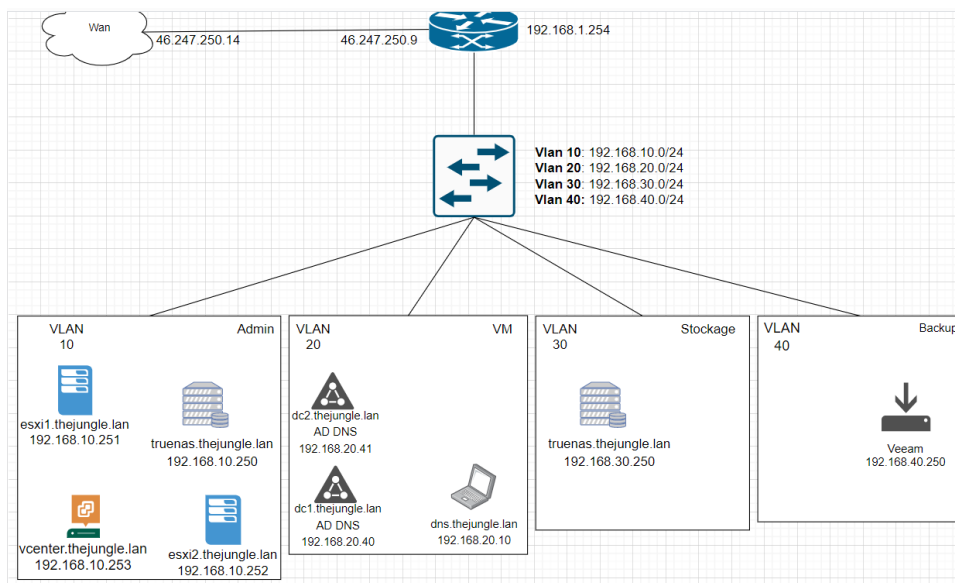


TP cluster ESX

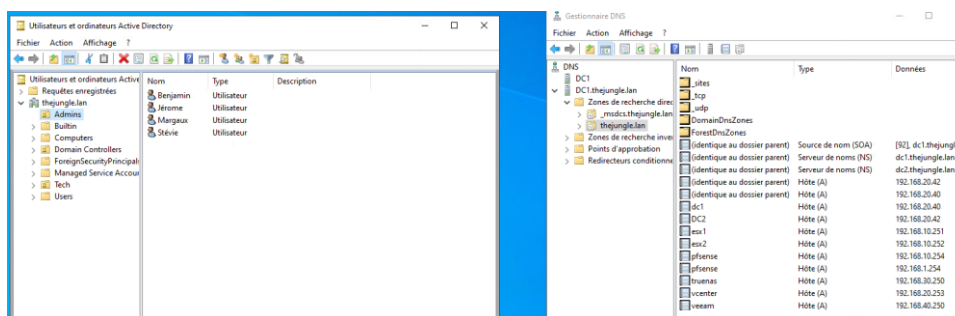
Groupe : Margaux, Stévie, Benjamin, Jérôme



1- Installer deux VMs DC et le vCenter sur le stockage local des ESXi

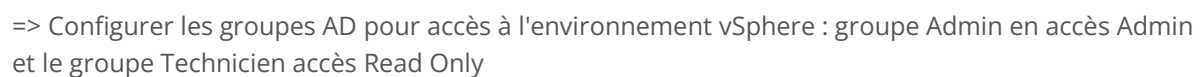
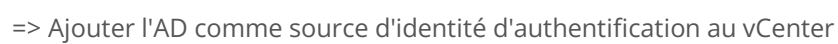
=> Configurer l'environnement Active Directory et DNS (par défaut le NTP est activé sur un DC)

=> Créer des utilisateurs admin et technicien et les affectés à des groupes



=> Installer le vCenter

=> Créer un Datacenter et connecter les ESXi



Users and Groups

Users Groups

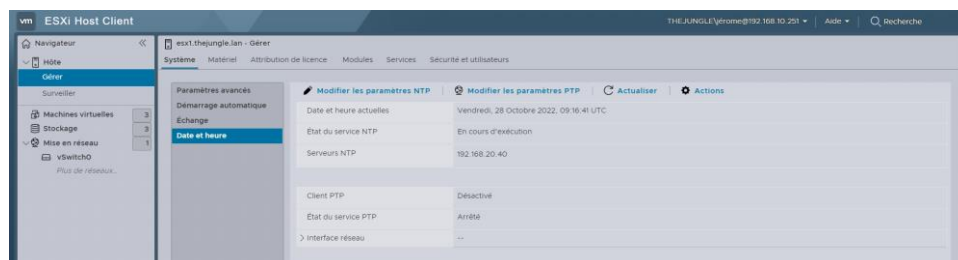
< ALL GROUPS

ReadOnlyUsers

[ADD MEMBERS](#)

