

# Rapport technique : Mise en place d'une infrastructure virtualisee avec Proxmox

## Contexte

Dans le cadre dun projet scolaire, une infrastructure basee sur Proxmox VE a ete mise en place afin de simuler un environnement dentreprise resilient et hautement disponible.

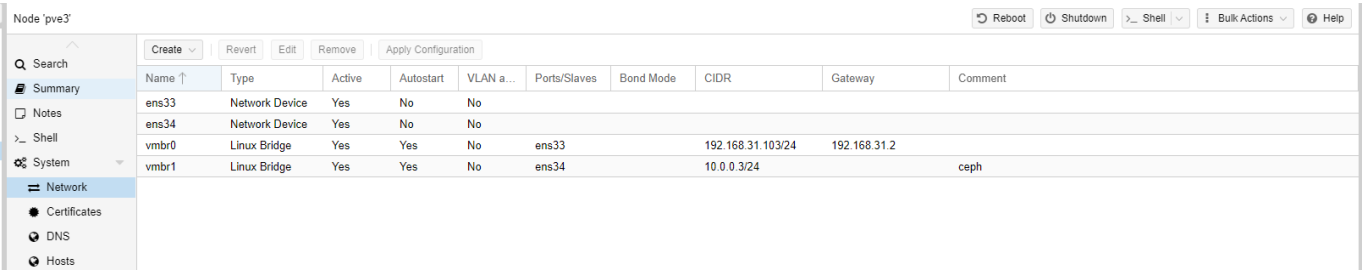
## Infrastructure materielle et logicielle

- 3 nuds Proxmox VE
- Reseau local organise en bridge (LAN/WAN/Cluster)
- ISO pfSense importee

[Erreur chargement image: Preparation des VM Proxmox.PNG]

