

# Cahier des Charges



**NETFORGE**





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# 1 *Objectif du projet*

- Créer un réseau d'entreprise qui permette une communication efficace entre les différents services de l'entreprise.
- Séparer les différents services par des VLANs pour améliorer la sécurité du réseau et garantir la confidentialité des données.
- Utiliser des équipements de qualité pour garantir la fiabilité et la performance du réseau.
- Mettre en place une solution de gestion de parc informatique pour faciliter la gestion et la maintenance du réseau.



## 2 Matériel

### 2.1 Pare-feu

- Pare-feu Pfsense en cluster

### 2.2 Équipements réseaux

- Routeur Cisco 3725
- Commutateur Cisco IOU-k9-15.1a

### 2.3 Serveurs Windows

- Serveur d'annuaire Active Directory sur Windows Server 2022
- DHCP sur Windows Server 2022
- Réplication du serveur d'annuaire Active Directory sur Windows Server 2022 core
- Réplication du serveur DHCP sur Windows Server 2022 core

### 2.4 Serveur Debian

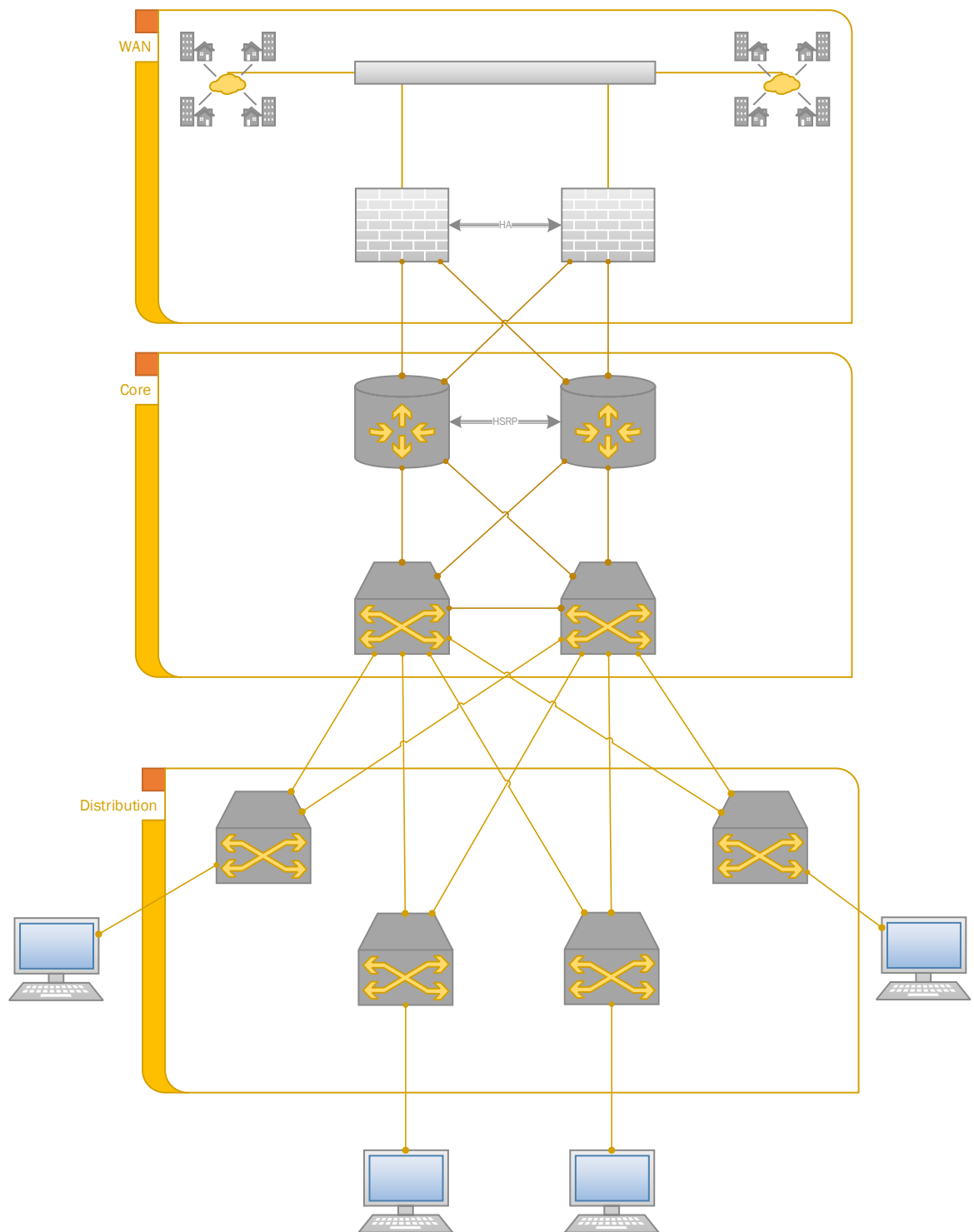
- Serveur de gestion des incidents GLPI sur Debian 12
- Serveur de supervision Zabbix sur Debian 12
- Serveur de synchronisation NextCloud sur Debian 12
- Serveur de log rSyslog sur Debian 12

## 3 *Fonctionnalités du réseau :*

### 3.1 *Topologie*

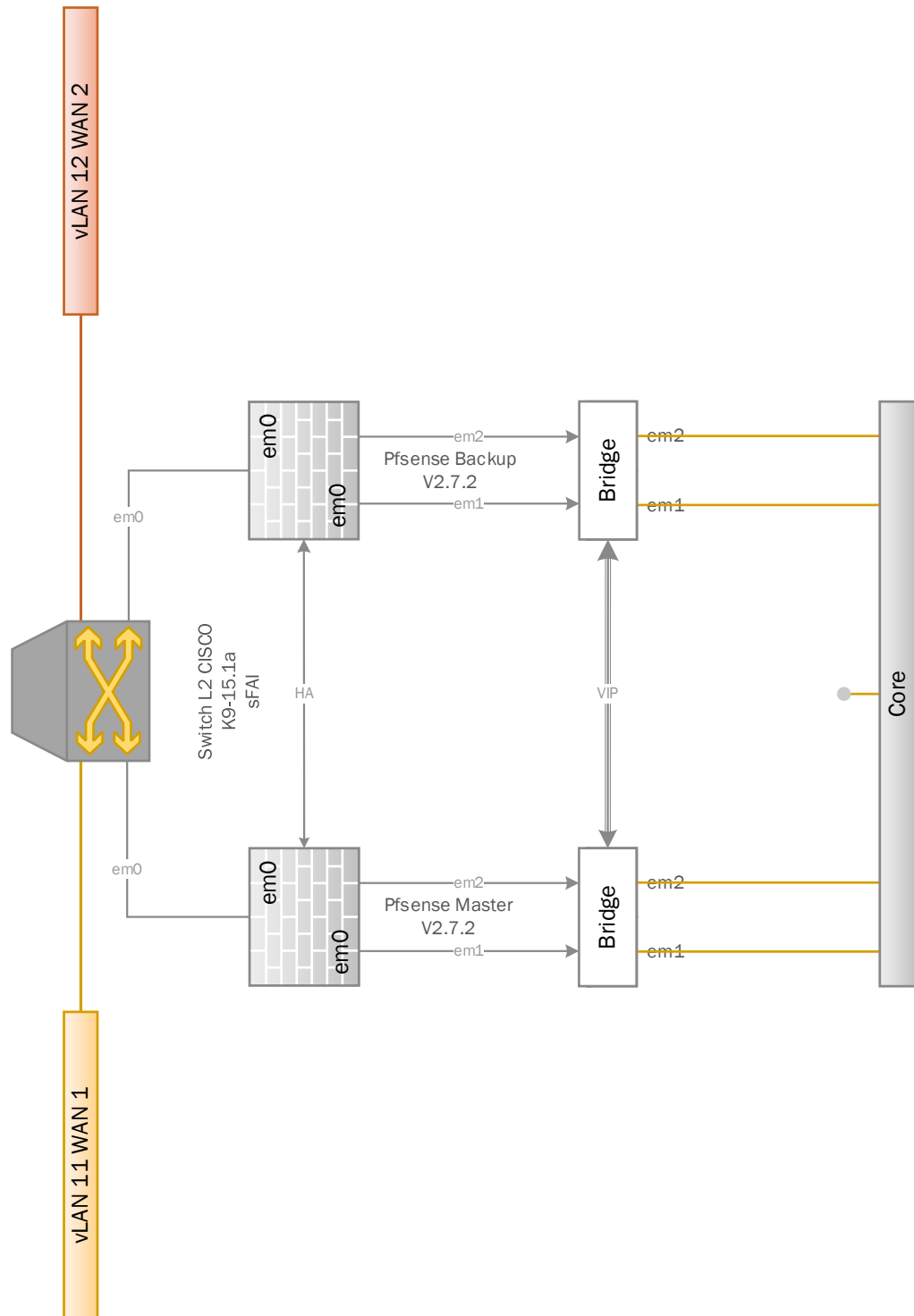
### 3.1.1 Réseaux

Reseaux



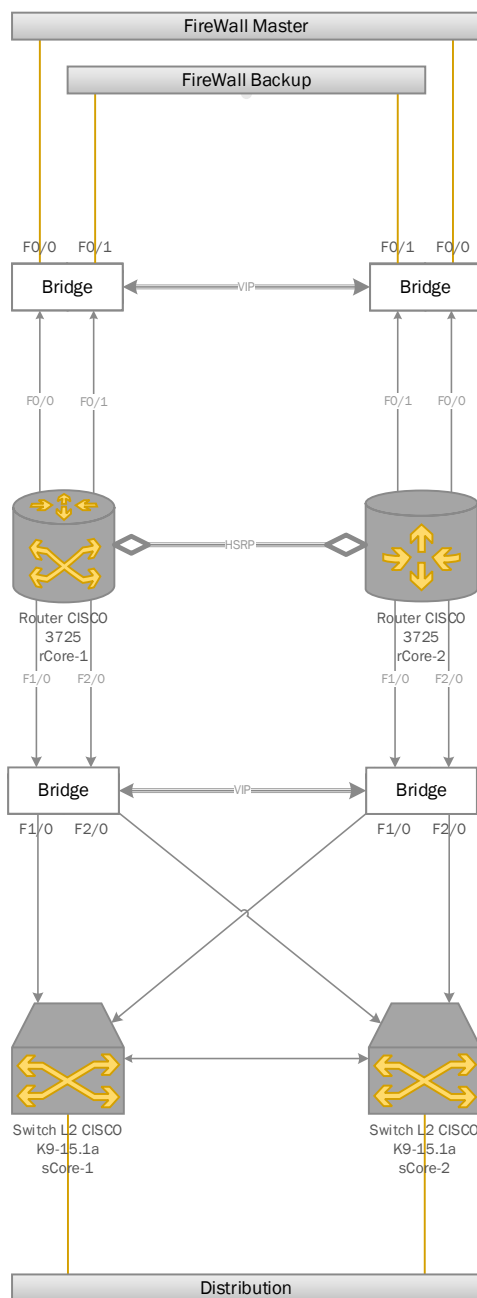
### 3.1.2 Pare-Feu

WAN



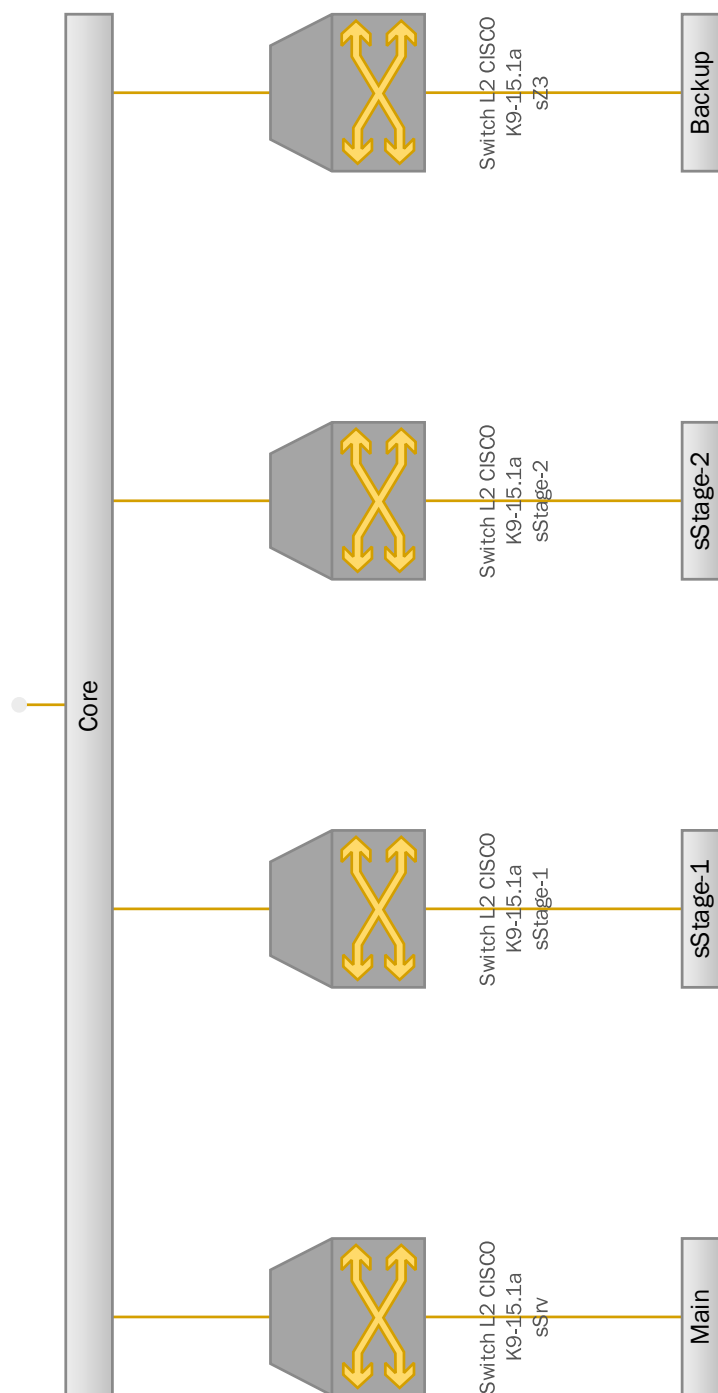
### 3.1.3 Cœur de réseaux

Core



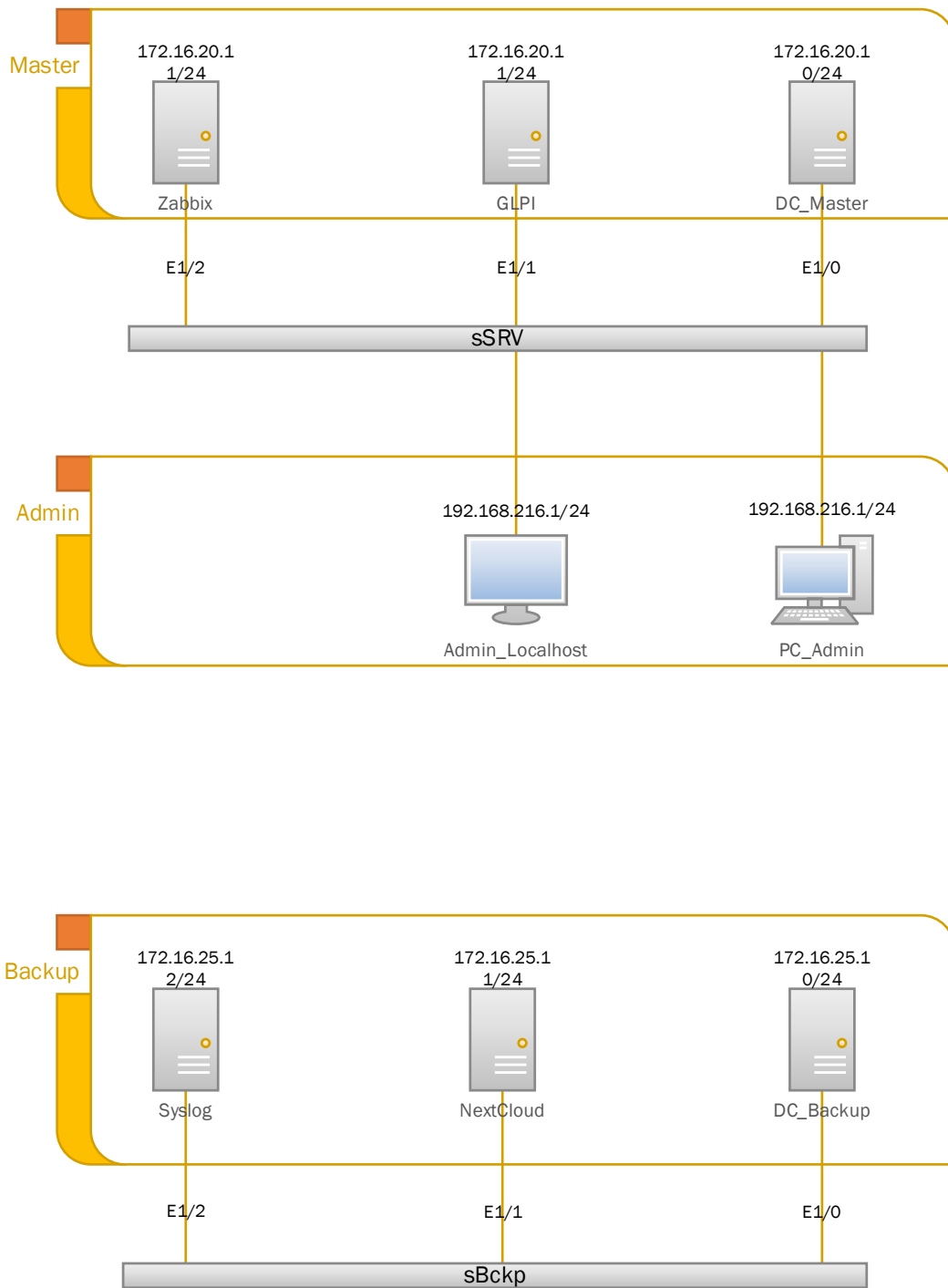
### 3.1.4 Distribution

#### Distribution



### 3.1.5 Serveurs

#### Servers



## 3.2 Segmentation

Segmentation des réseaux en utilisant des VLANs :

- VLAN 20 : VLAN serveurs
  - \* DCMaster : AD, DHCP, Sauvegarde
  - \* GLPI
  - \* Zabbix
- VLAN 25 : VLAN Backup
  - \* DCBackup : AD, DHCP
  - \* NextCloud
  - \* Syslog
- VLAN 40 : VLAN Management
  - \* PCAdmin
  - \* Admin-localhost
- VLAN 110 : VLAN Direction
- VLAN 120 : VLAN BE
- VLAN 130 : VLAN Atelier



## 4 Plan d'adressage

### 4.1.1 Réseaux

**Réseaux et sous-réseaux**

	vLAN	Nom vLAN	"@Réseaux"	Netmask	"@Broadcast"
Class A	LAN0		10.0.0.0	255.255.255.248	10.0.0.7
Class B	vLAN 20	Server	172.16.20.0	255.255.255.0	172.16.20.255
	vLAN 25	Backup	172.16.25.0	255.255.255.0	172.16.25.255
Class C	vLAN 11	nWAN	192.168.122.0	255.255.255.0	192.168.122.255
	vLAN12	cWAN	192.168.174.0	255.255.255.0	192.168.174.255
	vLAN 110	Direction	192.168.10.0	255.255.255.0	192.168.10.255
	vLAN 120	Bureau_Etude	192.168.20.0	255.255.255.0	192.168.20.255
		HA	192.168.0.0	255.255.255.252	192.168.0.3
		LAN	192.168.1.0	255.255.255.248	192.168.1.7
		Localhost	192.168.216.0	255.255.255.0	192.168.216.255

## 4.1.2 Pare-Feu

### Pare-Feu

Master						
Int		vLAN/Bridge	Nom	Adresse	Adresse Virtuelle	Connecté à
em0	em0.11	vLAN 11	nWAN	192.168.122.138	192.168.122.140	sFAI
	em0.12	vLAN 12	cWAN	192.168.174.138	192.168.174.140	
em1		Bridge0	LAN0	10.0.0.2	10.0.0.1	rCore-1
em2						rCore-2
em3		HA	HA	192.168.0.1		Pfsense-Backup
em4		LAN	LAN	192.168.1.2	192.168.1.1	sPfsense

Backup						
Int		vLAN/Bridge	Nom	Adresse	Adresse Virtuelle	Connecté à
em0	em0.11	vLAN 11	nWAN	192.168.122.139	192.168.122.140	sFAI
	em0.12	vLAN 12	cWAN	192.168.174.139	192.168.174.140	
em1		Bridge0	LAN0	10.0.0.3	10.0.0.1	rCore-1
em2						rCore-2
em3		HA	HA	192.168.0.2		Pfsense-Master
em4		LAN	LAN	192.168.1.3	192.168.1.1	sPfsense

### 4.1.3 Cœur de réseaux

#### Cœur de réseaux

rCore-1

Interfaces FastEthernet				
Int	Sous-int	dot1Q	Bridge-Group	Connecté à
F0/0			13	Pfsense-Master
F0/1			13	Pfsense-Backup
F1/0	F1/0.20	20	20	sCore-1
	F1/0.25	25	25	
	F1/0.40	40	40	
	F1/0.110	110	110	
	F1/0.120	120	120	
F2/0	F2/0.20	20	20	sCore-2
	F2/0.25	25	25	
	F2/0.40	40	40	
	F2/0.110	110	110	
	F2/0.120	120	120	