	Member Name	Domain
⋮	serviceaccountmgmt-ea4a6cae-aeb3-4ee7-af0d-1e6cb5a0fa6b	vsphere.local
⋮	tech1	thejungle.lan
⋮	vmware-scaservice-ea4a6cae-aeb3-4ee7-af0d-1e6cb5a0fa6b	vsphere.local

=> Configurer le NTP sur les ESXi



=> Configurer le réseau vMotion sur les ESXi (vmk1)

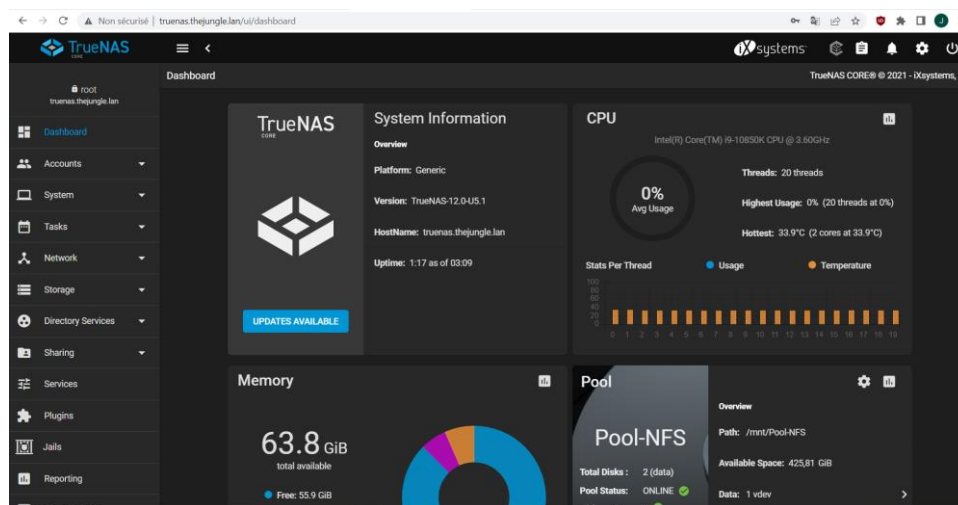
Edit settings - vmk2

Port group	Vmotion
MTU	1500
IP version	IPv4 only
> IPv4 settings	<input type="radio"/> DHCP <input checked="" type="radio"/> Static
TCP/IP stack	vMotion stack
Services	<input checked="" type="checkbox"/> vMotion <input type="checkbox"/> Provisioning <input type="checkbox"/> Fault tolerance logging <input type="checkbox"/> Management <input type="checkbox"/> Replication <input type="checkbox"/> NFC replication

CANCEL SAVE

2- Installer et configurer la solution de stockage avec les bonnes pratiques définies par le formateur

=> installer TrueNAS



=> configurer le pool RAID,

=> créer 2 volume logique (2x 200Go)

=> les configurés soit en partage NFS v4 ou en en LUN iSCSI avec authentification CHAP

Pools ADD

Pool-NFS (System Dataset Pool) ONLINE 10.34 GiB (2%) Used 435.29 GiB Free ⚙️ ^

Name	Type	Used	Available	Compression	Compression Ratio	Readonly	Dedup	Comments	
Pool-NFS	FILESYSTEM	10.34 GiB	435.29 GiB	tz4	1.58	false	OFF		⋮
NFS1	FILESYSTEM	3.36 GiB	146.64 GiB	Inherits (tz4)	1.61	false	OFF		⋮
NFS2	FILESYSTEM	6.95 GiB	143.05 GiB	Inherits (tz4)	1.55	false	OFF		⋮

NFS Filter NFS COLUMNS ADD

Path	Description	Enabled	
/mnt/Pool-NFS/NFS1	share nfs1	yes	⋮
/mnt/Pool-NFS/NFS2	share nfs2	yes	⋮

1 - 2 of 2

=> créer et configurer le réseau de stockage vmk2 sur les ESXi

vmk1
Virtual switch:
Port group:

storage2
port storage

TCP/IP configuration

TCP/IP stack	defaultTcpipStack
IPv4 DHCP	Disabled
IPv4 address	192.168.30.2
IPv4 subnet	255.255.255.0
IPv6 DHCP	Disabled
IPv6 auto-configuration	Disabled
IPv6 addresses	None

vSwitch topology

port storage
VLAN ID: 30
VMkernel ports (1)
vmk1: 192.168.30.2

Physical adapters
vmnic1, 1000 Mbps, Full

TCP/IP configuration

TCP/IP stack	defaultTcpipStack
IPv4 DHCP	Disabled
IPv4 address	192.168.30.1
IPv4 subnet	255.255.255.0
IPv6 DHCP	Disabled
IPv6 auto-configuration	Disabled
IPv6 addresses	None

