

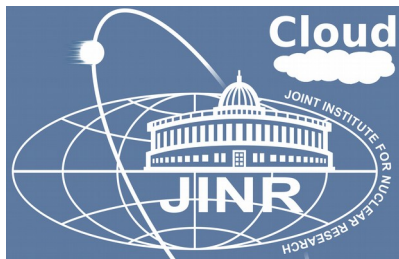
NEC'2019



XXVII International Symposium on Nuclear Electronics & Computing

Montenegro, Budva, Becici, 30 September - 4 October 2019

Present status and main directions of the JINR cloud development



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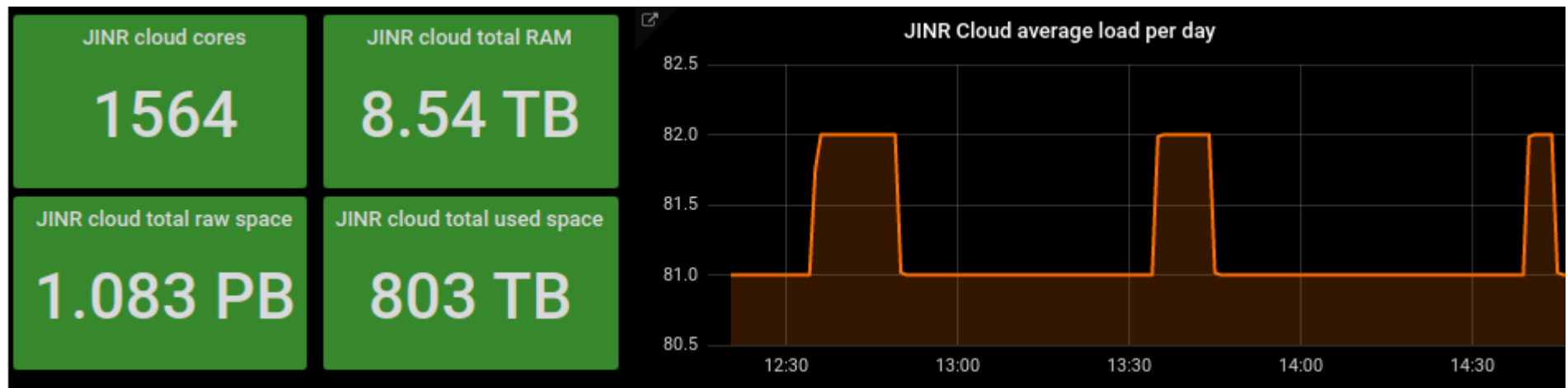
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Hardware resources

- Current hardware resources
 - 66 servers for VMs, 10 servers for ceph-based SDS, 3 servers for front-end nodes in HA setup