Interface BVI				
Int bvi	Groupe	Priorité	Adresse	Adresse Virtuelle
bvi 1	1	110	10.0.0.4	10.0.0.6
bvi 20	20	110	172.16.20.252	172.16.20.254
bvi 25	25	110	172.16.25.252	172.16.25.254
bvi 40	40	110	192.168.216.252	192.168.216.254
bvi 110	110	110	192.168.10.252	192.168.10.254
bvi 110	120	120	192.168.20.252	192.168.20.254

rCore-2

Interfaces FastEthernet				
Int	Sous-int	dot1Q	Bridge-Group	Connecté à
F0/0			13	Pfsense-Master
F0/1			13	Pfsense-Backup
F1/0	F1/0.20	20	20	sCore-1
	F1/0.25	25	25	
	F1/0.40	40	40	
	F1/0.110	110	110	
	F1/0.120	120	120	
F2/0	F2/0.20	20	20	sCore-2
	F2/0.25	25	25	
	F2/0.40	40	40	
	F2/0.110	110	110	
	F2/0.120	120	120	

Interface BVI				
Int bvi	Groupe	Priorité	Adresse	Adresse Virtuelle
bvi 1	1	90	10.0.0.5	10.0.0.6
bvi 20	20	90	172.16.20.253	172.16.20.254
bvi 25	25	90	172.16.25.253	172.16.25.254
bvi 40	40	90	192.168.216.253	192.168.216.254
bvi 110	110	90	192.168.10.252	192.168.10.254
bvi 110	110	90	192.168.20.252	192.168.20.254

## Cœur de réseaux

sCore-1

InterfacesEthernet			
Int	Type	vLAN	Connecté à
E0/0	tagged	20, 25, 40, 110, 120	rCore-1
E0/1	tagged	20, 25, 40, 110, 120	rCore-2
E0/2	tagged	20, 25, 40, 110, 120	sCore-2
E0/3	Interface Down		
E1/0	tagged	20, 25, 40, 110, 120	sSrv
E1/1	tagged	20, 25, 40, 110, 120	sStage-1
E1/2	tagged	20, 25, 40, 110, 120	sStage-2
E1/3	tagged	20, 25, 40, 110, 120	sBckp

Interface vLAN				
Int vLAN	vLAN	Name	Adresse	Spanning-tree
vLAN 1	1	natif		root primary
vLAN 20	20	vLAN_Server_Master	172.16.20.240	root primary
vLAN 25	25	vLAN_Server_Backup	172.16.25.240	root primary
vLAN 40	40	vLAN_LAN_Admin		root primary
vLAN 110	110	vLAN_Direction		root primary
vLAN 120	110	vLAN_Bureau_Etude		root primary
sCore-2				

InterfacesEthernet			
Int	Type	vLAN	Connecté à
E0/0	tagged	20, 25, 40, 110, 120	rCore-1
E0/1	tagged	20, 25, 40, 110, 120	rCore-2
E0/2	tagged	20, 25, 40, 110, 120	sCore-1
E0/3	Interface Down		
E1/0	tagged	20, 25, 40, 110, 120	sSrv
E1/1	tagged	20, 25, 40, 110, 120	sStage-1
E1/2	tagged	20, 25, 40, 110, 120	sStage-2
E1/3	tagged	20, 25, 40, 110, 120	sBckp

Interface vLAN				
Int vLAN	vLAN	Name	Adresse	Spanning-tree
vLAN 1	1	natif		root secondary
vLAN 20	20	vLAN_Server_Master	172.16.20.241	root secondary
vLAN 25	25	vLAN_Server_Backup	172.16.25.241	root secondary
vLAN 40	40	vLAN_LAN_Admin		root secondary
vLAN 110	110	vLAN_Direction		root secondary
vLAN 120	110	vLAN_Bureau_Etude		root secondary

## 4.1.4 Distribution

### Distribution

sSrv

InterfacesEthernet			
Int	Type	vLAN	Connecté à
E0/0	tagged	20, 25, 40, 110, 120	sCore-1
E0/1	tagged	20, 25, 40, 110, 120	sCore-2
E0/2	Interface Down		
E0/3	Interface Down		
E1/0	untagged	20	DCMaster
E1/1	untagged	20	GLPI
E1/2	untagged	20	Zabbix
E1/3	Interface Down		
E2/0	untagged	40	Admin
E2/1	untagged	40	Localhost
E2/2	Interface Down		
E2/3	Interface Down		
E3/0	Interface Down		
E3/1	Interface Down		
E3/2	Interface Down		
E3/3	Interface Down		

Interface vLAN				
Int vLAN	vLAN	Name	Adresse	Spanning-tree
vLAN 1	1	natif		Auto
vLAN 20	20	vLAN_Server_Master	172.16.20.243	Auto
vLAN 25	25	vLAN_Server_Backup	172.16.25.243	Auto
vLAN 40	40	vLAN_LAN_Admin		Auto
vLAN 110	110	vLAN_LAN_Direction		Auto
vLAN 120	120	vLAN_LAN_Bureau_Etude		Auto

## Distribution

sBckp

InterfacesEthernet			
Int	Type	vLAN	Connecté à
E0/0	tagged	20, 25, 40, 110, 120	sCore-1
E0/1	tagged	20, 25, 40, 110, 120	sCore-2
E0/2	Interface Down		
E0/3	Interface Down		
E1/0	untagged	25	DCBackup
E1/1	untagged	25	NextCloud
E1/2	untagged	25	Syslog
E1/3	Interface Down		
E2/0	Interface Down		
E2/1	Interface Down		
E2/2	Interface Down		
E2/3	Interface Down		
E3/0	Interface Down		
E3/1	Interface Down		
E3/2	Interface Down		
E3/3	Interface Down		

Interface vLAN				
Int vLAN	vLAN	Name	Adresse	Spanning-tree
vLAN 1	1	natif		Auto
vLAN 20	20	vLAN_Server_Master	172.16.20.243	Auto
vLAN 25	25	vLAN_Server_Backup	172.16.25.243	Auto
vLAN 40	40	vLAN_LAN_Admin		Auto
vLAN 110	110	vLAN_LAN_Direction		Auto
vLAN 120	120	vLAN_LAN_Bureau_Etude		Auto

## Distribution

sStage-1

InterfacesEthernet			
Int	Type	vLAN	Connecté à
E0/0	tagged	20, 25, 40, 110, 120	sCore-1
E0/1	tagged	20, 25, 40, 110, 120	sCore-2
E0/2	Interface Down		
E0/3	Interface Down		
E1/0	untagged	110	PC1
E1/1	untagged	120	Win10-temp
E1/2	Interface Down		
E1/3	Interface Down		
E2/0	Interface Down		
E2/1	Interface Down		
E2/2	Interface Down		
E2/3	Interface Down		
E3/0	Interface Down		
E3/1	Interface Down		
E3/2	Interface Down		
E3/3	Interface Down		

Interface vLAN				
Int vLAN	vLAN	Name	Adresse	Spanning-tree
vLAN 1	1	natif		Auto
vLAN 20	20	vLAN_Server_Master	172.16.20.243	Auto
vLAN 25	25	vLAN_Server_Backup	172.16.25.243	Auto
vLAN 40	40	vLAN_LAN_Admin		Auto
vLAN 110	110	vLAN_LAN_Direction		Auto
vLAN 120	120	vLAN_LAN_Bureau_Etude		Auto

## Distribution

sStage-2

InterfacesEthernet			
Int	Type	vLAN	Connecté à
E0/0	tagged	20, 25, 40, 110, 120	sCore-1
E0/1	tagged	20, 25, 40, 110, 120	sCore-2
E0/2	Interface Down		
E0/3	Interface Down		
E1/0	untagged	120	PC2
E1/1	untagged	110	Win10-temp
E1/2	Interface Down		
E1/3	Interface Down		
E2/0	Interface Down		
E2/1	Interface Down		
E2/2	Interface Down		
E2/3	Interface Down		
E3/0	Interface Down		
E3/1	Interface Down		
E3/2	Interface Down		
E3/3	Interface Down		

Interface vLAN				
Int vLAN	vLAN	Name	Adresse	Spanning-tree
vLAN 1	1	natif		Auto
vLAN 20	20	vLAN_Server_Master	172.16.20.243	Auto
vLAN 25	25	vLAN_Server_Backup	172.16.25.243	Auto
vLAN 40	40	vLAN_LAN_Admin		Auto
vLAN 110	110	vLAN_LAN_Direction		Auto
vLAN 120	120	vLAN_LAN_Bureau_Etude		Auto



## 5 *Administration et monitoring*

Mise en place d'un annuaire Active Directory pour administrer les utilisateurs

Mise en place d'un système de gestion des incidents et d'inventaire GLPI

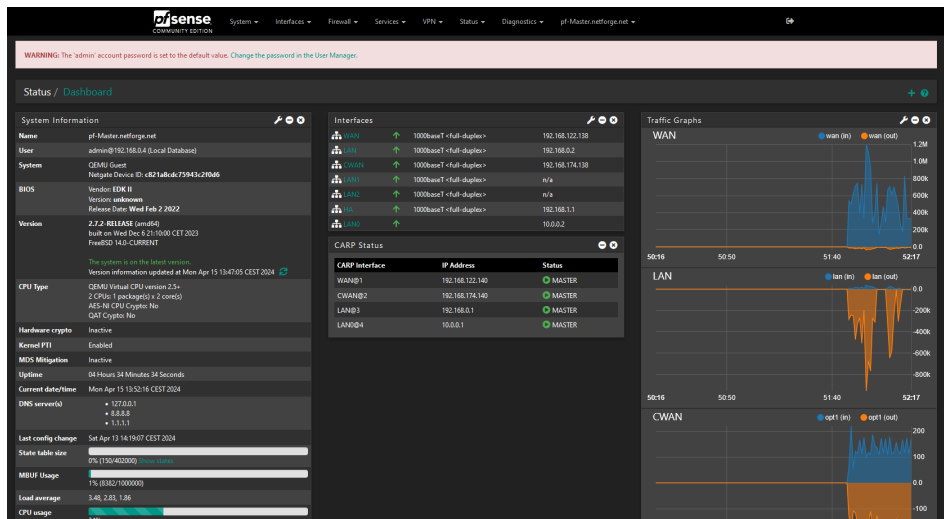
Mise en place d'un système de supervision des équipements Zabbix

Mise en place d'un serveur de centralisation des logs rSyslog

# 6 Procédure

## 6.1 Pfsense

### 6.1.1 Pfsense-Master



## Configuration du High Availability

pfSense Community Edition

System / High Availability

WARNING: The 'admin' account password is set to the default value. Change the password in the User Manager.

State Synchronization Settings (pfSync)

☒ Synchronize states

Each firewall sends state insertion, update, and deletion messages between firewalls. This setting should be enabled on all members of a failover group. Clicking "Save" will force a configuration sync if it is enabled (see Configuration Synchronization Settings below).

Synchronize Interface: HA

Filter Host ID: 433c0f08

pfSync Synchronize Peer IP: 192.168.1.2

Configuration Synchronization Settings (XMLRPC Sync)

Synchronize Config to IP: 192.168.1.2

Remote System Username: admin

Remote System Password: \*\*\*\*\*

Synchronize admin: ☒

Select options to sync:

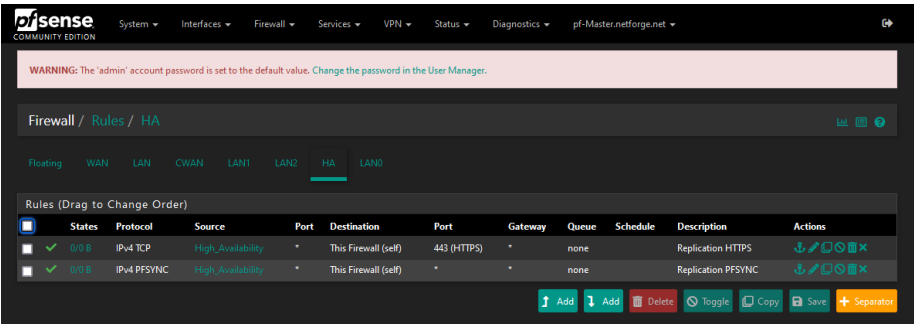
- ☒ User manager users and groups
- ☒ Authentication servers (e.g. LDAP, RADIUS)
- ☒ Certificate Authorities, Certificates, and Certificate Revocation Lists
- ☒ Firewall rules
- ☒ Firewall schedules
- ☒ Firewall aliases
- ☒ NAT configuration
- ☒ IPsec configuration
- ☒ OpenVPN configuration (implies CA/Cert/CRL Sync)
- ☒ DHCP Server settings
- ☒ DHCP Relay settings
- ☒ DHCPv6 Relay settings
- ☒ WOL Server settings
- ☒ Static Route configuration
- ☒ Virtual IPs
- ☒ Traffic Shaper configuration
- ☒ Traffic Shaper Limitless configuration
- ☒ DNS Forwarder and DNS Resolver configurations
- ☒ Captive Portal

[Toggle All](#)

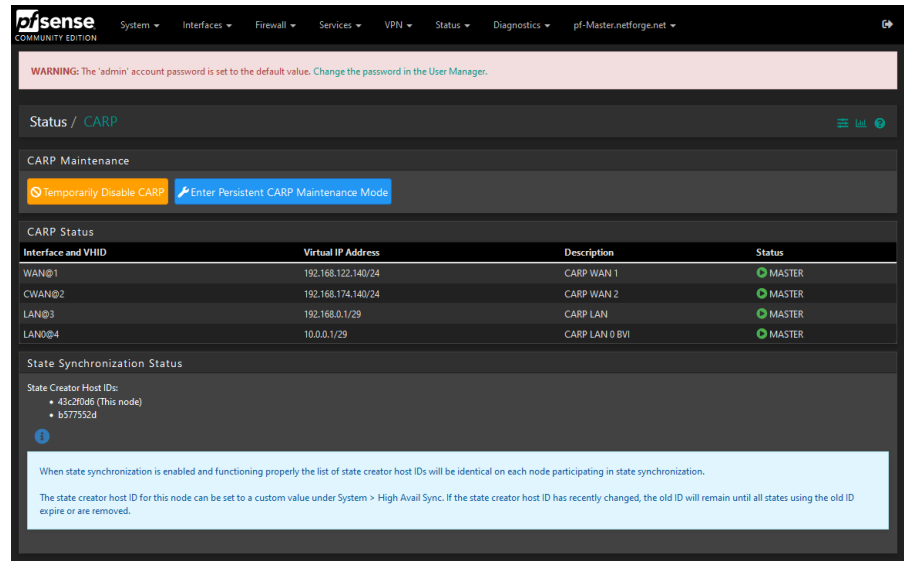
[Save](#)

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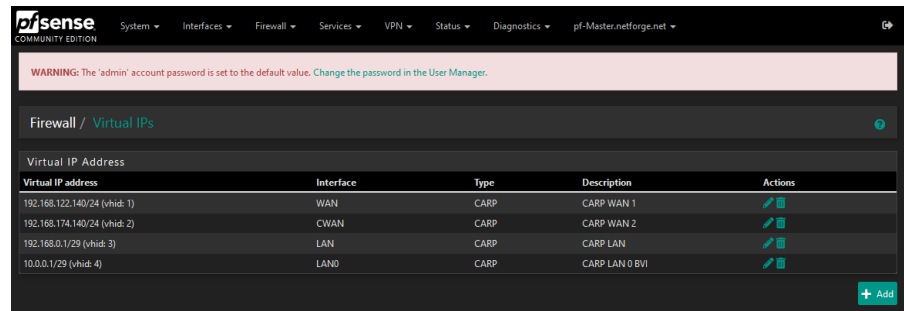
# Règles High Availability



# CARP



# VIP



Règles NAT

pfSense  
COMMUNITY EDITION

System ▾ Interfaces ▾ Firewall ▾ Services ▾ VPN ▾ Status ▾ Diagnostics ▾ pf-Master.netforge.net ▾

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Firewall / NAT / Outbound

Port Forward 1:1 Outbound NAT

Outbound NAT Mode

Mode

Automatic outbound NAT rule generation.  
(Preset passthrough included)

Hybrid Outbound NAT rule generation.  
(Automatic Outbound NAT + rules below)

Manual Outbound NAT rule generation.  
(ADM - Advanced Outbound NAT)

Disable Outbound NAT rule generation.  
(No Outbound NAT rules)

Save

Mappings

Interface

Source

Source Port

Destination

Destination Port

NAT Address

NAT Port

Static Port

Description

Actions

↑ Add

↓ Add

Delete

Toggle

Save

Automatic Rules

Interface	Source	Source Port	Destination	Destination Port	NAT Address	NAT Port	Static Port	Description	
✓ WAN	127.0.0.0/8::1/128	172.16.20.0/24	172.16.25.0/24	192.168.0.0/29	192.168.1.0/30	*	*	500	Auto created rule for ISAKMP
✓ WAN	127.0.0.0/8::1/128	172.16.20.0/24	172.16.25.0/24	192.168.0.0/29	192.168.1.0/30	*	*	*	Auto created rule
✓ CWAN	127.0.0.0/8::1/128	172.16.20.0/24	172.16.25.0/24	192.168.0.0/29	192.168.1.0/30	*	*	500	Auto created rule for ISAKMP
✓ CWAN	127.0.0.0/8::1/128	172.16.20.0/24	172.16.25.0/24	192.168.0.0/29	192.168.1.0/30	*	*	*	Auto created rule

Règles LAN0

pfSense  
COMMUNITY EDITION

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Firewall / Rules / LAN0

Floating WAN LAN CWAN LAN1 LAN2 HA LAN0

Rules (Drag to Change Order)

States	Protocol	Source	Port	Destination	Port	Gateway	Queue	Schedule	Description	Actions
✓ 0/0 B	IPv4 ICMP	*	*	*	*	*	none			
DNS										
✓ 17/208 KIB	IPv4 UDP	*	*	*	53 (DNS)	*	none			
✓ 0/0 B	IPv4 TCP	*	*	*	53 (DNS)	*	none			
✓ 0/0 B	IPv4 UDP	*	*	*	853 (DNS over TLS)	*	none			
✓ 0/0 B	IPv4 TCP	*	*	*	853 (DNS over TLS)	*	none			
Acces Internet										
✓ 32/29,33 MIB	IPv4 *	*	*	*	*	*	none			

↑ Add

↓ Add

Delete

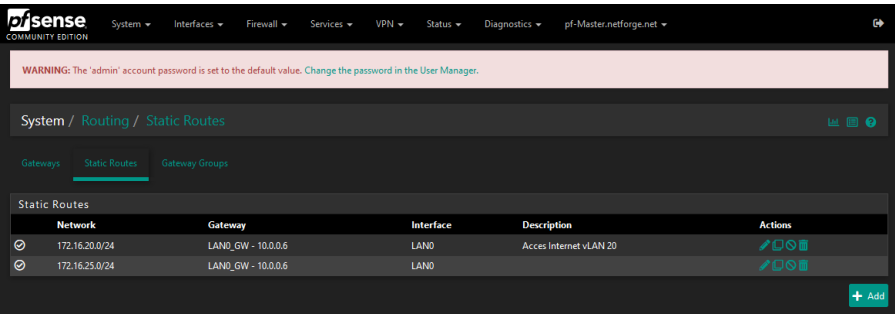
Toggle

Copy

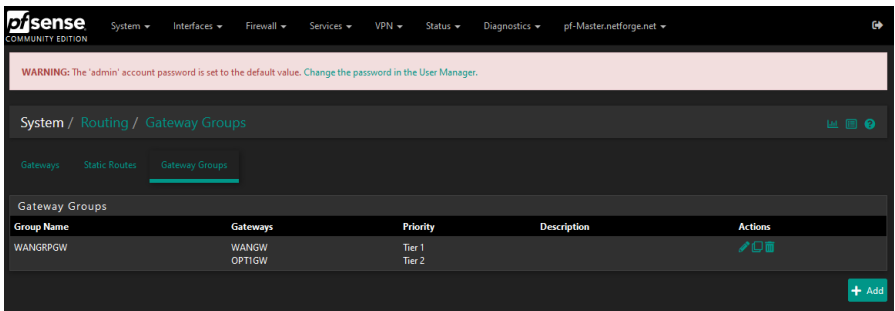
Save

Separator

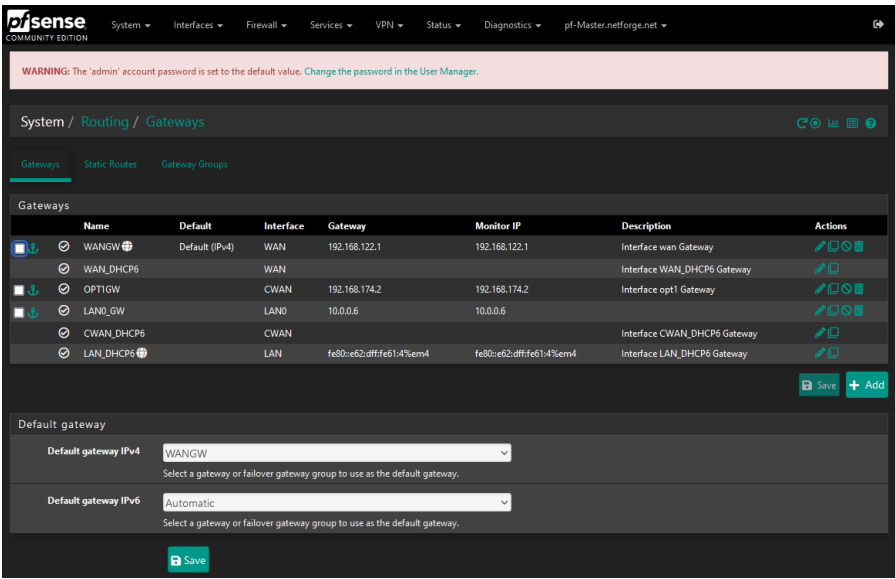
# Route Statique



# Groupe de passerelles



# Passerelles



# SNMP

pfSense

COMMUNITY EDITION

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Services / SNMP

SNMP Daemon

Enable ☒ Enable the SNMP Daemon and its controls

SNMP Daemon Settings

Polling Port

161

Enter the port to accept polling events on (default 161).