vSwitch topology

Storage ports
VLAN ID: 30
VMkernel ports (1)
vmk1: 192.168.30.1

Physical adapters
vmnic1, 1000 Mbps, Full

=> tester ce réseau avec un ping entre les vmkernel

```
C:\Users\CEFIM>ssh root@192.168.10.251
The authenticity of host '192.168.10.251 (192.168.10.251)' can't be established.
ECDSA key fingerprint is SHA256:nrVBSSC7BZY2cNciYGa5dUbTXt28CtXlzZ7r3R1eSi0.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.10.251' (ECDSA) to the list of known hosts.
Password:
Password:
The time and date of this login have been sent to the system logs.

WARNING:
  All commands run on the ESXi shell are logged and may be included in
  support bundles. Do not provide passwords directly on the command line.
  Most tools can prompt for secrets or accept them from standard input.

VMware offers supported, powerful system administration tools. Please
see www.vmware.com/go/sysadmintools for details.

The ESXi Shell can be disabled by an administrative user. See the
vSphere Security documentation for more information.
[root@esx1:~] vmkping -I vmk1 192.168.30.2
PING 192.168.30.2 (192.168.30.2): 56 data bytes
64 bytes from 192.168.30.2: icmp_seq=0 ttl=64 time=0.356 ms
64 bytes from 192.168.30.2: icmp_seq=1 ttl=64 time=0.148 ms
64 bytes from 192.168.30.2: icmp_seq=2 ttl=64 time=0.159 ms

--- 192.168.30.2 ping statistics ---
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max = 0.148/0.221/0.356 ms
```

=> monter le stockage sur les ESXi

The first screenshot shows the storage configuration for ESX1. It lists three datastores: NFS1 (NFS, 150 GB capacity, 7.29 GB provisioned, 142.71 GB free), NFS2 (NFS, 150 GB capacity, 11.99 GB provisioned, 138.01 GB free), and STORE ESX1 (SSD, 337.5 GB capacity, 7.02 GB provisioned, 330.48 GB free). The second screenshot shows the storage configuration for ESX2. It lists three datastores: NFS1 (NFS, 150 GB capacity, 7.29 GB provisioned, 142.71 GB free), NFS2 (NFS, 150 GB capacity, 11.97 GB provisioned, 138.03 GB free), and STORE ESX2 (SSD, 348.75 GB capacity, 54.32 GB provisioned, 294.43 GB free).

Name	Drive Type	Capacity	Provisioned	Free	Type	Thin provisioning	Access
NFS1	Unknown	150 GB	7.29 GB	142.71 GB	NFS	Supported	Single
NFS2	Unknown	150 GB	11.99 GB	138.01 GB	NFS	Supported	Single
STORE ESX1	SSD	337.5 GB	7.02 GB	330.48 GB	VMFS6	Supported	Single

Name	Drive Type	Capacity	Provisioned	Free	Type	Thin provisioning	Access
NFS1	Unknown	150 GB	7.29 GB	142.71 GB	NFS	Supported	Single
NFS2	Unknown	150 GB	11.97 GB	138.03 GB	NFS	Supported	Single
STORE ESX2	SSD	348.75 GB	54.32 GB	294.43 GB	VMFS6	Supported	Single

> migrer les VMs DC et le vCenter sur le stockage partagé

The screenshot shows a task in the vSphere Task Manager. The task is 'Replacer la machine virtuelle...' (Replace the virtual machine...). The status is '29 %' with a progress bar. The details show 'Migration de l'état actif de la...' (Migration of the active state of the...). The initiator is 'THEJUNGLE.LAN/vicrome'. The duration is '2 ms'. The start time is '28/10/2022 14:21:09'. The server is 'vcenter1'.

Nom de la tâche	Cible	Statut	Détails	Initiateur	Mise en file d'attente pendant	Heure de début	Heure de fin	Serveur
Replacer la machine virtuelle...	ds2	29 %	Migration de l'état actif de la...	THEJUNGLE.LAN/vicrome	2 ms	28/10/2022 14:21:09		vcenter1

Qu'elle méthode d'authentification AD avec vous utilisé pour le vCenter ?

LDAP

Qu'elle est la commande ping effectuée entre les vmkernel dédié stockage des ESXi ?

vmkping -I vmkX x.x.x.x

Qu'elle est le protocole de stockage utilisé par le groupe 1 et 2 ?

NFS3

Qu'elle est la différence entre NFS et iSCSI ?

NFS est un protocole conçu pour le partage entre plusieurs machines clientes alors que iSCSI est un partage où un client accède à un volume de partage.

3- Créer et configurer Cluster vSphere

=> Tester le réseau vMotion (ping entre vmkernel)

```
C:\Users\CEFIM>ssh root@192.168.10.251
The authenticity of host '192.168.10.251 (192.168.10.251)' can't be established.
ECDSA key fingerprint is SHA256:nrVBSSC7BZY2cNciYGa5dUbTXt28CtXlZ7r3R1eSi0.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.10.251' (ECDSA) to the list of known hosts.
Password:
Password:
The time and date of this login have been sent to the system logs.

WARNING:
  All commands run on the ESXi shell are logged and may be included in
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  Most tools can prompt for secrets or accept them from standard input.

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vSphere Security documentation for more information.
[root@esx1:~] vmkping -I vmk1 192.168.30.2
PING 192.168.30.2 (192.168.30.2): 56 data bytes
64 bytes from 192.168.30.2: icmp_seq=0 ttl=64 time=0.356 ms
64 bytes from 192.168.30.2: icmp_seq=1 ttl=64 time=0.148 ms
64 bytes from 192.168.30.2: icmp_seq=2 ttl=64 time=0.159 ms

--- 192.168.30.2 ping statistics ---
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max = 0.148/0.221/0.356 ms
```