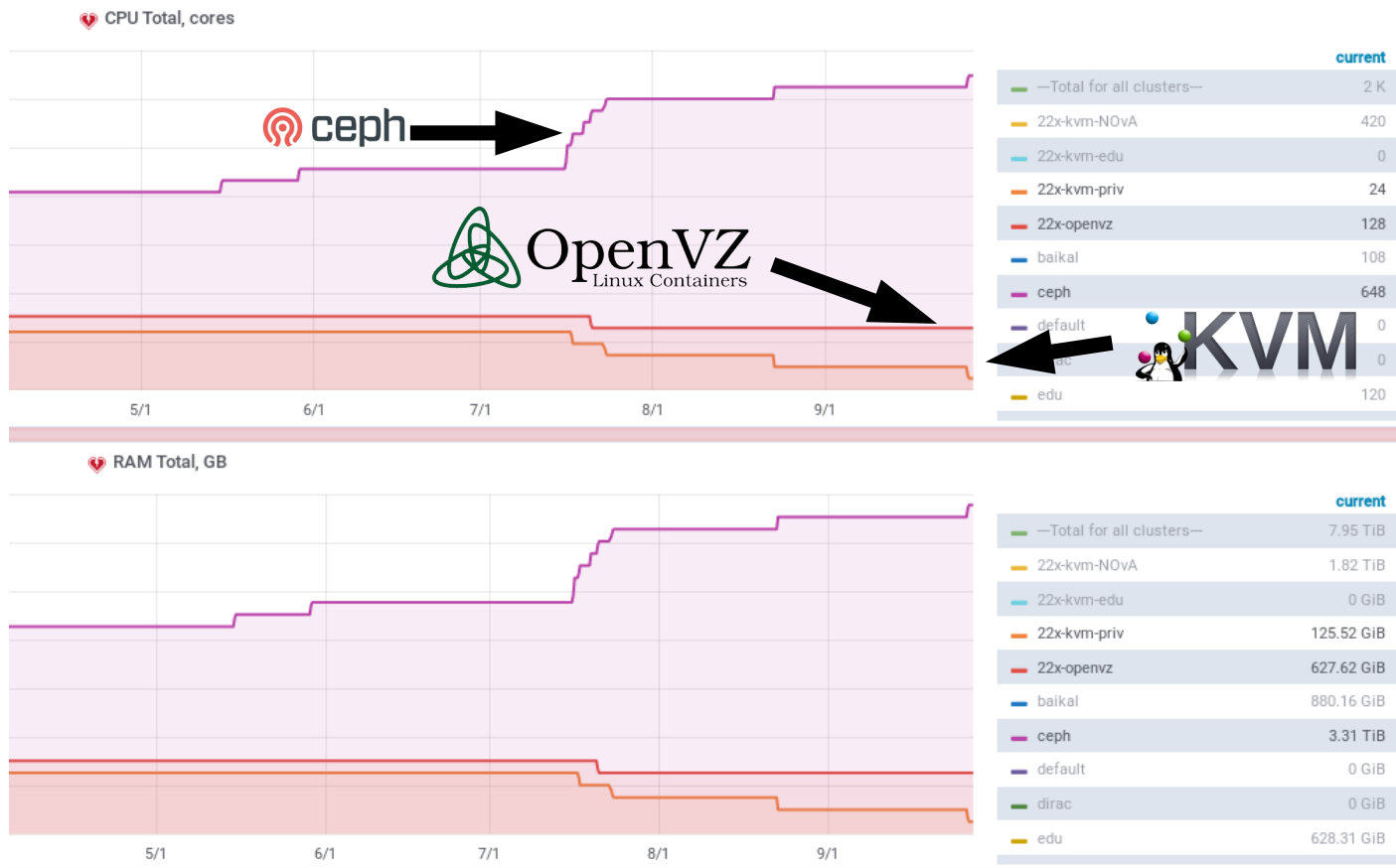
	Current	By the end of 2019			
Resource type	All contributors	NOvA	Baikal-GVD	JUNO	All contributors
CPU cores, items	1564	+120	+300	+2000	3984
RAM, TB	8.54	+0.64	+3	+32	44.18

Changes

Moving away from OpenVZ hosts to KVM:

- 1) lack of manpower to support OpenVZ driver for OpenNebula
- 2) OpenNebula has started recently LXD containers support

Migration all KVM VMs from its disks deployment on servers' HDDs to Ceph-based SDS



**5 OpenVZ servers
/ 56 CTs left**

**1 KVM (disk)
server / 12 VMs
left**

Usage (1/2)

