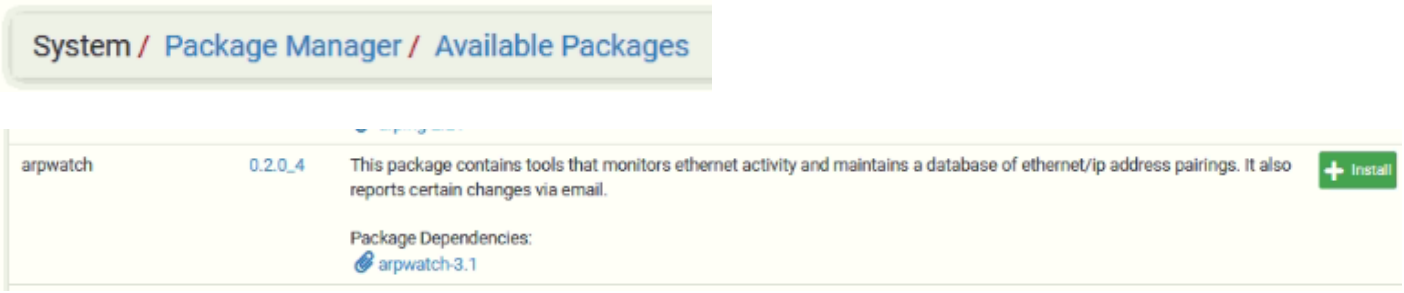
Plugins

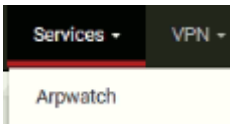
Pfsense dispose de nombreux plugins installables, comme open-vm-tools (si virtualisé), pfblockerng pour bloquer des sites/IP, agent Zabbix...

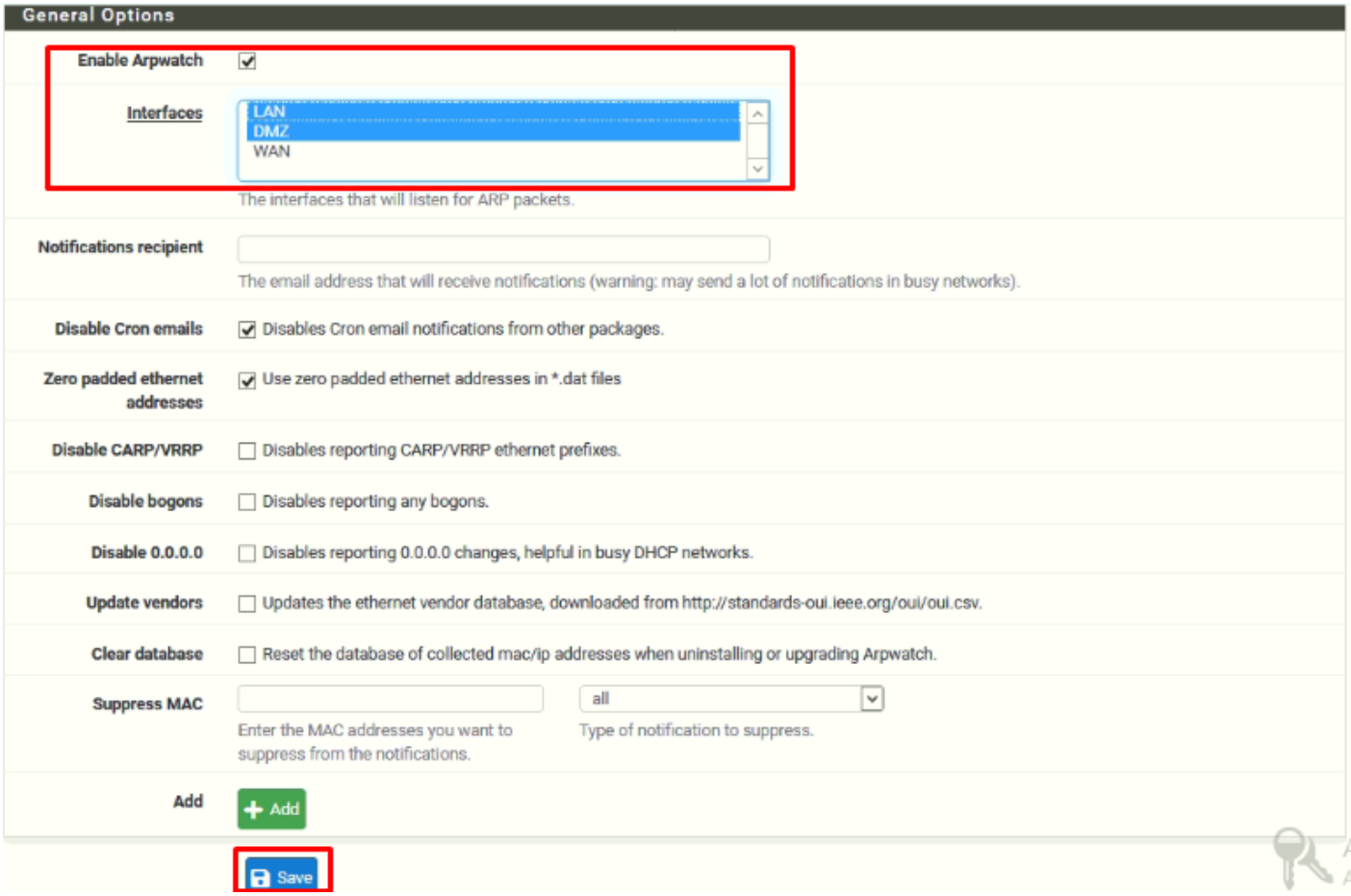
Par exemple, arpwatch.

