Spotkanie Polish WLCG z Przedstawicielami Eksperymentów LHC

Michał Bluj, Jacek Kitowski

Virtual Meeting, 27.6.2023 (14:00-15:30)

Realizacja zobowiązań centrów KDM

1. Podsumowanie ostatniego okresu działalności
2. Informacja nt. realizacji zobowiązań w 2022 i 2023
3. Ustalenia na 2024 w zakresie wielkości „pledges” i uzgodnienie obsługi zobowiązań
4. Propozycja terminu dostarczenia wartości pledges na 2024: 15.9.2023

Podsumowanie ostatniego okresu

1. Poprzednie spotkanie Polish WLCG i Przedstawicieli eksperymentów
   - 10.1.2023 - minuty

2. C-RRB – prof. Michał Bluj
   - 25.4.2023

3. GDB – prof. Jacek Kitowski
   - 12.4.2023
   - 21.6.2023

Zobowiązania na 2022 i 2023

for 2022	formally WLCG (CRIC): ACK, PCSS, NCBJ; rule of thumb: **1 core ca. 10-14 HS06**									
	Experiment - Pledges									
	Alice*		Atlas**		CMS		LHCb		total	
	HS06	TB	HS06	TB	HS06	TB	HS06	TB	HS06	TB
ACK			23 800	2 130	5 150	200			28 950	2 330
PCSS	22 000	1 900							22 000	1 900
NCBJ					5 150	650	8 625	0	13 775	650
pledges total	**22 000**	**1 900**	**23 800**	**2 130**	**10 300**	**850**	**8 625**	**0**	**64 725**	**4 880**
required	53 689	5 517	23 800	2 130	10 300	843	8 625			
pledges/required	41%	34%	100%	100%	100%	101%	100%			
% incr.total fed 2023			18,2	17,4						
required/pledges 2023	30 000	2 500	28 132	2 501						
shares, %, 2022	5,3 (T1 + T2)		1,5 (T2)		0,86 (T2)		2,5 (T2)			

for 2023	formally WLCG (CRIC): ACK, PCSS, NCBJ; rule of thumb: **1 core ca. 10-14 HS06**									
	Experiment - Pledges (CMS & LHCb corrected/introduced to WLCG by Panos 5.10.2022. Later LHCb changed)									
	Alice* - OK		Atlas - OK		CMS - OK		LHCb - OK		total	
	HS06	TB	HS06	TB	HS06	TB	HS06	TB	HS06	TB
ACK			26 205	2 520	5 150	425			31 355	2 945
PCSS	30 800	3 000							30 800	3 000
NCBJ					5 150	425	63 000	600	68 150	1 025
pledges total	**30 800**	**3 000**	**26 205**	**2 520**	**10 300**	**850**	**63 000**	**600**	**130 305**	**6 970**
required	60 500	6 300	26 205	2 520	10 206	885	8 625			
pledges/required	51%	48%	100%	100%	101%	96%				
% incr.PL 2024	15	15	10	15	10	10				
required/pledges 2024	35 420	3 450	28 826	2 898	11 330	935				
shares, %, 2023	5,2 (T1 + T2)		1,5 (T2)		0,86 (T2)		2,5 (T2)			

New benchmark HEPScore23 in production from 1 April 2023 (replacement of HS06) (see GDB 12.4.2023)

ALICE (1.4.2022-31.3.2023)

ALICE HS06 EGI accounting	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total	Percent	Average	Pledges
CYFRONET-LCG2	6 745	2 115	3 522	3 512	3 594	1 459	321	1 416	6 971	5 808	3 084	3 411	41 957	19,55%		
PSNC	13 581	13 191	11 848	11 457	9 110	10 138	12 780	10 925	14 844	22 037	19 139	22 940	171 991	80,13%		
WUT	125	143	140	101	125	40	0	0	0	0	0	24	699	0,33%		
Total	20 451	15 449	15 510	15 070	12 828	11 638	13 101	12 340	21 815	27 845	22 223	26 376	214 647		**17 887**	**22 000**
Percent	9,53%	7,20%	7,23%	7,02%	5,98%	5,42%	6,10%	5,75%	10,16%	12,97%	10,35%	12,29%	100,00%			
ALICE TB storage CRIC																
PSNC used	205	205	205	205	205	257	416	671	913	1 203	1 258	722	6 465		**539**	
PSNC allocated	282	282	282	282	282	2 324	2 603	2 603	2 603	2 603	2 603	2 603	19 352		**1 613**	**1 900**
Percent	72,70%	72,70%	72,70%	72,70%	72,70%	11,06%	15,98%	23,70%	35,07%	46,22%	48,33%					
ALICE TB storage MonAlisa																
PSNC used									833		1 071				**477**	
PSNC size											2 400					

Resource Centre	Apr 2023	May 2023	Total
CYFRONET-LCG2	1,730	1,360	**3,089**
PSNC	12,083	9,750	**21,833**
WUT	53	46	**98**
Total	13,865	11,155	25,020

HS06
Ave (4-5.2023) 10 917
Pledges 2023 30 800

Storage
PSNC (1.5.2023) CRIC used 722 TB
PCSS 20.6.2023 AliMon used 786 TB
PCSS 20.6.2023 AliMon size 2 312 TB
Pledges 2023 3 000 TB