Virtual Machines



312

TOTAL

0

PENDING

0

FAILED

System



262

USERS

26

GROUPS

Images



644

IMAGES

142.1 TB

USED

Virtual Networks



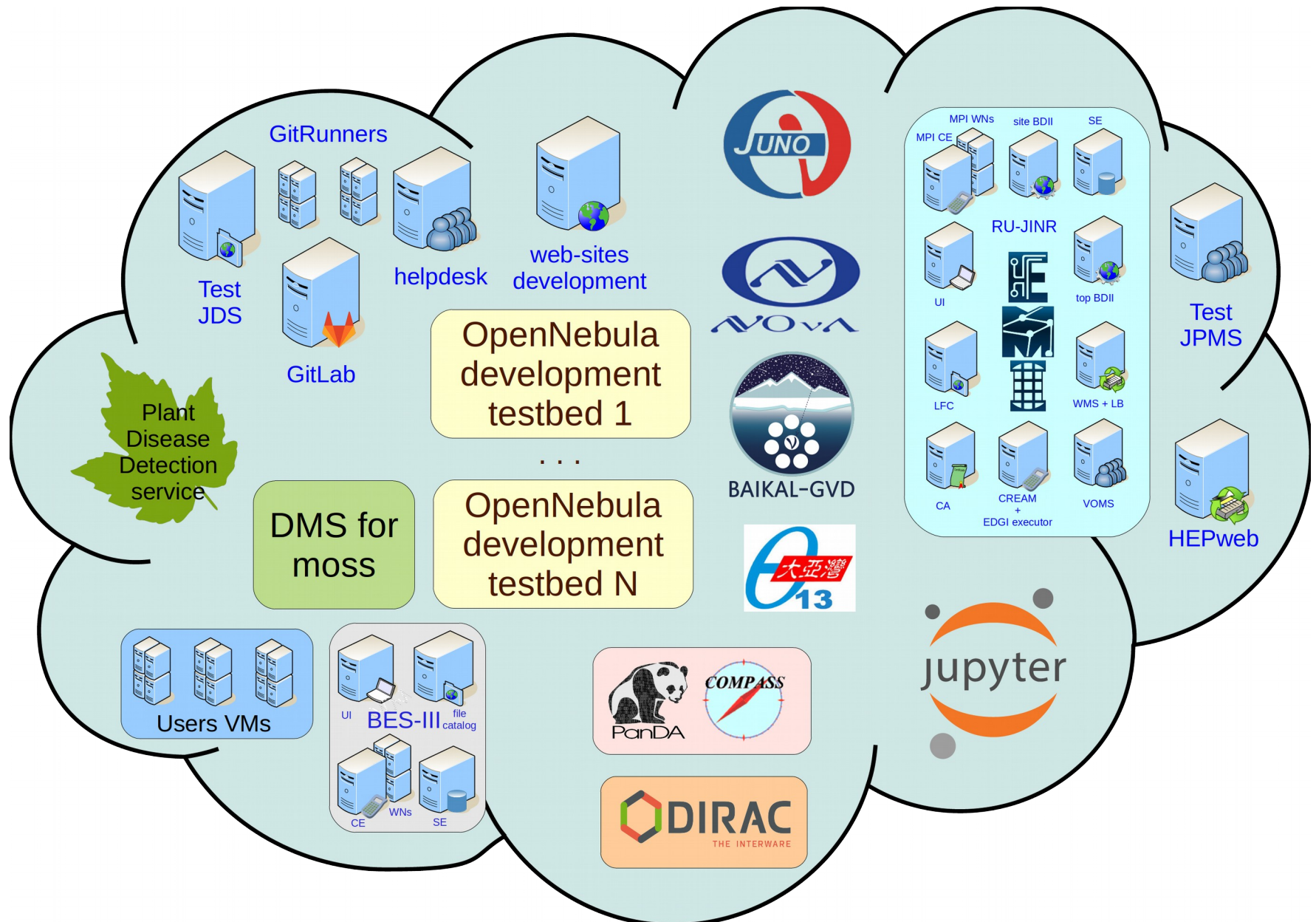
48

VNETS

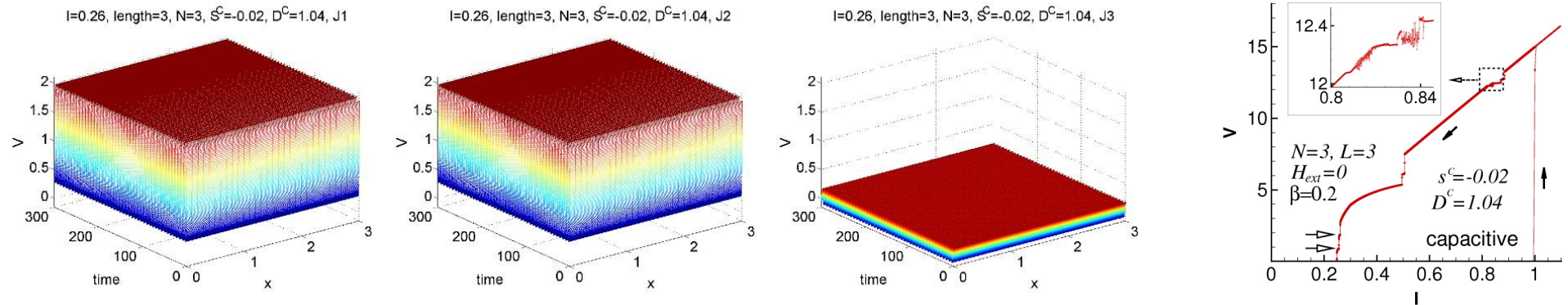
471

USED IPs

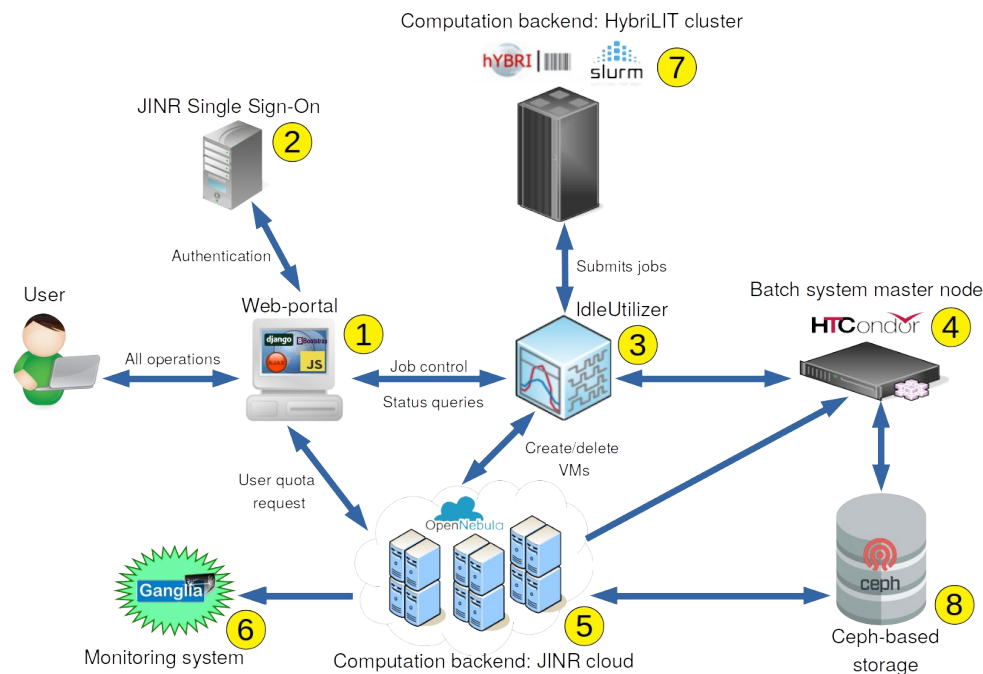
Usage (2/2)



Service for scientific and engineering computations



Supported apps: long and short Josephson junctions simulation



Screenshot of the JINR cloud SaaS interface showing job creation parameters:

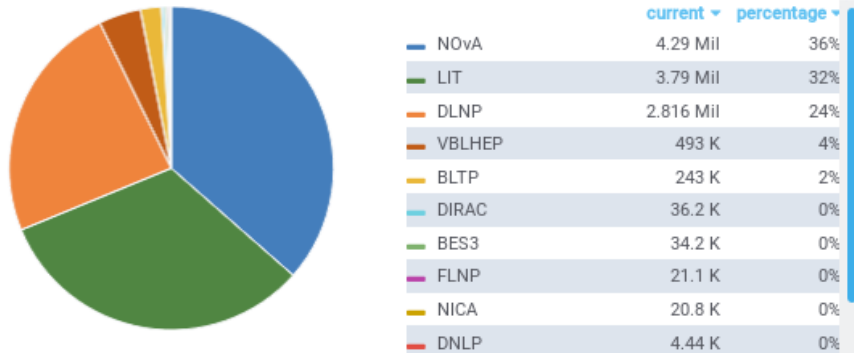
- App**: Long Josephson junctions simulation