arpwatch

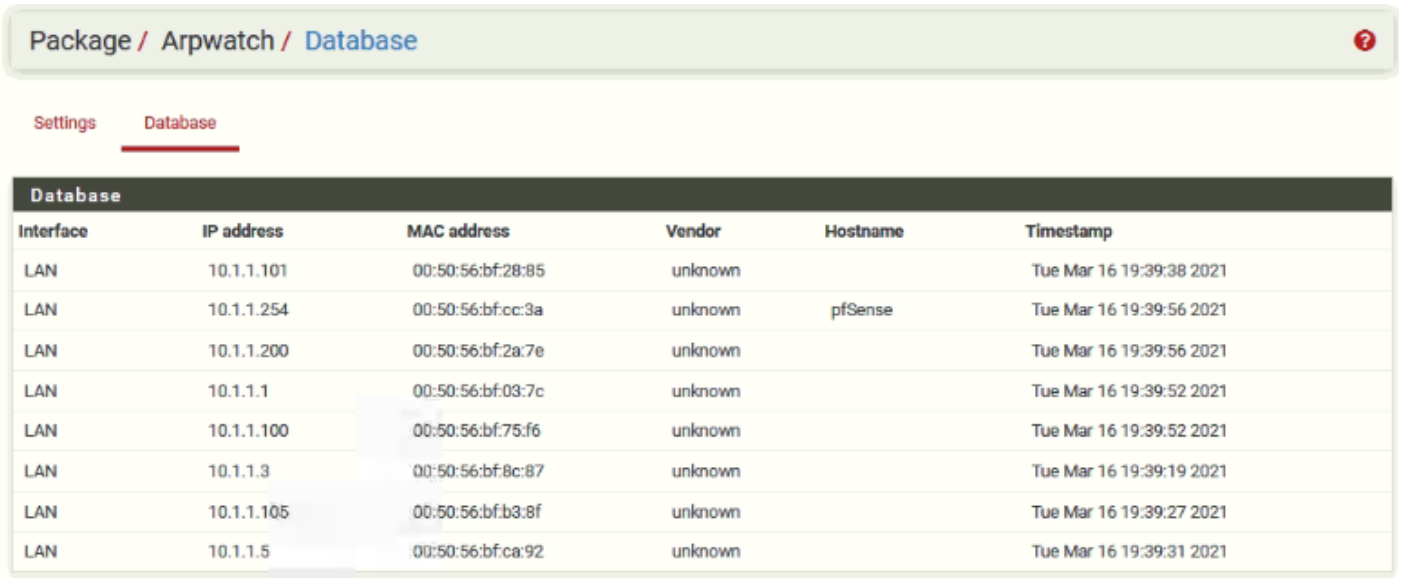
Ce plugin détecte les nouvelles adresses MAC du réseau.







Dans l'onglet Database, on aura une liste.