=> Migrer une VM d'un ESXi à l'autre

Tâches récentes		Alarmes							
Nom de la tâche	Cible	Statut	Détails	Initiateur	Mise en file d'attente pendant	Heure de début	Heure de fin	Serveur	
Remplacer la machine virtu...	dc2	<div><div></div></div> 39 %	Migration de l'état actif de la...	THEJUNGLE.LAN/Jérôme	2 ms	28/10/2022 14:21:09		vcenter1	

=> Activer vSphere HA et DRS

Junglestore | ACTIONS

Summary Monitor **Configure** Permissions Hosts VMs Datastores Networks Updates

Services **vSphere DRS** vSphere Availability

Configuration Quickstart General Key Provider

vSphere DRS is Turned ON

SCHEDULE D

- DRS Automation: Fully Automated
- Additional Options: Expand for policies
- Power Management: Off
- Advanced Options: Expand for advanced options

Junglestore | ACTIONS

Summary Monitor **Configure** Permissions Hosts VMs Datastores Networks Updates

Services vSphere DRS **vSphere Availability**

Configuration Quickstart General Key Provider VMware EVC VM/Host Groups VM/Host Rules VM Overrides

vSphere HA is Turned ON

Runtime information for vSphere HA is reported under vSphere HA Monitoring

Proactive HA is Turned OFF

Failure conditions and responses

Failure	Response	Details
Host failure	✓ Restart VMs	Restart VMs using VM restart priority ordering.
Proactive HA	❗ Disabled	Proactive HA is not enabled.
Host Isolation	❗ Disabled	VMs on isolated hosts will remain powered on.
Datastore with Permanent Device Lo...	✓ Power off and restart V...	Datastore protection enabled. Always attempt to restart VMs.
Datastore with All Paths Down	✓ Power off and restart V...	Datastore protection enabled. Ensure resources are available bef...

=> Mise en place d'une règle d'affinité pour que la VM DC1 devrait s'exécuter sur ESX1 et DC2 sur ESX2

Junglestore | ACTIONS

Summary Monitor **Configure** Permissions Hosts VMs Datastores Networks Updates

Quickstart General Key Provider VMware EVC **VM/Host Groups** VM/Host Rules VM Overrides I/O Filters Host Options Host Profile

VM/Host Groups

ADD... DELETE

Name	Type
DC1	VM Group
DC2	VM Group
esx1	Host Group

VM/Host Rules

ADD... EDIT... DELETE

Name	Type	Enabled	Conflicts	Defined By
dc1-esx2	Run VMs on Hosts	Yes	0	User
dc2-esx1	Run VMs on Hosts	Yes	0	User

4- Déployer certificat SSL de confiance

=> Installer rôle ADCS sur DC1 ou DC2

=> Déployer certificat PKI sur les ESXi, le vCenter et la baie de stockage

certsrv - [Autorité de certification (DC1:THEJUNGLE.IAN)\thejungle-DC1-CA\Certificats délivrés]

ID de la demande	Nom du demandeur	Certificat binaire	Modèle de certificat	Numéro de série	Date d'effet du certificat	Date d'expiration du certificat
2	THEJUNGLE/DC15	-----BEGIN CERTIFICATE-----	Mill...	660000000267553...	27/10/2022 15:19	27/10/2023 15:19
3	THEJUNGLE/DC25	-----BEGIN CERTIFICATE-----	Mill...	660000000356371...	27/10/2022 15:47	27/10/2023 15:47
4	THEJUNGLE/Administrateur	-----BEGIN CERTIFICATE-----	Mill...	660000000476800...	28/10/2022 09:30	27/10/2024 09:30
5	THEJUNGLE/Administrateur	-----BEGIN CERTIFICATE-----	Mill...	660000000596155...	28/10/2022 09:32	27/10/2024 09:32
6	THEJUNGLE/Administrateur	-----BEGIN CERTIFICATE-----	Mill...	660000000694891...	28/10/2022 10:09	27/10/2024 10:09
7	THEJUNGLE/Administrateur	-----BEGIN CERTIFICATE-----	Mill...	6600000007d1093...	28/10/2022 12:09	27/10/2024 12:09

Lecteur du certificat : vcenter.thejungle.ian

Général
Détails

Émis pour

Nom commun (CN) vcenter.thejungle.ian
Organisation (O) thejungle
Unité d'organisation (OU) Computers

Émis par

Nom commun (CN) thejungle-DC1-CA
Organisation (O) <Ne fait pas partie du certificat>
Unité d'organisation (OU) <Ne fait pas partie du certificat>