ATLAS (1.4.2022-31.3.2023)

ATLAS HS06 EGI accounting	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total	Percent	Average	Pledges
CYFRONET-LCG2	23 736	23 604	29 096	32 370	37 504	22 521	2 527	26 477	77 604	37 161	49 982	31 672	394 253	100%		
Total	23 736	23 604	29 096	32 370	37 504	22 521	2 527	26 477	77 604	37 161	49 982	31 672	394 254		**32 854**	**23 800**
Percent	6,02%	5,99%	7,38%	8,21%	9,51%	5,71%	0,64%	6,72%	19,68%	9,43%	12,68%	8,03%	100,00%			
ATLAS TB storage CRIC																
CYFRONET-LCG2 used	1 635	1 637	1 624	1 595	1 584	1 636	1 636	1 630	1 598	1 621	1 610	1 599	19 405		**1 617**	**2 130**
CYFRONET-LCG2 allocated	1 836	1 836	1 836	1 836	1 836	1 836	1 836	1 836	1 836	1 836	1 836	2 603	22 799		**1 900**	

Resource Centre	Apr 2023	May 2023	Total
CYFRONET-LCG2	26,496	43,674	70,170
Total	26,496	43,674	70,170

HS06
Ave (4-5.2023) 35 085
Pledges 2023 26 200

Storage
Cyfronet (1.5.2023) (CRIC) 1 550 TB
Cyfronet ave. (PANDA) 1 700 TB
Cyfronet od 1.6.2023 (PANDA) **700 TB**
Pledges 2023 2 500 TB

CMS (1.4.2022-31.3.2023)

CMS HS06 EGI accounting	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total	Percent	Average	Pledges
CYFRONET-LCG2	0	0	0	0	0	0	0	0	0	1 823	13	7 653	9 489	5,96%		
NCBJ-CIS	3 847	550	3 995	1 833	6 699	21 526	23 716	32 357	31 046	17 925	3 177	3 098	149 770	94,04%		
Total	3 847	550	3 995	1 833	6 699	21 526	23 716	32 357	31 046	19 748	3 191	10 751	159 259		**13 272**	**10 300**
Percent	2,42%	0,35%	2,51%	1,15%	4,21%	13,52%	14,89%	20,32%	19,49%	12,40%	2,00%	6,75%	100,01%			

Currently not all WLCG sites are instrumented for storage space reporting.
The report includes partial data, only for sites and VOs where storage space reporting is enabled.

Resource Centre	Apr 2023	May 2023	Total
CYFRONET-LCG2	55,854	89,088	**144,942**
NCBJ-CIS	4,927	5,177	**10,104**
Total	**60,781**	**94,265**	**155,046**

HS06
Ave (4-5.2023) 77 523
Pledges 2023 10 300

Storage (RUCIO) 26.6.2023
Cyfronet alloc. 400 TB
Cyfronet used 12,2 TB
NCBJ alloc. 630 TB
NCBJ used 533 TB
Pledges 2023 850 TB

LHCb (1.4.2022-31.3.2023)

LHCb HS06 EGI accounting	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total	Percent	Average	Pledges
CYFRONET-LCG2	638	536	554	519	559	644	144	559	929	550	3 236	11 863	20 730	3,42%		
NCBJ-CIS	50 273	33 444	48 270	68 608	62 199	38 076	45 383	27 473	36 251	46 348	54 141	66 278	576 746	95,26%		
PSNC	900	907	776	987	919	660	900	553	734	598	7	11	7 953	1,31%		
Total	51 811	34 887	49 600	70 114	63 677	39 381	46 427	28 585	37 914	47 496	57 384	78 153	605 429		**50 452**	**8 625**
Percent	8,56%	5,76%	8,19%	11,58%	10,52%	6,50%	7,67%	4,72%	6,26%	7,85%	9,48%	12,91%	100,00%			

Storage 2022	
NCBJ alloc.	600 TB
NCBJ used	533 TB
Pledges 2022	600 TB

Currently not all WLCG sites are instrumented for storage space reporting.
The report includes partial data, only for sites and VOs where storage space reporting is enabled.

Resource Centre	Apr 2023	May 2023	Total
CYFRONET-LCG2	6,388	3,455	**9,844**
NCBJ-CIS	64,771	65,397	**130,169**
PSNC	10	4	**15**
Total	71,170	68,857	140,027

