



**METEO
FRANCE**

Rencontre HPSS 2021

Atos client HPSS

09 Septembre 2021

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Ordre du jour

1. Météo France
2. Outil de repack: SATI
3. Inde - Tasmanie

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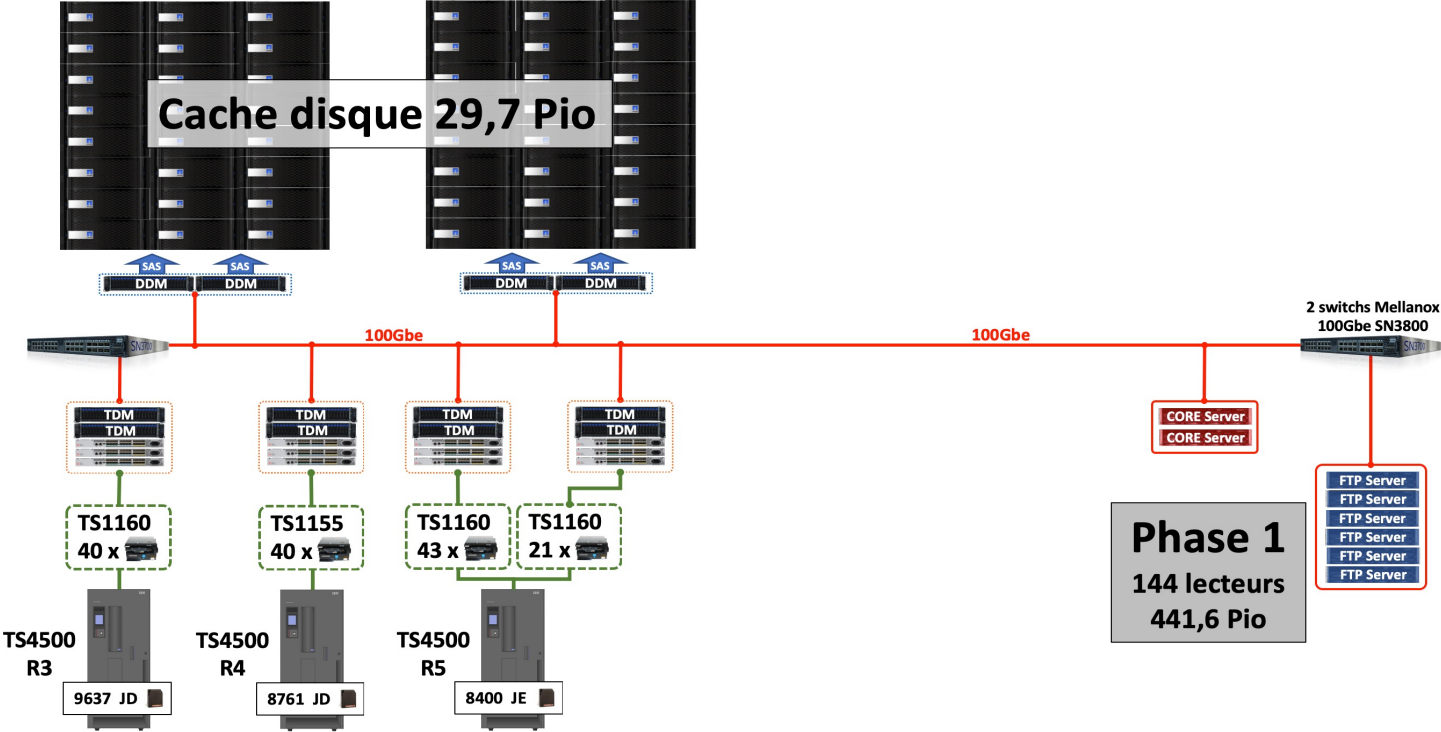
Météo France

