



# Status of Computing

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INFN-Napoli

**2th Meeting dei siti italiani di Belle II**

15/02/2021

# Rucio Integration in DIRAC

7<sup>th</sup> to 19<sup>o</sup> Gennaio 2021 è stata completata la migrazione dal Sistema di DDM storico di Belle II a RUCIO integrato dal team di BNL in DIRAC. Il precedente DDM era stato realizzato come esenzione di DIRAC + LFC.

- Last Thursday, a lot of replication rules were created generating a huge traffic. For a few hours, Belle II had transfer rates similar to ATLAS



Belle II



ATLAS

## Coming DIRAC releases and major features

- DIRAC v6r22
  - Essential: [WebApp4](#), PilotManager
  - Retire: /Registry/VOMS
  - Available: DIRACOS (not pilot), Pilot3 (w/lcgBundles), MySQL7

See also Federico's [DUW19](#) slide



- DIRAC v7r0
  - Essential: [DIRACOS](#)
  - Retire: lcgBundles, JobStateSync
  - Default: [Pilot3](#)
  - Available: M2Crypto, JobParameter@ES, ProductionSystem

### Major DIRAC players



















- CLIC: v6r22+DIRACOS
- LHCb: [v7r1](#) (last week)
- GridPP: v7r1

- DIRAC v7r1
  - Essential: [Pilot3](#)
  - Retire: Pilot2
  - Default: [M2Crypto](#) ← Common SSL wrapper to replace home-made PyGSI
  - Available: MySQL8, ThreadPoolExecutor
- DIRAC v7r2 [most of codes are futurized]
  - Essential: [M2Crypto](#)
  - Retire: PyGSI
  - Available: Some DIRAC component monitoring → ES, WebApp histogram, [DIRACOS2](#)