System Location

System Contact

Read Community String

Netforge

The community string is like a password, restricting access to querying SNMP to hosts knowing the community string. Use a strong value here to protect from unauthorized information disclosure.

SNMP Traps Enable

Enable ☒ Enable the SNMP Trap and its controls

SNMP Trap Settings

Trap server

172.16.20.12

Enter the trap server name

Trap Server Port

161

Enter the port to send the traps to (default 162)

SNMP Trap String

Netforge

SNMP Traps Enable

Enable ☒ Enable the SNMP Trap and its controls

SNMP Trap Settings

Trap server

172.16.20.12

Enter the trap server name

Trap Server Port

161

Enter the port to send the traps to (default 162)

SNMP Trap String

Netforge

SNMP Modules

SNMP modules

☒ MibII☒ Netgraph☒ PF☒ Host Resources☒ UCD☒ Regex

Interface Binding

Internet Protocol

IPv4

Bind Interfaces

All

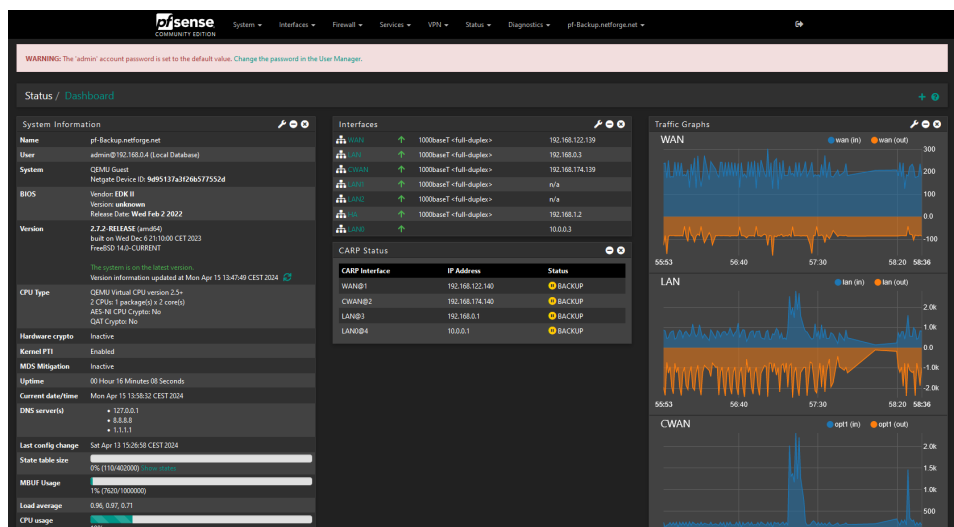
WAN

LAN

CWAN

Save

## 6.1.2 Pfsense-Backup



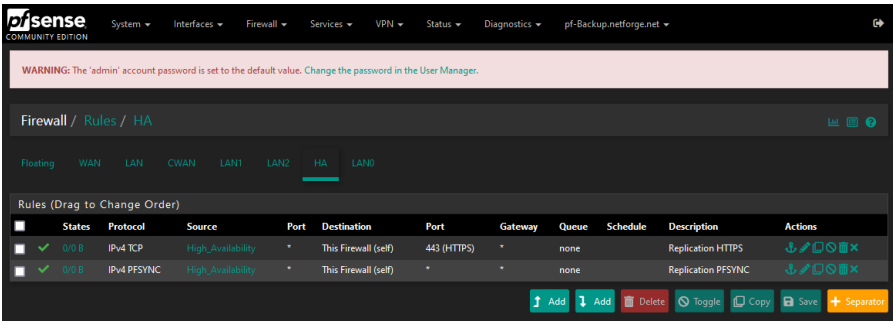
## Configuration du High Availability

The screenshot displays the pfSense High Availability configuration page. The page is titled "System / High Availability" and contains the following sections:

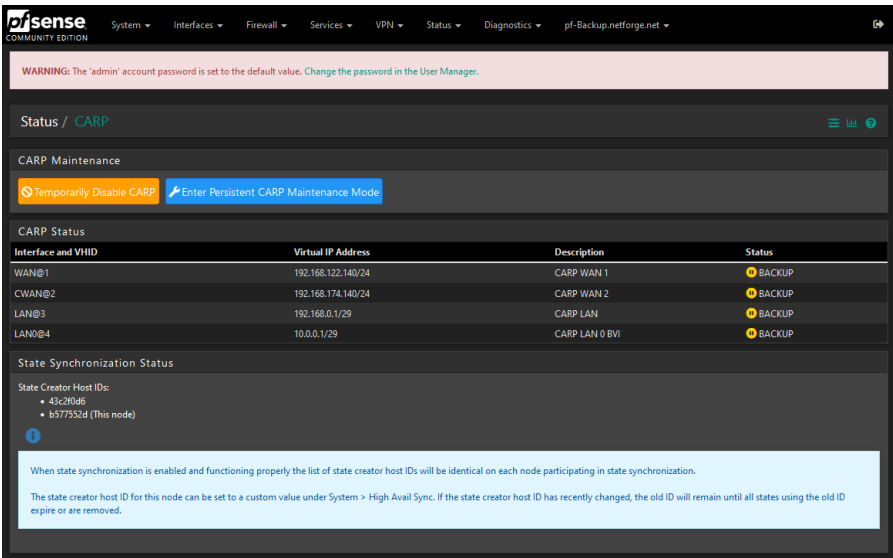
- State Synchronization Settings (pfSync):** Includes a checkbox for "pfSync transfers state insertion, update, and deletion messages between firewalls." and a dropdown for "Synchronize Interface" set to "HA".
- Filter Host ID:** A text field containing "6577552d".
- pfSync Synchronize Peer IP:** A text field containing "192.168.1.1".
- Configuration Synchronization Settings (XMLRPC Sync):** Includes a text field for "Synchronize Config to IP" and a text field for "Remote System Username".
- Remote System Password:** Includes a text field for "Remote System Password" and a "Confirm" button.
- Synchronize admin:** A checkbox for "synchronize admin accounts and autoupdate sync password."
- Select options to sync:** A list of checkboxes for various configuration options, including "User manager users and groups", "Authentication servers (e.g. LDAP, RADIUS)", "Certificate Authorities, Certificates, and Certificate Revocation Lists", "Firewall rules", "Firewall schedules", "Firewall aliases", "NAT configuration", "IPsec configuration", "OpenVPN configuration (Implies CA/Cert/CRL Sync)", "DHCP Server settings", "DHCP Relay settings", "DHCPv6 Relay settings", "WOL Server settings", "Static Route configuration", "Virtual IPs", "Traffic Shaper configuration", "Traffic Shaper Limiters configuration", "DNS Forwarder and DNS Resolver configurations", and "Captive Portal".

At the bottom of the page, there is a "Save" button and a footer that reads "pfSense is developed and maintained by Netgate. © ESP 2004 - 2024 View license."

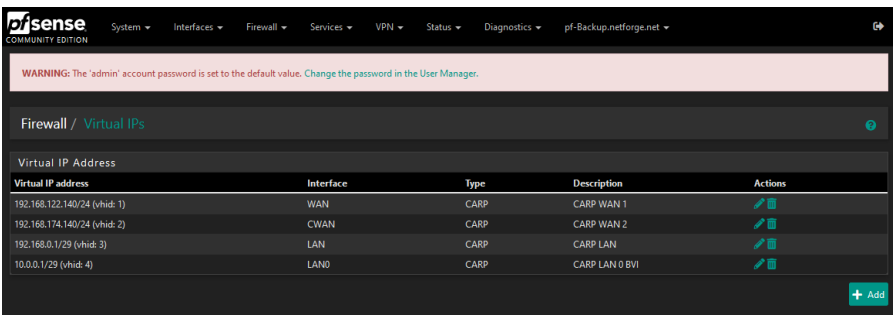
# Règles High Availability



# CARP



# VIP



Règles NAT voir [Pfsense-Master Règles NAT](#)

Règles LAN0 voir [Pfsense-Master Règles LAN0](#)

Routes statiques voir [Pfsense-Master Règles LAN0](#)

Groupe de passerelles voir [Pfsense-Master Règles LAN0](#)

Passerelles voir [Pfsense-Master Règles LAN0](#)



## SNMP

pfSense

COMMUNITY EDITION

System ▾ Interfaces ▾ Firewall ▾ Services ▾ VPN ▾ Status ▾ Diagnostics ▾ pf-Backup.netforge.net ▾

WARNING: The 'admin' account password is set to the default value. [Change the password in the User Manager.](#)

Services / SNMP

SNMP Daemon

Enable ☒ Enable the SNMP Daemon and its controls

SNMP Daemon Settings

Polling Port

161

Enter the port to accept polling events on (default 161).

System Location

System Contact

Read Community String

Netforge

The community string is like a password, restricting access to querying SNMP to hosts knowing the community string. Use a strong value here to protect from unauthorized information disclosure.

SNMP Traps Enable

Enable ☒ Enable the SNMP Trap and its controls

SNMP Trap Settings

Trap server

172.16.20.12

Enter the trap server name

Trap Server Port

161

Enter the port to send the traps to (default 162)

SNMP Trap String

Netforge

SNMP Modules

SNMP modules

☒ MibII

☒ Netgraph

☒ PF

☒ Host Resources

☒ UCD

☒ Regex

Interface Binding

Internet Protocol

IPv4

Bind Interfaces

All

WAN

LAN

CWAN

Save

# 6.2 Windows Server 2022

## 6.2.1 DCMaster

Tableau de bord

Serveur local

Tous les serveurs

AD DS

DHCP

DNS

Services de fichiers et d...

PROPRIÉTÉS

Pour DCMaster

Nom de l'ordinateur

DCMaster

Domaine

netforge.net

Dernières mises à jour installées

Windows Update

Dernière recherche de mises à jour :

Jamais

Pare-feu Microsoft Defender

Domaine : Actif

Gestion à distance

Active

Bureau à distance

Active

Association de cartes réseau

Désactivé

Ethernet0 2

172.16.20.10, Compatible IPv6

Antivirus Microsoft Defender

Commentaires et diagnostics

Configuration de sécurité renforcée d'Internet Explorer

Fuseau horaire

ID de produit (Product ID)

12th Gen Intel(R) Core(TM) i5-12500H, 12th Gen Intel(R) Core(TM) i5-12500H, 12th Gen Intel(R) Core(TM) i5-12500H, 12th G

Protection en temps réel : activée

Paramètres

Actif

(UTC+01:00) Bruxelles, Copenhague, Madrid, Paris

00454-60000-00001-AA328 (active)

Version du système d'exploitation

Microsoft Windows Server 2022 Datacenter

Informations sur le matériel

VMware, Inc. VMware20.1

Processeurs

Mémoire installée (RAM)

Espace disque total

59.33 Go

ÉVÉNEMENTS

Tous les événements | 24 au total

Filterer

🔍

📅

🔍

Nom du serveur	ID	Gravité	Source	Journal	Date et heure
DCMASTER	10016	Avertissement	Microsoft-Windows-DistributedCOM	Système	15/04/2024 14:07:40
DCMASTER	8198	Erreur	Microsoft-Windows-Security-SPP	Application	15/04/2024 13:44:20
DCMASTER	8198	Erreur	Microsoft-Windows-Security-SPP	Application	15/04/2024 13:44:17
DCMASTER	1008	Avertissement	Microsoft-Windows-Perflib	Application	15/04/2024 13:43:43
DCMASTER	10020	Avertissement	Microsoft-Windows-DHCP-Server	Système	15/04/2024 13:43:39
DCMASTER	1056	Avertissement	Microsoft-Windows-DHCP-Server	Système	15/04/2024 13:43:34
DCMASTER	10154	Avertissement	Microsoft-Windows-Remote Management	Système	15/04/2024 13:43:31

SERVICES

Tous les services | 1225 au total

Tâches

14:09

15/04/2024

### DHCP

### Étendue Direction

DHCP

Fichier Action Affichage ?

DHCP

dcmaster.netforge.net

IPv4

Étendue [192.168.20.0/24]

Pool d'adresses

Baux d'adresses

Réservations

Options d'étendu

Stratégies

Étendue [192.168.10.0/24]

Options de serveur

Stratégies

Filtres

IPv6

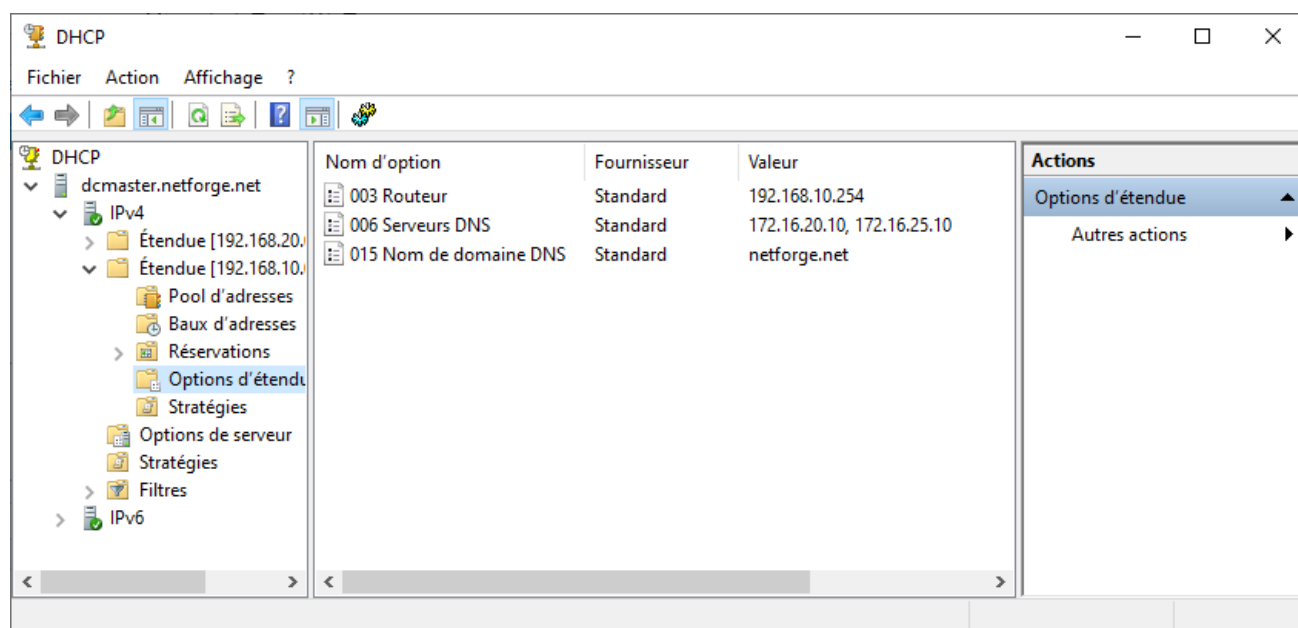
Nom d'option	Fournisseur	Valeur
003 Routeur	Standard	192.168.20.254
006 Serveurs DNS	Standard	172.16.20.10, 172.16.25.10
015 Nom de domaine DNS	Standard	netforge.net

Actions

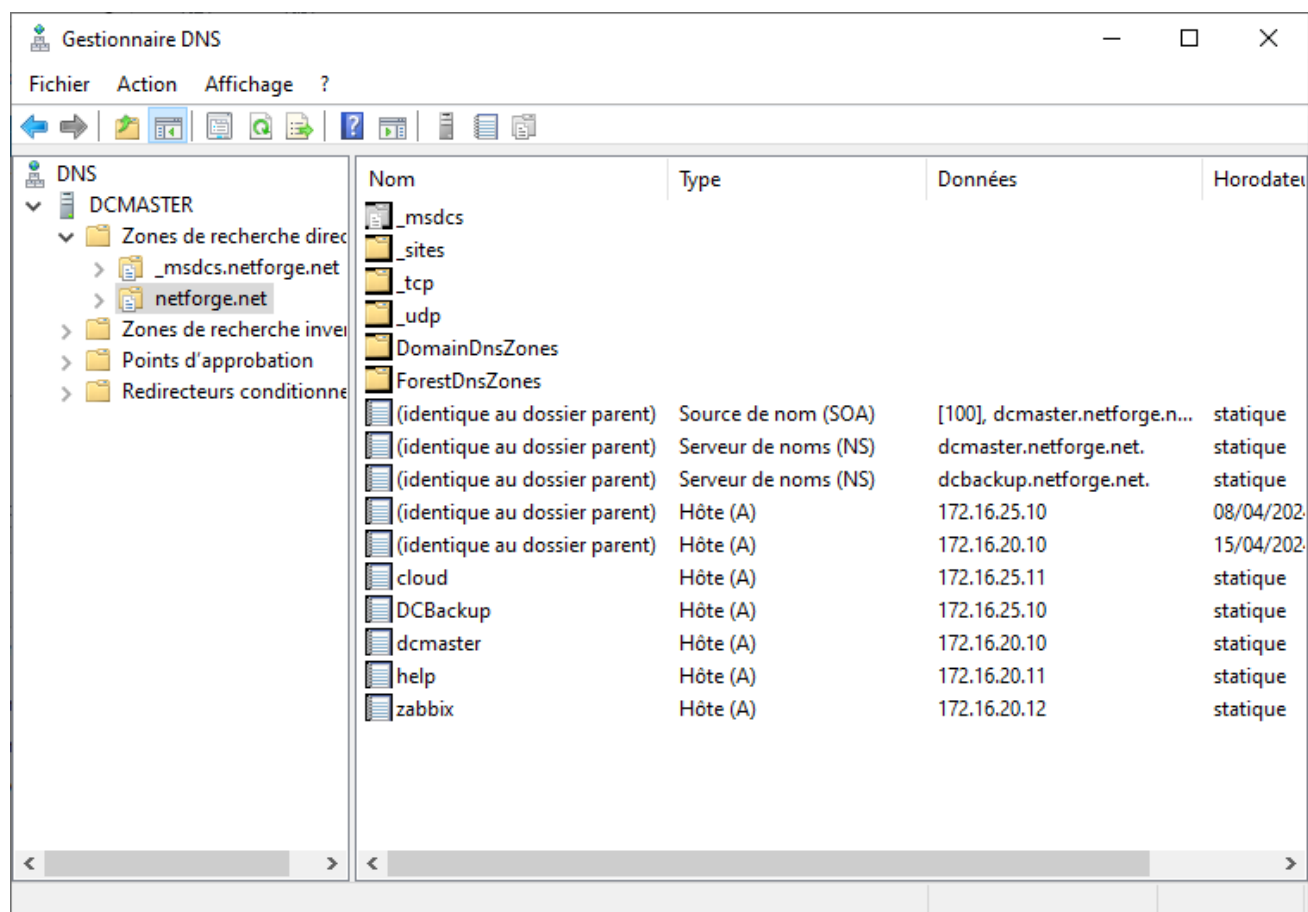
Options d'étendue

Autres actions

## Étendue Bureau Etude



## DNS



## Organisation des groupes et unité d'organisation



## 6.2.2 DCBackup

Script de configuration, une fois l'installation de Windows Serveur 2022 core terminé.