Météo France

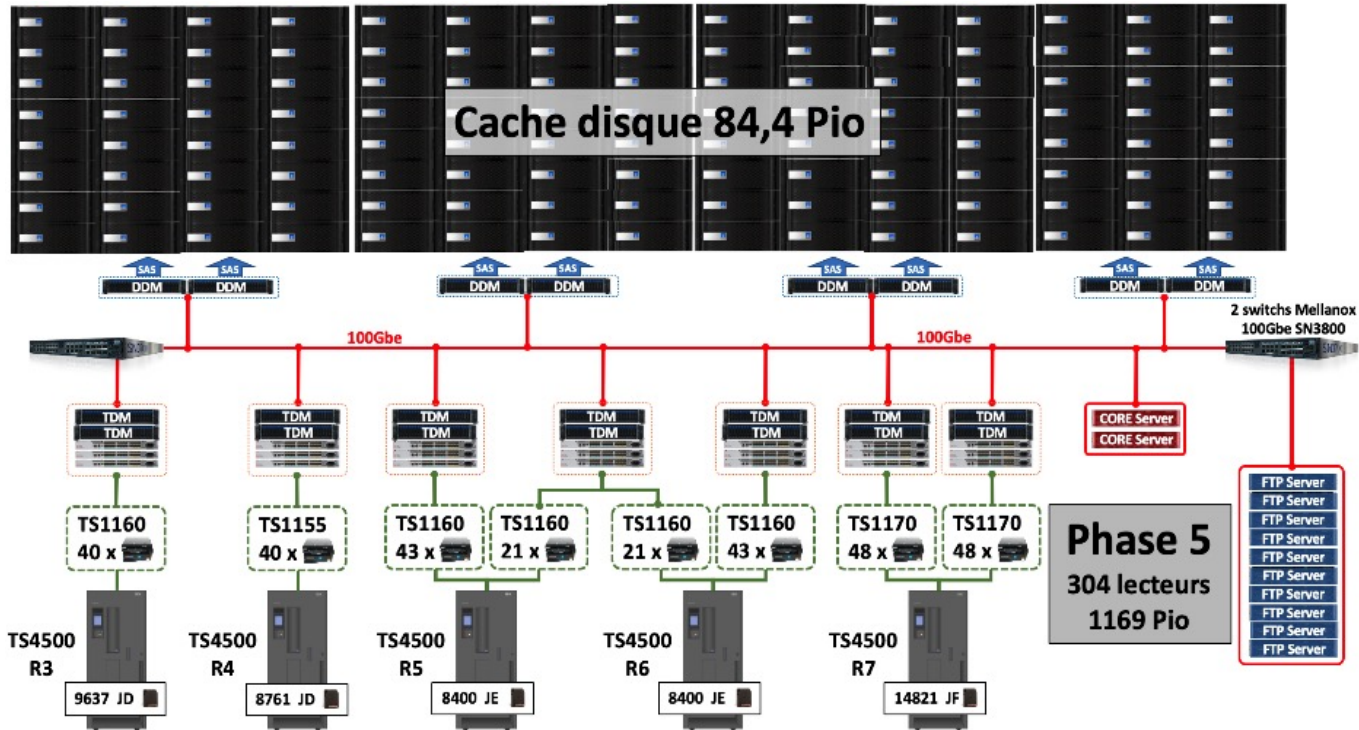
- ▶ Marché public No 1932F0145
 - Date de notification: 17/08/2020
 - Tranche ferme contenant **5 phases** (TF) portant sur le renouvellement et la maintenance du système de stockage
 - 2 tranches optionnelles, TO1 et TO2, relatives à la maintenance du système fourni durant la tranche ferme.

Attente Météo France	Réponse ATOS
Capacité totale en phase 5 : 830Pio	1 169 Pio
Facteur de Marge	40%
Solution Technique type HSM	Continuité avec la solution existante: NetApp, IBM tape, HPSS
Consommation électrique Max 175KW	165 KW (en phase 5)