- Description of job**: Text input field
- Resources**:
 - Number of VMs: 1
 - CPU per VM: 1
 - RAM per VM (GB): 1
- Job parameters**:
 - Physical parameters: $N=10$, $\beta=0.2$
 - Nonperiodic boundary conditions
 - External electromagnetic radiation
 - Set dimensional physical parameters
- Job results**: Results of the successfully finished job will be available at the URL, generated by the service automatically.
- Advanced mode**: Toggle switch
- Submit**: Button

<http://saas.jinr.ru>

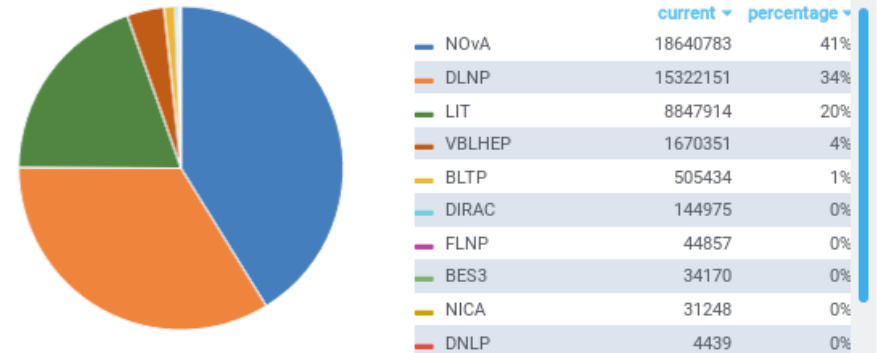
JINR cloud resources usage last 1 year

Resources distribution over labs/projects (Pie chart view)