Durée de validité

Émis le vendredi 28 octobre 2022 à 12:09:36
Expire le dimanche 27 octobre 2024 à 11:09:36

Empreintes

Empreinte SHA-256 B5 67 66 45 79 62 1B 2C 43 79 3F 3B 79 B1 7D 70
AA C4 2E CD 78 B3 4E 2C F4 03 B2 AB 54 14 FF 39
Empreinte SHA-1 FE 35 C1 99 12 28 74 29 79 41 E4 F6 18 07 7C AF
48 88 B2 81

5- Installer la solution de sauvegarde

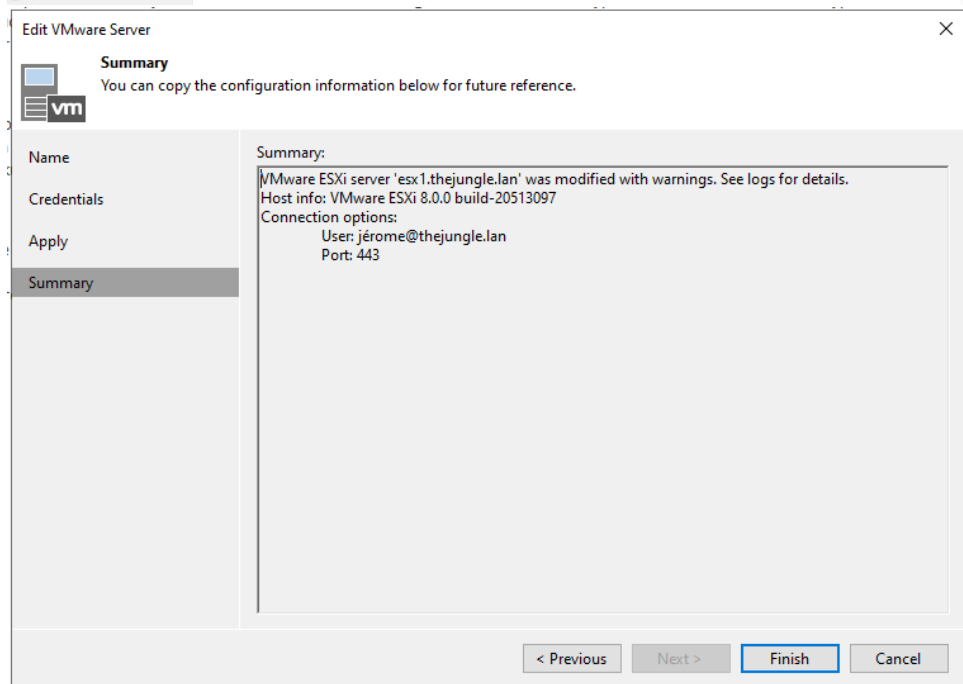
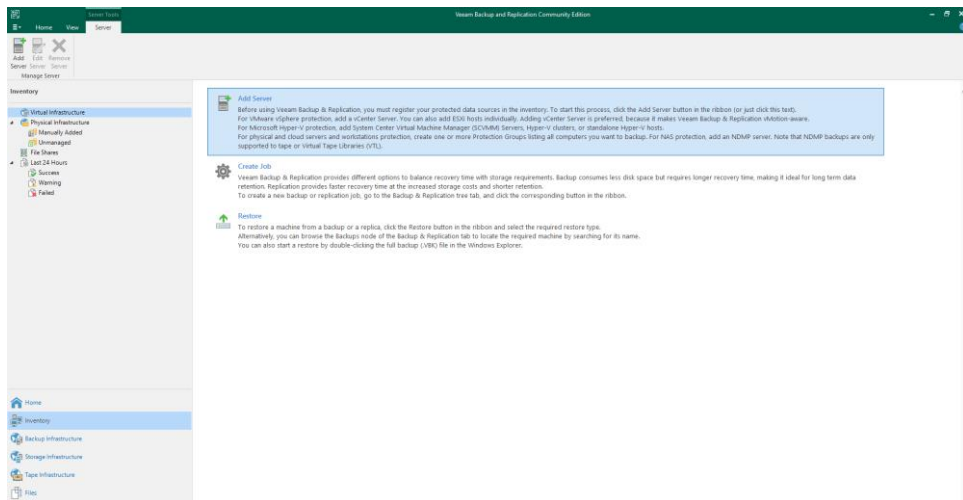
=> Installer la solution sur un serveur physique ou en VM

=> Créer un repository dédié sauvegarde

Veeam Backup and Replication Community Edition

Backup Infrastructure						
Name	Type	Host	Path	Capacity	Free	Used Space
Default Backup Repository	Windows	veeam.thejungle.ian	C:\Backup	297.4 GB	267.9 GB	0 B
Backup	Windows	veeam.thejungle.ian	E:\	931.5 GB	925.8 GB	0 B

=> Créer un job de sauvegarde avec une rétention de 15 jours et 2 Full synthétique



New Backup Job

Storage

vm

Specify processing proxy server to be used for source data retrieval, backup repository to store the backup files produced by this job and customize advanced job settings if required.