Météo France – Phase 1



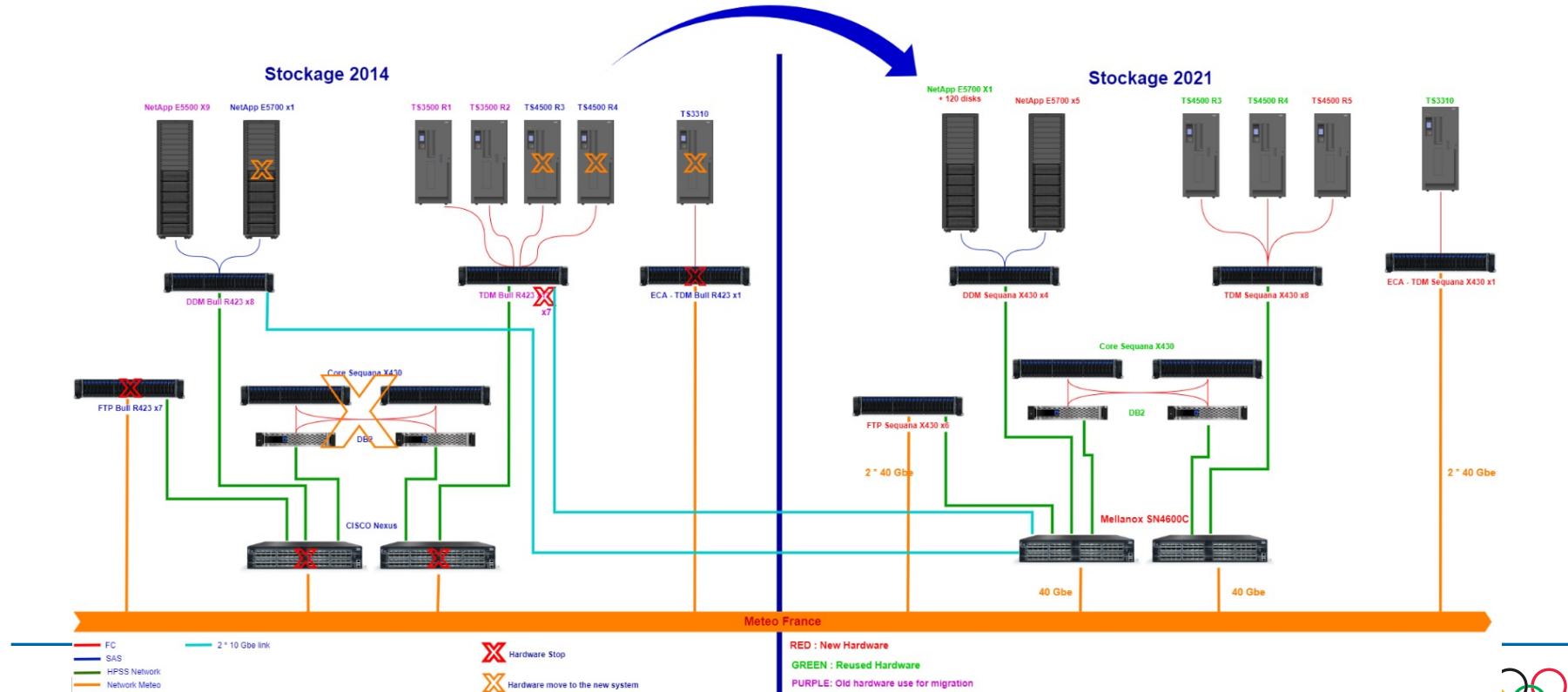
Meteo France – Phase 5



Météo France – Chiffres clés

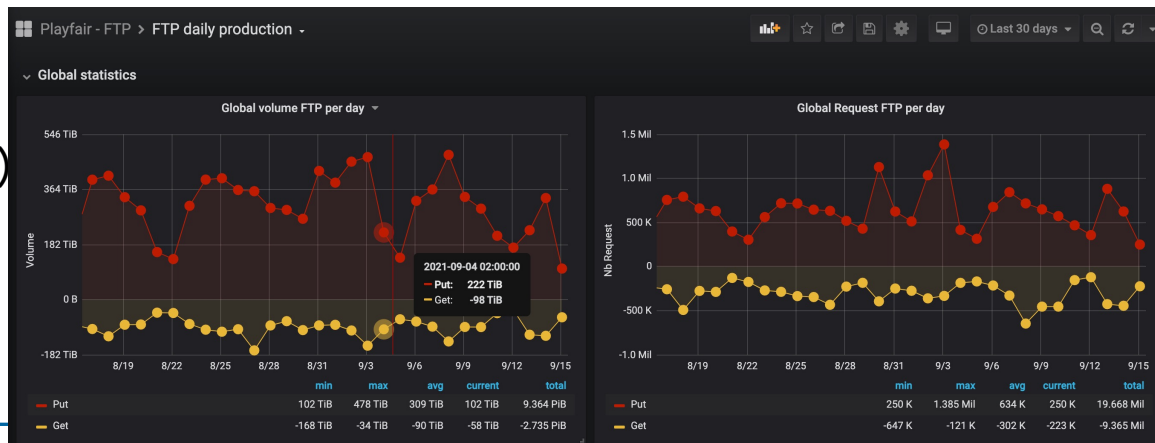
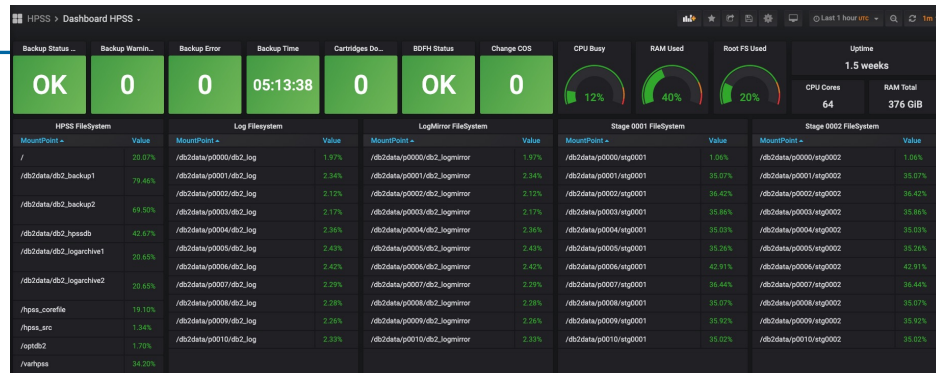
	phase 1	phase 2	phase 3	phase 4	phase 5
nb NetApp E5760	6	10	12	14	15
Cache disque	29,7 Pio	50,6 Pio	63,6 Pio	76,6 Pio	84,4 Pio
Capacité bande réclamée	260 Pio	410 Pio	565 Pio	730 Pio	835 Pio
Capacité bande (FM 40%)	441,6 Pio	574 Pio	791 Pio	1022 Pio	1169 Pio
nb lecteurs Jaguar	144	208	256	304	304
nb switches FC G610	14	17	23	23	23
nb serveurs	23	29	33	37	37
nb robot TS4500	3	4	5	5	5

Météo France - Bascule



Météo France - Software

- ▶ RedHat
 - Core serveur: RHEL 7
 - Mover: RHEL 8
 - Serveur FTP: RHEL 8
- ▶ Monitoring: Prometheus
- ▶ Statistiques (Playfair)
 - Telegraf/Influx/Grafana
- ▶ BDFH (Bull Director for HPSS)