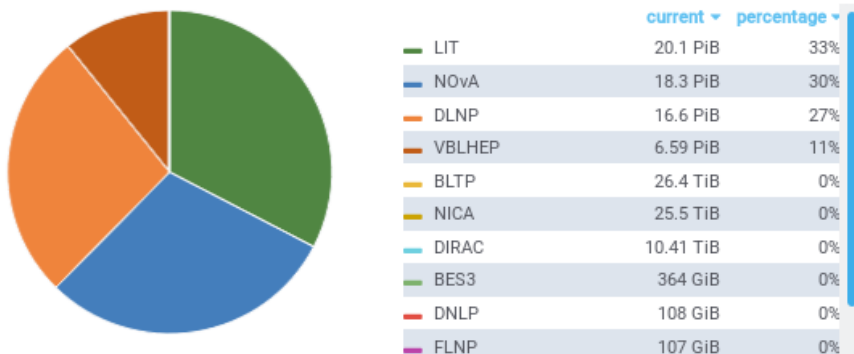
CPU, Core*hours



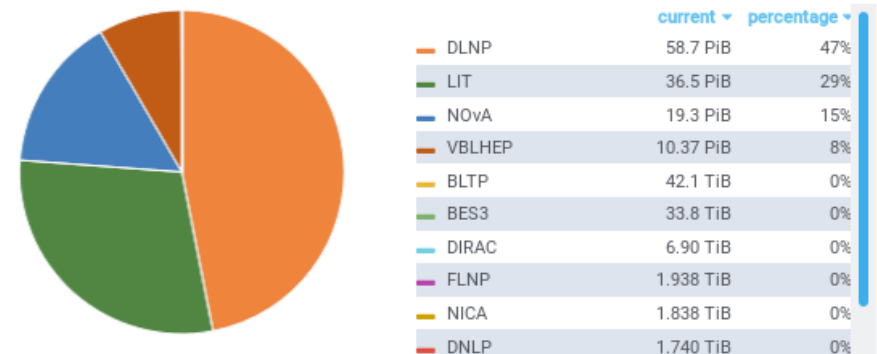
RAM, GB*hours



NET_TX, GB

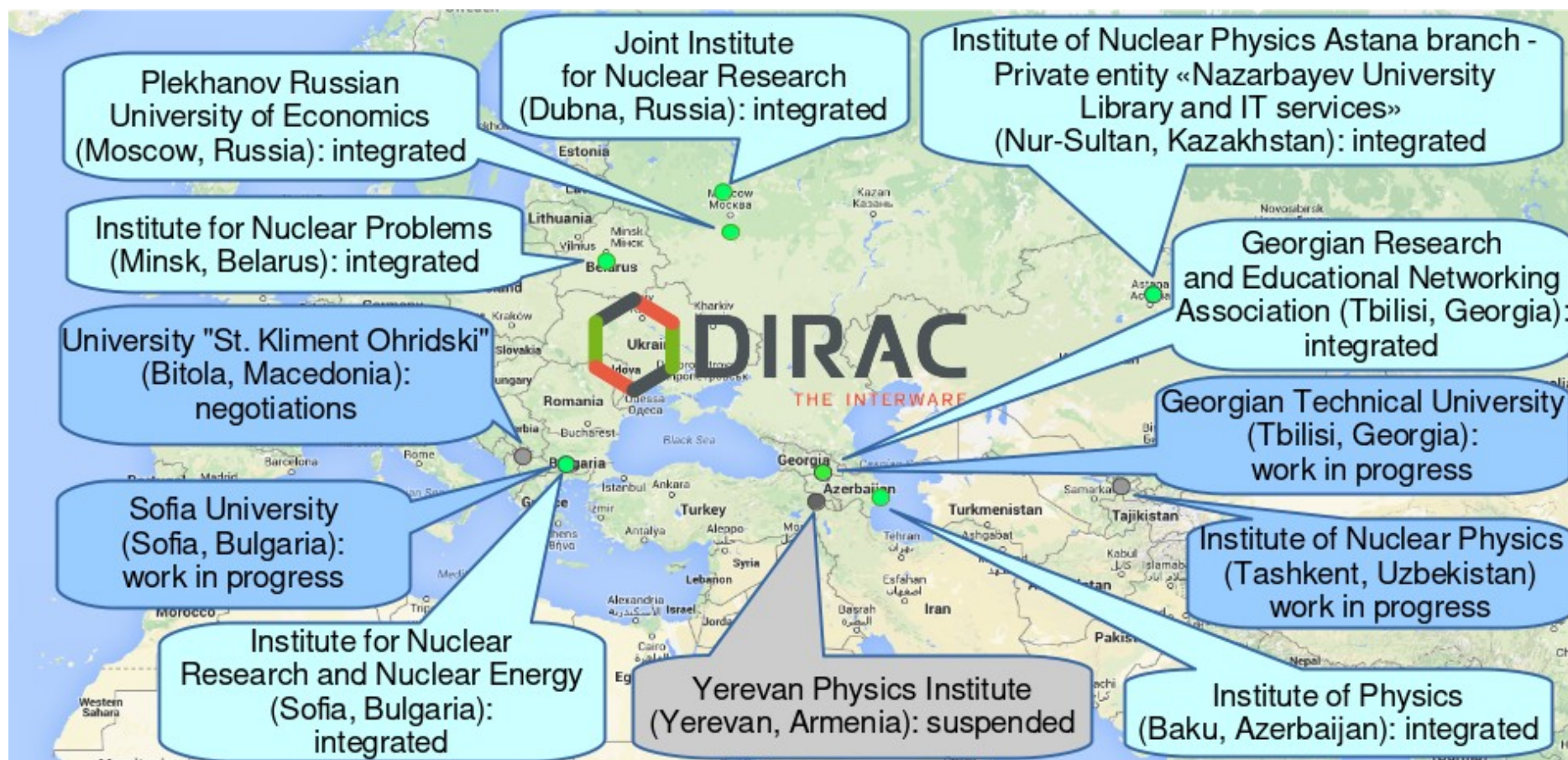


NET_RX, GB



