



Accounting system for the JINR Laboratories' experiments



Kashunin I., Mitsyn V., Strizh T.
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○ Load old WLCG Tier2 batch statistical data to the accounting system database

● Load old CMS Tier1 batch statistical data to the accounting system database

● Load the old batch statistics of the JINR Laboratories' experiments to the accounting system database

● Create an accounting script for the JINR Laboratories' experiments

● Visualize data

Accounting system base parameters

- ❖ **Number of jobs**
- ❖ **HS06 CPUclock in hours**
- ❖ **HS06 Wallclock in hours**
- ❖ **Number of cores per job**
- ❖ **Computing cluster efficiency**

Accounting system history

Parent Directory

- g2007
- g2007-05
- g2007-06
- g2007-07
- g2007-08
- g2007-09
- g2007-10
- g2007-11
- g2007-12
- g2008
- g2008-01
- g2008-02
- g2008-03
- g2008-04
- g2008-05
- g2008-06
- g2008-07
- g2008-08
- g2008-09
- g2008-10

Portable Batch System accounting statistics

- 1) CPUclock/Wallclock - Normalized to 1000 Specint2000
- 2) Exclude WLCG groups

A total of 234 accounting files will be processed.
The first record is dated 05/24/2007, last record is dated 12/31/2007.

Groupname	#jobs	CPUclock N-hours	Wallclock N-hours	Pct. Average Eff. #nodes	Average q-hours
TOTAL	6332	96128.42	47153.68	204	2.96
lcta	284	51421.30	4358.27	1180	4.48
lnur	1062	11823.26	4986.26	237	1.07
lhse	3667	10606.44	14090.89	75	1.00
lhse	363	9762.61	10741.52	91	1.00
foton2	195	6992.83	7325.39	95	1.00
lnup	735	5206.62	5329.07	98	1.00
ltph	26	315.36	322.29	98	1.00