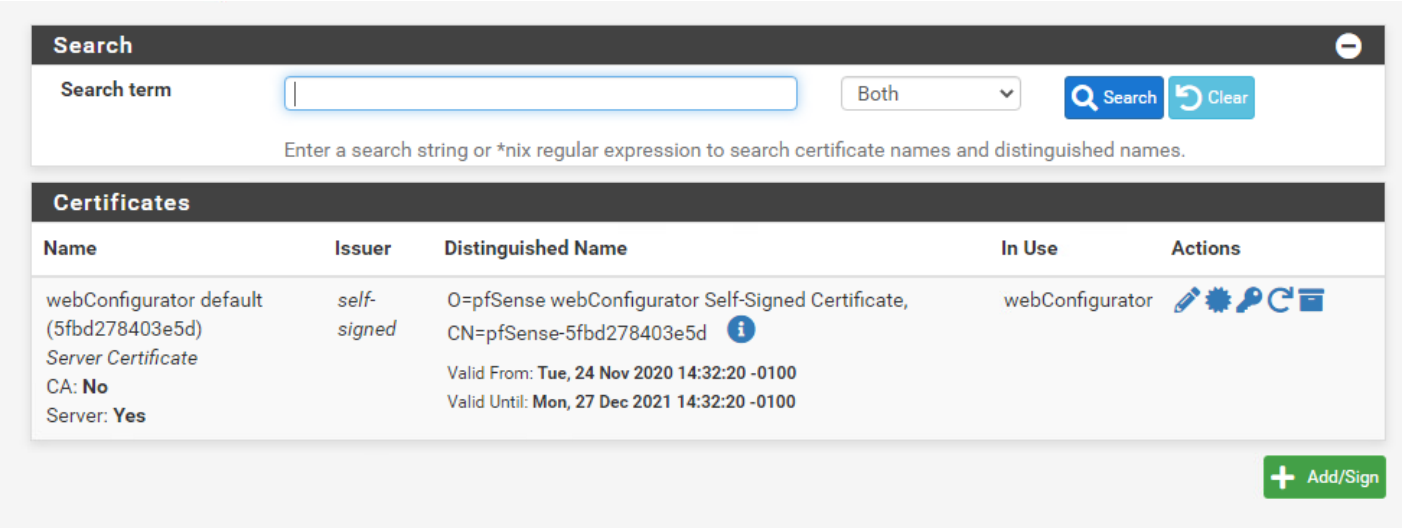
Interface	IP address	MAC address	Vendor	Hostname	Timestamp
LAN	10.1.1.101	00:50:56:bf:28:85	unknown		Tue Mar 16 19:39:38 2021
LAN	10.1.1.254	00:50:56:bf:cc:3a	unknown	pfSense	Tue Mar 16 19:39:56 2021
LAN	10.1.1.200	00:50:56:bf:2a:7e	unknown		Tue Mar 16 19:39:56 2021
LAN	10.1.1.1	00:50:56:bf:03:7c	unknown		Tue Mar 16 19:39:52 2021
LAN	10.1.1.100	00:50:56:bf:75:f6	unknown		Tue Mar 16 19:39:52 2021
LAN	10.1.1.3	00:50:56:bf:8c:87	unknown		Tue Mar 16 19:39:19 2021
LAN	10.1.1.105	00:50:56:bf:b3:8f	unknown		Tue Mar 16 19:39:27 2021
LAN	10.1.1.5	00:50:56:bf:ca:92	unknown		Tue Mar 16 19:39:31 2021