Name

Virtual Machines

Storage

Guest Processing

Schedule

Summary

Backup proxy:

Automatic selection

Choose...

Backup repository:

Backup (Created by THEJUNGLE Jérôme at 28/10/2022 09:23, Backup local 1T)

925 GB free of 931 GB

Map backup

Retention policy:

15

days

i

☐ Keep certain full backups longer for archival purposes

Configure...

GFS retention policy is not configured

☐ Configure secondary destinations for this job

Copy backups produced by this job to another backup repository, or tape. We recommend to make at least one copy of your backups to a different storage device that is located off-site.

Advanced job settings include backup mode, compression and deduplication, block size, notification settings, automated post-job activity and other settings.

Advanced

< Previous

Next >

Finish

Cancel

New Backup Job

Storage

vm

Specify processing proxy server to be used for source data retrieval, backup repository to store the backup files produced by this job and customize advanced job settings if required.

Name

Virtual Machines

Storage

Guest Processing

Schedule

Summary

Backup proxy:

Automatic selection

Choose...

Backup repository:

Backup (Created by THEJUNGLE Jérôme at 28/10/2022 09:23, Backup local 1T)

925 GB free of 931 GB

Map backup

Retention policy:

15

days

i

☐ Keep certain full backups longer for archival purposes

Configure...

GFS retention policy is not configured

☐ Configure secondary destinations for this job

Copy backups produced by this job to another backup repository, or tape. We recommend to make at least one copy of your backups to a different storage device that is located off-site.

Advanced job settings include backup mode, compression and deduplication, block size, notification settings, automated post-job activity and other settings.

Advanced

< Previous

Next >

Finish

Cancel

Advanced Settings

Backup

Maintenance

Storage

Notifications

vSphere

Integration

Scripts

Backup mode

☐ Reverse incremental (slower)

Increments are injected into the full backup file, so that the latest backup file is always a full backup of the most recent VM state.

☒ Incremental (recommended)

Increments are saved into new files dependent on previous files in the chain. Best for backup targets with poor random I/O performance.

☒ Create synthetic full backups periodically

Days...

Create on: samedi

Active full backup

☒ Create active full backups periodically

☐ Monthly on: First

lundi

Months...

☒ Weekly on selected days:

vendredi


Days...

Save As Default

OK

Cancel

New Backup Job



Guest Processing
Choose guest OS processing options available for running VMs.

Name

Virtual Machines

Storage

Guest Processing


Schedule

Summary

☒ **Enable application-aware processing**
Detects and prepares applications for consistent backup, performs transaction logs processing, and configures the OS to perform required application restore steps upon first boot.
Customize application handling options for individual machines and applications Applications...

☒ **Enable guest file system indexing**
Creates catalog of guest files to enable browsing, searching and 1-click restores of individual files. Indexing is optional, and is not required to perform instant file level recoveries.
Customize advanced guest file system indexing options for individual machines Indexing...

Guest OS credentials:

 jérôme@thejungle.lan (jérôme@thejungle.lan, last edited: less than a day ago) ▼

Add...

[Manage accounts](#)

Customize guest OS credentials for individual machines and operating systems Credentials...

Verify network connectivity and credentials for each machine included in the job Test Now


< Previous

Next >

Finish

Cancel

New Backup Job



Summary
The job's settings have been saved successfully. Click Finish to exit the wizard.

Name

Virtual Machines

Storage

Guest Processing

Schedule

Summary

Summary:

Name: bkpd2

Target Path: E:\

Type: VMware Backup

Enable application-aware processing

Enable guest file system indexing

Source items:
dc2 (esx1.thejungle.lan)

Command line to start the job on backup server:
"C:\Program Files\Veeam\Backup and Replication\Backup\Veeam.Backup.Manager.exe" backup 8e59d8cb-b885-4c6c-8a6f-8653077c5504