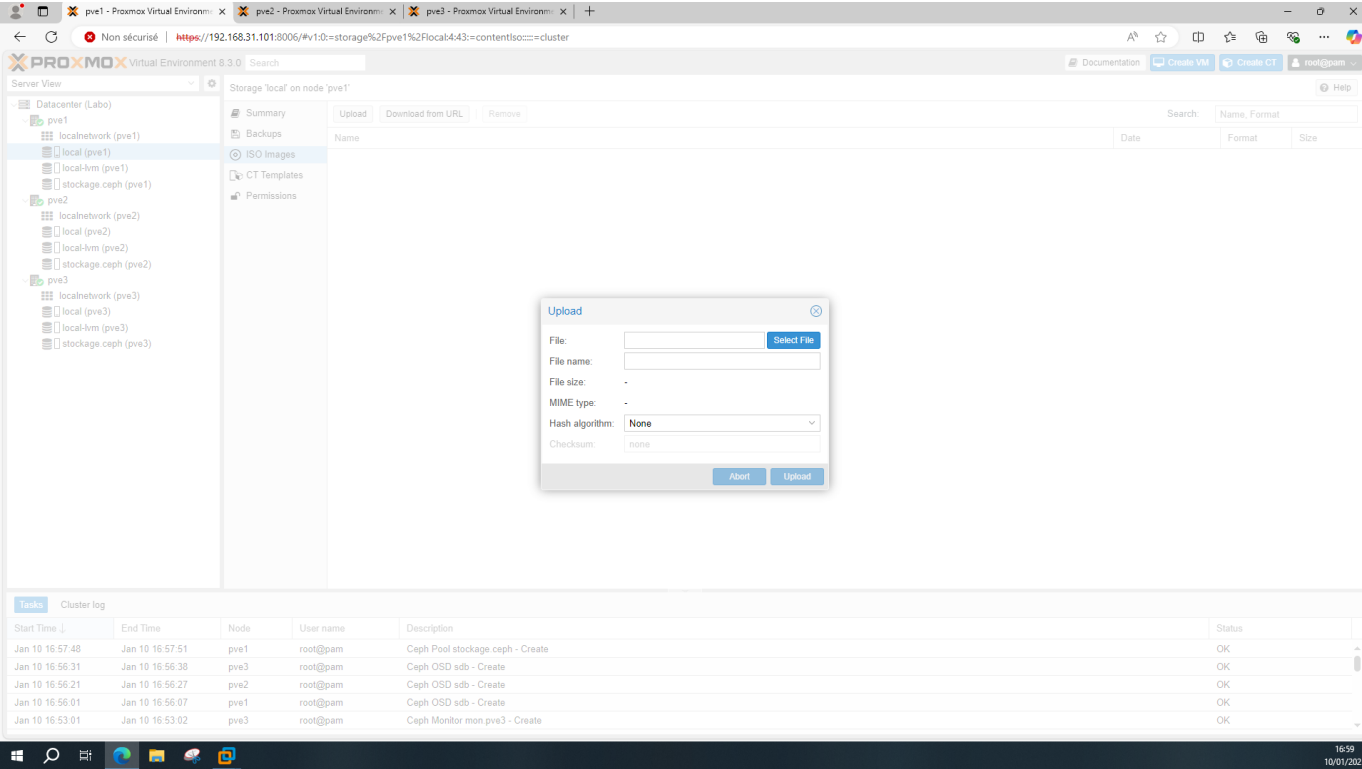
### 1. Preparation des bridges reseau

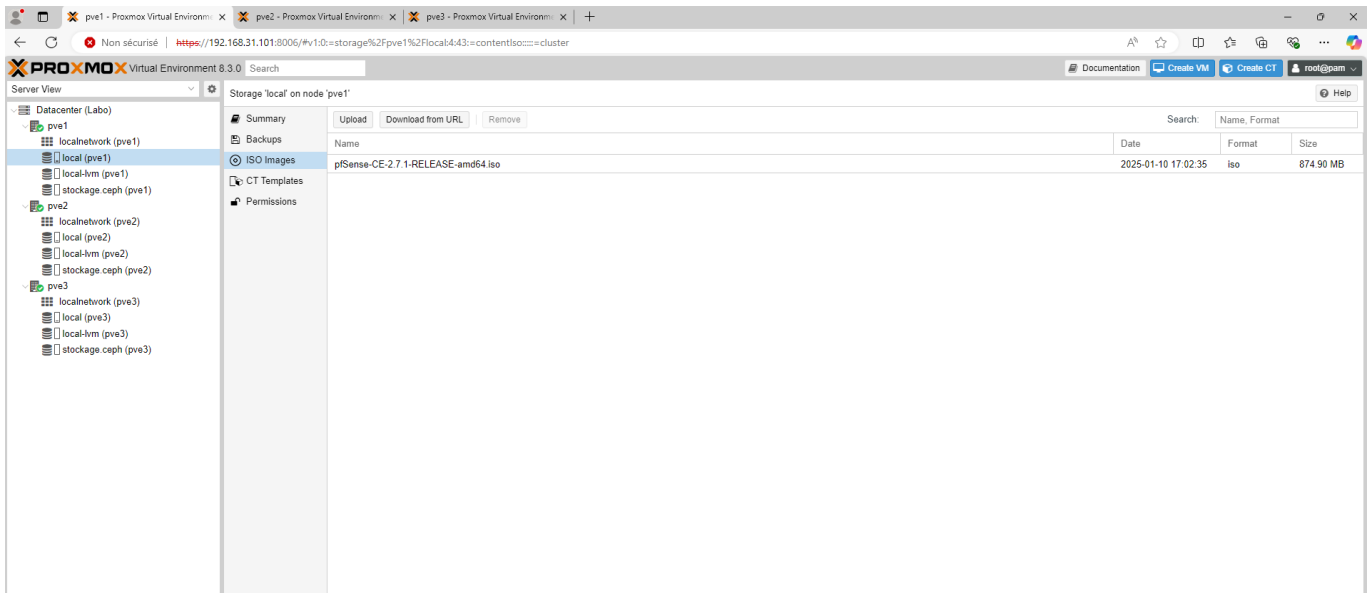
Creation de vmbr0, vmbr1, vmbr2 sur chaque nud Proxmox.



### 2. Acces a l'interface Web Proxmox et upload de IISO

Connexion a l'interface Web pour televerser l'ISO de pfSense.