Clouds integration: participants

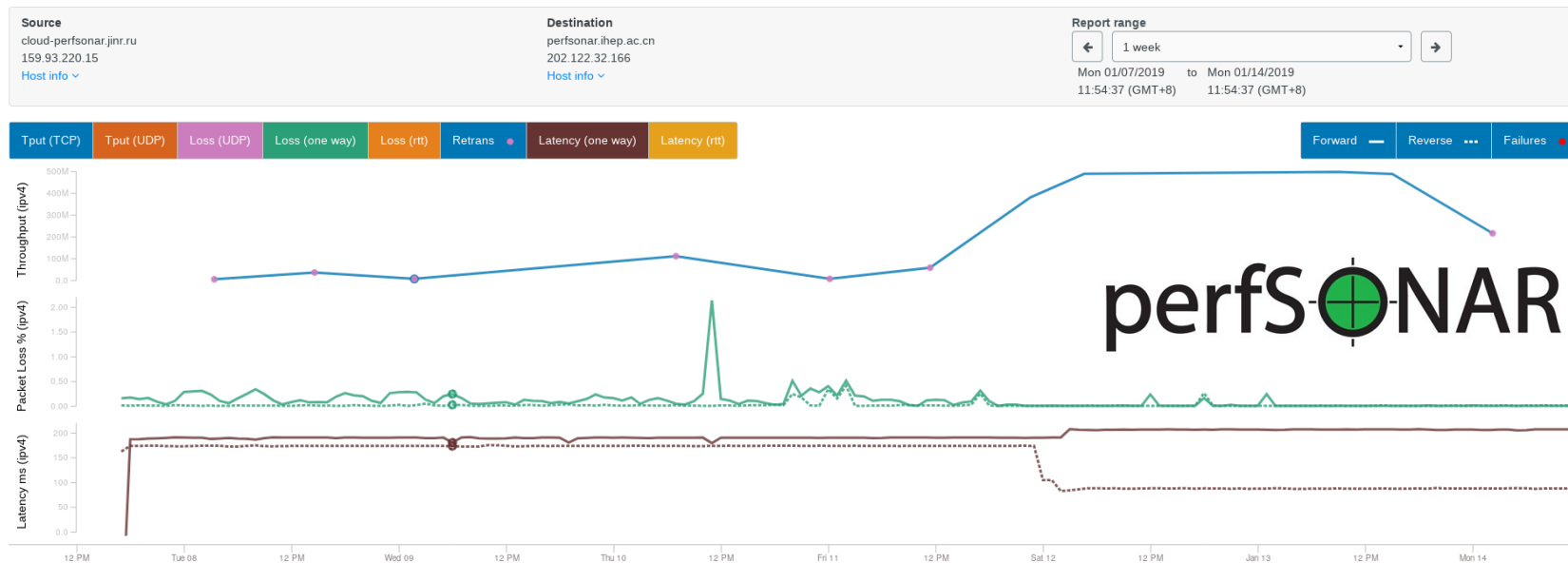
- To join resources for solving common tasks as well as to distribute a peak load across resources of partner organizations