In near future:  
DIPS → HTTPS

## Assignees

<https://agira.desy.de/browse/BIIDCD-1149> Epic JIRA

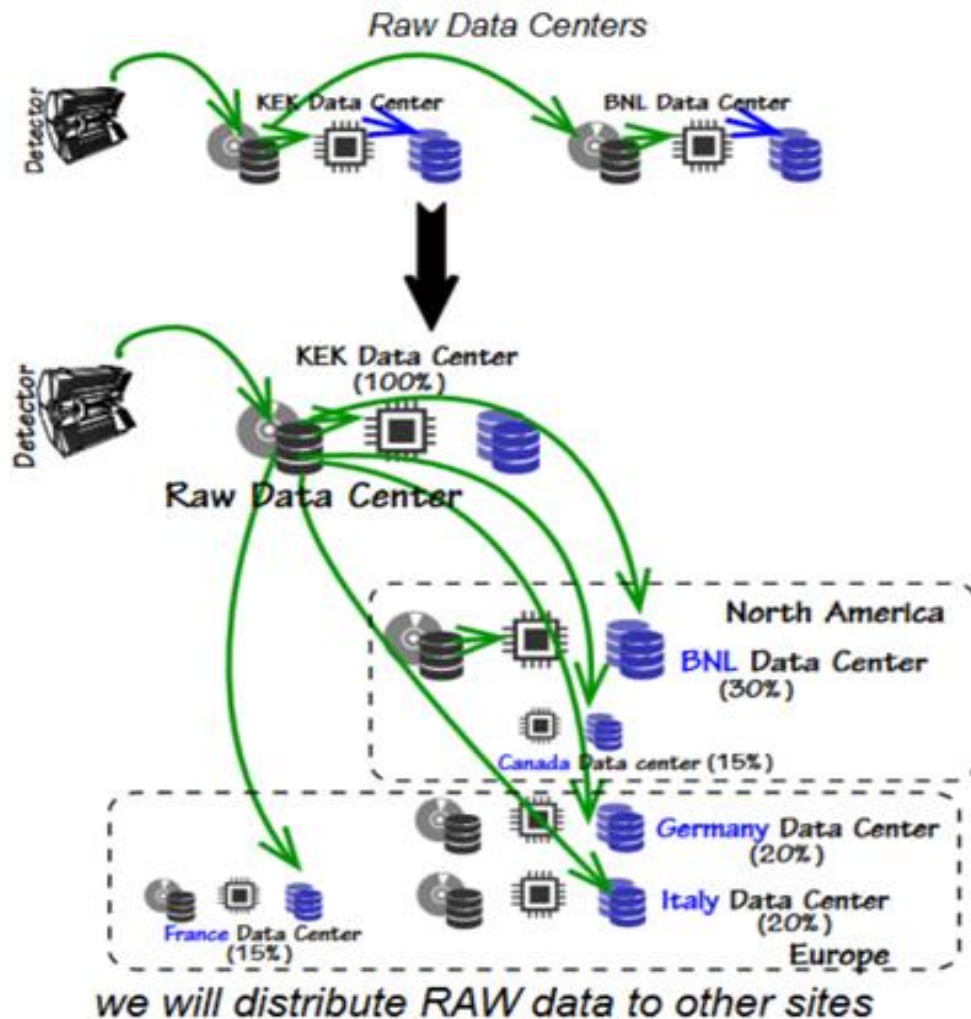
1.	Migration to Python3: FrameworkSystem		IN PROGRESS	Kato Yuji
2.	Migration to Python3: WebApp		OPEN	Kiyoshi Hayasaka
3.	Migration to Python3: Workflow		OPEN	Hideki Miyake
4.	Migration to Python3: Client		IN PROGRESS	Michel Hernandez Villanueva
5.	Migration to Python3: Transformation		OPEN	Hideki Miyake
6.	Migration to Python3: RequestManagementSystem		IN PROGRESS	Kato Yuji
7.	Migration to Python3: ProductionManagementSystem		OPEN	Hideki Miyake
8.	Migration to Python3: RucioDataManagementSystem		IN PROGRESS	Cedric Serfon
9.	Migration to Python3: DataManagementSystem		OPEN	Hideki Miyake
10.	Migration to Python3: FabricationSystem		OPEN	Hideki Miyake
11.	Migration to Python3: Resources		OPEN	Hirata Hikari
12.	Migration to Python3: Core		OPEN	Hideki Miyake
13.	Migration to Python3: WorkloadManagementSystem		OPEN	Kato Yuji
14.	Migration to Python3: B2MonitoringSystem		IN PROGRESS	Kato Yuji
15.	Migration to Python3: Accounting		OPEN	Kato Yuji
16.	Migration to Python3: gbasf2		IN PROGRESS	Michel Hernandez Villanueva
17.	Migration to Python3: B2DatasetLookupSystem		IN PROGRESS	Anil Panta
18.	Migration to Python3: Configuration		OPEN	Hideki Miyake

- Protocolli di accesso: http/webdav, gsiftp, xrootd – Belle II non ha una federazione xrootd
- Client: gb2\_ds relies on GFAL2 API
- Accounting: WLCG accounting JSON
- DDM: RUCIO funziona out of the box

# Migrazione dei CEAM-CE

SITE	MIGRATION TO	STATUS	NOTE
LCG.IPHC.fr	ARC + Torque	Completed	
LCG.HEPHY.at	HTCondorCE	Completed	
LCG.KIT-TARDIS.de	HTCondorCE	Completed	
LCG.LAL.fr	HTCondorCE	Completed	
LCG.TAU.il	HTCondorCE	Completed	
LCG.Legnaro.it	HTCondorCE	Completed	
LCG.KMI.jp	HTCondorCE	ONGOING	<a href="https://agira.desy.de/browse/BIIDCO-3008">https://agira.desy.de/browse/BIIDCO-3008</a>
LCG.Roma3.it	HTCondorCE	ONGOING	<a href="https://agira.desy.de/browse/BIIDCO-2969">https://agira.desy.de/browse/BIIDCO-2969</a>
LCG.Pisa.it	HTCondorCE	ONGOING	<a href="https://agira.desy.de/browse/BIIDCO-3017">https://agira.desy.de/browse/BIIDCO-3017</a>
LCG.ULAKBIM.fr	ARC	ONGOING	<a href="https://agira.desy.de/browse/BIIDCO-2937">https://agira.desy.de/browse/BIIDCO-2937</a>
LCG.Napoli.it	HTCondorCE	ONGOING	<a href="https://agira.desy.de/browse/BIIDCO-3029">https://agira.desy.de/browse/BIIDCO-3029</a>
LCG.Frascati.it	HTCondorCE	Not Started	Prototype Available
LCG.Cosenza.it	HTCondorCE	Not Started	No info yet
LCG.Torino.it	HTCondorCE	Not Started	Prototype Available
LCG.CYFRONET.pl	HTCondorCE	Not Started	No info yet

# RAW Data distribution



The second copy of RAW Data is currently stored at BNL. From 2021 the second copy of RAW will be distributed in different countries: USA, Italy, Germany, France and Canada.