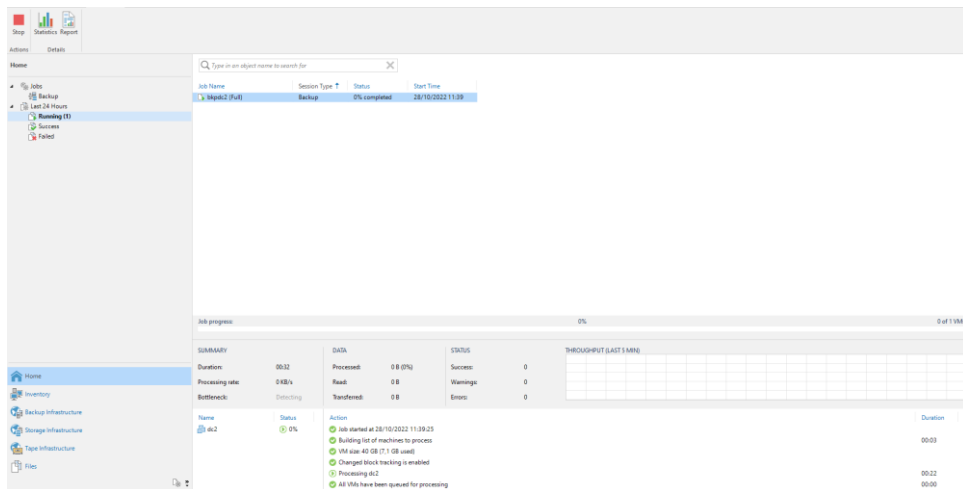
☒ Run the job when I click Finish

< Previous

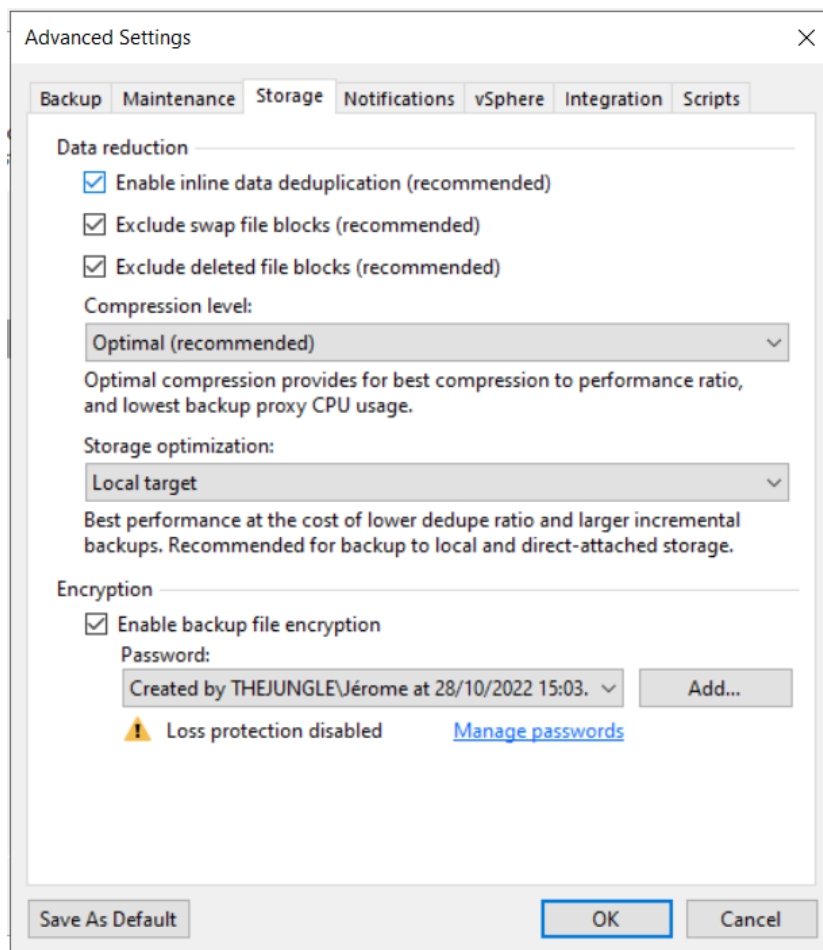
Next >

Finish

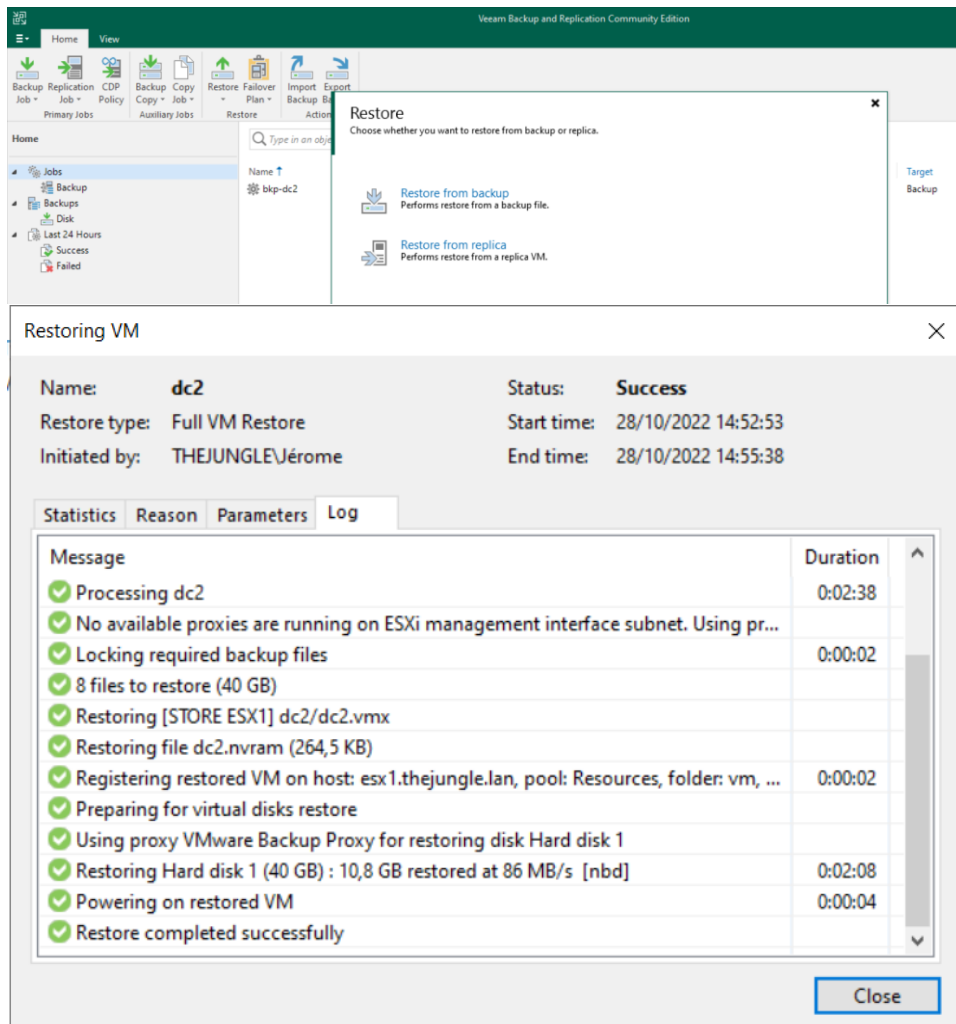
Cancel



=> Chiffrer les données de sauvegarde

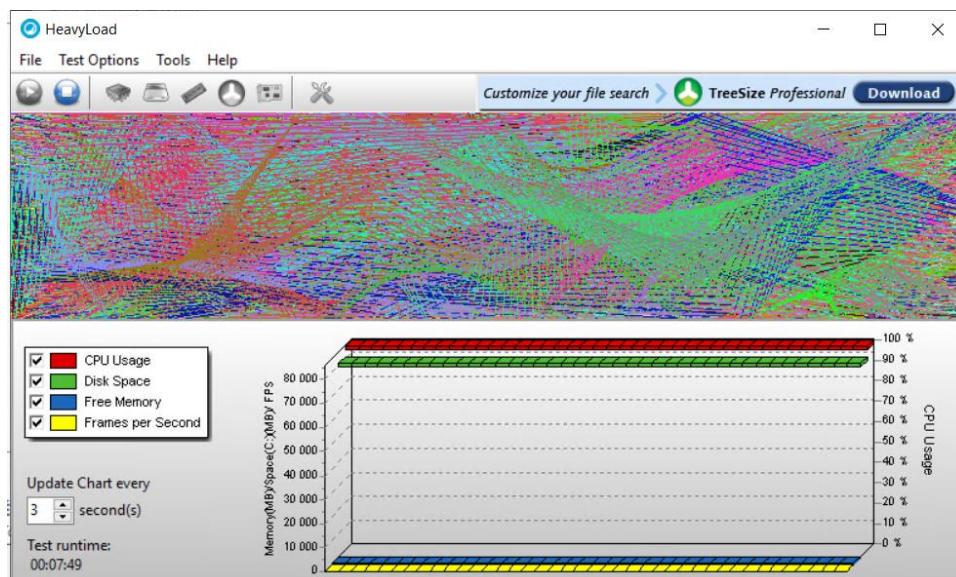


=> Tester la restauration d'une VM complète



=> Tester la restauration de fichier granulaire d'une VM

=> Installer une VM Windows Server 2022 avec HeavyLoad (outil de stress Disque/CPU/RAM/)



=> Déployer 10 VMs Windows Server 2022 (2CPU, 8Go RAM) à partir de celle-ci

Ces VMs doivent être intégrées dans le domaine automatiquement

=> Utiliser le fichier de personnalisation VM avec Sysprep par exemple

=> Déployer 10 VMs Linux Debian

Voir script joint.

Script avec PowerCLI

=> Créer un snapshot avec PowerCLI sur les 10 VMs Windows

=> Lancer HeavyLoad pour remplir disque C: sur les VMs Windows

Que c'est t il passé au niveau stockage ?

=> Scripter la suppression des snapshots avec PowerCLI

```
$ser = esx1.thejungle.lan
```

```
$serv = connect-viServer -server $ser -ErrorAction SilentlyContinue
```

```
Get-VM | Get-Snapshot | Where-Object {($_.name -like "*snapshot*") -or ($_.name -like  
quot;*datarecovery*")} | Remove-Snapshot
```

```
Disconnect-VIServer -Server $serv -Confirm:$false
```

=> Scripter une suppression automatique de Snapshot qui ont une durée de + 72h

Benchmark du Cluser

=> lancer les outils de stress CPU et RAM pour les 10 VMs Windows

Que se passe-t-il avec vSphere DRS ?

Comment voir l'activité de performance en temps réel depuis les ESXi ?

Dans : Cluster/Surveiller/Performance/Présentation

Que remarquez-vous ?

Non terminé