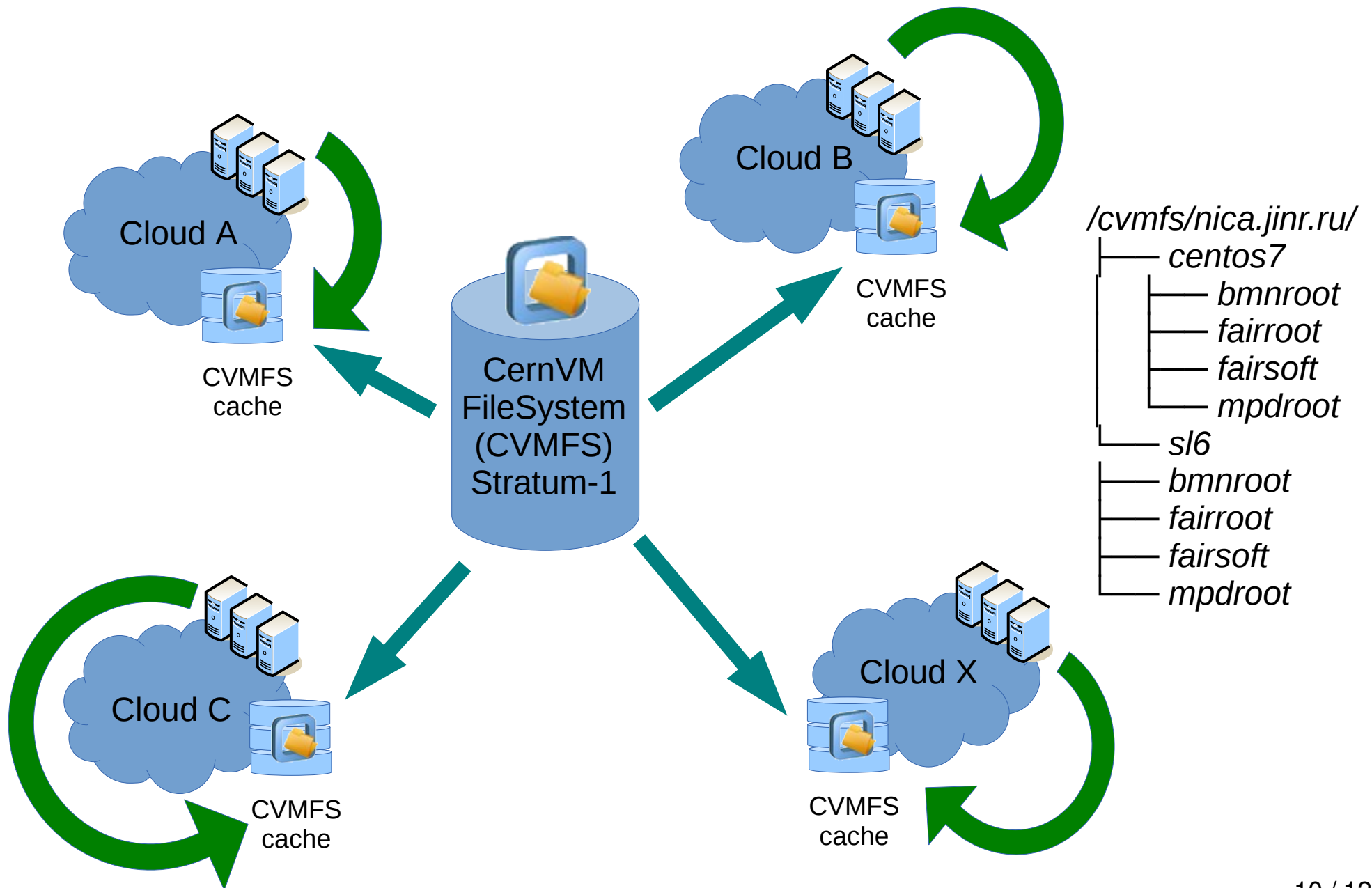
Recently joined: INRNE (Bulgaria),
Suspended: YerPhI (Armenia)