Météo France - HPSS

▶ HPSS

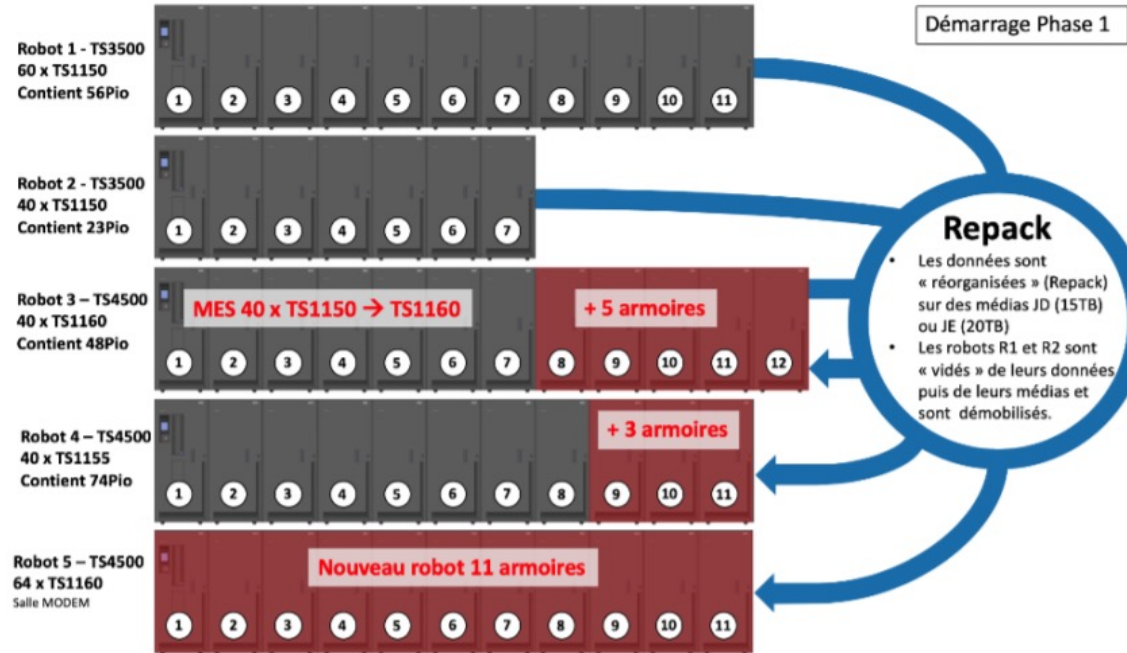
- Upgrade HPSS 7.5.3 vers 8.3
- Conversion accounting: Demande à Houston de paralléliser l'outil car environ 650 millions de fichier.
- Crash du core:
 - Core crash with bfs_StageThreadSignal
 - Core crash with bfs_DeterminePassiveSide (segfault)
 - Core crash if tape resource is deleted while in a repack process (segfault)
- Problème cache update 12:
 - Bug: 8963 - When the client LS cache becomes stale, it does not get properly refreshed (update 13)