- Adresse IP et hostname
- Ajout dans le domaine et élévation en contrôleur de domaine
- Ajout des rôles et fonctionnalités
  - \* DHCP
- Ajout et installation des agents GLPI et Zabbix

```
# Add-Content -Path C:\Users\Administrateur\Documents\script.ps1 -Value '
# Charge le module Active Directory s il n est pas déjà chargé
if (-not (Get-Module -Name ActiveDirectory)) {
    Import-Module NetSecurity
    Import-Module ActiveDirectory
}

# Definition du hostname
netdom renamecomputer $(hostname) /NewName:"DCBackup"

# Definition de l adresse IP
New-NetIPAddress -InterfaceAlias Ethernet0 -IPAddress 172.16.25.10 -PrefixLength 24
-DefaultGateway 172.16.25.254

# Definition du DNS
Set-DNSClientServerAddress -InterfaceAlias Ethernet0 -ServerAddresses
172.16.20.10,172.16.25.10,192.168.122.1

# Autorise le protocole ICMPv4 avec le DC Master
New-NetFirewallRule -DisplayName "ICMPv4 Allow DCMaster" -Direction Inbound -
Protocol ICMPv4 -IcmpType 8 -RemoteAddress 172.16.20.10 -Action Allow

# Open SSH
Add-WindowsCapability -Online -Name OpenSSH.Server~~~~0.0.1.0
Start-Service -Name "sshd"
Set-Service -Name "sshd" -StartupType Automatic
# New-NetFirewallRule -Name sshd -DisplayName 'OpenSSH Server (sshd) - Port 22' -
Enabled True -Direction Inbound -Protocol TCP -Action Allow -LocalPort 22

# Creation du repertoire agent et recuperation des agent.msi
New-Item -Path "c:\\" -Name "agents" -ItemType "directory"

Copy-Item -Path \\DCMASTER\get\GLPI-Agent-1.6.1-x64.msi -Destination c:\agents\GLPI-
Agent-1.6.1-x64.msi
Copy-Item -Path \\DCMASTER\get\zabbix_agent-6.4.11-windows-amd64-openssl.msi -
Destination c:\agents\zabbix_agent-6.4.11-windows-amd64-openssl.msi
Copy-Item -Path \\DCMASTER\get\GLPI-AgentMonitor-x64.exe -Destination
c:\agents\GLPI-AgentMonitor-x64.exe
```

```

# Copy-Item -Path \\DCMASTER\get\Nextcloud-3.12.3-x64.msi -Destination
c:\agent\Nextcloud-3.12.3-x64.msi

# Installation des agents
msiexec /i "c:\agents\GLPI-Agent-1.6.1-x64.msi" /quiet SERVER=http://172.16.20.11
ADD_FIREWALL_EXCEPTION=1 DEBUG=1 RUNNOW=1 TASK_FREQUENCY=hourly
# Get-Content 'C:\Program Files\GLPI-Agent\logs\glpi-agent.log' -wait
msiexec /i "c:\agents\zabbix_agent-6.4.11-windows-amd64-openssl.msi" /quiet
SERVER=127.0.0.1,172.16.20.12 SERVERACTIVE=127.0.0.1,172.16.20.12 LISTENIP=0.0.0.0
LISTENPORT=10050 HOSTNAME=$env:computername
# New-NetFirewallRule -DisplayName "Allow inbound 10050" -Direction Inbound -
Protocol TCP -Action Allow -LocalPort 10050 -Profile Domain

# Joindre le domain
Add-Computer -DomainName NetForge.net -Credential NETFORGE\Administrateur -Restart -
Force

# Active bureau a distance
Enable-PSRemoting -force
winrm quickconfig
# Certificat auto signe
New-SelfSignedCertificate -DnsName "DCBackup.netforge.net" -CertStoreLocation
Cert:\LocalMachine\My
$cert = Get-ChildItem Cert:\LocalMachine\My | Where-Object{$_.Subject -eq
"CN=DCBackup.netforge.net"}
winrm create winrm/config/Listener?Address=*&Transport=HTTPS
'@{Hostname="DCBackup.netforge.net"; CertificateThumbprint='$cert.Thumbprint'}'

# Add a new firewall rule
New-NetFirewallRule -DisplayName "Windows Remote Management (HTTPS-In)" -Direction
Inbound -Protocol TCP -RemoteAddress 172.16.20.10 -Action Allow -LocalPort 5986
New-NetFirewallRule -DisplayName "Windows Remote Management (HTTP-In)" -Direction
Inbound -Protocol TCP -RemoteAddress 172.16.20.10 -Action Allow -LocalPort 5985
# New-NetFirewallRule -DisplayName "Autoriser le Bureau à distance (RDP)" -Group
"Bureau à distance" -Profile Domain -Enabled True -Action Allow -LocalPort 5985

# Installation du roel ADDS
Install-WindowsFeature AD-Domain-Services -IncludeManagementTools

# Promouvoir en controleur
Install-ADDSDomainController

# Installation du role DHCP
Install-WindowsFeature DHCP -IncludeManagementTools

```

## 6.3 Debian 12

### 6.3.1 *mysql\_secure\_installation.sql*

Script de sécurisation de mySql (suppression d'utilisateur et base de données par default)

```
-- mysql_secure_installation.sql
UPDATE mysql.user SET Password=PASSWORD('password') WHERE User='root';
DELETE FROM mysql.user WHERE User='';
DELETE FROM mysql.user WHERE User='root' AND Host NOT IN ('localhost', '127.0.0.1',
'::1');
DROP DATABASE IF EXISTS test;
DELETE FROM mysql.db WHERE Db='test' OR Db='test\\_%';
FLUSH PRIVILEGES;
```

### 6.3.2 *Configuration de base*

Installation basique commune à tous les Debian

- Update du système d'exploitation
- Création d'un alias
- Ajout du serveur AD-DNS dans le fichier resolv.conf
- Installation des paquet et dépendances puis installation de :
  - \* Agent Zabbix
  - \* Agent GLPI
  - \* SSSD
  - \* UFW
- Autorisation de connexion et d'élévation de privilège au groupe Administrateur Linux
- Préparation pour rejoindre le domaine

```

#!/usr/bin/bash

apt-get update && apt-get upgrade -y

echo "
alias ll='ls -lrt'
" > ~/.bashrc

source ~/.bashrc

echo "

domain NetForge.fr
search NetForge.fr
nameserver 172.16.20.10
nameserver 172.16.25.10

" >> /etc/resolv.conf

apt-get install -y sudo ufw perl

# Zabbix Agent
wget https://repo.zabbix.com/zabbix/6.4/debian/pool/main/z/zabbix-release/zabbix-
release_6.4-1+debian12_all.deb
dpkg -i zabbix-release_6.4-1+debian12_all.deb
apt-get update && apt-get install zabbix-agent -y

systemctl enable ufw
systemctl enable zabbix-agent
systemctl start zabbix-agent

ufw allow 10050
ufw reload

sed -i 's;Server=127.0.0.1;Server=127.0.0.1,172.16.20.12;g'
/etc/zabbix/zabbix_agentd.conf
sed -i 's;#\ ListenPort=10050;ListenPort=10050;g' /etc/zabbix/zabbix_agentd.conf
sed -i 's;#\ ListenIP=0.0.0.0;ListenIP=0.0.0.0;g' /etc/zabbix/zabbix_agentd.conf
sed -i 's;ServerActive=127.0.0.1;ServerActive=127.0.0.1,172.16.20.12;g'
/etc/zabbix/zabbix_agentd.conf
# sed -i 's;Hostname=Zabbix\ server;Hostname=nextcloud;g'
/etc/zabbix/zabbix_agentd.conf

# GLPI Agent
# wget https://github.com/glpi-project/glpi-agent/releases/download/1.6.1/glpi-
agent-1.6.1-linux-installer.pl

# /etc/glpi-agent/conf.d/00-install.cfg

```



```

perl glpi-agent-1.7-linux-installer.pl <<EOF

EOF
echo 'server = http://172.16.20.11' >> /etc/glpi-agent/conf.d/00-install.cfg

ufw allow 62354
ufw reload

systemctl restart glpi-agent

apt-get install -y realmd sssd sssd-tools libnss-sss libpam-sss adcli samba-common
samba-common-bin oddjob oddjob-mkhomedir packagekit krb5-user resolvconf

realm join --user=Administrateur NETFORGE.FR << EOF
Soleil1
EOF

# ligne a changer
sed -i 's;use_fully_qualified_names\ =\ True;use_fully_qualified_names\ =\ False;g'
/etc/sss/sssd.conf
# sed -i 's;ldap_id_mapping\ =\ True;ldap_id_mapping\ =\ True;g' /etc/sss/sssd.conf
echo "
ldap_user_uid_number = uidNumber
ldap_user_gid_number = gidNumber" >> /etc/sss/sssd.conf

rm -f /var/lib/sss/db/*
systemctl restart sssd
realm permit -g GG_Administrateur_Linux@netforge.net

echo "%NETFORGE.NET\\GG_Administrateur_Linux ALL=(ALL:ALL) ALL" >>
/etc/sudoers.d/GG_Administrateur_Linux

```

### 6.3.3 GLPI

#### Script d'installation et de configuration GLPI 10.0.9

- Changement du hostname et de l'adresse IP
- Installation des paquet et dépendances puis installation de GLPI et de sa base de données

```
#!/usr/bin/bash

hostnamectl set-hostname GLPI

echo "
127.0.0.1      localhost
127.0.1.1      GLPI

# The following lines are desirable for IPv6 capable hosts
::1          localhost ip6-localhost ip6-loopback
ff02::1      ip6-allnodes
ff02::2      ip6-allrouters
" >> /etc/hosts

echo "
# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface" > /etc/network/interfaces

echo "
auto ens33
iface ens33 inet static
    address 172.16.20.11
    netmask 255.255.255.0
    gateway 172.16.20.254
    dns-domain netforge.net
    dns-nameservers 172.16.20.10 172.16.25.10" > /etc/network/interfaces.d/ens33

systemctl restart networking

# Ajout du hostname dans la configuration zabbix
sed -i 's;Hostname=Zabbix\ server;Hostname=GLPI;g' /etc/zabbix/zabbix_agentd.conf
systemctl restart agent-zabbix

# Mise a jour du system
apt-get update && apt-get upgrade -y

# Installation de Apache2 et PHP
# Apache2
apt-get install apache2 -y
```

```

systemctl enable apache2.service
echo 'ServerName $(hostname)' >> /etc/apache2/conf-available/fqdn.conf

a2enconf fqdn

systemctl reload apache2

# PHP
apt-get install php -y

systemctl reload apache2

# Installation de MariaDB
apt-get install mariadb-server -y
systemctl enable mariadb.service

# Creation de la BDD
mariadb -uroot -p'Soleil1' -e "CREATE DATABASE glpi;"
mariadb -uroot -p'Soleil1' -e "CREATE USER 'glpibdd'@'localhost' IDENTIFIED BY
'Soleil1';"
mariadb -uroot -p'Soleil1' -e "GRANT ALL PRIVILEGES ON glpi . * TO
'glpibdd'@'localhost';"

apt-get install perl -y
apt-get install php-ldap php-imap php-apcu php-xmldrpc php-cas php-mysqli php-
mbstring php-curl php-gd php-simplexml php-xml php-intl php-zip php-bz2 -y
service apache2 reload
cd /tmp
wget https://github.com/glpi-project/glpi/releases/download/10.0.9/glpi-10.0.9.tgz
tar xzf glpi-10.0.9.tgz
cp -R /tmp/glpi /usr/share
chown -R root:www-data /usr/share/glpi
chmod -R 775 /usr/share/glpi
ln -s /usr/share/glpi /var/www/html/

echo "
<VirtualHost *:80>
    ServerAdmin webmaster@localhost
    DocumentRoot /var/www/html/glpi

    ErrorLog ${APACHE_LOG_DIR}/error.log
    CustomLog ${APACHE_LOG_DIR}/access.log combined
</VirtualHost> " >> /etc/apache2/sites-available/glpi.conf

a2dissite 000-default.conf
a2ensite glpi.conf

```

```
systemctl reload apache2

if [[ -f /usr/share/glpfi/config/config_db.php ]]; then
    rm /usr/share/glpfi/install/install.php
    echo "suppression"
else
    echo "Finir l'installtion via la page web"
fi
```

### 6.3.4 Zabbix

#### Script d'installation et de configuration Zabbix 6.4

- Changement du hostname et de l'adresse IP
- Installation des paquet et dépendances puis installation de Zabbix et de sa base de données

```
#!/usr/bin/bash

hostnamectl set-hostname Zabbix

echo "
127.0.0.1      localhost
127.0.1.1      Zabbix

# The following lines are desirable for IPv6 capable hosts
::1          localhost ip6-localhost ip6-loopback
ff02::1      ip6-allnodes
ff02::2      ip6-allrouters
" >> /etc/hosts

echo "
# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface" > /etc/network/interfaces

echo "
auto ens33
iface ens33 inet static
    address 172.16.20.12
    netmask 255.255.255.0
    gateway 172.16.20.254
    dns-domain netforge.net
    dns-nameservers 172.16.20.10 172.16.25.10" > /etc/network/interfaces.d/ens33

systemctl restart networking

apt-get update && apt-get upgrade -y

# Installation des dependances
apt-get -y install apache2 php php-mysql php-mysqld php-ldap php-bcmath php-
mbstring php-gd php-pdo php-xml libapache2-mod-php

# Installer et configurer la BDD
apt-get -y install mariadb-server mariadb-client
systemctl enable --now mariadb
```

```

# mysql_secure_installation
mysql -sfu root < "mysql_secure_installation.sql"

mysql -uroot -p'rootDBpass' -e "create database zabbix character set utf8mb4 collate
utf8mb4_bin;"
mysql -uroot -p'rootDBpass' -e "create user 'zabbix'@'localhost' identified by
'zabbixDBpass';"
mysql -uroot -p'rootDBpass' -e "grant all privileges on zabbix.* to zabbix@localhost
identified by 'zabbixDBpass';"

# Installer et configurer le serveur Zabbix
# wget https://repo.zabbix.com/zabbix/6.0/debian/pool/main/z/zabbix-release/zabbix-
release_6.0-4+debian$(cut -d"." -f1 /etc/debian_version)_all.deb

# dpkg -i zabbix-release_6.0-4+debian$(cut -d"." -f1 /etc/debian_version)_all.deb

wget https://repo.zabbix.com/zabbix/6.4/debian/pool/main/z/zabbix-release/zabbix-
release_6.4-1+debian12_all.deb

dpkg -i zabbix-release_6.4-1+debian12_all.deb

apt-get update

apt-get -y install zabbix-server-mysql zabbix-frontend-php zabbix-apache-conf
zabbix-sql-scripts zabbix-agent

zcat /usr/share/zabbix-sql-scripts/mysql/server.sql.gz | mysql --default-character-
set=utf8mb4 -uzabbix -p'zabbixDBpass' zabbix

# Ajout du mot de passe dans la conf BDD
echo "DBPassword=zabbixDBpass" >> /etc/zabbix/zabbix_server.conf

mysql -uroot -p'rootDBpass' -e "set global log_bin_trust_function_creators = 0;"

# Redemarrage de zabbix
systemctl restart zabbix-server zabbix-agent
systemctl enable zabbix-server zabbix-agent

# Editer la timezone dans la config php.ini
sed -i 's;#\ php_value\ date.timezone\ Europe\Riga;php_value date.timezone\
Europe\Paris;g' /etc/zabbix/apache.conf

```

```
echo "  
<VirtualHost *:80>  
    ServerAdmin webmaster@localhost  
    DocumentRoot /usr/share/zabbix  
  
    ErrorLog ${APACHE_LOG_DIR}/error.log  
    CustomLog ${APACHE_LOG_DIR}/access.log combined  
</VirtualHost> " >> /etc/apache2/sites-available/zabbix.conf  
  
a2dissite 000-default.conf  
a2ensite zabbix.conf  
  
systemctl reload apache2  
  
# Redemarrage de apache  
systemctl restart apache2  
systemctl enable apache2
```

### 6.3.6 NextCloud

#### Script d'installation et de configuration NextCloud

- Changement du hostname et de l'adresse IP
- Installation des paquet et dépendances puis installation de NextCloud et de sa base de données

```
#!/usr/bin/bash

hostnamectl set-hostname Nextcloud

echo "
127.0.0.1      localhost
127.0.1.1      Nextcloud

# The following lines are desirable for IPv6 capable hosts
::1          localhost ip6-localhost ip6-loopback
ff02::1      ip6-allnodes
ff02::2      ip6-allrouters
" > /etc/hosts

echo "
# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface" > /etc/network/interfaces

echo "
auto ens33
iface ens33 inet static
    address 172.16.25.11
    netmask 255.255.255.0
    gateway 172.16.25.254
    dns-domain netforge.net
    dns-nameservers 172.16.20.10 172.16.25.10" > /etc/network/interfaces.d/ens33

systemctl restart networking

# Ajout du hostname dans la configuration zabbix
sed -i 's;Hostname=Zabbix\ server;Hostname=Nextcloud;g'
/etc/zabbix/zabbix_agentd.conf
systemctl restart agent-zabbix

apt-get update && apt-get upgrade -y

# Installation apache
apt-get install apache2 -y
```



```

# Installation ufw firewall
apt-get install ufw -y
ufw allow 22
ufw enable -y
ufw app list
ufw allow "WWW Full"
ufw reload

# Installation PHP
apt install software-properties-common ca-certificates lsb-release apt-transport-https -y
sh -c 'echo "deb https://packages.sury.org/php/ $(lsb_release -sc) main" > /etc/apt/sources.list.d/php.list'
wget -qO - https://packages.sury.org/php/apt.gpg | apt-key add -
apt-get update
apt-get purge -y php7*
apt-get purge -y php8*
apt-get install -y php8.3 php-curl php-cli php-mysql php-gd php-common php-xml php-json php-intl php-pear php-imagick php-dev php-common php-mbstring php-zip php-soap php-bz2 php-bcmath php-gmp php-apcu libmagickcore-dev php-redis php-memcached php-ldap

sed -i 's#;date.timezone\ =\ Europe\ /Paris#g' /etc/php/8.3/apache2/php.ini
sed -i 's#memory_limit\ =\ 128M#memory_limit\ =\ 512M#g' /etc/php/8.3/apache2/php.ini
sed -i 's#upload_max_filesize\ =\ 2M#upload_max_filesize\ =\ 500M#g' /etc/php/8.3/apache2/php.ini
sed -i 's#post_max_size\ =\ 8M#post_max_size\ =\ 600M#g' /etc/php/8.3/apache2/php.ini
sed -i 's#max_execution_time\ =\ 30#max_execution_time\ =\ 300#g' /etc/php/8.3/apache2/php.ini

# sed -i 's#;file_uploads\ =\ On#file_uploads\ =\ On#g' /etc/php/8.3/apache2/php.ini
# sed -i 's#;allow_url_fopen\ =\ On#allow_url_fopen\ =\ On#g' /etc/php/8.3/apache2/php.ini

# sed -i 's#;display_errors\ =\ Off#display_errors\ =\ Off#g' /etc/php/8.3/apache2/php.ini
sed -i 's#output_buffering\ =\ 4096#output_buffering\ =\ Off#g' /etc/php/8.3/apache2/php.ini

```

```

sed -i 's#;zend_extension=opcache#zend_extension=opcache#g'
/etc/php/8.3/apache2/php.ini
sed -i '/zend_extension=opcache/a opcache.enable = 1\
opcache.interned_strings_buffer = 8\
opcache.max_accelerated_files = 10000\
opcache.memory_consumption = 128\
opcache.save_comments = 1\
opcache.revalidate_freq = 1' /etc/php/8.3/apache2/php.ini

systemctl restart apache2

# Install MariaDB
apt-get install mariadb-server -y
systemctl enable --now mariadb

# mysql -sfu root < "mysql_secure_installation.sql" # ne fonctionne pas
mariadb-secure-installation <<EOF

y
y
Soleil1
Soleil1
y
y
y
y
EOF

mysql -uroot -p'rootDBpass' -e "create database nextcloud_db character set
utf8mb4 collate utf8mb4_bin;"
mysql -uroot -p'rootDBpass' -e "create user 'nextclouduser'@'localhost'
identified by 'nextcloudpass';"
mysql -uroot -p'rootDBpass' -e "grant all privileges on nextcloud_db.* to
nextclouduser@localhost identified by 'nextcloudpass';"
# mysql -uroot -p'rootDBpass' -e "show grants for nextclouduser@localhost;"

apt-get install curl unzip -y
curl -o /var/www/nextcloud.zip
https://download.nextcloud.com/server/releases/latest.zip
unzip /var/www/nextcloud.zip -d /var/www/html/
chown -R www-data:www-data /var/www/html/nextcloud

echo 'ServerName $(hostname)' >> /etc/apache2/conf-available/fqdn.conf

```

```
echo "  
<VirtualHost *:80>  
    ServerName 127.0.0.1  
  
    DocumentRoot "/var/www/html/nextcloud"  
    <Directory "/var/www/html/nextcloud">  
        Require all granted  
        AllowOverride All  
        Options FollowSymLinks MultiViews  
  
        <IfModule mod_dav.c>  
            Dav off  
        </IfModule>  
  
        SetEnv HOME /var/www/html/nextcloud  
        SetEnv HTTP_HOME /var/www/html/nextcloud  
    </Directory>  
</VirtualHost>" >> /etc/apache2/sites-available/nextcloud.conf  
  
a2ensite nextcloud.conf  
a2dissite 000-default.conf  
apachectl configtest  
systemctl reload apache2  
systemctl restart apache2  
—
```

## 6.3.7 Syslog

### Script d'installation et de configuration Syslog

- Changement du hostname et de l'adresse IP
- Installation des paquet et dépendances puis installation de Syslog et de sa base de données

```
#!/usr/bin/bash

hostnamectl set-hostname Syslog

echo "
127.0.0.1      localhost
127.0.1.1      Syslog

# The following lines are desirable for IPv6 capable hosts
::1          localhost ip6-localhost ip6-loopback
ff02::1      ip6-allnodes
ff02::2      ip6-allrouters
" >> /etc/hosts

echo "
# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface" > /etc/network/interfaces

echo "
auto ens33
iface ens33 inet static
    address 172.16.25.12
    netmask 255.255.255.0
    gateway 172.16.25.254
    dns-domain netforge.net
    dns-nameservers 172.16.20.10 172.16.25.10" > /etc/network/interfaces.d/ens33

systemctl restart networking

# Ajout du hostname dans la configuration zabbix
sed -i 's;Hostname=Zabbix\ server;Hostname=Syslog;g'
/etc/zabbix/zabbix_agentd.conf
systemctl restart agent-zabbix

apt-get update && apt-get upgrade -y

apt-get install -y apache2 mariadb-server php php-mysql php-gd
apt-get install rsyslog-mysql -y
```

```

# mysql -sfu root < "mysql_secure_installation.sql" # ne fonctionne pas
mariadb-secure-installation <<EOF

y
y
Soleil1
Soleil1
y
y
y
y
EOF

mariadb -uroot -p'Soleil1' -e "GRANT ALL PRIVILEGES ON Syslog . * TO
'rsyslog'@'localhost';"

sed -i 's;#module(load="imudp");module(load="imudp");g' /etc/rsyslog.conf
sed -i 's;#input(type="imudp" port="514");input(type="imudp" port="514");g'
/etc/rsyslog.conf
sed -i 's;#module(load="imtcp");module(load="imtcp");g' /etc/rsyslog.conf
sed -i 's;#input(type="imtcp" port="514");input(type="imtcp" port="514");g'
/etc/rsyslog.conf

echo -e "\n*.* :ommysql:localhost,Syslog,rsyslog,Soleil1" >> /etc/rsyslog.conf

ufw enable
ufw allow 514
ufw reload

systemctl enable rsyslog

# verif mdp
# mysql -e "SELECT User,Password, Host FROM mysql.user;"
# GRANT ALL PRIVILEGES ON *.* TO `root`@`localhost` IDENTIFIED VIA
mysql_native_password USING 'invalid' OR unix_socket WITH GRANT OPTION