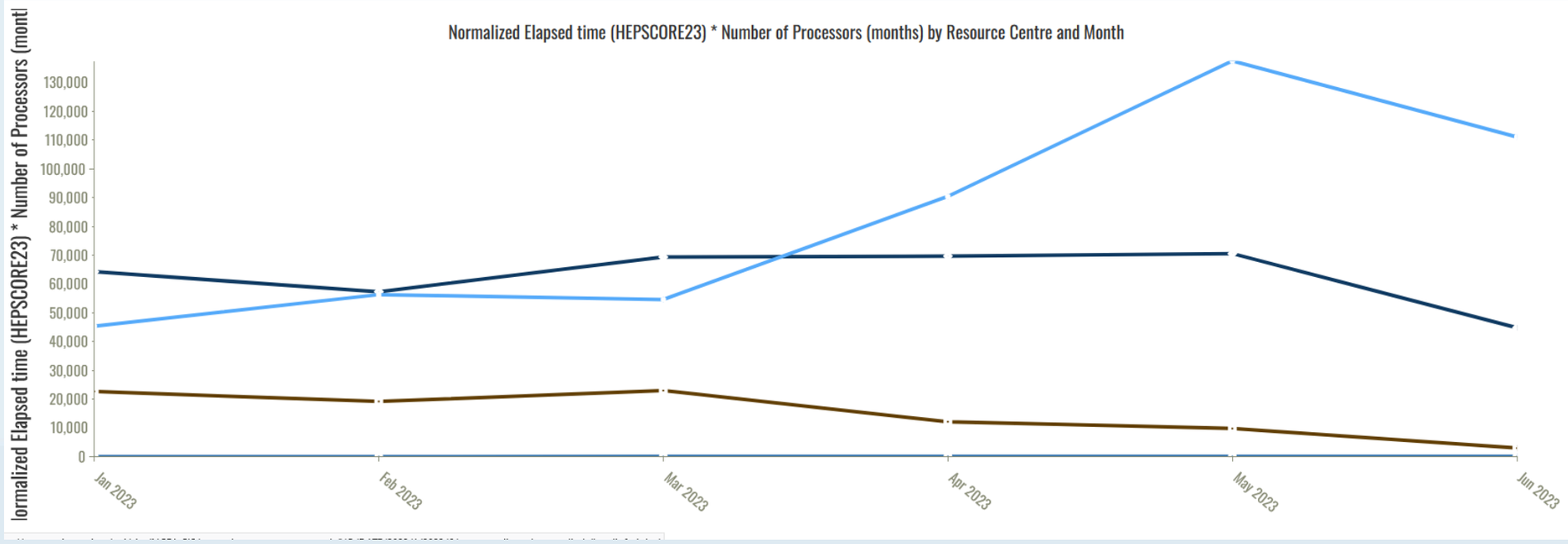
Ave (4-5.2023) 70 014
Pledges 2023 63 000

I – VI 2023 All Partners' Performance

Poland — Normalized Elapsed time (HEPSCORE23) * Number of Processors (months) by Resource Centre and Month (Custom VOs)

Resource Centre	Jan 2023	Feb 2023	Mar 2023	Apr 2023	May 2023	Jun 2023	Total	Percent
CYFRONET-LCG2	45,341	56,315	54,599	90,468	137,576	111,131	**495,431**	**51.55%**
NCBJ-CIS	64,273	57,319	69,377	69,699	70,574	44,778	**376,020**	**39.12%**
PSNC	22,635	19,147	22,952	12,094	9,754	2,950	**89,530**	**9.32%**
WUT	0	0	24	53	46	27	**150**	**0.02%**
Total	**132,250**	**132,780**	**146,952**	**172,313**	**217,950**	**158,886**	**961,131**	
Percent	**13.76%**	**13.81%**	**15.29%**	**17.93%**	**22.68%**	**16.53%**		

1 - 4 of 4 results ‹ 1 › Number of rows per page 30



C-RRB

GDB 12.4.2023

GDB

Wednesday 12 Apr 2023, 10:45 → 16:00 Europe/Zurich

31/3-004 - IT Amphitheatre (CERN)

Erik Mattias Wadenstein (University of Umeå (SE)) ,
Jose Flix Molina (CIEMAT - Centro de Investigaciones Energéticas Medioambientales y Tec. (ES))

Description Monthly meeting of the WLCG Grid Deployment Board
See also Twiki GDB area for actions and summaries.

10:45 → 11:00 **Introduction**
Speaker: Jose Flix Molina (CIEMAT - Centro de Investigaciones Energéticas Medioambientales y Tec. (ES))
20230412_GDB_intr...

11:00 → 11:30 **Security Infrastructure (development and status report of the SOC WG)**
Speakers: Dr David Crooks (UKRI STFC), Liviu Valsan (CERN)
2023-04-12_GDB_S...

11:30 → 12:00 **Security operations (the SAFER trust group and recent ransomware attacks)**
Speaker: Romain Wartel (CERN)
2023 - WLCG GDB C...

12:00 → 12:30 **Benchmarking switch status**
Speakers: Domenico Giordano (CERN), Julia Andreeva (CERN)
Draft_HEPScore_ru... GDB-12-04-2023-gio... NewBenchmarkGD...

12:30 → 14:00 **Lunch break**

14:00 → 15:00 **Joint FTS and XRootD Workshop 2023 summary**

14:00 **FTS summary**
Speaker: Steven Murray (CERN)
fts_summary_at_gd...

14:30 **XRootD summary**
Speaker: Guilherme Amadio (CERN)
xrootd-workshop-20...

15:00 → 15:30 **Quantum computing initiative @CERN**
Speaker: Alberto Di Meglio (CERN)
CERN QTI Overview... CERN QTI Overview...

15:30 → 16:00 **HEPIX Spring 2022 Workshop summary**
Speaker: Tomoaki Nakamura
2023-04-12_TNaka...