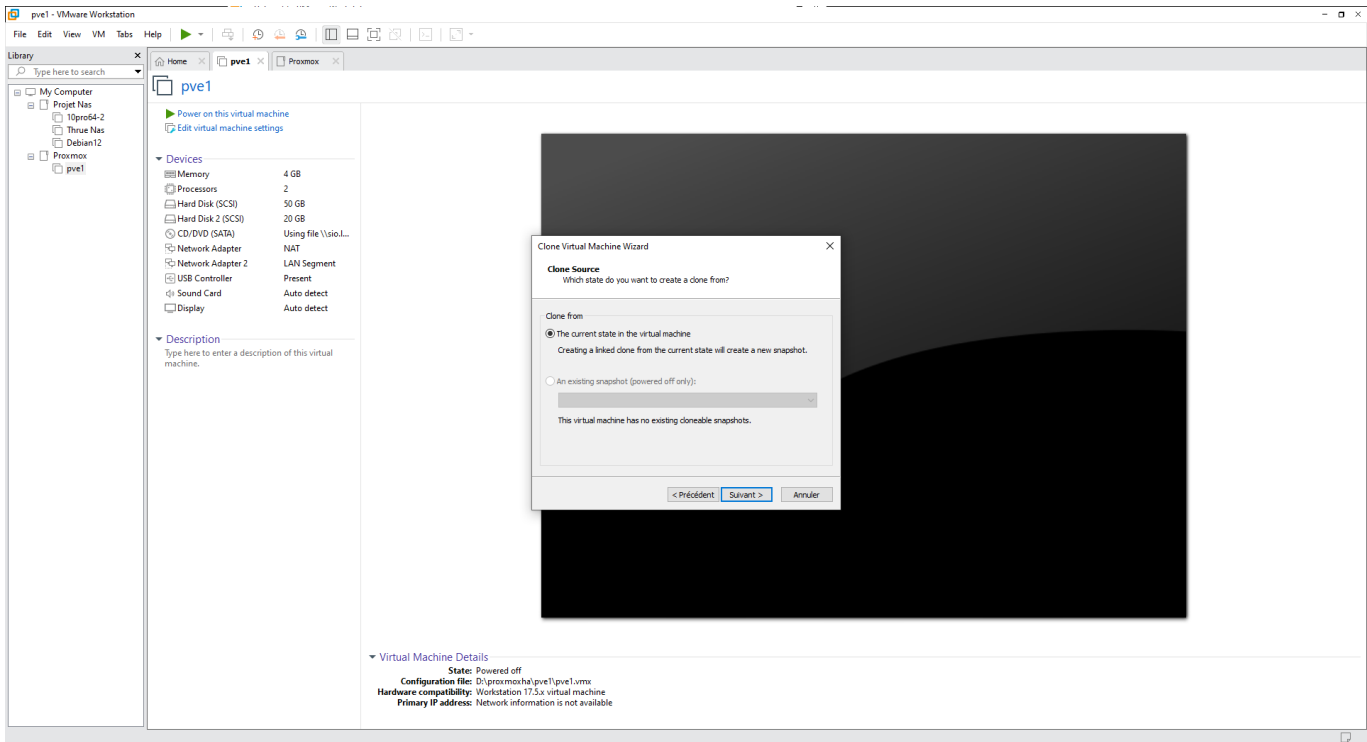




### 3. Creation dune VM pfSense et clonage

Creation dune VM avec pfSense et duplication pour test.

[Erreur chargement image: La VM est cree.PNG]



### 4. Creation dun cluster

Creation du cluster depuis le PVE1, et ajout de PVE2/PVE3.

[Erreur chargement image: creation d\_un cluster et ns faisons rejoindre PVE 2 et PVE3 au PVE1.PNG]

### 5. Installation de Ceph sur chaque nud

Configuration du stockage distribue Ceph sur les 3 serveurs.

PROXMOX Virtual Environment 8.3.0

Server View

Node 'pve1'

Tasks

Start Time	End Time	Node	User name	Description	Status
Jan 10 16:41:37	Jan 10 16:41:47	pve1	root@pam	Shell	OK
Jan 10 16:40:16	Jan 10 16:40:17	pve3	root@pam	SRV networking - Reload	OK
Jan 10 16:39:34	Jan 10 16:39:36	pve2	root@pam	SRV networking - Reload	OK
Jan 10 16:38:42	Jan 10 16:38:43	pve1	root@pam	SRV networking - Reload	OK
Jan 10 16:33:26	Jan 10 16:33:40	pve3	root@pam	Join Cluster	OK