```

## 6.4 Routeurs

### 6.4.1 rCore-1

```
enable
configure terminal

no ip igmp snooping

ip domain lookup
ip domain name netforge.net
ip name-server 172.16.20.10 172.16.25.10

ip route 0.0.0.0 0.0.0.0 10.0.0.1

! creation du mot de passe enable necessaire pour ssh
enable password Soleil1
! Creation d un utilisateur dans la base locale necessaire pour connexion ssh
username Admin password Soleil1

! Activation de la connexion ssh
crypto key generate rsa
1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3
line vty 0 4
no transport input all
transport input ssh
login local
exit

! SNMP v3
snmp-server group Netforge v3 auth read v1default
snmp-server user Admin Netforge v3 auth md5 Soleil10!@
snmp-server host 172.16.20.12 version 3 auth Admin
snmp-server enable traps

! Syslog
logging buffered 16384
logging 172.16.25.12
archive
log config
logging enable
logging size 1000
notify syslog
hidekeys
exit
exit
```

```
bridge irb

interface FastEthernet 0/0
no ip address
no shutdown
exit

interface FastEthernet 0/1
no ip address
no shutdown
exit

interface FastEthernet 1/0
no ip address
no shutdown
exit

interface FastEthernet 2/0
no ip address
no shutdown
exit

interface FastEthernet 1/0.20
encapsulation dot1Q 20
no ip address
no ip directed-broadcast
bridge-group 20
no shutdown
exit

interface FastEthernet 1/0.25
encapsulation dot1Q 25
no ip address
no ip directed-broadcast
bridge-group 25
no shutdown
exit

interface FastEthernet 1/0.40
encapsulation dot1Q 40
no ip address
no ip directed-broadcast
bridge-group 40
no shutdown
exit

interface FastEthernet 1/0.110
```

```
encapsulation dot1Q 110
no ip address
no ip directed-broadcast
bridge-group 110
no shutdown
exit

interface FastEthernet 1/0.120
encapsulation dot1Q 120
no ip address
no ip directed-broadcast
bridge-group 120
no shutdown
exit

interface FastEthernet 2/0.20
encapsulation dot1Q 20
no ip address
no ip directed-broadcast
bridge-group 20
no shutdown
exit

interface FastEthernet 2/0.25
encapsulation dot1Q 25
no ip address
no ip directed-broadcast
bridge-group 25
no shutdown
exit

interface FastEthernet 2/0.40
encapsulation dot1Q 40
no ip address
no ip directed-broadcast
bridge-group 40
no shutdown
exit

interface FastEthernet 2/0.110
encapsulation dot1Q 110
no ip address
no ip directed-broadcast
bridge-group 110
no shutdown
exit

interface FastEthernet 2/0.120
```



```
encapsulation dot1Q 120
no ip address
no ip directed-broadcast
bridge-group 120
no shutdown
exit

interface bvi 1
ip address 10.0.0.4 255.255.255.248
standby 1 ip 10.0.0.6
standby 1 priority 110
no ip directed-broadcast
no shutdown
exit

interface bvi 20
description "vLAN Server"
ip address 172.16.20.252 255.255.255.0
standby 20 ip 172.16.20.254
standby 20 priority 110
no ip directed-broadcast
no shutdown
exit

interface bvi 25
description "vLAN Backup"
ip address 172.16.25.252 255.255.255.0
standby 25 ip 172.16.25.254
standby 25 priority 110
no ip directed-broadcast
no shutdown
exit

interface bvi 40
description "vLAN Admin"
ip address 192.168.216.252 255.255.255.0
ip helper-address 172.16.20.10
ip helper-address 172.16.25.10
standby 40 ip 192.168.216.254
standby 40 priority 110
no ip directed-broadcast
no shutdown
exit

interface bvi 110
description "vLAN Direction"
ip address 192.168.10.252 255.255.255.0
ip helper-address 172.16.20.10
```

```
ip helper-address 172.16.25.10
standby 110 ip 192.168.10.254
standby 110 priority 110
no ip directed-broadcast
no shutdown
exit

interface bvi 120
description "vLAN Bureau_Etude"
ip address 192.168.20.252 255.255.255.0
ip helper-address 172.16.20.10
ip helper-address 172.16.25.10
standby 120 ip 192.168.20.254
standby 120 priority 110
no ip directed-broadcast
no shutdown
exit

bridge 1 protocol ieee
bridge 1 route ip

bridge 20 protocol ieee
bridge 20 route ip

bridge 25 protocol ieee
bridge 25 route ip

bridge 40 protocol ieee
bridge 40 route ip

bridge 110 protocol ieee
bridge 110 route ip

bridge 120 protocol ieee
bridge 120 route ip

exit
write memory
```

## 6.4.2 rCore-2

```
enable
configure terminal

no ip igmp snooping

ip domain lookup
ip domain name netforge.net
ip name-server 172.16.20.10 172.16.25.10

ip route 0.0.0.0 0.0.0.0 10.0.0.1

! creation du mot de passe enable necessaire pour ssh
enable password Soleil1
! Creation d un utilisateur dans la base locale necessaire pour connexion ssh
username Admin password Soleil1

! Activation de la connexion ssh
crypto key generate rsa
1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3
line vty 0 4
no transport input all
transport input ssh
login local
exit

! SNMP v3
snmp-server group Netforge v3 auth read v1default
snmp-server user Admin Netforge v3 auth md5 Soleil10!@
snmp-server host 172.16.20.12 version 3 auth Admin
! snmp-server host 172.16.25.12 version 3 auth Admin
snmp-server enable traps

logging buffered 16384
logging 172.16.25.12
archive
log config
logging enable
logging size 1000
notify syslog
hidekeys
exit
exit

bridge irb
```

```
interface FastEthernet 0/0
no ip address
no ip directed-broadcast
bridge-group 1
no shutdown
exit

interface FastEthernet 0/1
no ip address
no ip directed-broadcast
bridge-group 1
no shutdown
exit

interface FastEthernet 1/0
no ip address
no shutdown
exit

interface FastEthernet 2/0
no ip address
no shutdown
exit

interface FastEthernet 1/0.20
encapsulation dot1Q 20
no ip address
no ip directed-broadcast
bridge-group 20
no shutdown
exit

interface FastEthernet 1/0.25
encapsulation dot1Q 25
no ip address
no ip directed-broadcast
bridge-group 25
no shutdown
exit

interface FastEthernet 1/0.40
encapsulation dot1Q 40
no ip address
no ip directed-broadcast
bridge-group 40
no shutdown
exit
```

```
interface FastEthernet 1/0.110
encapsulation dot1Q 110
no ip address
no ip directed-broadcast
bridge-group 110
no shutdown
exit
```

```
interface FastEthernet 1/0.120
encapsulation dot1Q 120
no ip address
no ip directed-broadcast
bridge-group 120
no shutdown
exit
```

```
interface FastEthernet 2/0.20
encapsulation dot1Q 20
no ip address
no ip directed-broadcast
bridge-group 20
no shutdown
exit
```

```
interface FastEthernet 2/0.25
encapsulation dot1Q 25
no ip address
no ip directed-broadcast
bridge-group 25
no shutdown
exit
```

```
interface FastEthernet 2/0.40
encapsulation dot1Q 40
no ip address
no ip directed-broadcast
bridge-group 40
no shutdown
exit
```

```
interface FastEthernet 2/0.110
encapsulation dot1Q 110
no ip address
no ip directed-broadcast
bridge-group 110
no shutdown
exit
```

```
interface FastEthernet 2/0.120
encapsulation dot1Q 120
no ip address
no ip directed-broadcast
bridge-group 120
no shutdown
exit

interface bvi 1
ip address 10.0.0.5 255.255.255.248
standby 1 ip 10.0.0.6
standby 1 priority 90
no ip directed-broadcast
no shutdown
exit

interface bvi 20
description "vLAN Server"
ip address 172.16.20.253 255.255.255.0
standby 20 ip 172.16.20.254
standby 20 priority 90
no ip directed-broadcast
no shutdown
exit

interface bvi 25
description "vLAN Backup"
ip address 172.16.25.253 255.255.255.0
standby 25 ip 172.16.25.254
standby 25 priority 90
no ip directed-broadcast
no shutdown
exit

interface bvi 40
description "vLAN Backup"
ip address 192.168.216.253 255.255.255.0
ip helper-address 172.16.20.10
ip helper-address 172.16.25.10
standby 40 ip 192.168.216.254
standby 40 priority 90
no ip directed-broadcast
no shutdown
exit

interface bvi 110
description "vLAN Direction"
```

```
ip address 192.168.10.253 255.255.255.0
ip helper-address 172.16.20.10
ip helper-address 172.16.25.10
standby 110 ip 192.168.10.254
standby 110 priority 90
no ip directed-broadcast
no shutdown
exit
```

```
interface bvi 120
description "vLAN Bureau_Etude"
ip address 192.168.20.253 255.255.255.0
ip helper-address 172.16.20.10
ip helper-address 172.16.25.10
standby 120 ip 192.168.20.254
standby 120 priority 90
no ip directed-broadcast
no shutdown
exit
```

```
bridge 1 protocol ieee
bridge 1 route ip
```

```
bridge 20 protocol ieee
bridge 20 route ip
```

```
bridge 25 protocol ieee
bridge 25 route ip
```

```
bridge 40 protocol ieee
bridge 40 route ip
```

```
bridge 110 protocol ieee
bridge 110 route ip
```

```
bridge 120 protocol ieee
bridge 120 route ip
```

```
exit
write memory
```

## 6.5 Commutateurs

### 6.5.1 sAccess

```
enable
configure terminal

no ip igmp snooping

ip domain lookup
ip domain name netforge.net

! creation du mot de passe enable necessaire pour ssh
enable password Soleil1
! Creation d un utilisateur dans la base locale necessaire pour connexion ssh
username Admin password Soleil1

! Activation de la connexion ssh
crypto key generate rsa
1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3
line vty 0 4
no transport input all
transport input ssh
login local
exit

! SNMP v3
snmp-server group Netforge v3 auth read v1default
snmp-server user Admin Netforge v3 auth md5 Soleil10!@
snmp-server host 172.16.20.12 version 3 auth Admin
snmp-server enable traps

vlan 11
name vLAN_WAN_1

vlan 12
name vLAN_WAN_2

interface Ethernet 0/0
duplex full
description "nWan-1"
switchport mode access
switchport access vlan 11
no shutdown
exit
```



```
interface Ethernet 0/1
duplex full
description "cWan-2"
switchport mode access
switchport access vlan 12
no shutdown
exit

interface Ethernet 0/2
duplex full
description "Master"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 11
switchport trunk allowed vlan add 12
no shutdown
exit

interface Ethernet 0/3
duplex full
description "Backup"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 11
switchport trunk allowed vlan add 12
no shutdown
exit

exit
write memory
```

## 6.5.2 sCore-1

```
enable
configure terminal

no ip igmp snooping

ip domain lookup
ip domain name netforge.net
ip name-server 172.16.20.10 172.16.25.10

! creation du mot de passe enable necessaire pour ssh
enable password Soleil1
! Creation d un utilisateur dans la base locale necessaire pour connexion ssh
username Admin password Soleil1

! Activation de la connexion ssh
crypto key generate rsa
1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3
line vty 0 4
no transport input all
transport input ssh
login local
exit

! SNMP v3
snmp-server group Netforge v3 auth read v1default
snmp-server user Admin Netforge v3 auth md5 Soleil10!@
snmp-server host 172.16.20.12 version 3 auth Admin
snmp-server enable traps

logging buffered 16384
logging 172.16.25.12
archive
log config
logging enable
logging size 1000
notify syslog
hidekeys
exit
exit

vlan 20
name vLAN_Server_Master
exit
```

```
vlan 25
name vLAN_Server_Backup
exit

vlan 40
name vLAN_LAN_Admin
exit

vlan 110
name vLAN_LAN_Direction
exit

vlan 120
name vLAN_LAN_Bureau_Etude
exit

interface vlan 20
ip address 172.16.20.240 255.255.255.0
no shutdown
exit

interface vlan 25
ip address 172.16.25.240 255.255.255.0
no shutdown
exit

interface Ethernet 0/0
duplex full
description "rCore-1"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 20
switchport trunk allowed vlan add 25
switchport trunk allowed vlan add 40
switchport trunk allowed vlan add 110
switchport trunk allowed vlan add 120
no shutdown
exit

interface Ethernet 0/1
duplex full
description "rCore-2"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 20
switchport trunk allowed vlan add 25
```

```
switchport trunk allowed vlan add 40
switchport trunk allowed vlan add 110
switchport trunk allowed vlan add 120
no shutdown
exit
```

```
interface Ethernet 1/0
duplex full
description "sSrv"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 20
switchport trunk allowed vlan add 25
switchport trunk allowed vlan add 40
switchport trunk allowed vlan add 110
switchport trunk allowed vlan add 120
no shutdown
exit
```

```
interface Ethernet 1/1
duplex full
description "sStage-1"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 20
switchport trunk allowed vlan add 25
switchport trunk allowed vlan add 40
switchport trunk allowed vlan add 110
switchport trunk allowed vlan add 120
no shutdown
exit
```

```
interface Ethernet 1/2
duplex full
description "sStage-2"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 20
switchport trunk allowed vlan add 25
switchport trunk allowed vlan add 40
switchport trunk allowed vlan add 110
switchport trunk allowed vlan add 120
no shutdown
exit
```

```
interface Ethernet 1/3
duplex full
description "sBckp"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 20
switchport trunk allowed vlan add 25
switchport trunk allowed vlan add 40
switchport trunk allowed vlan add 110
switchport trunk allowed vlan add 120
no shutdown
exit

spanning-tree vlan 20 root primary
spanning-tree vlan 25 root primary
spanning-tree vlan 40 root primary
spanning-tree vlan 110 root primary
spanning-tree vlan 120 root primary

! spanning-tree vlan 25 root secondary
! spanning-tree vlan 30 root secondary

exit
write memory
```

### 6.5.3 sCore-2

```
enable
configure terminal

no ip igmp snooping

ip domain lookup
ip domain name netforge.net
ip name-server 172.16.20.10 172.16.25.10

! creation du mot de passe enable necessaire pour ssh
enable password Soleil1
! Creation d un utilisateur dans la base locale necessaire pour connexion ssh
username Admin password Soleil1

! Activation de la connexion ssh
crypto key generate rsa
1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3
line vty 0 4
no transport input all
transport input ssh
login local
exit

! SNMP v3
snmp-server group Netforge v3 auth read v1default
snmp-server user Admin Netforge v3 auth md5 Soleil10!@
snmp-server host 172.16.20.12 version 3 auth Admin
snmp-server enable traps

logging buffered 16384
logging 172.16.25.12
archive
log config
logging enable
logging size 1000
notify syslog
hidekeys
exit
exit

vlan 20
name vLAN_Server_Master
exit
```

```

vlan 25
name vLAN_Server_Backup
exit

vlan 40
name vLAN_LAN_Admin
exit

vlan 110
name vLAN_LAN_Direction
exit

vlan 120
name vLAN_LAN_Bureau_Etude
exit

interface vlan 20
ip address 172.16.20.241 255.255.255.0
no shutdown
exit

interface vlan 25
ip address 172.16.25.241 255.255.255.0
no shutdown
exit

interface Ethernet 0/0
duplex full
description "rCore-1"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 20
switchport trunk allowed vlan add 25
switchport trunk allowed vlan add 40
switchport trunk allowed vlan add 110
switchport trunk allowed vlan add 120
no shutdown
exit

interface Ethernet 0/1
duplex full
description "rCore-2"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 20
switchport trunk allowed vlan add 25

```

```
switchport trunk allowed vlan add 40
switchport trunk allowed vlan add 110
switchport trunk allowed vlan add 120
no shutdown
exit
```

```
interface Ethernet 0/2
duplex full
description "sCore-1"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 20
switchport trunk allowed vlan add 25
switchport trunk allowed vlan add 40
switchport trunk allowed vlan add 110
switchport trunk allowed vlan add 120
no shutdown
exit
```

```
interface Ethernet 1/0
duplex full
description "sSrv"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 20
switchport trunk allowed vlan add 25
switchport trunk allowed vlan add 40
switchport trunk allowed vlan add 110
switchport trunk allowed vlan add 120
no shutdown
exit
```

```
interface Ethernet 1/1
duplex full
description "sStage-1"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 20
switchport trunk allowed vlan add 25
switchport trunk allowed vlan add 40
switchport trunk allowed vlan add 110
switchport trunk allowed vlan add 120
no shutdown
exit
```



```
interface Ethernet 1/2
duplex full
description "sStage-2"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 20
switchport trunk allowed vlan add 25
switchport trunk allowed vlan add 40
switchport trunk allowed vlan add 110
switchport trunk allowed vlan add 120
no shutdown
exit
```

```
interface Ethernet 1/3
duplex full
description "sBckp"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 20
switchport trunk allowed vlan add 25
switchport trunk allowed vlan add 40
switchport trunk allowed vlan add 110
switchport trunk allowed vlan add 120
no shutdown
exit
```

```
! spanning-tree vlan 25 root primary
! spanning-tree vlan 30 root primary
```

```
spanning-tree vlan 20 root secondary
spanning-tree vlan 25 root secondary
spanning-tree vlan 40 root secondary
spanning-tree vlan 110 root secondary
spanning-tree vlan 120 root secondary
```

```
exit
write memory
```

## 6.5.4 sSrv

```
enable
configure terminal

no ip igmp snooping

ip domain lookup
ip domain name netforge.net
ip name-server 172.16.20.10 172.16.25.10

! creation du mot de passe enable necessaire pour ssh
enable password Soleil1
! Creation d un utilisateur dans la base locale necessaire pour connexion ssh
username Admin password Soleil1

! Activation de la connexion ssh
crypto key generate rsa
1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3
line vty 0 4
no transport input all
transport input ssh
login local
exit

interface loopback 0
ip address 10.0.1.1 255.255.255.255
no shutdown
exit

! SNMP v3
snmp-server group Netforge v3 auth read v1default
snmp-server user Admin Netforge v3 auth md5 Soleil10!@
snmp-server host 172.16.20.12 version 3 auth Admin
snmp-server enable traps

logging buffered 16384
logging 172.16.25.12
archive
log config
logging enable
logging size 1000
notify syslog
hidekeys
exit
exit
```

```

vlan 20
name vLAN_Server_Master
exit

vlan 40
name vLAN_LAN_Admin
exit

vlan 110
name vLAN_LAN_Direction
exit

vlan 120
name vLAN_LAN_Bureau_Etude
exit

interface vlan 20
ip address 172.16.20.242 255.255.255.0
no shutdown
exit

interface vlan 25
ip address 172.16.25.242 255.255.255.0
no shutdown
exit

interface Ethernet 0/0
duplex full
description "sCore-1"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 20
switchport trunk allowed vlan add 25
switchport trunk allowed vlan add 40
switchport trunk allowed vlan add 110
switchport trunk allowed vlan add 120
no shutdown
exit

interface Ethernet 0/1
duplex full
description "sCore-2"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 20

```

```
switchport trunk allowed vlan add 25
switchport trunk allowed vlan add 40
switchport trunk allowed vlan add 110
switchport trunk allowed vlan add 120
no shutdown
exit
```

```
interface Ethernet 1/0
duplex full
description "DC_Master"
switchport mode access
switchport access vlan 20
no shutdown
exit
```

```
interface Ethernet 1/1
duplex full
description "GLPI"
switchport mode access
switchport access vlan 20
no shutdown
exit
```

```
interface Ethernet 1/2
duplex full
description "ZABBIX"
switchport mode access
switchport access vlan 20
no shutdown
exit
```

```
interface Ethernet 2/0
duplex full
description "Admin-1"
switchport mode access
switchport access vlan 20
no shutdown
exit
```

```
interface Ethernet 2/1
duplex full
description "Admin-LocalHost"
switchport mode access
switchport access vlan 40
no shutdown
exit
```

```
exit
```

write memory

### 6.5.5 sBckp

```
enable
configure terminal

no ip igmp snooping

ip domain lookup
ip domain name netforge.net
ip name-server 172.16.20.10 172.16.25.10

! creation du mot de passe enable necessaire pour ssh
enable password Soleil1
! Creation d un utilisateur dans la base locale necessaire pour connexion ssh
username Admin password Soleil1

! Activation de la connexion ssh
crypto key generate rsa
1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3
line vty 0 4
no transport input all
transport input ssh
login local
exit

interface loopback 0
ip address 10.0.1.4 255.255.255.255
no shutdown
exit

! SNMP v3
snmp-server group Netforge v3 auth read v1default
snmp-server user Admin Netforge v3 auth md5 Soleil10!@
snmp-server host 172.16.20.12 version 3 auth Admin
snmp-server enable traps

logging buffered 16384
logging 172.16.25.12
archive
log config
logging enable
logging size 1000
notify syslog
hidekeys
exit
exit
```

```

vlan 20
name vLAN_Server_Master
exit

vlan 25
name vLAN_Server_Backup
exit

vlan 110
name vLAN_LAN_Direction
exit

vlan 120
name vLAN_LAN_Bureau_Etude
exit

interface vlan 20
ip address 172.16.20.245 255.255.255.0
no shutdown
exit

interface vlan 25
ip address 172.16.25.245 255.255.255.0
no shutdown
exit

interface Ethernet 0/0
duplex full
description "sCore-1"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 20
switchport trunk allowed vlan add 25
switchport trunk allowed vlan add 40
switchport trunk allowed vlan add 110
switchport trunk allowed vlan add 120
no shutdown
exit

interface Ethernet 0/1
duplex full
description "sCore-2"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 20