2008-09-01 14:57 1.1K

2008-10-24 17:48 1.0K

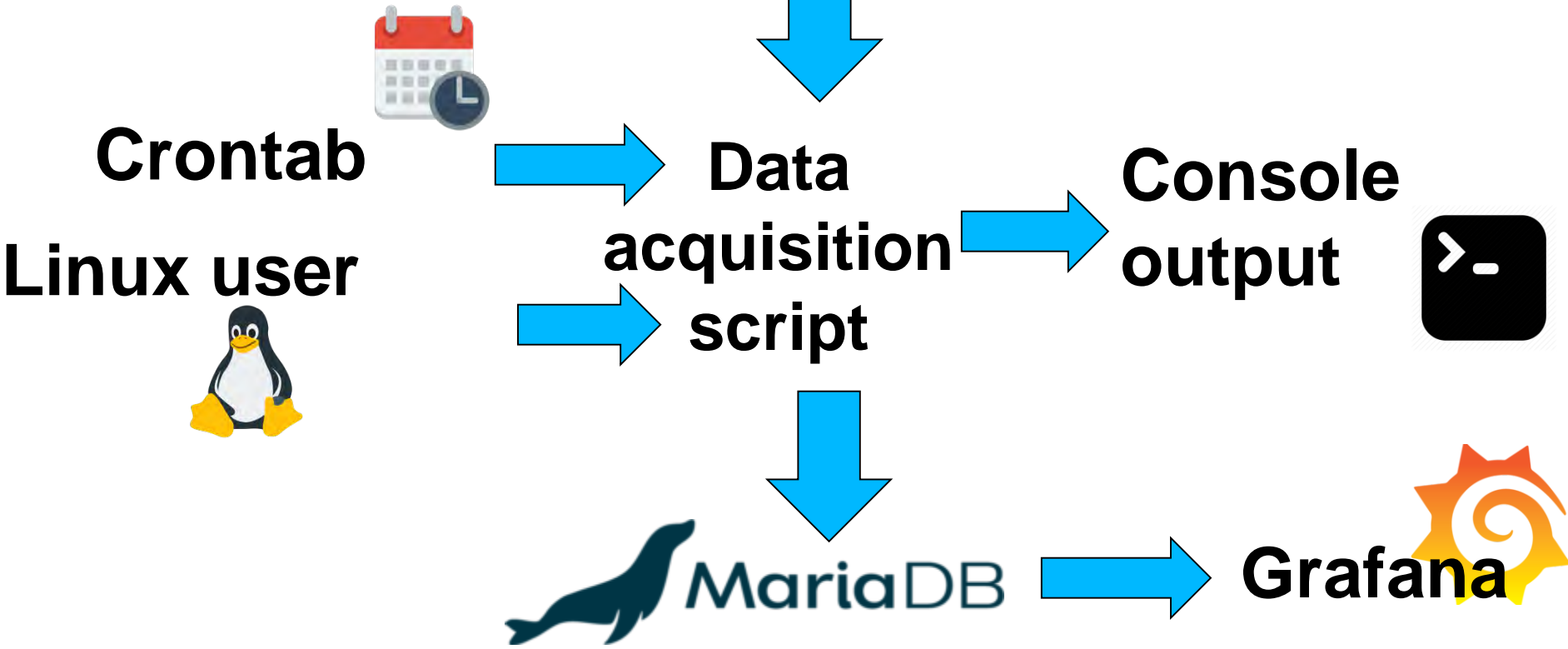
2008-11-01 07:06 1.0K

$$\text{HS06} = \text{SPECINT2000} * 4$$

Data acquisition and processing algorithm