See materials „HS23” at indico

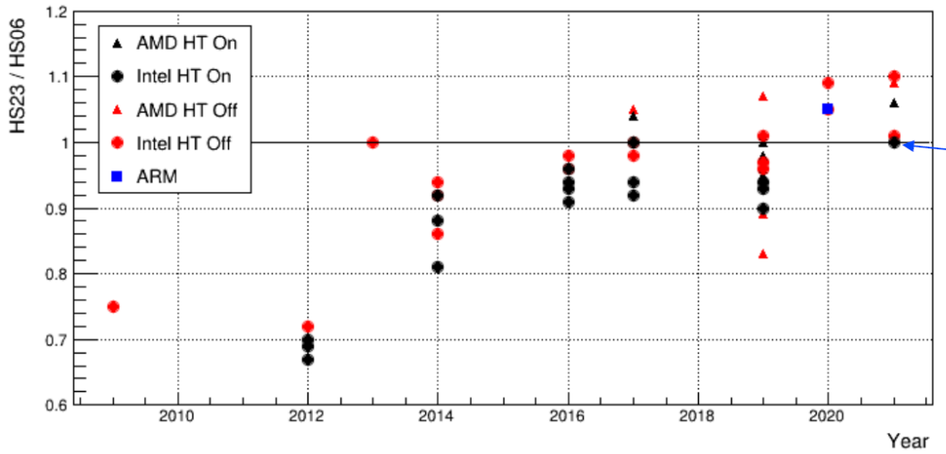
HEPScore23 status

D. Giordano (CERN/IT)
On behalf of HEPScore Deployment TF and HEPiX Benchmarking WG

GDB
12 April 2023

HS23 vs HEP-SPEC06

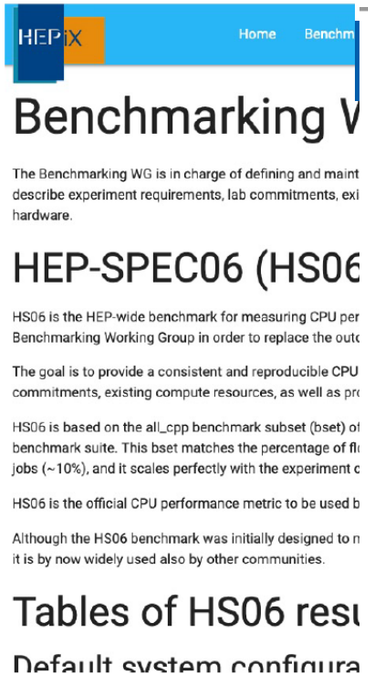
Clear trend: HS23 score is higher than HS06 for newer CPU models



Reference machine
(Gold 6326 @ 2.90GHz)
Fixed HS23==HS06

Next steps

- ❑ Update the official documentation in the HEPiX web page
- ❑ Monitor the adoption by sites
  - Support the usage of the benchmark for future requests
    - Summer 2023 for 2025


HEPiX Home Benchm

Benchmarking W

The Benchmarking WG is in charge of defining and maint
describe experiment requirements, lab commitments, exi
hardware.

HEP-SPEC06 (HS06

HS06 is the HEP-wide benchmark for measuring CPU per
Benchmarking Working Group in order to replace the outc

The goal is to provide a consistent and reproducible CPU
commitments, existing compute resources, as well as pr

HS06 is based on the all_cpp benchmark subset (bset) of
benchmark suite. This bset matches the percentage of fl
jobs (~10%), and it scales perfectly with the experiment c

HS06 is the official CPU performance metric to be used b

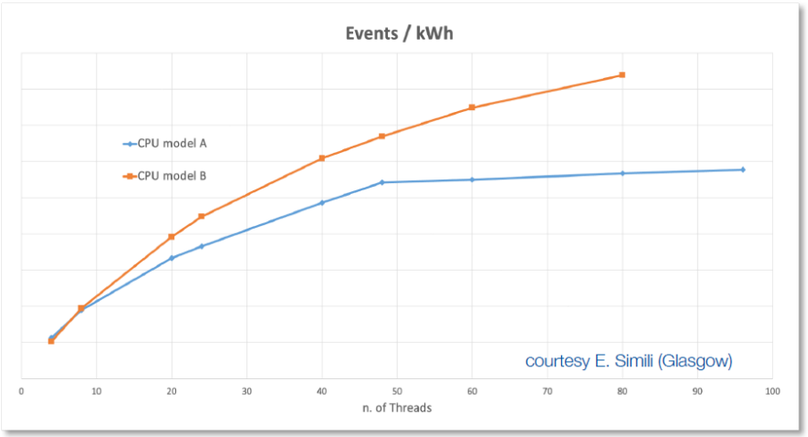
Although the HS06 benchmark was initially designed to n
it is by now widely used also by other communities.