```

```
switchport trunk allowed vlan add 25
switchport trunk allowed vlan add 40
switchport trunk allowed vlan add 110
switchport trunk allowed vlan add 120
no shutdown
exit
```

```
interface Ethernet 1/0
duplex full
description "DC_Backup"
switchport mode access
switchport access vlan 25
no shutdown
exit
```

```
interface Ethernet 1/1
duplex full
description "NextCloud"
switchport mode access
switchport access vlan 25
no shutdown
exit
```

```
interface Ethernet 1/2
duplex full
description "RepoMirror"
switchport mode access
switchport access vlan 25
no shutdown
exit
```

```
exit
write memory
```



## 6.5.6 sStage-1

```
enable
configure terminal

no ip igmp snooping

ip domain lookup
ip domain name netforge.net
ip name-server 172.16.20.10 172.16.25.10

! creation du mot de passe enable necessaire pour ssh
enable password Soleil1
! Creation d un utilisateur dans la base locale necessaire pour connexion ssh
username Admin password Soleil1

! Activation de la connexion ssh
crypto key generate rsa
1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3
line vty 0 4
no transport input all
transport input ssh
login local
exit

interface loopback 0
ip address 10.0.1.2 255.255.255.255
no shutdown
exit

! SNMP v3
snmp-server group Netforge v3 auth read v1default
snmp-server user Admin Netforge v3 auth md5 Soleil10!@
snmp-server host 172.16.20.12 version 3 auth Admin
snmp-server enable traps

logging buffered 16384
logging 172.16.25.12
archive
log config
logging enable
logging size 1000
notify syslog
hidekeys
exit
exit
```

```

vlan 20
name vLAN_Server_Master
exit

vlan 40
name vLAN_LAN_Admin
exit

vlan 110
name vLAN_LAN_Direction
exit

vlan 120
name vLAN_LAN_Bureau_Etude
exit

interface vlan 20
ip address 172.16.20.243 255.255.255.0
no shutdown
exit

interface vlan 25
ip address 172.16.25.243 255.255.255.0
no shutdown
exit

interface Ethernet 0/0
duplex full
description "sCore-1"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 20
switchport trunk allowed vlan add 25
switchport trunk allowed vlan add 40
switchport trunk allowed vlan add 110
switchport trunk allowed vlan add 120
no shutdown
exit

interface Ethernet 0/1
duplex full
description "sCore-2"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 20

```

```
switchport trunk allowed vlan add 25
switchport trunk allowed vlan add 40
switchport trunk allowed vlan add 110
switchport trunk allowed vlan add 120
no shutdown
exit

interface Ethernet 1/0
duplex full
description "Admin"
switchport mode access
switchport access vlan 40
no shutdown
exit

exit
write memory
```

## 6.5.7 sStage-2

```
enable
configure terminal

no ip igmp snooping

ip domain lookup
ip domain name netforge.net
ip name-server 172.16.20.10 172.16.25.10

! creation du mot de passe enable necessaire pour ssh
enable password Soleil1
! Creation d un utilisateur dans la base locale necessaire pour connexion ssh
username Admin password Soleil1

! Activation de la connexion ssh
crypto key generate rsa
1024
ip ssh version 2
ip ssh time-out 60
ip ssh authentication-retries 3
line vty 0 4
no transport input all
transport input ssh
login local
exit

interface loopback 0
ip address 10.0.1.3 255.255.255.255
no shutdown
exit

! SNMP v3
snmp-server group Netforge v3 auth read v1default
snmp-server user Admin Netforge v3 auth md5 Soleil10!@
snmp-server host 172.16.20.12 version 3 auth Admin
snmp-server enable traps

logging buffered 16384
logging 172.16.25.12
archive
log config
logging enable
logging size 1000
notify syslog
hidekeys
exit
exit
```

```

vlan 20
name vLAN_Server_Master
exit

vlan 40
name vLAN_LAN_Admin
exit

vlan 110
name vLAN_LAN_Direction
exit

vlan 120
name vLAN_LAN_Bureau_Etude
exit

interface vlan 20
ip address 172.16.20.244 255.255.255.0
no shutdown
exit

interface vlan 25
ip address 172.16.25.244 255.255.255.0
no shutdown
exit

interface Ethernet 0/0
duplex full
description "sCore-1"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 20
switchport trunk allowed vlan add 25
switchport trunk allowed vlan add 40
switchport trunk allowed vlan add 110
switchport trunk allowed vlan add 120
no shutdown
exit

interface Ethernet 0/1
duplex full
description "sCore-2"
switchport trunk encapsulation dot1q
switchport mode trunk
switchport trunk allowed vlan none
switchport trunk allowed vlan add 20

```

```
switchport trunk allowed vlan add 25
switchport trunk allowed vlan add 40
switchport trunk allowed vlan add 110
switchport trunk allowed vlan add 120
no shutdown
exit

interface Ethernet 1/0
duplex full
description "Admin"
switchport mode access
switchport access vlan 40
no shutdown
exit

exit
write memory
```

## 7 Sauvegarde

### 7.1 Main.py

```
import csv,logs,argparse,logging
from logging.handlers import TimedRotatingFileHandler
from switch import SSH,Telnet
from zabbix import Zabbix
from dotenv import load_dotenv
from time import sleep
from os import getenv, environ, path

# class logging.handlers.SysLogHandler(address=('localhost', SYSLOG_UDP_PORT),
# facility=LOG_USER, socktype=socket.SOCK_DGRAM)

load_dotenv("C:\\Scripts\\ENV_GIT_Main\\.env")
sleep(1)
DIR: str | None = getenv("DIR")
BASEFILE: str | None = getenv("BASEFILE")
ZABBIXIP: str | None = environ.get("ZABBIXIP")
ZABBIXTOKEN: str | None = environ.get("ZABBIXTOKEN")
LOG_DIR: str | None = getenv("LOG_DIR")
LOG_LEVEL: str | None = getenv("LOG_LEVEL")
STREAM_HANDLER: str | None = getenv("STREAM_HANDLER")
DISCONNECT: str | None = getenv("DISCONNECT")
PASS_BIS: str | None = getenv("PASS_BIS")
LOG_FILE: str | None = LOG_DIR+"\\.log" if LOG_LEVEL else None
ERR_LOG_CSV: str | None = LOG_DIR+"\\err.csv" if LOG_LEVEL else None

AVAYA_USER: str | None = getenv("AVAYA_USER") if not environ.get("AVAYA_USER") else
environ.get("AVAYA_USER")
AVAYA_PASS: str | None = getenv("AVAYA_PASS") if not environ.get("AVAYA_PASS") else
environ.get("AVAYA_PASS")
ARUBA_ERS_USER: str | None = getenv("ARUBA_ERS_USER") if not
environ.get("ARUBA_ERS_USER") else environ.get("ARUBA_ERS_USER")
ARUBA_ERS_PASS: str | None = getenv("ARUBA_ERS_PASS") if not
environ.get("ARUBA_ERS_PASS") else environ.get("ARUBA_ERS_PASS")
ARUBA_ERS_USER_BIS: str | None = getenv("ARUBA_ERS_USER_BIS") if not
environ.get("ARUBA_ERS_USER_BIS") else environ.get("ARUBA_ERS_USER_BIS")

logLevel: dict = {
    "DEBUG":logging.DEBUG,
    "INFO":logging.INFO,
    "WARNING":logging.WARNING,
    "ERROR":logging.ERROR,
    "CRITICAL":logging.CRITICAL
}
```

```

# ----- log standard -----
logger_main = logging.getLogger(__name__)
logger_main.setLevel(logLevel[LOG_LEVEL])
formatter_main =
logging.Formatter('%(asctime)s:%(levelname)s:%(name)s:ligne_%(lineno)d ->
%(message)s')
file_handler_main = TimedRotatingFileHandler(
    filename=LOG_FILE, # type: ignore
    when='H',
    interval=24,
    backupCount=5,
    encoding='utf-8'
)
file_handler_main.setFormatter(formatter_main)
file_handler_main.setLevel(logLevel[LOG_LEVEL])

stream_handler_main = logging.StreamHandler()
stream_handler_main.setFormatter(formatter_main)

logger_main.addHandler(file_handler_main)
logger_main.addHandler(stream_handler_main) if STREAM_HANDLER.lower() == 'true' else
...

rotatingLogger: bool = True

# -----

def GetParser() -> argparse.Namespace:
    parser = argparse.ArgumentParser(description="Sauvegarde des configuration de
Switch via SSH et Telnet")

    parser.add_argument('-f', '--filelog', dest="ZabbixFileLog", help="Sauvegarder
la liste des switchs trouvé dans Zabbix", required=False, action='store_true')
    parser.add_argument('-g', '--group', dest="group", help="renvoie la liste des
groupes trouvé", required=False, action='store_true')
    parser.add_argument('--src', type=str, nargs="*", dest="source", help='source du
fichier csv', required=False)

    return parser.parse_args()

@logs.Timer
def Reroll(fileList: list):
    for fLst in fileList:
        with open(fLst, 'w') as newLog:
            newLog.close()

@logs.Timer
def OpenCSV(file:str) -> list:

```



```

switchLst: list=[]

with open(file,"r") as c:
    read = csv.reader(c, delimiter=";")
    logger_main.debug(f"Lecture .csv: {read}")
    for row in read:
        logger_main.debug(f"{read}")
        if 0<len(row):
            if row[0] == "type":
                continue
            match(row[4]):
                case "aruba_os":
                    device: dict = {
                        "ip":row[3],
                        "username":ARUBA_ERS_USER,
                        "password":ARUBA_ERS_PASS,
                        "device_type":row[4]
                        # 'use_keys': True, # Activer cle ssh
                        # 'key_file': '/data/05_PYTHON_DEMO/SSH_KEY/admin1' #
chemin cle ssh
                    }
                case "avaya_ers":
                    device: dict = {
                        "ip":row[3],
                        "username":AVAYA_USER,
                        "password":AVAYA_PASS,
                        "device_type":row[4]
                        # 'use_keys': True, # Activer cle ssh
                        # 'key_file': '/data/05_PYTHON_DEMO/SSH_KEY/admin1' #
chemin cle ssh
                    }
                case _:
                    raise ValueError
            s=[row[0], row[1], row[2], device]
            switchLst.append(s)

    return switchLst

def DisconnectSwitch(file:str) -> list:
    switchLst: list=[]

    with open(file,"r") as c:
        read = csv.reader(c, delimiter=";")
        for row in read:
            switchLst.append(row)

    return switchLst

```

```

def PassBisSwitch(file:str) -> list:
    switchLst: list=[]

    with open(file,"r") as c:
        read = csv.reader(c, delimiter=";")
        for row in read:
            switchLst.append(row)

    return switchLst

def WriteCSV(file: str, msg: list) -> None:
    logger_main.debug(f"Call by {msg}")
    with open(file, 'a') as f:
        writer = csv.writer(f, delimiter=";")
        writer.writerow(msg)
        logger_main.debug(f"Write in {f}; msg: {msg}")
        f.close()

@logs.Timer
def saveSwitch(switch: list, Zapi: Zabbix) -> None:
    match(switch[0]):
        case "ssh":
            ssh = SSH(DIR, switch[1], switch[2], switch[3]) # type: ignore
            ssh.main()
            Zapi.Declancheur(ssh.Name, ssh.File) # type: ignore
        case "telnet":
            tn = Telnet(DIR, switch[1], switch[2], switch[3]) # type: ignore
            tn.main()
            Zapi.Declancheur(tn.Name, tn.File) # type: ignore
        case _:
            logger_main.error(f"{switch[1]}:{switch[1]}: Erreur lors de la creation
de la class (type de connexion errone).")

@logs.Timer
def main(args: argparse.Namespace) -> int:
    device: dict
    sw: tuple
    succ: int = 0; err: int = 0;
    if args.group:
        ZabbixGrp = Zabbix(ZABBIXIP, ZABBIXTOKEN) # type: ignore
        ZabbixGrp.connexion()
        grp = ZabbixGrp.GetGroup()
        from pprint import pprint
        pprint(grp, indent=4)
        exit()
    if (args.source != None):
        logger_main.info(f"run from '--src' {args.source}")
        Zapi = Zabbix(ZABBIXIP, ZABBIXTOKEN) # type: ignore

```

```

Zapi.connexion()
Zapi.Disconnect = DisconnectSwitch(DISCONNECT) if path.exists(DISCONNECT)
else []
Zapi.PassBis = PassBisSwitch(PASS_BIS) if path.exists(PASS_BIS) else []
for file in args.source:
    switchLst = OpenCSV(file)
    logger_main.debug(f"Switchs recuperer: {len(switchLst)} -> {switchLst}")
    for switch in switchLst:
        total: int = len(switchLst)
        logger_main.info(f"Total de switch trouvé: {total:>4}")
        try:
            saveSwitch(switch, Zapi)
            succ += 1
        except Exception as e:
            err += 1
            row = [switch[0], switch[1], switch[2], switch[3], switch[6]]
            WriteCSV(ERR_LOG_CSV, row)
            logger_main.exception(e)
        finally:
            progress: str = f"success: {succ:>3}/{total:>3}; error
{err:>3}/{total:>3};"
            logger_main.info(f"\n\n{"-"*25} {progress:^40} {"-"*25}\n")
            progress: str = f"progress: {((succ+err)*100)/total:>6.2f}%"
            logger_main.info(f"\n\n{"-"*25} {progress:^40} {"-"*25}\n")
            continue
    else:
        logger_main.info(f"run from Default Zabbix")
        Reroll([ERR_LOG_CSV])
        Zapi = Zabbix(ZABBIXIP, ZABBIXTOKEN) # type: ignore
        Zapi.connexion()
        Zapi.Disconnect = DisconnectSwitch(DISCONNECT) if path.exists(DISCONNECT)
else []
Zapi.PassBis = PassBisSwitch(PASS_BIS) if path.exists(PASS_BIS) else []
swLst = Zapi.main(args.ZabbixFileLog)
total: int = len(swLst)
logger_main.info(f"Total de switch trouvé: {total:>4}")
for s in swLst:
    device = {
        "ip":s[3],
        "username":s[4],
        "password":s[5],
        "device_type":s[6],
        "secret":s[7],
        "conn_timeout":30
    }
    sw = (s[0], s[1], s[2], device)

    try:

```

```

        saveSwitch(sw, Zapi)
        succ += 1
    except Exception as e:
        err += 1
        row = [sw[0],sw[1],sw[2],device["ip"],device["device_type"]]
        WriteCSV(ERR_LOG_CSV, row)
        logger_main.exception(e)
    finally:
        progress: str = f"success: {succ:>3}/{total:>3}; error
{err:>3}/{total:>3};"
        logger_main.info(f"\n\n{"-"*25} {progress:^40} {"-"*25}\n")
        progress: str = f"progress: {((succ+err)*100)/total:>6.2f}%"
        logger_main.info(f"\n\n{"-"*25} {progress:^40} {"-"*25}\n")
        continue

    return 0

if __name__=="__main__":
    try:
        Reroll([LOG_FILE])
        logger_main.info(f"\n\n{'='*100}\n\n{"*"*20}"Debut du
programme":^30}"*"*20}\n\n")
        args = GetParser()
        main(args)
    except Exception as e:
        logger_main.exception(e)
        logger_main.info(f'\n\n\n{"*"*20}"Arret du
programme":^30}"*"*20}\n\n{'='*100}\n')
    try:
        file_handler_main.doRollover()
    except PermissionError as p:
        logger_main.debug(f"Impossible deffectuer une rotation de log via logging:
{p}")
    rotatingLogger = False
    finally:
        logs.Rotation([LOG_FILE]) if not rotatingLogger else ...
    exit()

```

## 7.2 switch.py

```
import tempfile, datetime, logs, logging
from logging.handlers import TimedRotatingFileHandler
from gitManager import GitManager
from dotenv import load_dotenv
from os import path, getenv

class ErrorSize(Exception):
    """Le fichier de configuration est vide"""
    f"Le fichier de configuration est vide"

    def __init__(self, size: int, maxSize: int):
        self.size = size
        self.maxSize = maxSize
        self.message = f"Taille du fichier ({self.size}) inferieur a: {self.maxSize} Bytes"
        super().__init__(self.message)

    """
    
    """

    """
class Switch:
    load_dotenv("C:\\Scripts\\ENV_GIT_Main\\.env")
    ban: tuple=("\x1b", "", "-", "\n", "# show running-config", "#show running-
config", "Running configuration:")
    TODAY: str = datetime.date.today().strftime("%Y-%m-%d")
    LOG_DIR: str | None = getenv("LOG_DIR")
    LOG_LEVEL: str | None = getenv("LOG_LEVEL")
    STREAM_HANDLER: str | None = getenv("STREAM_HANDLER")
    FILE_MIN_SIZE: int | None = int(getenv("FILE_MIN_SIZE"))
    LOG_FILE: str | None = LOG_DIR+"\\.log" if LOG_LEVEL else None

    logLevel: dict = {
        "DEBUG":logging.DEBUG,
        "INFO":logging.INFO,
        "WARNING":logging.WARNING,
        "ERROR":logging.ERROR,
        "CRITICAL":logging.CRITICAL
    }
}
```

```

logger_switch = logging.getLogger(__name__)
logger_switch.setLevel(logLevel[LOG_LEVEL])

formater_switch =
logging.Formatter('%(asctime)s:%(levelname)s:%(name)s:ligne_%(lineno)d ->
%(message)s')

file_handler_switch = TimedRotatingFileHandler(
    filename=LOG_FILE, # type: ignore
    when='H',
    interval=24,
    backupCount=5,
    encoding='utf-8'
)
file_handler_switch.setFormatter(formater_switch)
file_handler_switch.setLevel(logLevel[LOG_LEVEL])

stream_handler_switch = logging.StreamHandler()
stream_handler_switch.setFormatter(formater_switch)

logger_switch.addHandler(file_handler_switch)
logger_switch.addHandler(stream_handler_switch) if STREAM_HANDLER.lower() ==
'true' else ...

def __init__(self, pDir:str, pName:str, pLoc:str, pProp:dict, pConnType: str) ->
None:
    self.name: str = pName
    self.localisation: str = pLoc
    self.property: dict = pProp
    self.connType: str = pConnType
    self.dir: str = pDir+"\\ "+self.localisation+"\\ "+self.name
    self.file: str = self.dir+"\\ "+self.name+".cfg"
    self.git: GitManager = GitManager(self.dir,
self.localisation+"\\ "+self.name)
    Switch.logger_switch.debug(f"Creation: {self}")

def __str__(self) -> str:
    return f"{self.name}, type de connexion: {self.connType}, local:
{self.localisation}, ip: {self.property[\"ip\"]}, OS type:
{self.property[\"device_type\"]}"

@property
def Name(self) -> str:
    return self.name

@property
def Dir(self) -> str:

```

```

        return self.dir

    @property
    def File(self) -> str:
        return self.file

    @logs.Timer
    def saveConf(self, conf:str) -> None:
        Switch.logger_switch.info("Sauvegarde de la configuration")
        tmp: tempfile._TemporaryFileWrapper[str] =
tempfile.TemporaryFile("w+t",delete=False)
        with open(tmp.name, "w") as f:
            f.write(conf)
            Switch.logger_switch.debug(f"Creation fichier temporaire: {tmp.name}")
            Switch.logger_switch.debug(f"sizeof: {tmp.name}, {path.getsize(tmp.name)}
Bytes")
        if path.getsize(tmp.name) <= Switch.FILE_MIN_SIZE:
            Switch.logger_switch.error(f"Taille du fichier inferieur a:
{Switch.FILE_MIN_SIZE} Bytes")
            raise ErrorSize(path.getsize(tmp.name), Switch.FILE_MIN_SIZE)
        else:
            with open(self.file, "w") as c:
                with open(tmp.name,"r") as f:
                    lines = f.readlines()
                    for line in lines:
                        c.write(line) if not(line.startswith(Switch.ban) or
line.upper().startswith(self.name.upper()+"#") or line.__contains__("# show running-
config")) else ...
                f.close()
                c.close()
                msg = f'Sauvegarde le la config {self.name} -
{datetime.datetime.now().strftime("%Y-%m-%d.%Hh%M")}'
                self.git.main([self.file], msg)

    def __del__(self) -> None:
        Switch.logger_switch.debug(f"Destruction: {self}")
        pass

"""

"""

```

```

from netmiko import ConnectHandler, BaseConnection # type: ignore
class SSH(Switch):

    def __init__(self, pDir:str, pName:str, pLoc:str, pProp:dict) -> None:
        self.connType = "ssh"
        self.conn: BaseConnection
        super().__init__(pDir, pName, pLoc, pProp, self.connType)
        Switch.logger_switch.debug(f"Creation: {self}")

    @logs.Timer
    def connection(self) -> bool:
        Switch.logger_switch.info(f"{self.name}:{self.property['ip']}: Connexion")
        self.conn = ConnectHandler(**self.property)
        self.conn.enable()
        # self.conn.send_command_timing("enable")
        # self.conn.send_command_timing(self.property['secret'])
        return True

    @logs.Timer
    def showRun(self) -> str:
        Switch.logger_switch.debug(f"{self.name}:{self.property['ip']}: Envoie commande show running-config")
        return self.conn.send_command_timing("display current-configuration",
last_read=45.0, read_timeout=120.0)
        # if "VSP" in self.name or "vsp" in self.name:
        #     return self.conn.send_command_timing("show running-config",
last_read=45.0, read_timeout=120.0)
        # elif self.property["device_type"]=="huawei":
        #     return self.conn.send_command_timing("display current-configuration",
last_read=45.0, read_timeout=120.0)
        # else:
        #     return self.conn.send_command_timing("show running-config")

    """
    
    """

    @logs.Timer
    def main(self) -> int:

```



```

isConnect: bool
isConnect = self.connection()
if isConnect:
    output: str = self.showRun()
    self.saveConf(output)
    self.conn.disconnect()
    Switch.logger_switch.debug(f"{self.name}:{self.property['ip']}:
Deconnexion")
    return 0
else:
    Switch.logger_switch.error(f"{self.name}:{self.property['ip']}:
connexion impossible")
    return 1

"""



"""

import telnetlib
from time import sleep
class Telnet(Switch):

    start: str = "\x19"
    space: str = "\x20"
    enter: str = "\x0D"

    def __init__(self, pDir:str, pName:str, pLoc:str, pProp:dict) -> None:
        self.connType = "telnet"
        self.conn: telnetlib.Telnet
        super().__init__(pDir, pName, pLoc, pProp, self.connType)
        Switch.logger_switch.debug(f"Creation: {self}")

    @logs.Timer
    def connection(self) -> tuple[bool, Exception | None]:
        Switch.logger_switch.info(f"{self.name}:{self.property['ip']}: Connexion")
        self.conn = telnetlib.Telnet(self.property["ip"], 23, timeout=2)
        sleep(1)
        self.conn.write(Telnet.start.encode("ascii"))
        sleep(1)

```

```

        #
Switch.logger_switch.debug(f"{self.conn.read_very_eager().decode('ascii')}"*100}
") # Voir la console dans les logs direct
        # self.conn.read_until(b"Username:") # switch test: SW_IUTC_2eme ne permet
pas d'utiliser read_until UI non compatible
        # sleep(1)
        self.conn.write(self.property["username"].encode("ascii")+b"\n")
        self.conn.write(b"\r")
        sleep(3)
        #
lSwitch.logger_switch.debug(f"{self.conn.read_very_eager().decode('ascii')}") # Voir
la console dans les logs direct
        # self.conn.read_until(b"Password:") # switch test: SW_IUTC_2eme ne permet
pas d'utiliser read_until UI non compatible
        # sleep(1)
        self.conn.write(b"\r")
        self.conn.write(self.property["password"].encode(encoding="ascii")+b"\n")
        #
Switch.logger_switch.debug(f"{self.conn.read_very_eager().decode('ascii')}") # Voir
la console dans les logs direct
        sleep(3)
        self.conn.write(b"\r")
        # self.conn.read_until(b"#") # switch test: SW_IUTC_2eme ne permet pas
d'utiliser read_until UI non compatible
        # sleep(1)
        self.conn.write("enable".encode(encoding="ascii")+b"\n")
        sleep(3)
        self.conn.write(b"\r")
        # self.conn.read_until(b"#") # switch test: SW_IUTC_2eme ne permet pas
d'utiliser read_until UI non compatible
        # sleep(1)
        #
Switch.logger_switch.debug(f"{self.conn.read_very_eager().decode('ascii')}") # Voir
la console dans les logs direct
        Switch.logger_switch.info(f"{self.name}:{self.property['ip']}: Connexion
semble effectue")
        return True, None

@logs.Timer
def showRun(self) -> str:
    sleep(3)
    self.conn.write(b"\r")
    #
Switch.logger_switch.debug(f"{self.conn.read_very_eager().decode('ascii')}") # Voir
la console dans les logs direct
        Switch.logger_switch.debug(f"{self.name}:{self.property['ip']}: Envoie
commande show running-config")
        self.conn.write("show running-config".encode("ascii"))

```

```

        sleep(.5)
        self.conn.write(b"\r")
        #
Switch.logger_switch.debug(f"{self.conn.read_very_eager().decode('ascii')}") # Voir
la console dans les logs direct
        sleep(2)
        for _ in range(0,11):
            self.conn.write(Telnet.space.encode("ascii"))
            sleep(2)
            #
Switch.logger_switch.debug(f"{self.conn.read_very_eager().decode('ascii')}") # Voir
la console dans les logs direct
            Switch.logger_switch.debug(f"{self.name}:{self.property['ip']}: Commande
show running-config semble effectue")
            return self.conn.read_very_eager().decode("ascii")

"""



"""

@logs.Timer
def main(self) -> int:
    isConnect: bool; e: Exception | None
    isConnect,e = self.connection()
    if isConnect:
        output: str = self.showRun()
        self.saveConf(output)
        self.conn.write(b"exit")
        self.conn.write(b"\r")
        Switch.logger_switch.info(f"{self.name}:{self.property['ip']}:
Deconnexion")
        return 0
    else:
        Switch.logger_switch.error(f"{self.name}:{self.property['ip']}: {e}")
        return 1

```

## 7.3 Zabbix.py

```
import logs, datetime, logging
from logging.handlers import TimedRotatingFileHandler
from pyzabbix import ZabbixAPI
from dotenv import load_dotenv
from os import getenv, environ

class Zabbix:
    load_dotenv("C:\\Scripts\\ENV_GIT_Main\\.env")
    TODAY: str = datetime.date.today().strftime("%Y-%m-%d")
    CISCO_IOS_USER: str | None = getenv("CISCO_IOS_USER") if not
environ.get("CISCO_IOS_USER") else environ.get("CISCO_IOS_USER")
    CISCO_IOS_PASS: str | None = getenv("CISCO_IOS_PASS") if not
environ.get("CISCO_IOS_PASS") else environ.get("CISCO_IOS_PASS")
    CISCO_IOS_SECRET: str | None = getenv("CISCO_IOS_SECRET") if not
environ.get("CISCO_IOS_SECRET") else environ.get("CISCO_IOS_SECRET")
    TELNET_USER: str | None = getenv("TELNET_USER") if not
environ.get("TELNET_USER") else environ.get("TELNET_USER")
    TELNET_PASS: str | None = getenv("TELNET_PASS") if not
environ.get("TELNET_PASS") else environ.get("TELNET_PASS")
    DELAY: str | None = getenv("DELAY")
    INTERVAL: str | None = getenv("INTERVAL")
    ITEM_AGE: str | None = getenv("ITEM_AGE")
    ITEM_SIZE: str | None = getenv("ITEM_SIZE")
    TRIGGER_PRIORITY: int | None = int(getenv("TRIGGER_PRIORITY"))
    LOG_DIR: str | None = getenv("LOG_DIR")
    LOG_LEVEL: str | None = getenv("LOG_LEVEL")
    STREAM_HANDLER: str | None = getenv("STREAM_HANDLER")
    LOG_FILE: str | None = LOG_DIR+"\\.log" if LOG_LEVEL else None

    logLevel: dict = {
        "DEBUG": logging.DEBUG,
        "INFO": logging.INFO,
        "WARNING": logging.WARNING,
        "ERROR": logging.ERROR,
        "CRITICAL": logging.CRITICAL
    }

    triggerPriority: dict = {
        0: "Non-classe",
        1: "Information",
        2: "Avertissement",
        3: "Moyen",
        4: "Haut",
        5: "Desastre"
    }

    logger_zabbix = logging.getLogger(__name__)
```

```

logger_zabbix.setLevel(logLevel[LOG_LEVEL])

formater_zabbix =
logging.Formatter('%(asctime)s: %(levelname)s: %(name)s: ligne_%(lineno)d ->
%(message)s')

file_handler_zabbix = TimedRotatingFileHandler(
    filename=LOG_FILE, # type: ignore
    when='H',
    interval=24,
    backupCount=5,
    encoding='utf-8'
)
file_handler_zabbix.setFormatter(formater_zabbix)
file_handler_zabbix.setLevel(logLevel[LOG_LEVEL])

stream_handler_zabbix = logging.StreamHandler()
stream_handler_zabbix.setFormatter(formater_zabbix)

logger_zabbix.addHandler(file_handler_zabbix)
logger_zabbix.addHandler(stream_handler_zabbix) if STREAM_HANDLER.lower() ==
'true' else ...

SWITCHID: dict={
    "Switchs":22,
    "Routers":23,
    "pyZabbixGitFileGroup": 24
}
os: dict = {
    29:"aruba_os",
    30:"avaya_ers"
}

tagList: dict = {
    'connexion_type': 'telnet',
    'device_type': 'avaya_ers'
}

def __init__(self, ip: str, token: str) -> None:
    self.ip: str = ip
    self.token: str = token
    self.api: ZabbixAPI
    self.diconnect: list = []
    self.passBis: list = []
    # Zabbix.logger_zabbix.debug(f"Creation: {self}")

def __str__(self) -> str:
    return f"Serveur Zabbix: {self.ip}>15}"

```

```

def __del__(self) -> None:
    # Zabbix.logger_zabbix.debug(f"Destruction: {self}")
    pass

@property
def Disconnect(self) -> list:
    return self.diconnect

@Disconnect.setter
def Disconnect(self, swLst: list) -> None:
    Zabbix.logger_zabbix.info(f"Disconnect List set")
    Zabbix.logger_zabbix.debug(f"{swLst}")
    self.diconnect = swLst

@property
def PassBis(self) -> list:
    return self.passBis

@PassBis.setter
def PassBis(self, bisLst: list) -> None:
    Zabbix.logger_zabbix.info(f"PassBis List set")
    Zabbix.logger_zabbix.debug(f"{bisLst}")
    self.passBis = bisLst

@logs.Timer
def connexion(self) -> None:
    self.api = ZabbixAPI(self.ip)
    Zabbix.logger_zabbix.info(f"Connexion: {self}")
    self.api.login(api_token=self.token)

def GetGroup(self) -> dict:
    groupe: dict = {}

    group = self.api.host.get(selectGroups='extend')
    for grp in group:
        for g in grp["groups"]:
            if not g['groupid'] in groupe.keys() and not int(g['groupid']) in
Zabbix.SWITCHID.values():
                groupe[g['name']] = int(g['groupid'])
    return groupe

def GetTag(self, seek: str = None, hostname: str = None) -> dict:
    tags: dict = {}
    hosts = self.api.host.get(selectTags='extend')
    if hostname:
        for host in hosts:
            if host['host'] == hostname:

```



```

        newpwd: bool = bool(self.GetTag("isNewPass", host['host'])) if
0<len(self.GetTag("lieux", host['host'])) else False
        pwd: str = Zabbix.CISCO_IOS_PASS_BIS if newpwd else
Zabbix.CISCO_IOS_PASS
        cpwd: str = "CISCO_IOS_PASS_BIS" if newpwd else "CISCO_IOS_PASS"
        interfaces = self.api.hostinterface.get(hostids=[host["hostid"]])
        for intf in interfaces:
            h = ["ssh",host['host'], grp,intf["ip"], Zabbix.CISCO_IOS_USER, pwd,
"cisco_ios", Zabbix.CISCO_IOS_SECRET]
            if filelog:
                h2 = ["ssh",host['host'], grp,intf["ip"], "CISCO_IOS_USER", cpwd,
"cisco_ios", "CISCO_IOS_SECRET"]
                log.append(h2)
                hostlst.append(h)
            Zabbix.logger_zabbix.info(f"switchs, {len(hostlst):>5} cisco_ios trouves")
        return hostlst, log

@logs.Timer
def GetTelnet(self, filelog: bool) -> tuple:
    """ssh, name, group, ip, username, device_type"""
    Zabbix.logger_zabbix.debug(f"Recherche de switch: telnet")
    hostlst: list = []
    hostName: list = []
    log: list = []
    CRED: tuple = ()
    grp: str | None = None
    hostsgrp = self.api.host.get(selectTags='extend', tags=[{"tag":
"connexion_type", "value": "telnet"}])
    for host in hostsgrp:
        device = self.GetTag("device_type", host['host'])
        if 0<len(self.diconnect):
            if host['host'] in self.diconnect[0]:
                Zabbix.logger_zabbix.info(f"{host['host']} est dans la liste
deconnecte")
                continue
        if self.GetTag("device_type") == "avaya_ers":
            if 0<len(self.passBis):
                if host['host'] in self.passBis[0]:
                    CRED = Zabbix.AVAYA_USER, Zabbix.AVAYA_PASS_BIS,
"avaya_ers", "AVAYA_USER", "AVAYA_PASS_BIS"
                else:
                    CRED = Zabbix.AVAYA_USER, Zabbix.AVAYA_PASS, "avaya_ers",
"AVAYA_USER", "AVAYA_PASS"
            else:
                CRED = Zabbix.AVAYA_USER, Zabbix.AVAYA_PASS, "avaya_ers",
"AVAYA_USER", "AVAYA_PASS"
        elif self.GetTag("device_type") == "aruba_os":
            if 0<len(self.passBis):

```

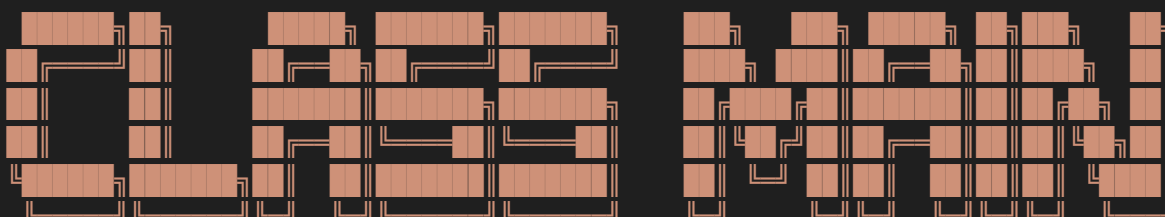


```

        if host['host'] in self.passBis[0]:
            CRED = Zabbix.ARUBA_ERS_USER, Zabbix.ARUBA_ERS_PASS_BIS,
"aruba_os", "ARUBA_ERS_USER", "ARUBA_ERS_PASS_BIS"
        else:
            CRED = Zabbix.ARUBA_ERS_USER, Zabbix.ARUBA_ERS_PASS,
"aruba_os", "ARUBA_ERS_USER", "ARUBA_ERS_PASS"
        else:
            CRED = Zabbix.ARUBA_ERS_USER, Zabbix.ARUBA_ERS_PASS, "aruba_os",
"ARUBA_ERS_USER", "ARUBA_ERS_PASS"
            grp = self.GetTag("lieux", host['host']) if 0<len(self.GetTag("lieux",
host['host'])) else "None"
            interfaces = self.api.hostinterface.get(hostids=[host["hostid"]])
            for intf in interfaces:
                if host['host'] not in hostlst:
                    h =["telnet",host['host'], grp,intf["ip"], CRED[0], CRED[1],
CRED[2]]
                    if filelog:
                        h2 =["telnet",host['host'], grp,intf["ip"], CRED[3],
CRED[4], CRED[2]]
                        log.append(h2)
                        hostlst.append(h)
                if 0<len(hostlst):
                    hostName.append(h[1])
                    Zabbix.logger_zabbix.info(f"switchs telnet, {len(hostlst):>5} connexion
telnet trouves")
            return hostlst, log

```

"""



"""

```

@logs.Timer
def main(self, FileLog: bool = False) -> list:
    telnet: list = []; tnlog: list | None
    cicolst: list= []; cslog: list | None
    telnet, tnlog= self.GetTelnet(FileLog)
    cicolst, cslog= self.GetCisco(FileLog)
    if FileLog:
        from os import path, makedirs
        import json

```



```

        "value_type":3,
        "interfaceid":host["interfaces"][0]["interfaceid"],
        "delay":f"{Zabbix.DELAY};;{Zabbix.INTERVAL}",
        # "delay":'1d;h9',
    }
    self.api.item.create(
        hostid=itemExist['hostid'],
        name=itemExist['name'],
        key_=itemExist['key_'],
        type=itemExist['type'],
        value_type=itemExist['value_type'],
        interfaceid=itemExist['interfaceid'],
        delay=itemExist['delay'],
    )
    Zabbix.logger_zabbix.debug(f"Creation de l'item {itemExist['name']}")
    triggerExist: dict = {
        "event_name":"FileExits_"+name,
        "description":"FileExits_"+name,
        "comments":"FileExits_"+name,
        "expression":"last(/"+host['host']+ "/" +itemExist['key_']+")=0",
"recovery_mode":1,
        "recovery_expression":"last(/"+host['host']+ "/" +itemExist['key_']+
=1",
        "priority":Zabbix.TRIGGER_PRIORITY,
        "comments":f"Le fichier {name} n'a pas été trouvé."
    }
    self.api.trigger.create(triggerExist)
    Zabbix.logger_zabbix.debug(f"\n\nCreation du trigger
{triggerExist['event_name']}\n")

def ItemSize(host, name: str, item:str, size: str, parentName):
    itemSize: dict = {
        "hostid":host['hostid'],
        "name":"FileSize_"+name,
        "key_":"vfs.file.size["+item+"]",
        "type":0,
        "value_type":3,
        "interfaceid":host["interfaces"][0]["interfaceid"],
        "delay":f"{Zabbix.DELAY};;{Zabbix.INTERVAL}",
    }
    self.api.item.create(
        hostid=itemSize['hostid'],
        name=itemSize['name'],
        key_=itemSize['key_'],
        type=itemSize['type'],
        value_type=itemSize['value_type'],
        interfaceid=itemSize['interfaceid'],
        delay=itemSize['delay'],

```

```

    )
    Zabbix.logger_zabbix.debug(f"Creation de l'item {itemSize['name']}")
    triggerSize: dict = {
        "event_name": "FileSize_"+name,
        "description": "FileSize_"+name,
        "expression": "last(/"+host['host']+ "/" +itemSize['key_']+")<="+size,
        "recovery_mode": 1, "recovery_expression": "last(/"+host['host']+ "/" +it
emSize['key_']+")>"+size,
        "priority": Zabbix.TRIGGER_PRIORITY,
        "comments": f"La taille du fichier {name} est inférieur à la limite
définie."
    }
    self.api.trigger.create(triggerSize)
    parentID = TriggerID(parentName)
    selfID = TriggerID("FileSize_"+name)
    self.api.trigger.addDependencies({"triggerid": selfID,
"dependsOnTriggerid": parentID})
    Zabbix.logger_zabbix.debug(f"\n\nCreation du trigger
{triggerSize['event_name']}\ndependant de {parentName}\n")

def ItemAge(host, name: str, item: str, age: str, parentName) -> None:
    itemAge: dict = {
        "hostid": host['hostid'],
        "name": "FileAge_"+name,
        "key_": "vfs.file.time["+item+"]",
        "type": 0,
        "value_type": 3,
        "interfaceid": host["interfaces"][0]["interfaceid"],
        "delay": f"{Zabbix.DELAY};{Zabbix.INTERVAL}",
    }
    self.api.item.create(
        hostid=itemAge['hostid'],
        name=itemAge['name'],
        key_=itemAge['key_'],
        type=itemAge['type'],
        value_type=itemAge['value_type'],
        interfaceid=itemAge['interfaceid'],
        delay=itemAge['delay'],
    )
    Zabbix.logger_zabbix.debug(f"Creation de l'item {itemAge['name']}")
    triggerAge: dict = {
        "event_name": "FileAge_"+name,
        "description": "FileAge_"+name,
        "expression": "abs(now()-
last(/"+host['host']+ "/" +itemAge['key_']+"))>"+age,
        "recovery_mode": 1, "recovery_expression": "abs(now()-
last(/"+host['host']+ "/" +itemAge['key_']+"))<="+age,
        "priority": Zabbix.TRIGGER_PRIORITY,

```

```

        "comments":f"Pas fichier {name} récent trouvé."
    }
    self.api.trigger.create(triggerAge)
    parentID = TriggerID(parentName)
    selfID = TriggerID("FileAge_"+name)
    self.api.trigger.addDependencies({"triggerid":selfID,
"dependsOnTriggerid":parentID})
    Zabbix.logger_zabbix.debug(f"\n\nCreation du trigger
{triggerAge['event_name']}\n\ndependant de {parentName}\n")

    """
        _____
        | _ \      | |      |
        | | | | _ _ | | _ _ _ _ _ | | _ _ _ _ _ | \ / | _ _ _
    _ _
        | | | | / _ \ _ | | / _ \ | ' \ / _ | ' \ / _ \ | | | ' _ | | | \ / _ \ | |
    ' _ \
        | | | | _ / ( _ | | ( _ | | | | ( _ | | | | _ / | | | | | | | ( _ | |
    | | |
        | _ _ / \ _ | \ _ | | \ _ | | | \ _ | |
    | | \ _ | \ _ | | | | | \ _ | | | | |
    """

    """
    def main(name: str, file: str) -> None:
        itemsLst: list = []
        itemsNameLst: list = []
        hosts = self.api.host.get(selectInterfaces='extend',
groupids=[Zabbix.SWITCHID.get('pyZabbixGitFileGroup')])
        items =
self.api.item.get(groupids=[Zabbix.SWITCHID.get('pyZabbixGitFileGroup')])
        itemsLst = GetItems(items, itemsLst) # type: ignore
        exist: str = "FileExists_"+name
        for item in itemsLst:
            for it in item.keys():
                itemsNameLst.append(it)
        if (exist not in itemsNameLst and exist not in items):
            for host in hosts:
                Zabbix.logger_zabbix.debug(f"host: {host}, name: {name}, file:
{file}")

                ItemExist(host, name, file)
                ItemSize(host, name, file, Zabbix.ITEM_SIZE, exist) # taille en
octets ?

                ItemAge(host, name, file, Zabbix.ITEM_AGE, exist) # 1800 sec ==
30 min