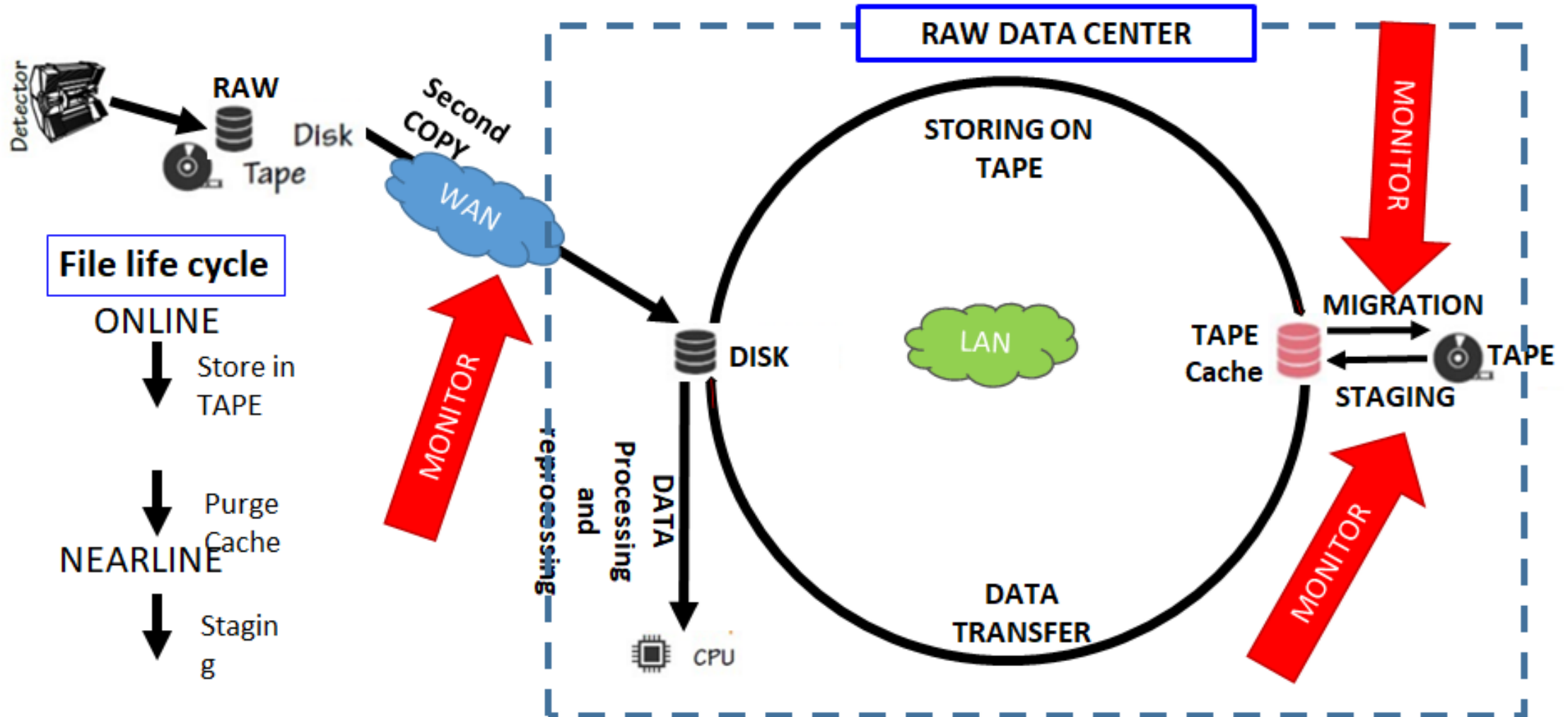
SITE	2019-2020	2021-2024
BNL - USA	100%	30%
CNAF - Italy	0%	20%
DESY - Germany	0%	10%
KIT - Germany	0%	10%
IN2P3CC - France	0%	15%
UVIC - Canada	0%	15%