Tables of HS06 resu

Default system configura

Performance as Events/kWh

The ability of HEPScore23 to run on x86 and ARM nodes has already enabled studies of energy consumption vs performance



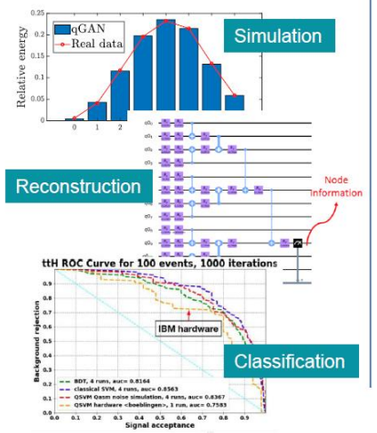
CERN QTI: Overview

Alberto Di Meglio

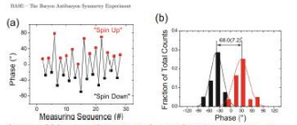
QUANTUM TECHNOLOGY INITIATIVE

R&D Interests

Computing



Sensing

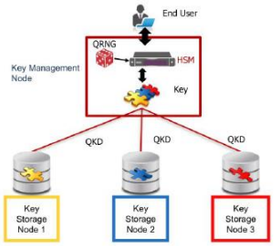


https://doi.org/10.1140/epjst/e2015-02607-4

Low-energy experiments, quantum states measurements, nano-technologies

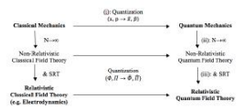
Future HEP Detectors

Communications

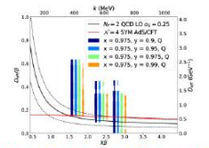


QKD infrastructures Quantum Internet

Theory



Quantum Field Theory



https://cds.cern.ch/record/2703396

Lattice QCD

Many pilot projects already started as part of the **CERN openlab quantum** programme (https://openlab.cern/quantum)

Quantum Computing at CERN

- Assess **QC potential** in HEP
  - Development and optimization of algorithms targeted for **realistic** use cases
  - Ideal and NISQ configurations
- Build expertise on **state-of-the-art software stack**
  - Simulators, hardware specific vs agnostic frameworks, …
  - Optimisation of classical computing resources for QC studies (HPC)
- Set up a distributed QC **Simulation platform**
  - Provide **resource access** to the community for R&D

Initial investigations set a baseline for **prioritisation** and **systematisation**

- Start on **Quantum Machine Learning**
  - Relatively loose definition
  - Variational approach / Robustness to noise

Interest QC **algorithms beyond QML**

Now a **more formal approach** to algorithms, methods, error characterisation and correction

- NISQ optimisations
- Data embedding / scalability / problem dimensionality

Different hardware

- "Mainstream" (Semi-conductors, ions, …) (IBM, Google, Rigetti,IonQ)
- Photon QC (Xanadu) , Quantum Annealer (D-Wave)
- Quantum-inspired computing (Fujtsu digital, Toshiba SBM)

QML models implementations for NISQ

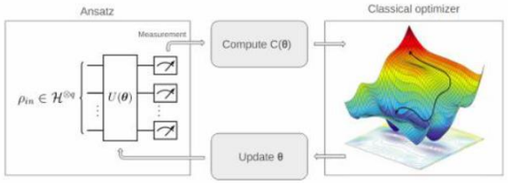
Variational algorithms - EXPLICIT

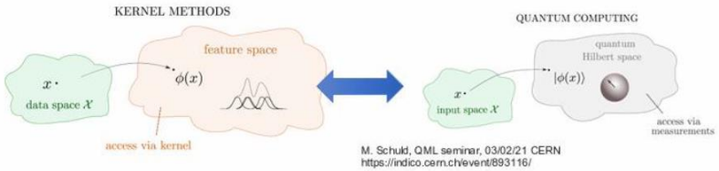
- Flexible parametric ansatz: design can leverage data symmetries[1]
- Can use **gradient-free** methods or **stochastic gradient-descent**
- **Data Embedding** can be **learned**
- **Better generalization**[1]

Kernel methods - IMPLICIT

- **Feature maps** as **quantum kernels**
- **Convex** losses, **global** minimum
- Identify kernel classes that relate to specific **data structures**[3]
- **Better accuracy**[2]

→ *What is easiest to use/define?*





M. Schuld, QML seminar, 03/02/21 CERN https://indico.cern.ch/event/893116/

1-Bogatskiy, Alexander, et al. "Lorentz group equivariant neural network for particle physics." PMLR, 2020

2-S.Jerbi at all., Quantum Machine Learning Beyond Kernel Methods https://arxiv.org/abs/2110.13162

3- Glick, Jennifer R., et al. "Covariant quantum kernels for data with group structure." arXiv:2105.03406 (2021)

Do they really differ? Where to focus?

GDB 21.6.2023

GDB (co-located at the EGI Conference 2023 in Poznan)

Wednesday 21 Jun 2023, 14:00 → 18:30 Europe/Zurich

Room Oslo (Poznan)

Erik Mattias Wadenstein (University of Umeå (SE)) ,
Jose Flix Molina (CIEMAT - Centro de Investigaciones Energéticas Medioambientales y Tec. (ES))

Videoconference GDB — Join

14:00 → 14:10 **Introduction** — 10m
Speaker: Jose Flix Molina (CIEMAT - Centro de Investigaciones Energéticas Medioambientales y Tec. (ES))
20230621_GDB_intr...

14:10 → 14:45 **Tier-1 deployment at NCBJ**
Speaker: Henryk Giemza (National Centre for Nuclear Research (PL))
NCBJ Proto-WLCG ...