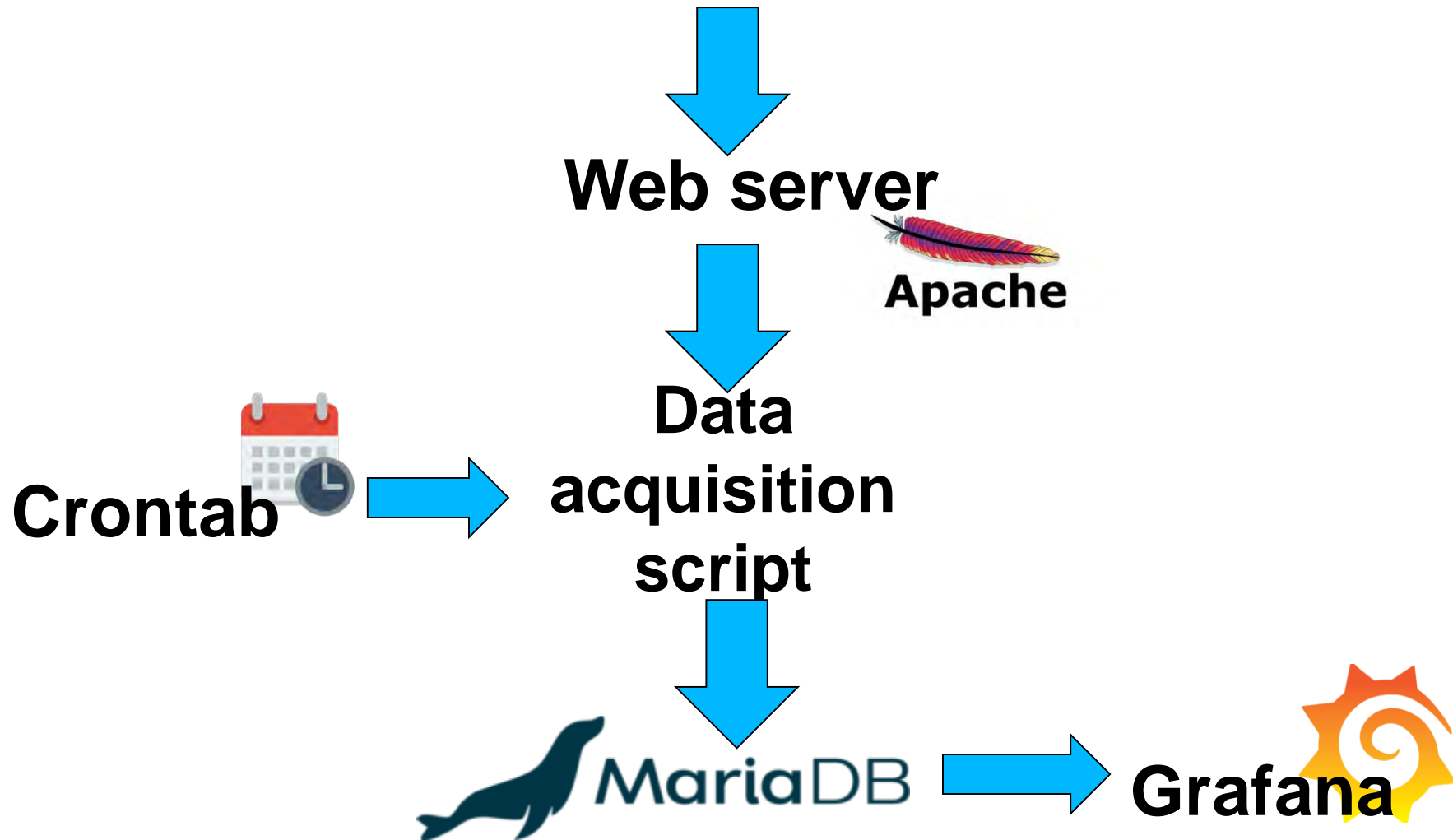


Batch system database

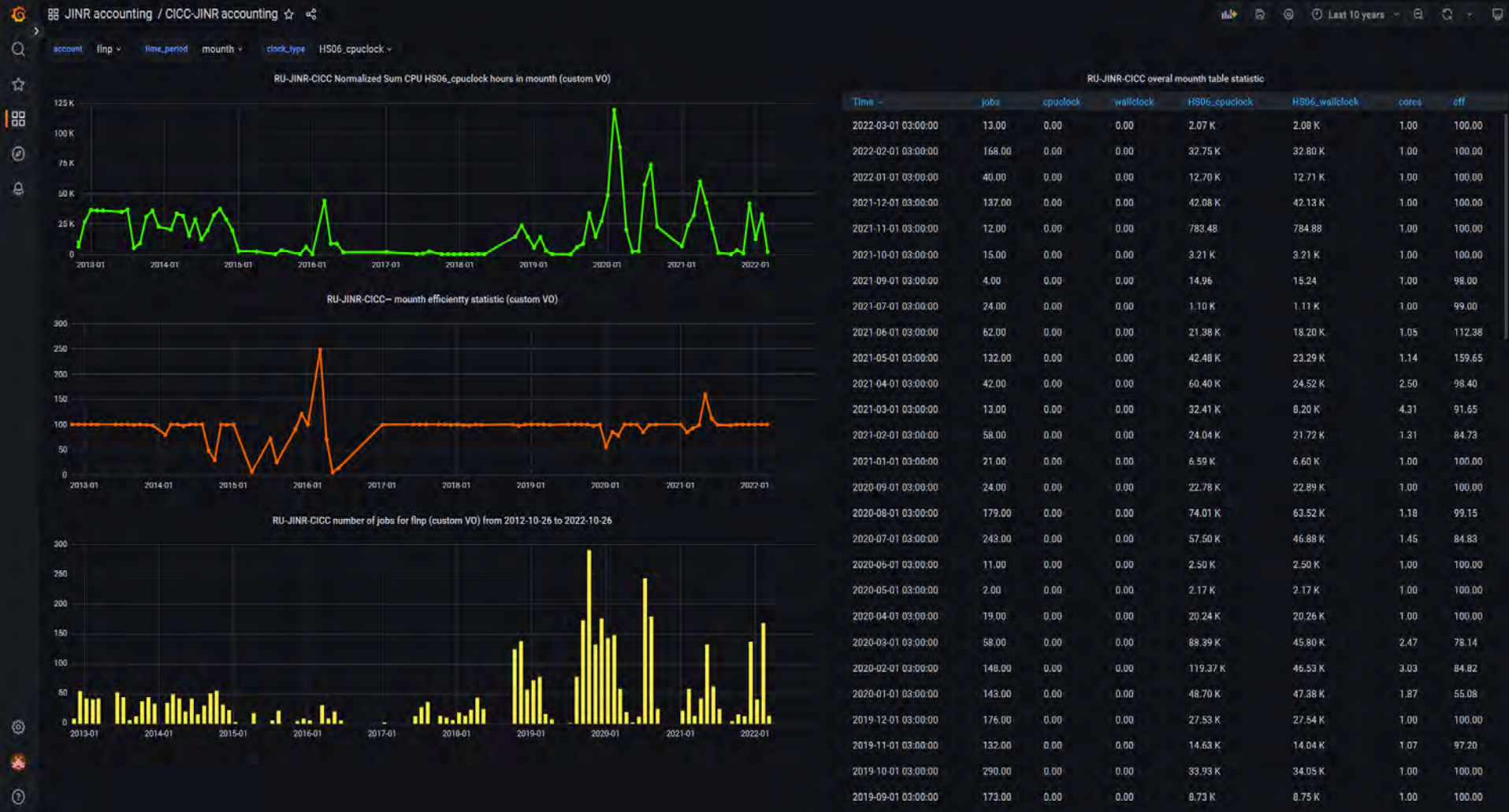


Torque/Maui statistical data load to the accounting system database

Batch system (Torque/Maui)