Météo France - HPSS

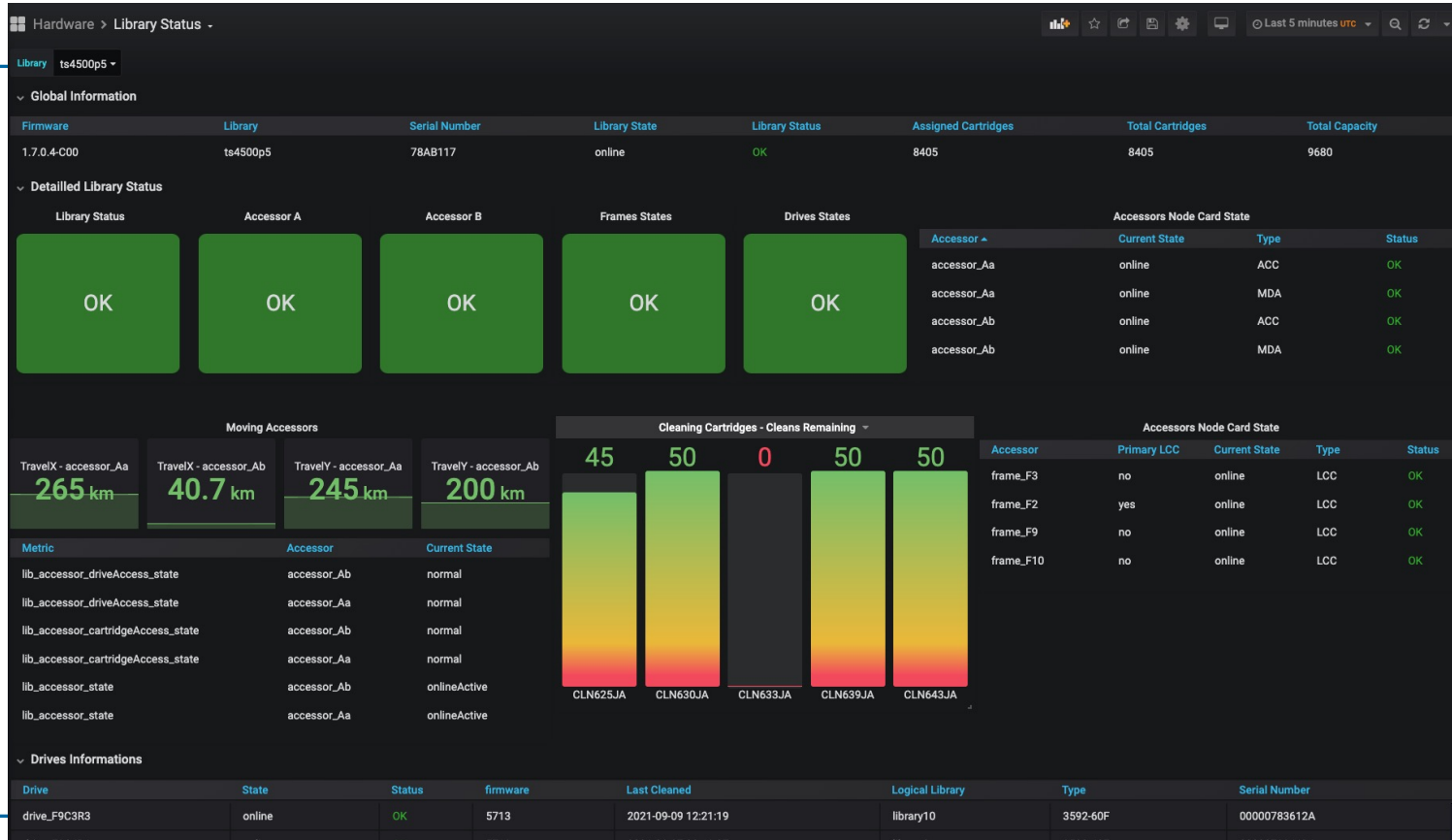
- ▶ HPSS – Changement taille segment SC
 - Petits fichiers < 32 MB conservés sur cache disque
 - Beaucoup de métadonnées
 - Objectif:
 - Réduire la taille de la base de données
 - Modifier le minSeg size de 4KB à 512KB (Variable length)
 - Création des disques dans la SC avec les nouveaux paramètres
 - Repack des anciens disques de la SC vers les nouveaux
 - Problématique:
 - Le repack ne traite pas le fichier mais le segment...
 - Donc un segment de 4KB sera stocké dans 512KB...
 - Solution:
 - Développement par IBM Houston d'un outil
 - Rehome:
 - The rehome_files utility rewrites the data for all files on a disk volume which are not using the correct storage segment size as currently defined by the storage class configuration.

Météo France - Librairie

- ▶ Extension de robot
 - Attention pas d'ajout de Frame au milieu...
- ▶ MES lecteurs TS1150 vers TS1160
- ▶ Arrêt des ts3500 et récupération des 8000 bandes après repack
- ▶ Utilisation ROS API (Rest Over SCSI)



Météo France – Librairie



2

Outil de repack

Contexte de l'outil Sati

- ▶ 8000 bandes à repack, supprimer et exporter d'HPSS
- ▶ Bandes réparties dans 4 PVRs (2 librairies TS3500)
- ▶ Destination sur 6 PVRs différents
- ▶ Repacks lancés par listes de bandes source et destination
 - Difficile à gérer manuellement
 - Pas de suivi statistique

Sati - Outil de gestion de repacks automatisé

- ▶ Développé en Python3 (bibliothèques threading, subprocess, libtmux)
- ▶ Sélection des bandes selon la configuration (PVR, % de remplissage, media)
 - Définition des PVRs sources et destinations
 - Nombre drive disponible au repack par PVR
 - Nombre de thread de repack
- ▶ Lancement automatique des repacks
- ▶ Gestion des erreurs et crashes
- ▶ Suivi global des repacks en cours (volSer, PVR, drive, SC, Family, volume)
- ▶ Statistiques des repacks dans Grafana

Sati

- ▶ VVs max en écriture
- ▶ Lecteurs utilisés par PVR
- ▶ Détail des bandes source
- ▶ Détail des repacks en cours
- ▶ Détail du repack pour chaque bande