14:45 → 15:15 **Using EGI Check-In tokens**
Speakers: Valeria Ardizzone, Andrei Tsaregorodtsev (Aix Marseille Univ, CNRS/IN2P3, CPPM, Marseille, F
Using EGI Check-in t...

15:15 → 15:40 **UMD update plans**
Speaker: Joao Antonio Tomasio Pina (LIP - Laboratorio de Instrumentação e Física Experimental de Particul
UMD/CMD Softwar... UMD_CMD Softwar...

15:40 → 16:00 **Status report on sites migrating away from DPM**
Speaker: Alessandro Paolini
2023-06-21_DPM-c...

16:00 → 16:30 **Coffee break** — 30m

16:30 → 17:00 **EOS Workshop summary** — 30m
Speaker: Oliver Keeble (CERN)
EOS 2023 WS Sum...

17:00 → 17:30 **Status of the new Helpdesk** — 30m
Speaker: Pavel Weber (KIT - Karlsruhe Institute of Technology (DE))
GDB_Helpdesk_Poz...

17:30 → 18:00 **ARC update and future outlook** — 30m
Speaker: Maiken Pedersen (University of Oslo (NO))
ARC7 preparation st... ARC7 preparation st...

18:00 → 18:30 **Cloud Services for Synchronisation and Sharing (CS3) 2023 summary** — 30m
Speaker: Oliver Keeble (CERN)
CS3_GDB.pdf

Tier-1 deployment at NCBJ

Henryk Giemza

NARODOWE CENTRUM BADAŃ JĄDROWYCH ŚWIERK

Department of Complex Systems (DUZ)

Mission

Development of IT infrastructure and services for power engineering and scientific applications including high energy physics

Projects and co-operations

pracelab 2 WLCG European XFEL KMD EuroHPC PL

Activities

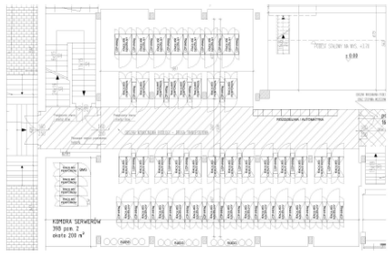
- HPC (T2K, LSST, EuXFEL, J-PET, HTGR, NOMATEN, PolFEL)
- Calculations of power distribution (IDEA)
- Grid computing (CMS, LHCb)
- CFD (Symkom)
- Cyber security of industrial networks
- Render farm (commercial)

Świerk Computing Centre

Resources

- Computing
  - 1.4 PFLOPS
  - 36000 cores, 200 TB RAM
- Disk storage
  - 26 PB (Lustre, Isilon, Netapp, dCache)
- Tape storage
  - TSM4500, 16 PB (uncompressed)
- Network
  - Internet: 2 x 8 Gbps
  - Academic internet: 100 Gbps
  - Internal Infiniband network

- Ongoing upgrades
  - New server room
  - New computing resources (1.6 PFLOPS in 2023, PraceLab2)
  - New storage resources (25 PB in 2023, KMD)



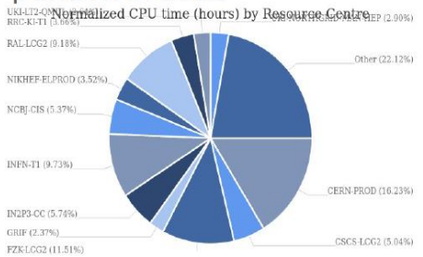
NCBJ-CIS Grid Site

Support of WLCG Experiments

7 years of support as opportunistic resources**, 2 years** as a part of Polish WLCG federation

- CMS, Tier-2
  - T2_PL_Swierk
  - 34th position in 2021
  - 28th position in 2022
- LHCb, Tier-2D (Proto Tier-1)
  - LCG.NCBJ.pl. LCG.NCBJ-CIS.pl
  - 6th position in 2021
  - 9th position in 2022

UKI-LT2-RHUL	21,829,604	21,829,604	0.17%
BEIJING-LCG2	25,805,583	25,805,583	0.2%
INFN-ROMA1-CMS	26,870,383	26,870,383	0.21%
NCBJ-CIS	26,773,001	26,773,001	0.21%
FI_HIP_T2	37,278,902	37,278,902	0.29%
NCG-INGRID-PT	47,207,275	47,207,275	0.37%
UKI-SOUTHGRID-BRIS-HEP	51,612,799	51,612,799	0.4%



NCBJ-CIS Proto-WLCG Tier 1

Computing

- Architecture
  - Two **ARC6** Computing Elements (ce.cis.gov.pl, ce2.cis.gov.pl)
  - Dedicated resources provided by **SLURM**
  - Shared session directory (Netapp)
  - **Local scratch space** and CVMFS cache (SSD)
- Automatic deployment and configuration (Foreman+Puppet)
- Monitoring (Zabbix)

NCBJ-CIS Proto-WLCG Tier 1

Disk storage

- Architecture
  - **dCache 8.2**
  - WebDAV, xroot, GridFTP doors (se.cis.gov.pl)
  - 3 disk nodes containing 11 LVM RAID6 pools each
- All data successfully migrated from DPM in February
- Automatic deployment and configuration (Foreman+Puppet)
- Monitoring (Zabbix)