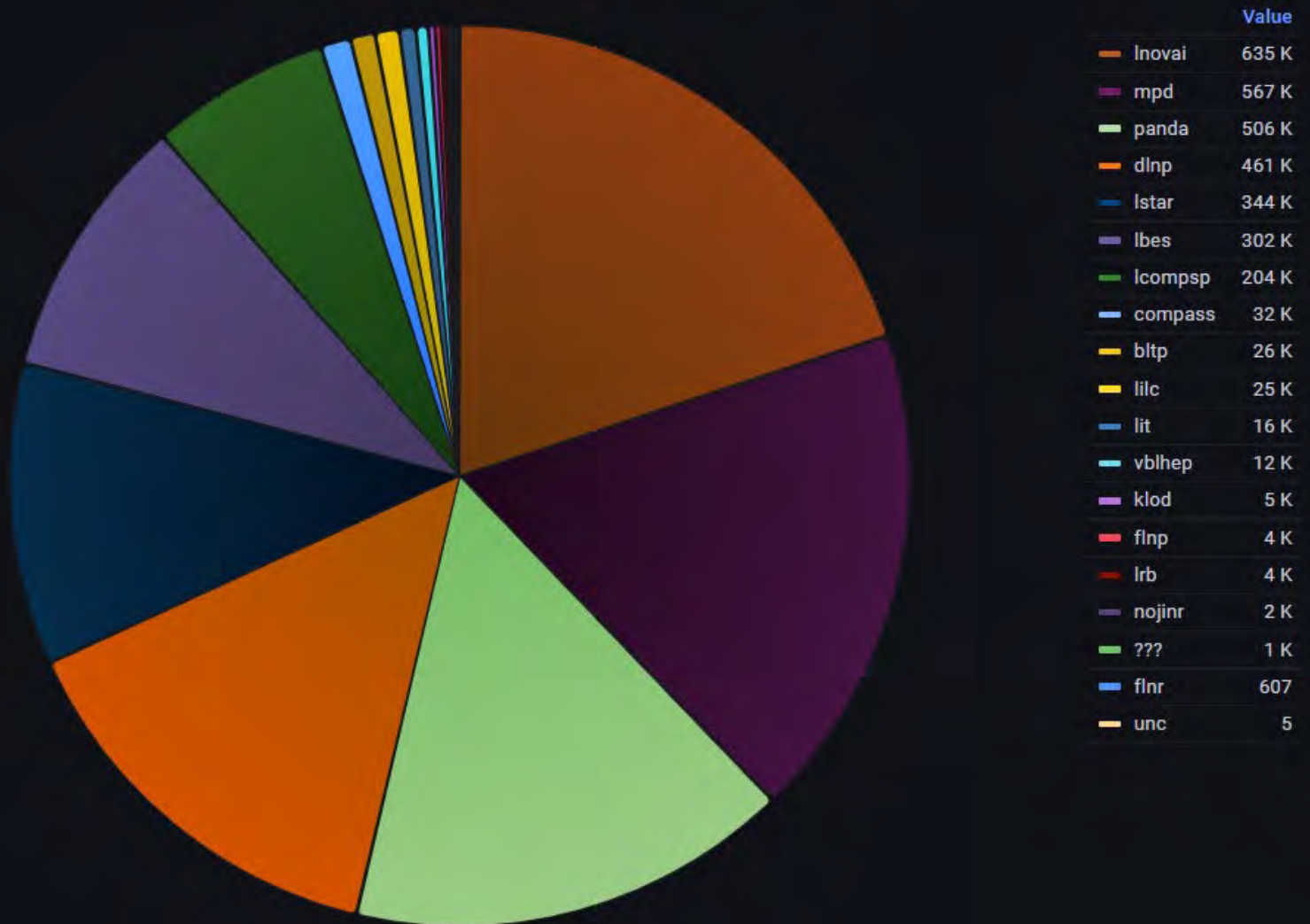


JINR Laboratories' experiments accounting system dashboard