PerfSONAR

- To monitor network connectivity of participants
 - <http://cloud-perfsonar.jinr.ru>

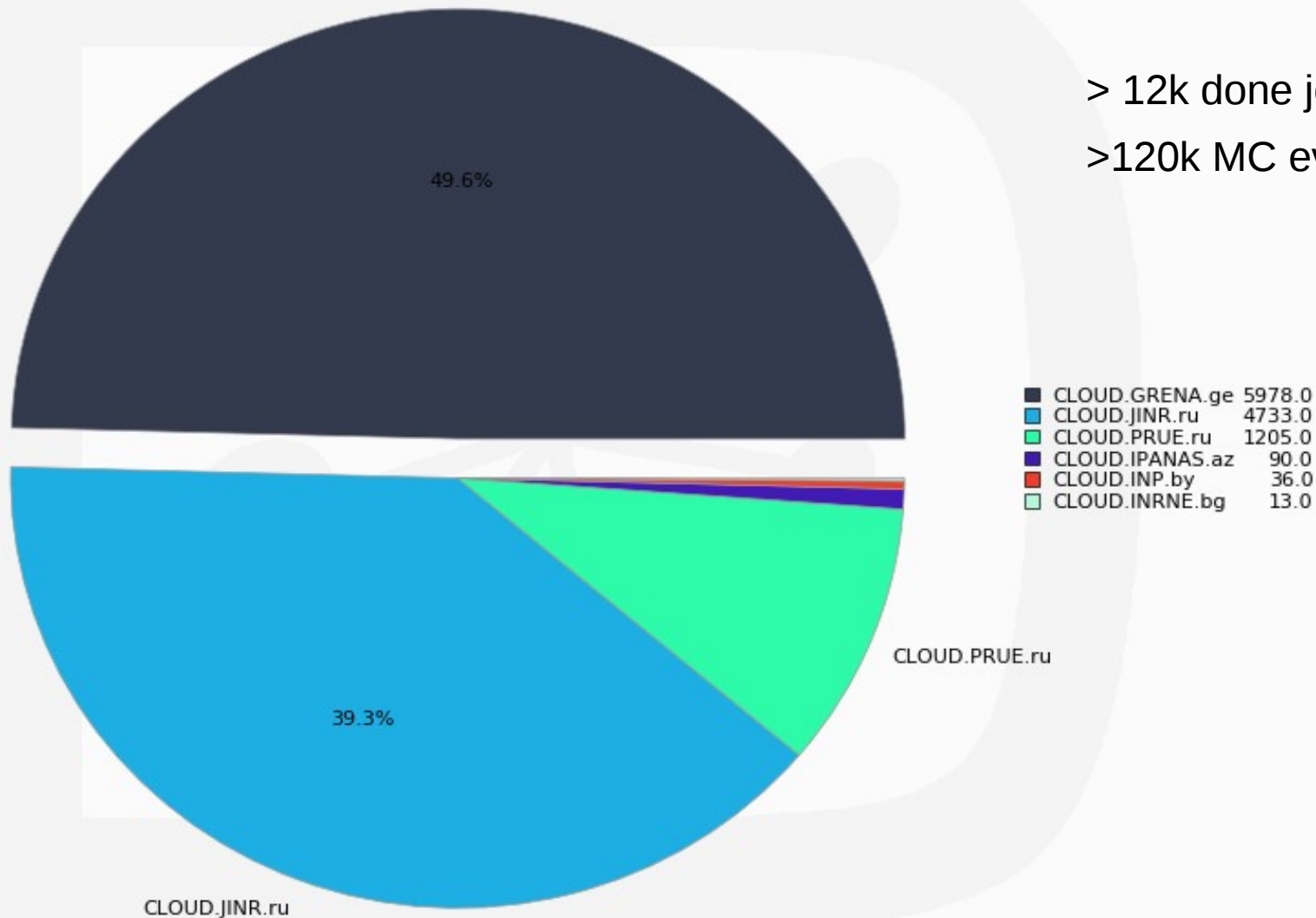


Experiments software distribution model



Clouds integration: done jobs

Total Number of Jobs by Site
8 Weeks from Week 30 of 2019 to Week 38 of 2019



> 12k done jobs

>120k MC events

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Plans

- Migrate all OpenVZ containers and hosts to KVM
- Increase ceph write performance at the cost of SSD pool
- Adopt a set of experiments' workflow to run into JINR distributed information and computing environment (DICE)