NCBJ-CIS Proto-WLCG Tier 1

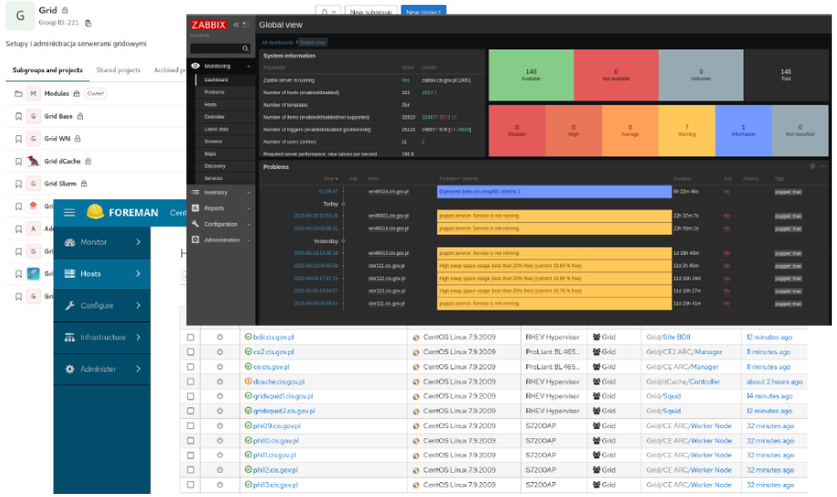
Tape storage

- Architecture
  - **dCache 8.2** + **ENDIT** + **Spectrum Protect**
  - shared namespace with disks
  - WebDAV, xroot, GridFTP, SRM doors (tape.cis.gov.pl)
  - **internal** dCache pools on servers connected to the tape library
- Partial configuration provided by Puppet
- Currently only internal monitoring provided by Spectrum Protect

NCBJ-CIS Proto-WLCG Tier 1

Services

- Grid
  - BDII
  - 2 CVMFS Squid
  - CMS Frontier Squid
  - Internal UI server
- Central
  - Zabbix, OpenNMS
  - Foreman + Puppet
  - Gitlab, Mattermost



DPM Migration campaign status

Alessandro Paolini
EGI Foundation

21-06-2023
EGI 2023 - GDB meeting

DPM Decommission and migration campaign

Introduction

- In Sept 2022 tickets were opened to sites providing DPM endpoints
- Sites have been encouraged to start the migration to a different storage element since the process will take time
  - Choosing the new storage solution depends on the expertise/experience of the sites and on the needs of the supported Vos
  - Currently available in UMD: dCache, Storm, EOS, XrootD.
- DPM team provided a script and a guide for the migration to dCache:
  - https://twiki.cern.ch/twiki/bin/view/DPM/DpmDCache
- Collecting migration plans
- Following-up the tickets along with DPM team to provide support in case of issues
- Migration to dCache should be completed by June 2023

- CERN IT will provide a minimal support to DPM until the EOL of CentOS 7, with very little effort:
  - only critical issues will be looked into

Not yet completed

By Feb 2023
- INFN-COSENZA (dCache)

Q1 2023
- BG05-SUGrid (EOS)

By May 2023
- TR-10-ULAKBIM (dCache)

By June 2023:
- CYFRONET-LCG2 (EOS)
- GRIF (EOS)
- IN2P3-IRES (DPM read-only from July)
- INFN-FRASCATI (dCache)
- INFN-ROMA1 (dCache)
- IR-IPM-HEP (dCache)
- UKI-LT2-Brunel (XrootD/CEPHFS)
- UKI-NORTHGRID-LIV-HEP (dCache)
- UNIBE-LHEP (dCache)

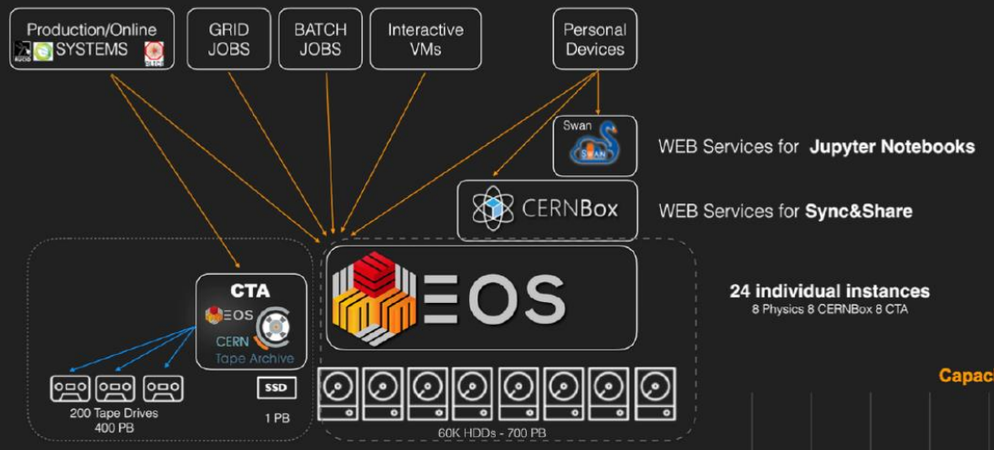
Q2 2023
- Australia-ATLAS (Dynafed)
- Australia-T2 (Dynafed)
- BEIJING-LCG2 (EOS)
- NCP-LCG2