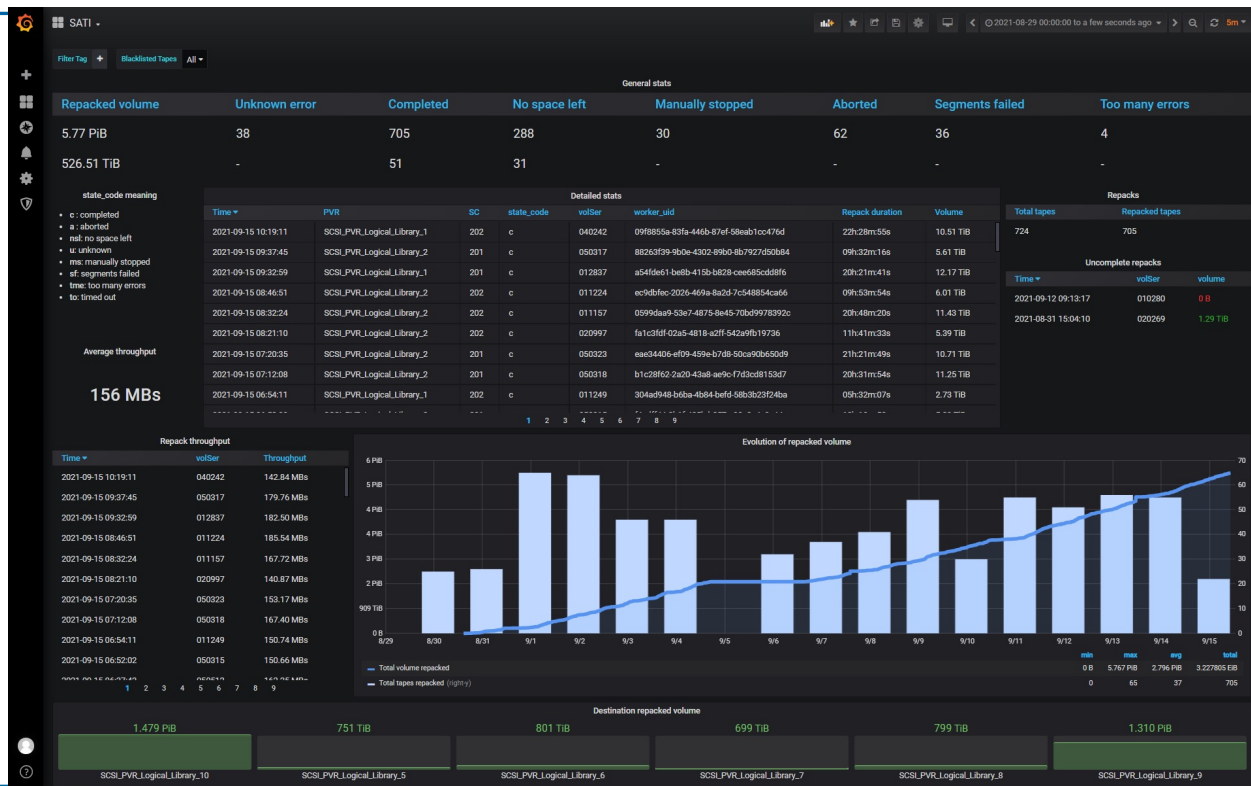
```
(Tape format: Family - SC - PVR - alloc_state - repack_state - used_space)
>
SC id      : 200 201 202 300 301 302 303 304 305 900
Writing Ws : 5/ 5 4/15 3/35 0/4 0/1 0/1 0/1 0/1 0/1 0/1

SCSI PVR Logical Library 1: 22/22 used drives.
- SrcTape 020688: 0 -202 -SCSI PVR Logical Library 1 - allocated - repacking - 11845727922128
- SrcTape 020428: 0 -202 -SCSI PVR Logical Library 1 - allocated - repacking - 11848443551801
- SrcTape 012673: 0 -202 -SCSI PVR Logical Library 1 - allocated - repacking - 11863282139421
- SrcTape 050972: 0 -201 -SCSI PVR Logical Library 1 - allocated - repacking - 13483393731773
- SrcTape 012512: 0 -201 -SCSI PVR Logical Library 1 - allocated - repacking - 13982679189972
- SrcTape 011867: 0 -202 -SCSI PVR Logical Library 1 - allocated - repacking - 1186754013074
- SrcTape 012905: 0 -202 -SCSI PVR Logical Library 1 - allocated - repacking - 11867735897781
- SrcTape 012650: 0 -202 -SCSI PVR Logical Library 1 - allocated - repacking - 11877732091836
- SrcTape 011454: 0 -200 -SCSI PVR Logical Library 1 - allocated - repacking - 971230975563
- SrcTape 011476: 0 -200 -SCSI PVR Logical Library 1 - allocated - torepack - 973620417475
- SrcTape 012751: 0 -201 -SCSI PVR Logical Library 1 - allocated - repacking - 14137937484077
- SrcTape 011425: 0 -202 -SCSI PVR Logical Library 1 - allocated - repacking - 11882029384029
- SrcTape 010826: 0 -202 -SCSI PVR Logical Library 1 - allocated - repacking - 11812259950602
- SrcTape 020959: 0 -202 -SCSI PVR Logical Library 1 - allocated - repacking - 11884846484415
- SrcTape 020421: 0 -202 -SCSI PVR Logical Library 1 - allocated - repacking - 11884849874201
- SrcTape 011840: 0 -202 -SCSI PVR Logical Library 1 - allocated - repacking - 11894712899400
- SrcTape 012573: 0 -202 -SCSI PVR Logical Library 1 - allocated - repacking - 11886712920669
- SrcTape 011887: 0 -202 -SCSI PVR Logical Library 1 - allocated - repacking - 11901791085126
- SrcTape 011804: 0 -202 -SCSI PVR Logical Library 1 - allocated - repacking - 11903208349808
- SrcTape 010855: 0 -202 -SCSI PVR Logical Library 1 - allocated - repacking - 11911522374031
- SrcTape 012801: 0 -201 -SCSI PVR Logical Library 1 - allocated - repacking - 14057566287882
- SrcTape 010359: 0 -202 -SCSI PVR Logical Library 1 - allocated - repacking - 11922952969137
- SrcTape 010602: 0 -202 -SCSI PVR Logical Library 1 - allocated - repacking - 11932161355260
SCSI PVR Logical Library 3: 10/10 used drives.
- SrcTape 050912: 0 -200 -SCSI PVR Logical Library 2 - allocated - repacking - 4008093299782
- SrcTape 012988: 0 -200 -SCSI PVR Logical Library 2 - allocated - repacking - 11107353132795
- SrcTape 040176: 0 -200 -SCSI PVR Logical Library 2 - allocated - repacking - 1117091036913
- SrcTape 020798: 0 -200 -SCSI PVR Logical Library 2 - allocated - repacking - 11160995485360
- SrcTape 020957: 0 -202 -SCSI PVR Logical Library 2 - allocated - repacking - 1120626187699
- SrcTape 010474: 0 -202 -SCSI PVR Logical Library 2 - allocated - repacking - 11294006133844
- SrcTape 012224: 0 -202 -SCSI PVR Logical Library 2 - allocated - repacking - 11321522577699