Setup

Info Installation Configuration Success

Connection closed (Code: 1006)

```
update available package list
E: Failed to fetch https://enterprise.proxmox.com/debian/ceph-reef/dists/bookworm/InRelease 401 Unauthorized [IP: 51.91.20.24 443]
E: The repository 'https://enterprise.proxmox.com/debian/ceph-reef bookworm InRelease' is not signed.
E: Failed to fetch https://enterprise.proxmox.com/debian/pve/dists/bookworm/InRelease 401 Unauthorized [IP: 51.91.20.24 443]
E: The repository 'https://enterprise.proxmox.com/debian/pve bookworm InRelease' is not signed.
start installation
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
E: Unable to locate package ceph-volume
apt failed during ceph installation (25600)
```

Advanced Next

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Server View

Node 'pve1'

Tasks

Start Time	End Time	Node	User name	Description	Status
Jan 10 16:56:31	Jan 10 16:56:38	pve3	root@pam	Ceph OSD sdb - Create	OK
Jan 10 16:56:21	Jan 10 16:56:27	pve2	root@pam	Ceph OSD sdb - Create	OK
Jan 10 16:56:01	Jan 10 16:56:07	pve1	root@pam	Ceph OSD sdb - Create	OK
Jan 10 16:53:01	Jan 10 16:53:02	pve3	root@pam	Ceph Monitor mon.pve3 - Create	OK
Jan 10 16:52:53	Jan 10 16:52:54	pve2	root@pam	Ceph Monitor mon.pve2 - Create	OK

Reload Create OSD Manage Global Flags

No OSD selected

Name	Class	OSD Type	Status	Version	weight	reweight	Used (%)	Total	Apply/Commit Latency (ms)	PGs
default				18.2.4						
osd.2	hdd	bluestore	up / in	18.2.4	0.01949	1.00	0.13	20.00 GiB	2 / 2	1
osd.1	hdd	bluestore	up / in	18.2.4	0.01949	1.00	0.13	20.00 GiB	3 / 3	1
osd.0	hdd	bluestore	up / in	18.2.4	0.01949	1.00	0.13	20.00 GiB	1 / 1	1

6. Creation du pool Ceph et OSD

Chaque disque est configure en OSD, creation du pool RAID.

[Erreur chargement image: Creation d\_un OSD dev SDB , choix du disque pr le red.PNG]

[Erreur chargement image: Le pool a ete cree maintenant le Raid Fonctionne.PNG]

7. Activation du monitoring

Surveillance des trois hotes activee dans l'interface Web.

PROXMOX Virtual Environment 8.3.0

Server View

Datacenter (Labo)

- pve1
- pve2
- pve3

Node 'pve1'

Monitor

Name	Host	Status	Address	Version	Quorum
mon.pve1	pve1	running	10.0.0.1:6789/0	18.2.4	Yes

Manager

Name	Host	Status	Address	Version
mgr.pve1	pve1	active	10.0.0.1	18.2.4

Tasks Cluster log

Start Time	End Time	Node	User name	Description	Status
Jan 10 16:48:51	Jan 10 16:50:39	pve1	root@pam	Shell	OK
Jan 10 16:45:33	Jan 10 16:48:04	pve1	root@pam	Shell	OK
Jan 10 16:45:25	Jan 10 16:45:27	pve1	root@pam	Ceph Manager mgr.pve1 - Create	OK
Jan 10 16:45:23	Jan 10 16:45:25	pve1	root@pam	Ceph Monitor mon.pve1 - Create	OK
Jan 10 16:42:41	Jan 10 16:44:28	pve1	root@pam	Shell	OK

Node 'pve1'

Monitor

Name	Host	Status	Address	Version	Quorum
mon.pve1	pve1	running	10.0.0.1:6789/0	18.2.4	Yes
mon.pve2	pve2	running	10.0.0.2:6789/0	18.2.4	Yes

Manager

Name	Host	Status	Address	Version
mgr.pve1	pve1	active	10.0.0.1	18.2.4

## 8. Test de migration et de haute disponibilité

Test de la migration a chaud et de la tolerance de panne avec arret dun nud.

[Erreur chargement image: Migration de la VM qui fonctionne de la 3 a la 2.PNG]

[Erreur chargement image: Test disponibilite en shutdown de PVE3.PNG]

Resultat

Linфраstructure est pleinement fonctionnelle. Les VM migrent automatiquement en cas de panne, et le stockage Ceph est reparti et resilient.