Q3 2023
- UKI-SCOTGRID-DURHAM (XrootD/CEPHFS)

Q1 2024
- UKI-NORTHGRID-MAN-HEP (XrootD/CEPHFS)

No reply/not clear
- ATLAND
- GR-07-UOI-HEPLAB
- INDIACMS-TIFR (dCache)
- PSNC

EOS at CERN



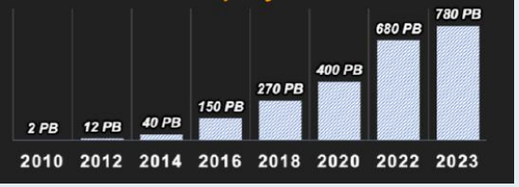
24 individual instances
8 Physics 8 CERNBox 8 CTA

2023 Targets

Total Space	780 PB
Files Stored	~8 Bil
# Storage Nodes	~1300
# Disks	~60000

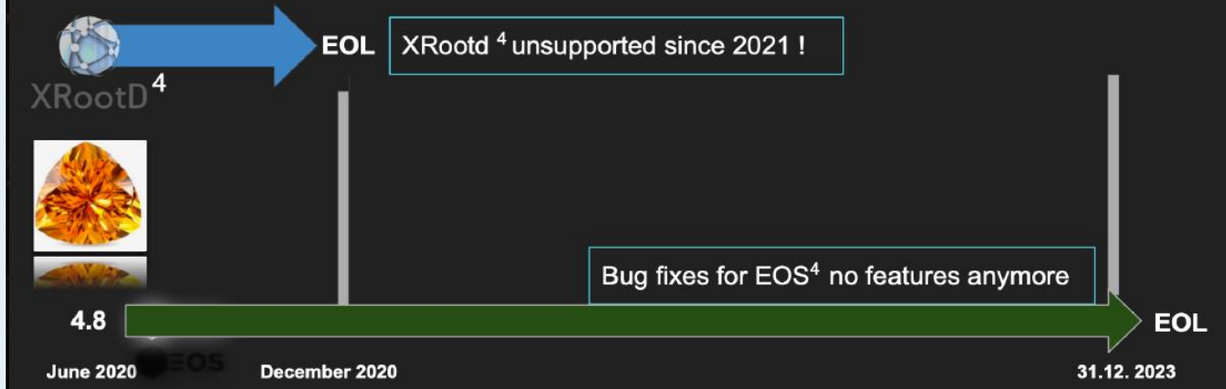
How is EOS used?

Capacity Evolution



EOS [4] EOL Plan

- **Update** to EOS[5] **until end of this year!**
- **Support stops** at end of this year!
- We will do bug fixing concerning security and stability!

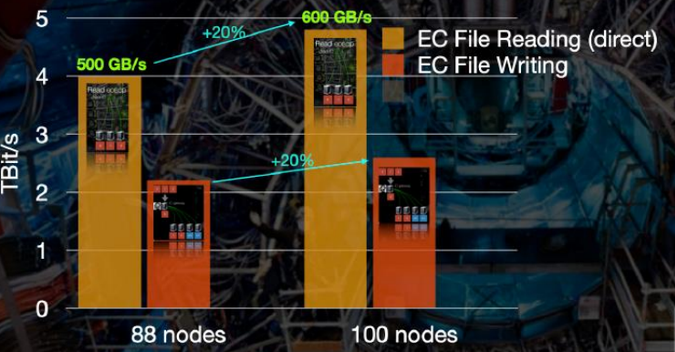


EOS [5] Releases Phases

- EOS[5] **was available since mid 2021**
- We probably don't need a major version release this year
  - even if XRootD might have one

O[2] Benchmarks 23/03/23

READ or WRITE
6800/7400 cp Streams 20G files



600 GB/s network traffic

Ustalenia – dla przypomnienia

Wg p. 4 Porozumienia i późniejszych ustaleń (w nawiasie osoby kontaktowe ośrodków koordynujących):

- Cyfronet dostarcza i koordynuje zasoby dla współpracy ATLAS oraz dostarcza zasoby dla CMS
  (Marek Magryś, Patryk Lasoń, Adrian Marszalik, Andrzej Zemła)

- NCBJ dostarcza i koordynuje zasoby dla współpracy LHCb oraz dla CMS
  (Wojciech Wiślicki, Michał Bluj, Henryk Giemza, Tomasz Fruboes)

- PCSS dostarcza i koordynuje zasoby dla współpracy ALICE
  (Krzysztof Kurowski, Norbert Meyer, Marcin Pospieszny, Radosław Januszewski)

Każdy Sygnatariusz Porozumienia (PCSS, Cyfronet, NCBJ) może udostępniać zasoby dla każdego eksperymentu, lecz koordynacja w ramach eksperymentu należy do ośrodka koordynującego.

Propozycja terminu dostarczenia wartości pledges na 2024: 15.9.2023

AOB