- SrcTape 011776: 0 -202 -SCSI PVR Logical Library 2 - allocated - repacking - 11327789733963
- SrcTape 011867: 0 -202 -SCSI PVR Logical Library 2 - allocated - repacking - 11340762525660
- SrcTape 020894: 0 -202 -SCSI PVR Logical Library 2 - allocated - repacking - 1136958284409
- SrcTape 020949: 0 -202 -SCSI PVR Logical Library 2 - allocated - repacking - 11343566973980
- SrcTape 011937: 0 -200 -SCSI PVR Logical Library 2 - allocated - torepack - 11162249259957
- SrcTape 021032: 0 -202 -SCSI PVR Logical Library 2 - allocated - repacking - 11348142754246
- SrcTape 011361: 0 -202 -SCSI PVR Logical Library 2 - allocated - repacking - 11363784795576
- SrcTape 011510: 0 -202 -SCSI PVR Logical Library 2 - allocated - repacking - 1139095284409
- SrcTape 010792: 0 -202 -SCSI PVR Logical Library 2 - allocated - repacking - 11392492869132
- SrcTape 011760: 0 -202 -SCSI PVR Logical Library 2 - allocated - repacking - 11401936614741
- SrcTape 012749: 0 -202 -SCSI PVR Logical Library 2 - allocated - repacking - 11412138723789
- SrcTape 012925: 0 -202 -SCSI PVR Logical Library 2 - allocated - repacking - 11417584060751
SCSI PVR Logical Library 5: 5/5 used drives.
SCSI PVR Logical Library 6: 5/5 used drives.
SCSI PVR Logical Library 7: 5/5 used drives.
SCSI PVR Logical Library 8: 5/5 used drives.
SCSI PVR Logical Library 9: 10/10 used drives.
SCSI PVR Logical Library 10: 10/10 used drives.
09:50:193 root@hendrixcore [root]# echo << EOF
>
Running repacks: (40/40)
> 020688, SCSI PVR Logical Library 1, 20807, 95.4% ==> 020154, SCSI PVR Logical Library 5, 20104, 95.4%
> 012988, SCSI PVR Logical Library 2, 20812, 85.7% ==> 021091, SCSI PVR Logical Library 6, 20129, 85.7%
> 020957, SCSI PVR Logical Library 2, 20827, 26.4% ==> 012177, SCSI PVR Logical Library 8, 20170, 26.4%
> 020428, SCSI PVR Logical Library 1, 20842, 89.3% ==> 011735, SCSI PVR Logical Library 8, 20189, 89.3%
> 012673, SCSI PVR Logical Library 1, 20830, 90.9% ==> 115500, SCSI PVR Logical Library 10, 20181, 90.9%
> 050872, SCSI PVR Logical Library 1, 20805, 71.2% ==> 010128, SCSI PVR Logical Library 7, 20153, 71.2%
> 010474, SCSI PVR Logical Library 2, 20811, 11.1% ==> 111476, SCSI PVR Logical Library 9, 20562, 11.1%
> 040176, SCSI PVR Logical Library 2, 20823, 98.0% ==> 115496, SCSI PVR Logical Library 10, 20554, 98.0%
> 012512, SCSI PVR Logical Library 2, 20832, 84.7% ==> 111470, SCSI PVR Logical Library 9, 20599, 84.7%
> 012224, SCSI PVR Logical Library 2, 20833, 0.7% ==> 021090, SCSI PVR Logical Library 6, 20120, 0.7%
> 011867, SCSI PVR Logical Library 1, 20136, 59.3% ==> 115501, SCSI PVR Logical Library 10, 20540, 59.3%
> 012905, SCSI PVR Logical Library 1, 20808, 15.5% ==> 111474, SCSI PVR Logical Library 9, 20552, 15.5%
> 012650, SCSI PVR Logical Library 1, 20844, 31.5% ==> 010134, SCSI PVR Logical Library 7, 20135, 31.5%
> 012751, SCSI PVR Logical Library 2, 20802, 3.1% ==> 021094, SCSI PVR Logical Library 6, 20128, 3.1%
> 020798, SCSI PVR Logical Library 2, 20810, 7.0% ==> 021092, SCSI PVR Logical Library 6, 20113, 6.9%
> 011776, SCSI PVR Logical Library 2, 20835, 18.7% ==> 010136, SCSI PVR Logical Library 7, 20183, 18.7%