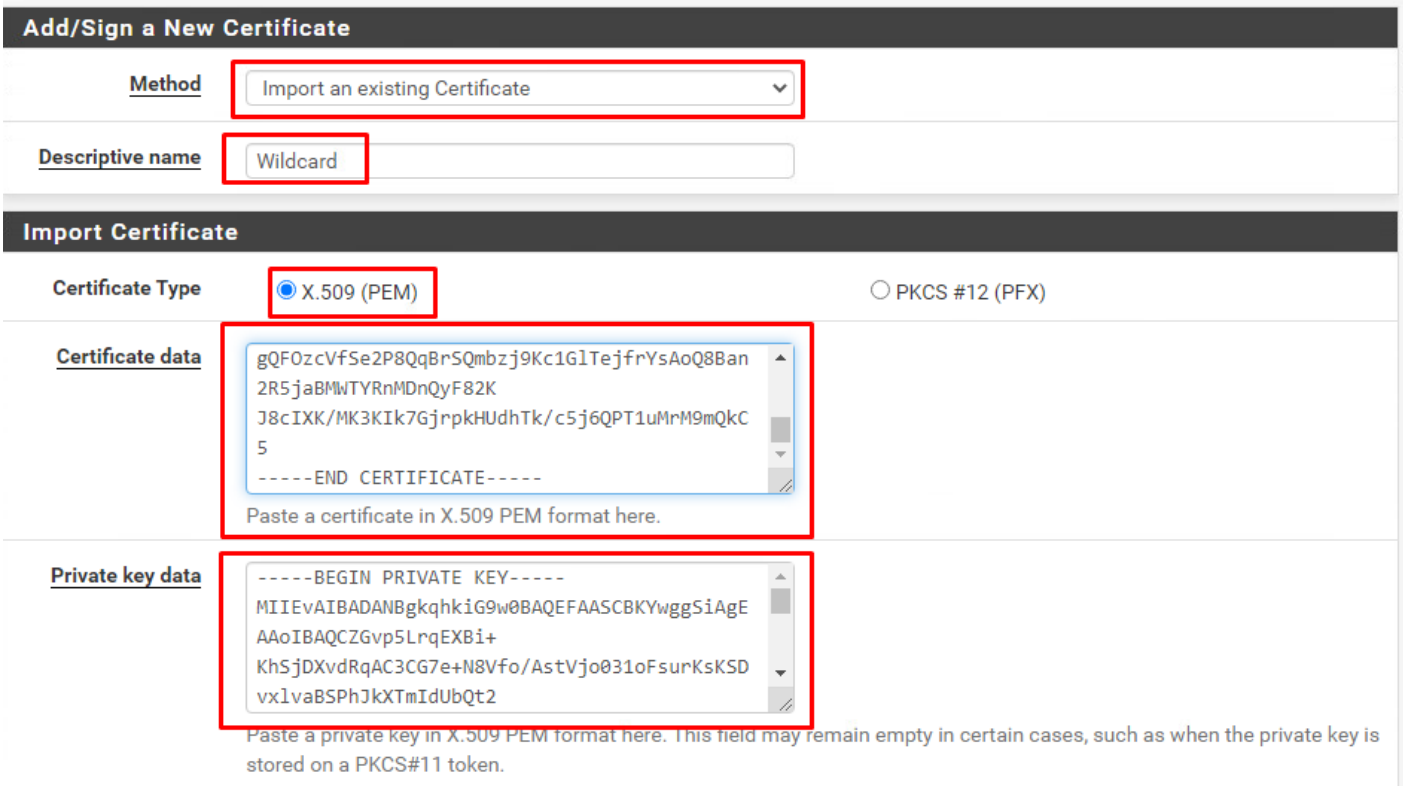
pfblockerng

Voir : A VENIR.

Reverse-proxy

On ajoute un certificat SSL (Wildcard) dans System > Cert. Manager, et dans l'onglet "Certificates".





Services / HAProxy / Backend

Settings | Frontend | Backend | Files | Stats | Stats FS | Templates

Backends

	Advanced	Name	Servers	Check	Frontend	Actions
☐		www.littoral1.fr	1	HTTP	shared-frontend	
☐		mail.littoral1.fr	1	none	shared-frontend	

Add | Delete | Save

Services / HAProxy / Frontend

Settings | Frontend | Backend | Files | Stats | Stats FS | Templates

Frontends

Primary	Shared	On	Advanced	Name	Description	Address	Type	Backend	Actions
☐		✓		shared-frontend	shared-frontend	192.168.199.5:443	https	www.littoral1.fr if(WEB) mail.littoral1.fr if(MAIL)	

Add | Delete | Save

Name shared-frontend

Description shared-frontend

Status Active

External address Define what ip:port combinations to listen on for incomming connections.