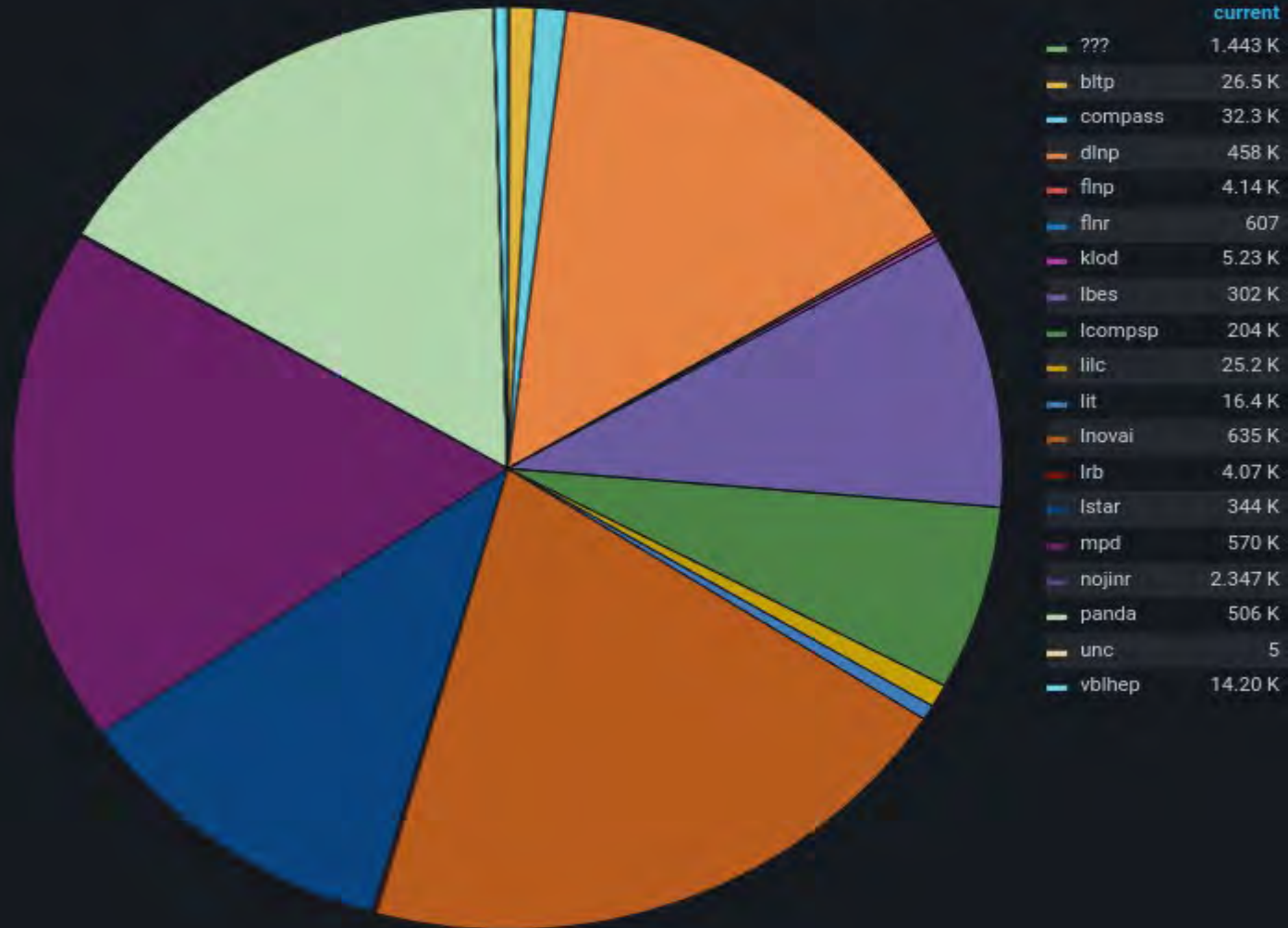
JINR Laboratories' experiments CPU statistics