# From Site Report - B2GM37- 2020

RAW-DC	PLEGGED	TIMELINE
BNL	BNL will provide its share of Tape resources (volume) Disk buffer in front of the tape system is not part of pledges	At BNL tape media are not purchased in advance .
CNAF	<b>Tape: 350TB - Disk Buffer in front of TAPE: 180TB shared with multiple VO</b>	Since January 2021
DESY	<b>Tape: 80TB + 120TB</b> That will be added as data come: pledged: 0.12PB - <b>The disk buffer: 116TB.</b>	Already available
IN2P3CC	<b>Tape: 180TB - Disk: 160TB (+ 200TB from 2020)</b> The arbitrage of the pledges for 2021 will happen only at the end of this year. What is going to be proposed for Belle2 disk is overall 360TB.	Typically April
KEK	<b>Tape: 2.500TB</b> equivalent TAPES are mounted to GHI. This is RAW data dedicated area and 1.5PB cache disk is available to stage data from TAPES. Already purchased TAPE media corresponding to several PB storage. So, we can increase the storage space by mounting these tapes if necessary.	Currently in place
KIT	<b>Tape: 100TB</b> of disk space in dCache for tape write and read buffers. For the time being, we will simply add this to the pledge we report. Tape media are purchased on demand and a reasonable buffer is always available, so no extra provisions for Belle II are necessary on our side.	The resources would usually be made available in April, but since the BelleII share is so small, we can discuss the timeline.
Uvic	<b>Around 300TB</b> available on Disk. We currently provide B2 with 700TB of storage and only 400TB is currently used. We could allocate some of this storage for raw data storage.	late 2021. We would like to start testing the system in the early 2021. (April-June).