> 011454, SCSI PVR Logical Library 1, 20803, 31.2% ==> 011737, SCSI PVR Logical Library 8, 20171, 31.2%
> 011425, SCSI PVR Logical Library 1, 20840, 67.3% ==> 111478, SCSI PVR Logical Library 9, 20501, 67.2%
> 010826, SCSI PVR Logical Library 1, 20817, 29.8% ==> 115495, SCSI PVR Logical Library 10, 20544, 29.8%
> 011867, SCSI PVR Logical Library 2, 20809, 30.3% ==> 020155, SCSI PVR Logical Library 5, 20107, 30.3%
> 020395, SCSI PVR Logical Library 1, 20839, 42.5% ==> 115503, SCSI PVR Logical Library 10, 20546, 42.5%
> 020421, SCSI PVR Logical Library 1, 20829, 79.6% ==> 111482, SCSI PVR Logical Library 9, 20539, 79.6%
> 011840, SCSI PVR Logical Library 1, 20819, 33.1% ==> 111460, SCSI PVR Logical Library 9, 20509, 33.1%
> 012573, SCSI PVR Logical Library 1, 20133, 57.2% ==> 021078, SCSI PVR Logical Library 6, 20114, 57.2%
> 011087, SCSI PVR Logical Library 1, 20139, 57.0% ==> 020157, SCSI PVR Logical Library 5, 20105, 57.0%
> 050943, SCSI PVR Logical Library 2, 20846, 3.8% ==> 111481, SCSI PVR Logical Library 9, 20506, 3.7%
> 050512, SCSI PVR Logical Library 2, 20836, 15.2% ==> 011739, SCSI PVR Logical Library 8, 20172, 15.2%
> 011804, SCSI PVR Logical Library 1, 20135, 51.1% ==> 111477, SCSI PVR Logical Library 9, 20500, 51.1%
> 021032, SCSI PVR Logical Library 2, - - - - - ==> 011725, SCSI PVR Logical Library 8, - - - - -
> 011361, SCSI PVR Logical Library 2, 20824, 3.6% ==> 111483, SCSI PVR Logical Library 9, 20529, 3.6%
> 011510, SCSI PVR Logical Library 2, 20826, 2.2% ==> 020611, SCSI PVR Logical Library 5, 20103, 2.2%
> 010170, SCSI PVR Logical Library 2, 20848, 74.2% ==> 111476, SCSI PVR Logical Library 9, 20502, 74.2%
> 010855, SCSI PVR Logical Library 2, 20820, 10.2% ==> 111480, SCSI PVR Logical Library 10, 20510, 10.1%
> 012749, SCSI PVR Logical Library 2, 20850, 68.0% ==> 020156, SCSI PVR Logical Library 5, 20095, 68.0%
> 010855, SCSI PVR Logical Library 1, 20815, 30.5% ==> 115504, SCSI PVR Logical Library 10, 20521, 30.5%
> 012925, SCSI PVR Logical Library 2, 20849, 23.4% ==> 115505, SCSI PVR Logical Library 10, 20522, 23.4%
> 012801, SCSI PVR Logical Library 1, 20804, 97.0% ==> 115492, SCSI PVR Logical Library 10, 20525, 97.0%
> 010359, SCSI PVR Logical Library 1, 20806, 2.5% ==> 115499, SCSI PVR Logical Library 10, 20548, 2.5%
> 020956, SCSI PVR Logical Library 2, - - - - - ==> 010138, SCSI PVR Logical Library 7, - - - - -
> 010602, SCSI PVR Logical Library 1, - - - - - ==> 010125, SCSI PVR Logical Library 7, - - - - -
>
```

[sati] 0:logs 1:conf 2:main 3:status+ 4:050512 5:011510 6:020421 7:010179 8:020688 9:012925 10:020428 11:011560 12:012988 13:040176 14:020957 15:012749 16:050972 17:010474 18:010474 19:012511#hendrixcore

Sati - Dashboard Grafana

- ▶ Volume total déplacé
- ▶ Bandes repackées
- ▶ Débits
- ▶ Evolution
- ▶ Répartition des données



3

Inde - Tasmanie

Inde - Tasmanie

- ▶ Inde: IITM et NCMRWF
 - HPSS version 8.3
 - Environ 8PB de données par site
 - Spectra + RAIT (4+1)
 - Cache DDN – SFA7990

- ▶ Tasmanie: UTAS
 - Upgrade 7.5.3 vers 8.3
 - Migration DMF en cours

Merci

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