RU-JINR-CICC jobs from 2012-10-26 to 2022-10-26



JINR Laboratories' experiments job statistics

RU-JINR-CICC jobs from 2012-08-02 to 2022-08-02



WLCG JINR Tier2 CPU statistics



Sum HS06_cpuclock hours for total (custom VO) from 2017-08-02 to 2022-08-02

1135287132

CMS JINR Tier1 CPU statistics



Integration into the monitoring system

Tier-1 ✗ Tier-1 accounting ✓
Tier-2 ✗ Tier-2 accounting ✓
CICC-JINR accounting ✓

Govorun ✗ Tier-1 Cooling system ✓ Tier-1 PDU ✗ Tier overview ✗
JINR Cloud CICC ✗ Tier-2 Cooling system ✓ Tier-2 PDU ✓ Tier-2_module4 PDU ✓ Litmon dashboard ?

Tier-1 tape space 50.6 PB	Tier-1 cms mss space 2.641 PB
Tier-1 cms dCache space 11.34 PB	Tier-1 cores 16096
Tier-2 CMS total space 1.656 PB	Tier-2 Alice total space 1.693 PB
Tier-2 Atlas total space 1.602 PB	Tier-2 cores 8472
Govorun eos space 304 TB	Govorun Skylake HT cores nu... 9600
Common JINR eos space 17.0 PB	Govorun KNL HT cores number 4320
JINR cloud CPU cores 5000	JINR cloud total RAM 60.1 TB
JINR cloud total raw space 1.223 PB	JINR cloud total used space 636 TB



<https://litmon.jinr.ru>

<https://litmon-01.jinr.ru>

<http://litmon-display.jinr.ru>

The JINR Laboratories got a new tool for statistical data processing

The JINR Laboratories got a new monitoring tool

Old and new statistics can be compared

The database as a backend can be used by other monitoring systems

The accounting system for the JINR Laboratories' experiments was put into operation.



Thank you for your attention!



New Tier1 accounting system (visualization)



New Tier2/CICC accounting system (visualization)