Table

Listen address	Custom address	Port	SSL Offloading	Advanced	Actions
WAN address (IPv4)		443	☑		

NOTE: You must add a firewall rules permitting access to the listen ports above.
If you want this rule to apply to another IP address than the IP address of the interface chosen above, select it here (you need to define Virtual IP addresses on the first). Also note that if you are trying to redirect connections on the LAN select the "any" option. In the port to listen to, if you want to specify multiple ports, separate them with a comma (,). EXAMPLE: 80,8000 Or to listen on both 80 and 443 create 2 rows in the table where for the 443 you would likely want to check the SSL-offloading checkbox.

Max connections

Sets the maximum amount of connections this frontend will accept, may be left empty.

Type http / https(offloading)

This defines the processing type of HAProxy, and will determine the available options for acl checks and also several other options

Default backend, access control lists and actions

Access Control lists

Use these to define criteria that will be used with actions defined below to perform them only when certain conditions are met.

Table

	Name	Expression	CS	Not	Value	Actions
☐ ⚓	WEB	Host matches:	no	no	www.littoral1.fr	✎ 🗑 ⧉
☐ ⚓	MAIL	Host matches:	no	no	mail.littoral1.fr	✎ 🗑 ⧉

- 'CS' makes the string matches 'Case Sensitive' so www.domain.tld wil not be the same as WWW.domain.TLD
- 'Not' makes the match if the value given is not matched

Example:

Name	Expression	CS	Not	Value
Backend1acl	Host matches			www.yourdomain.tld
addHeaderAcl	SSL Client certificate valid			

acl's with the same name will be 'combined' using OR criteria.
For more information about ACL's please see HAProxy Documentation Section 7 - Using ACL's

NOTE Important change in behaviour, since package version 0.32
-acl's are no longer combined with logical AND operators, list multiple acl's below where needed.
-acl's alone no longer implicitly generate use_backend configuration. Add 'actions' below to accomplish this behaviour.

Actions

Use these to select the backend to use or perform other actions like calling a lua script, blocking certain requests or others available.

Table

	Action	Parameters	Condition acl names	Actions
☐ ⚓	Use Backend	See below	WEB	✎ 🗑 ⧉
	backend: www.littoral1.fr			
☐ ⚓	Use Backend	See below	MAIL	✎ 🗑 ⧉
	backend: mail.littoral1.fr			

Example:

Action	Parameters	Condition
Use Backend	Website1Backend	Backend1acl
http-request header set	Headername: X-HEADER-ClientCertValid New logformat value: YES	addHeaderAcl

Default Backend

None

the time (in milliseconds) we accept to wait for data from the client, or for the client to accept data (default 30000).

Use "forwardfor" option

☐ Use "forwardfor" option.

The "forwardfor" option creates an HTTP "X-Forwarded-For" header which contains the client's IP address. This is useful to let the final web server know what the client address was. (eg for statistics on domains)

Use "httpclose" option

http-keep-alive (default)

```
By default HAProxy operates in keep-alive mode with regards to
persistent connections: for each connection it processes each request
and response, and leaves the connection idle on both sides between the
end of a response and the start of a new request.
```

Bind pass thru

NOTE: paste text into this box that you would like to pass behind each bind option.

Advanced pass thru

NOTE: paste text into this box that you would like to pass thru in the frontend.

SSL Offloading

Note

SSL Offloading will reduce web servers load by maintaining and encrypting connection with users on internet while sending and retrieving data without encrytion to internal servers. Also more ACL rules and http logging may be configured when this option is used. Certificates can be imported into the pfSense "Certificate Authority Manager" Please be aware this possibly will not work with all web applications. Some applications will require setting the SSL checkbox on the backend server configurations so the connection to the webserver will also be a encrypted connection, in that case there will be a slight overall performance loss."

SNI Filter

Specify a SNI filter to apply below SSL settings to specific domain(s), see the "crt-list" option from haproxy for details.
EXAMPLE: *.securedomain.tld !public.securedomain.tld

Certificate

littoral

Choose the cert to use on this frontend.

- [ ] Add ACL for certificate CommonName. (host header matches the "CN" of the certificate)
- [ ] Add ACL for certificate Subject Alternative Names.

OCSP

- [ ] Load certificate ocsp responses for easy certificate validation by the client.

A cron job wil update the ocsp response every hour.

Additional certificates

Which of these certificate will be send will be determined by haproxys SNI recognition. If the browser does not send SNI this will not work properly. (IE on XP is one example, possibly also older browsers or mobile devices).

Table

Certificates	Actions