```

```

        Zabbix.logger_zabbix.debug(f"\n\n{' '*50}\nCreation de
triggers/items:{name}\nserver:{host['host']}\npriorite:
{Zabbix.triggerPriority.get(Zabbix.TRIGGER_PRIORITY)}\n{' '*50}\n")

    main(name, file)

if __name__=='__main__':
    Zapi = Zabbix("http://172.16.20.12/zabbix/",
"053b13d15a1d00c45ce4d2efc7ac3fcbfab6f9d0c136669ef6ef159602652f38") # type: ignore
    Zapi.connexion()
    grp = Zapi.GetGroup()
    from pprint import pprint
    pprint(grp)

```

## 7.4 gitManager.py

```
import logs, logging
from git import Repo, Actor, Remote, RemoteProgress, Commit # type: ignore
from logging.handlers import TimedRotatingFileHandler
from os import path, getenv, environ
from dotenv import load_dotenv

class MyProgressPrinter(RemoteProgress):
    def update(self, op_code, cur_count, max_count=None, message=""):
        print(
            op_code,
            cur_count,
            max_count,
            cur_count / (max_count or 100.0),
            message or "NO MESSAGE",
        )

class GitManager:
    load_dotenv("C:\\Scripts\\ENV_GIT_Main\\.env")
    GIT_SERVER: str | None = getenv("GIT_SERVER") if not environ.get("GIT_SERVER")
else environ.get("GIT_SERVER")
    GIT_SSH_USER: str | None = getenv("GIT_SSH_USER") if not
environ.get("GIT_SSH_USER") else environ.get("GIT_SSH_USER")
    GIT_REMOTE: str | None = getenv("GIT_REMOTE") if not environ.get("GIT_REMOTE")
else environ.get("GIT_REMOTE")
    LOG_DIR: str | None = getenv("LOG_DIR")
    LOG_LEVEL: str | None = getenv("LOG_LEVEL")
    STREAM_HANDLER: str | None = getenv("STREAM_HANDLER")
    LOG_FILE: str | None = LOG_DIR+"\\.log" if LOG_LEVEL else None
    EMAIL = "null@null"
    NAME = "ConfigSaver"

    logLevel: dict = {
        "DEBUG":logging.DEBUG,
        "INFO":logging.INFO,
        "WARNING":logging.WARNING,
        "ERROR":logging.ERROR,
        "CRITICAL":logging.CRITICAL
    }

    logger_gittmanager = logging.getLogger(__name__)
    logger_gittmanager.setLevel(logLevel[LOG_LEVEL])

    formater_gitmanager =
logging.Formatter('%(asctime)s:%(levelname)s:%(name)s:ligne_%(lineno)d ->
%(message)s')

    file_handler_gitmanager = TimedRotatingFileHandler(
```

```

        filename=LOG_FILE, # type: ignore
        when='H',
        interval=24,
        backupCount=5,
        encoding='utf-8'
    )

    stream_handler_gitmanager = logging.StreamHandler()
    stream_handler_gitmanager.setFormatter(formatter_gitmanager)

    file_handler_gitmanager.setFormatter(formatter_gitmanager)
    file_handler_gitmanager.setLevel(logLevel[LOG_LEVEL])

    logger_gittmanager.addHandler(file_handler_gitmanager)
    logger_gittmanager.addHandler(stream_handler_gitmanager) if
STREAM_HANDLER.lower() == 'true' else ...

    def __init__(self, dir: str, originPath: str) -> None:
        self.author: Actor = Actor(GitManager.NAME, GitManager.EMAIL)
        self.committer: Actor = Actor(GitManager.NAME, GitManager.EMAIL)
        self.dir: str = dir
        self.originPath: str = GitManager.GIT_SERVER+"\\\\"+originPath+".git" if
GitManager.GIT_SERVER else originPath
        self.repo: Repo = Repo(self.dir) if path.exists(self.dir) else
Repo.init(self.dir, mkdir=True)
        self.origin: Remote | None = self.Remote() if GitManager.GIT_SERVER else
None

        GitManager.logger_gittmanager.debug(f"creation Objet git {self.repo}")

    def __del__(self) -> None:
        # GitManager.logger_gittmanager.debug(f"Destruction Objet git {self.repo}")
        pass

    def __str__(self) -> str:
        return f"Repo: {self.repo}, origin: {self.origin}"

    @logs.Timer
    def Remote(self) -> Remote:
        GitManager.logger_gittmanager.info(f"Server Origin:
{GitManager.GIT_SERVER}")
        try:
            remote = Repo(self.originPath) if path.exists(self.originPath) else
Repo.clone_from(self.dir, self.originPath, multi_options=["--bare"],
progress=MyProgressPrinter) if path.exists(self.dir) else Repo.init(self.originPath,
mkdir=True, bare=True) # type: ignore
        except Exception as e:
            GitManager.logger_gittmanager.exception(e)

```



```

        print(self.repo.remote("origin").exists())
        self.origin = self.repo.remote("origin") if
self.repo.remote("origin").exists() else remote.create_remote('origin',
f"{GitManager.GIT_SSH_USER}@{GitManager.GIT_REMOTE}:{self.originPath}")
        GitManager.logger_gittmanager.debug(f"git remote add origin
{GitManager.GIT_SSH_USER}@{GitManager.GIT_REMOTE}:{self.originPath}")
        self.origin.fetch()
        self.origin.pull()
        GitManager.logger_gittmanager.debug(f"git fetch origin main\ngit pull origin
main")
        return self.origin

    def Commit(self, addFile: list[str], msg: str) -> None:
        self.repo.index.add(addFile)
        self.repo.index.commit(msg, author=self.author, committer=self.committer)

    def last_commit_data(self) -> str:
        commit: Commit = self.repo.head.commit
        return f"\n\n{' '*50}\n{str(commit.hexsha)}\n\n{commit.summary}\n" by
{commit.author.name}
({commit.author.email})\n{str(commit.authored_datetime)}\ncount: {commit.count()}
and size: {commit.size}\n{' '*50}\n"

    @property
    def Log(self):
        self.repo.git.log(p=True)

    """

    """

    @logs.Timer
    def main(self, dir: list[str], msg: str) -> None:
        self.Commit(dir, msg)
        GitManager.logger_gittmanager.info(self.last_commit_data())
        if GitManager.GIT_SERVER:
            self.origin.push() # type: ignore

```

## 7.5 logs.py

```
import datetime, logging, time
from logging.handlers import TimedRotatingFileHandler
from dotenv import load_dotenv
from os import getenv, path, listdir, remove

load_dotenv("C:\\Scripts\\ENV_GIT_Main\\.env")

TODAY: str = datetime.date.today().strftime("%Y-%m-%d")
LOG_DIR: str | None = getenv("LOG_DIR")
LOG_LEVEL: str | None = getenv("LOG_LEVEL")
MAX_AGE: float | None = float(getenv("MAX_AGE"))
STREAM_HANDLER: str | None = getenv("STREAM_HANDLER")
LOG_FILE: str | None = LOG_DIR+"\\.log" if LOG_LEVEL else None

logLevel: dict = {
    "DEBUG":logging.DEBUG,
    "INFO":logging.INFO,
    "WARNING":logging.WARNING,
    "ERROR":logging.ERROR,
    "CRITICAL":logging.CRITICAL
}

logger = logging.getLogger(__name__)
logger.setLevel(logLevel[LOG_LEVEL])

formatter = logging.Formatter('%(asctime)s:%(levelname)s:%(name)s:ligne_%(lineno)d ->
%(message)s')

file_handler = TimedRotatingFileHandler(
    filename=LOG_FILE, # type: ignore
    when='H',
    interval=24,
    backupCount=5,
    encoding='utf-8'
)

file_handler.setFormatter(formatter)
file_handler.setLevel(logLevel[LOG_LEVEL])

stream_handler = logging.StreamHandler()
stream_handler.setFormatter(formatter)

logger.addHandler(file_handler)
logger.addHandler(stream_handler) if STREAM_HANDLER.lower() == 'true' else ...
```

```

def Timer(func):
    def wrapper(*args, **kwargs):
        msg: str = f"Debut de{func.__name__!r}"
        logger.debug(f'{"*"*10} {msg:^30} {"*"*10}')
        t1 = datetime.datetime.now()
        res = func(*args, **kwargs)
        t2 = datetime.datetime.now() - t1
        msg = f"Arret de{func.__name__!r}"
        logger.debug(f'{"*"*10} {msg:^30} {"*"*10}')
        logger.info(f'Fonction {func.__name__!r} executee en {(t2)}s')
        return res
    return wrapper

def Rotation(fileList: list):
    for fLst in fileList:
        with open(fLst+"."+TODAY, 'a') as newLog:
            logger.debug(f"Ouverture/Creation de {fLst+"."+TODAY}")
            with open(fLst, 'r') as log:
                logger.debug(f"Lecture de {fLst}")
                lines = log.readlines()
                for l in lines:
                    newLog.write(l)
            log.close()
        newLog.close()
    files = listdir(fLst)
    for file in files:
        age = time.time()-path.getctime(fLst+"\\ "+file)
        if MAX_AGE <= age and file!=".log":
            logger.debug(f"Suppression de {file}")
            remove(fLst+"\\ "+file)
    fLst.close()

```

## 7.6 .env

```
# LOG
LOG_DIR = "C:\Backup\LOGS"
LOG_LEVEL = "DEBUG"
# "DEBUG"
# "INFO"
# "WARNING"
# "ERROR"
# "CRITICAL"
MAX_AGE = 604800.0
# historique max des logs
# 604800 epoch time 1 semaine
STREAM_HANDLER = "True"

# main -> Netmiko && Zabbix
DIR = "C:\Backup\GIT"
DISCONNECT = ""
PASS_BIS = ""

CISCO_IOS_USER = "Admin"
CISCO_IOS_PASS = "Soleil1"
CISCO_IOS_SECRET = "Soleil1"
ZABBIXIP = "http://172.16.20.12/zabbix/"
ZABBIXTOKEN = "053b13d15a1d00c45ce4d2efc7ac3fcbfab6f9d0c136669ef6ef159602652f38"

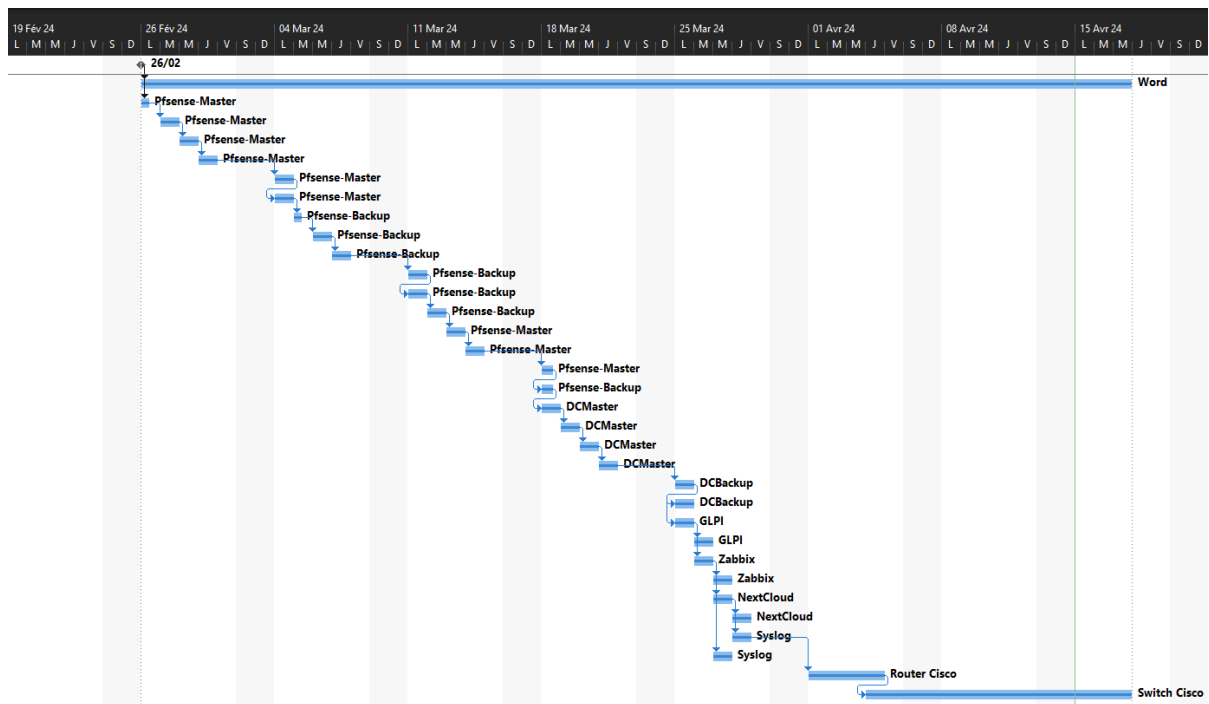
# Switch
FILE_MIN_SIZE = 256

# Zabbix -> pyZabbix
# DELAY = "${ITEM_DELAY};${FLEX_INTERVAL}"
DELAY = "86400"
INTERVAL = "h9"
# interval d obtention de la valeur de l item par default en second sinon preciser l
# unite :: valeur mmax 86400s soit 1d (un jour)
# 30s
# 12h
# 1d
ITEM_AGE = "${CONFIG_AGE}"
ITEM_SIZE = "${ITEM_SIZE}"
# age maximum du fichier conf en sec avant de declancher un trigger
# 30 min    = 1800 utiliser pour les tests
# 1 heure   = 3600
# 1 jour    = 86400
# 1 semaine = 604800
# 1 moi     = 2629743
```

```
TRIGGER_PRIORITY = 2
# 0 = Non-classe
# 1 = Information
# 2 = Avertissement
# 3 = Moyen
# 4 = Haut
# 5 = Desastre

# GitManager -> GitPython
GIT_REMOTE = ""
GIT_SERVER = ""
GIT_SSH_USER = ""
connexion_type : ssh | telnet
device_type    : aruba_os | avaya_ers | extreme_vsp | huawei | cisco_ios
lieux          : Coeur_De_Reseaux | Distribution
isInactivate   : True | False
isNewPass      : True | False
```

## 8 Calendrier



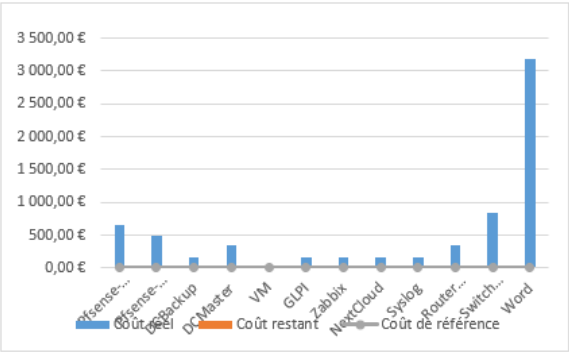
		Mode	Nom de la tâche	Durée	Début	Fin	F	Noms ressources	Coût
1	✓	🔧	Début	0 jour	Lun 26/02/24	Lun 26/02/24			0,00 €
2	✓	🔧	Cahier des charge	38 jours	Lun 26/02/24	Mer 17/04/24	1	Word	3 192,00 €
3	✓	🔧	Installation Pfense-Master	0,25 jour	Lun 26/02/24	Lun 26/02/24	1	Pfense-Master	21,00 €
4	✓	🔧	Configuration des interfaces	1 jour	Mar 27/02/24	Mar 27/02/24	3	Pfense-Master	84,00 €
5	✓	🔧	Configuration du High Availability	1 jour	Mer 28/02/24	Mer 28/02/24	4	Pfense-Master	84,00 €
6	✓	🔧	Configuration CARP	1 jour	Jeu 29/02/24	Jeu 29/02/24	5	Pfense-Master	84,00 €
7	✓	🔧	Configuration VIP	1 jour	Lun 04/03/24	Lun 04/03/24	6	Pfense-Master	84,00 €
8	✓	🔧	Configuration règles HA	1 jour	Lun 04/03/24	Lun 04/03/24	7	Pfense-Master	84,00 €
9	✓	🔧	Installation Pfense-Backup	0,25 jour	Mar 05/03/24	Mar 05/03/24	8	Pfense-Backup	21,00 €
10	✓	🔧	Configuration des interfaces	1 jour	Mer 06/03/24	Mer 06/03/24	9	Pfense-Backup	84,00 €
11	✓	🔧	Configuration du High Availability	1 jour	Jeu 07/03/24	Jeu 07/03/24	10	Pfense-Backup	84,00 €
12	✓	🔧	Configuration CARP	1 jour	Lun 11/03/24	Lun 11/03/24	11	Pfense-Backup	84,00 €
13	✓	🔧	Configuration VIP	1 jour	Lun 11/03/24	Lun 11/03/24	12	Pfense-Backup	84,00 €
14	✓	🔧	Configuration règles HA	1 jour	Mar 12/03/24	Mar 12/03/24	13	Pfense-Backup	84,00 €
15	✓	🔧	Configuration règles LAN -> Internet	1 jour	Mer 13/03/24	Mer 13/03/24	14	Pfense-Master	84,00 €
16	✓	🔧	Configuration des routes statique	1 jour	Jeu 14/03/24	Jeu 14/03/24	15	Pfense-Master	84,00 €
17	✓	🔧	Configuration SNMP	0,5 jour	Lun 18/03/24	Lun 18/03/24	16	Pfense-Master	42,00 €
18	✓	🔧	Configuration SNMP	0,5 jour	Lun 18/03/24	Lun 18/03/24	17	Pfense-Backup	42,00 €
19	✓	🔧	Installation Windows Server 2022 Master	1 jour	Lun 18/03/24	Lun 18/03/24	18	DCMaster	84,00 €
20	✓	🔧	Configuration AD	1 jour	Mar 19/03/24	Mar 19/03/24	19	DCMaster	84,00 €
21	✓	🔧	Configuration DHCP	1 jour	Mer 20/03/24	Mer 20/03/24	20	DCMaster	84,00 €
22	✓	🔧	Creation de group	1 jour	Jeu 21/03/24	Jeu 21/03/24	21	DCMaster	84,00 €
23	✓	🔧	Installation Windows Server 2022 Backup	1 jour	Lun 25/03/24	Lun 25/03/24	22	DCBackup	84,00 €
24	✓	🔧	Configuration AD, DHCP	1 jour	Lun 25/03/24	Lun 25/03/24	23	DCBackup	84,00 €
25	✓	🔧	Installation Debian 12	1 jour	Lun 25/03/24	Lun 25/03/24	23	GLPI	84,00 €
26	✓	🔧	Installation GLPI	1 jour	Mar 26/03/24	Mar 26/03/24	25	GLPI	84,00 €
27	✓	🔧	Installation Debian 12	1 jour	Mar 26/03/24	Mar 26/03/24	25	Zabbix	84,00 €
28	✓	🔧	Installation Zabbix	1 jour	Mer 27/03/24	Mer 27/03/24	27	Zabbix	84,00 €
29	✓	🔧	Installation Debian 12	1 jour	Mer 27/03/24	Mer 27/03/24	27	NextCloud	84,00 €
30	✓	🔧	Installation NextCloud	1 jour	Jeu 28/03/24	Jeu 28/03/24	29	NextCloud	84,00 €
31	✓	🔧	Installation Debian 12	1 jour	Jeu 28/03/24	Jeu 28/03/24	29	Syslog	84,00 €
32	✓	🔧	Installation Syslog	1 jour	Mer 27/03/24	Mer 27/03/24	27	Syslog	84,00 €
33	✓	🔧	Configuration Router	4 jours	Lun 01/04/24	Jeu 04/04/24	31	Router Cisco	336,00 €
34	✓	🔧	Configuration Switch	10 jours	Jeu 04/04/24	Mer 17/04/24	33	Switch Cisco	840,00 €

# 9 Prévisionnel

## VUE D'ENSEMBLE DES COÛTS DE RESSOURCES

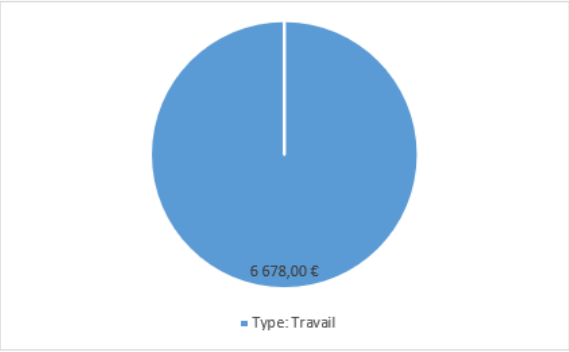
### ÉTAT DES COÛTS

État des coûts pour les ressources de travail.



### RÉPARTITION DES COÛTS

Répartition des coûts parmi les différents types de ressources.



### DÉTAILS DES COÛTS

Détails des coûts pour toutes les ressources de travail.

Nom	Travail réel	Coût réel	Taux standard
Pfsense-Master	54,25 heures	651,00 €	12,00 €/heure
Pfsense-Backup	40,25 heures	483,00 €	12,00 €/heure
DCBackup	14 heures	168,00 €	12,00 €/heure
DCMaster	28 heures	336,00 €	12,00 €/heure
VM	0 heure	0,00 €	12,00 €/heure
GLPI	14 heures	168,00 €	12,00 €/heure
Zabbix	14 heures	168,00 €	12,00 €/heure
NextCloud	14 heures	168,00 €	12,00 €/heure
Syslog	14 heures	168,00 €	12,00 €/heure
Router Cisco	28 heures	336,00 €	12,00 €/heure
Switch Cisco	70 heures	840,00 €	12,00 €/heure
Word	266 heures	3 192,00 €	12,00 €/heure