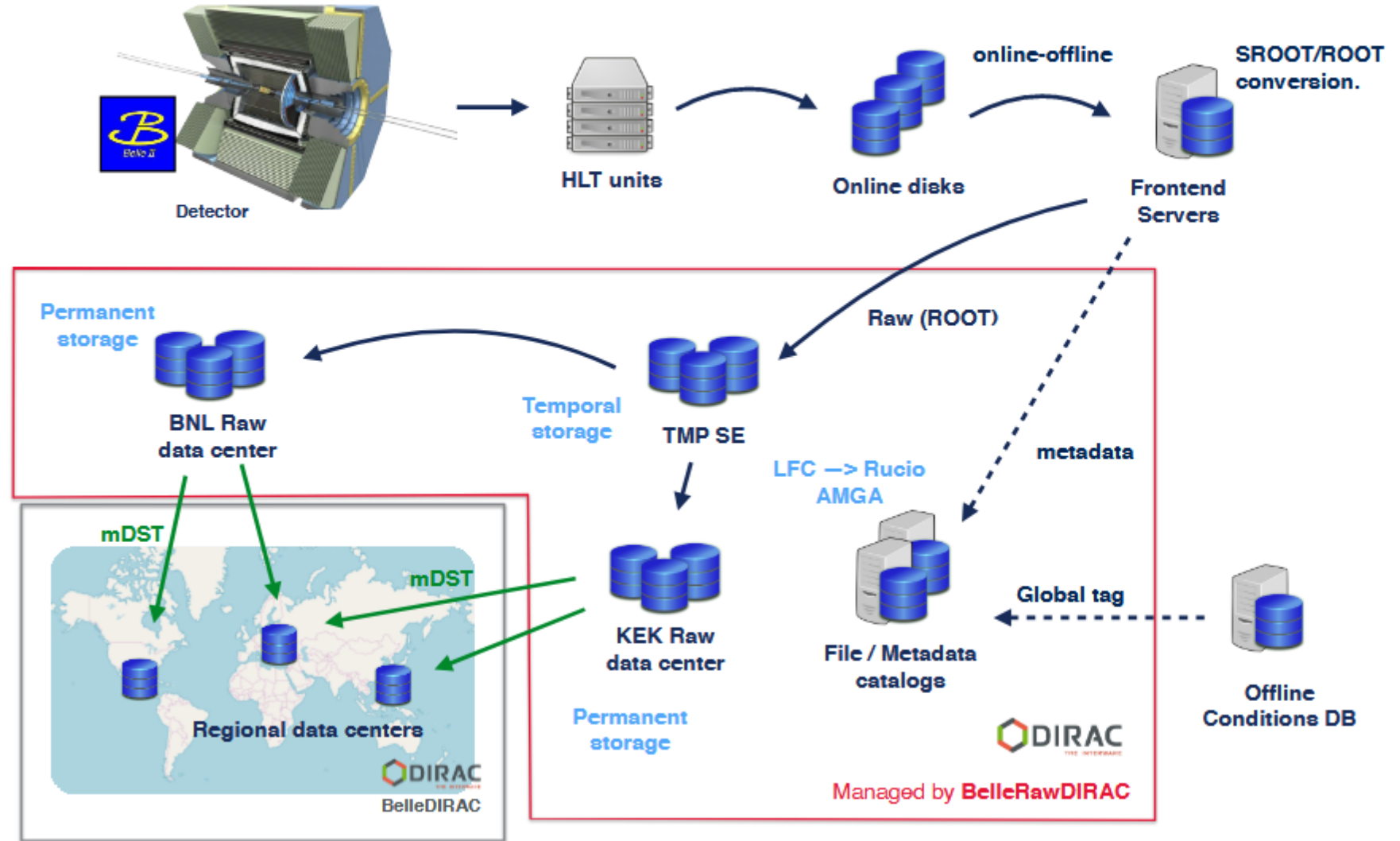


# Raw Data Cycle



# Online - Offline - Grid

- BelleRawDIRAC is an extension of DIRAC.
- It is partially independent from the production activities (**BelleDIRAC**).
- It takes care of the **upload, registration,** and monitoring the **replication** for raw and HLT skim data files.
- Per file, the status of the tasks is collected. Once the replication to both sites is finished, the integrity of the file is verified in the raw data centers.



# Online - Offline - Grid

## RUCIO SUBSCRIPTION

- BelleRawDIRAC extension of DIRAC
- It is partially from the production activities (BelleRawDIRAC)
- It takes care of **registration**, and the **replication** of HLT skim data
- Per file, the status is collected. Once replication is finished, the integrity is verified in the production centers.



- Subscriptions for /belle/Raw :
  - **KEK-TMP-SE -> KEK-RAW-SE**
  - **KEK-TMP-SE -> BNL-TMP-SE**
    - From **BNL-TMP-SE** to **BNL-TAPE-SE** by chain configured in Rucio.
  - Verified ✓
- Subscriptions for /belle/hRaw/eXXXX/{hadron, delayedBhabha}:
  - **KEK-TMP-SE -> KEK-RAW-SE**
  - **KEK-TMP-SE -> BNL-TMP-SE**
    - From **BNL-TMP-SE** to **BNL-TAPE-SE** by chain configured in Rucio.
  - To verify ⚠
- Subscriptions for /belle/hRaw/eXXXX/(others)
  - **KEK-TMP-SE -> BNL-TMP-SE**
  - To verify ⚠

SROOT/ROOT conversion.



Content servers



Offline Conditions DB

# RAW Data Centres Activation

		Name	ResourceT...	Stat...	Status	Reason	DateEffective	LastCheck...	TokenOwner	TokenExpir...
+	<input type="checkbox"/>	UVic-ObjectStorage-SE	StorageEle...	4 el...	Degraded	Not comple...				
+	<input checked="" type="checkbox"/>	CNAF-TAPE-SE	StorageEle...	4 el...	Active	All Active				
+	<input checked="" type="checkbox"/>	BNL-TAPE-SE	StorageEle...	4 el...	Active	All Active				
+	<input checked="" type="checkbox"/>	KIT-TAPE-SE	StorageEle...	4 el...	Active	All Active				
+	<input type="checkbox"/>	DESY-TAPE-SE	StorageEle...	4 el...	Unknown	All Unknown				
+	<input type="checkbox"/>	IN2P3CC-TAPE-SE	StorageEle...	4 el...	Unknown	All Unknown				

E' in corso una revisione delle necessità di spazio su TAPE per Belle II per il 2021 principalmente per via degli attuali constraint sul trigger.

Secondo le nuove stime è possibile che avremmo bisogno di utilizzare per quest'anno fino a 600TB su TAPE al CNAF anziché i 350TB richiesti.

La cosa riguarda tutti TAPE systems