ALICE RDIG Tier2 after Run1

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AGENDA

- **General remarks**

  - *Structure & 2013 resources of ALICE RDIG Tier2*

  - *RDIG network*

  - *Status of middle ware, OS, ...*

  - *Last year results*

  - *Virtualization*

  - *2014 and after*

- **JINR Tier2 for ALICE**

- **IHEP Tier2 for ALICE**

General remarks

Structure & 2013 resources of ALICE RDIG Tier2 (1/2)

Today – **8** sites of RDIG, distributed Tier2, involved into ALICE activity:

• **IHEP, JINR, RRC-KI** - shared with ATLAS, CMS and LHCb

• **ITEP, Troitsk** – shared with CMS and LHCb

• **MEPHI, PNPI** –shared with ATLAS and LHCb

•**SPbSU** – used mainly by ALICE

•Statical **PROOF** cluster at JINR – **JRAF** with 48 workers and 14.7TB

• **PROOF PoD** cluster at 148 SPbSU virtual machines for local users only (32 worker and 1TB per user)

General remarks

Structure & 2013 resources of ALICE RDIG Tier2 (2/2)

Resources have been pledged by Russia for ALICE at REBUS in 2013
http://wlcg-rebus.cern.ch/apps/pledges/resources/

	pledged at REBUS	**delivered** Today
CPU	18,256 HEP-SPEC06	2674 kSi2k =10,696 HEP-SPEC06
		(averaged in ½ year)
DISKS	1,301 Tbytes	1,295 Tbytes allocated

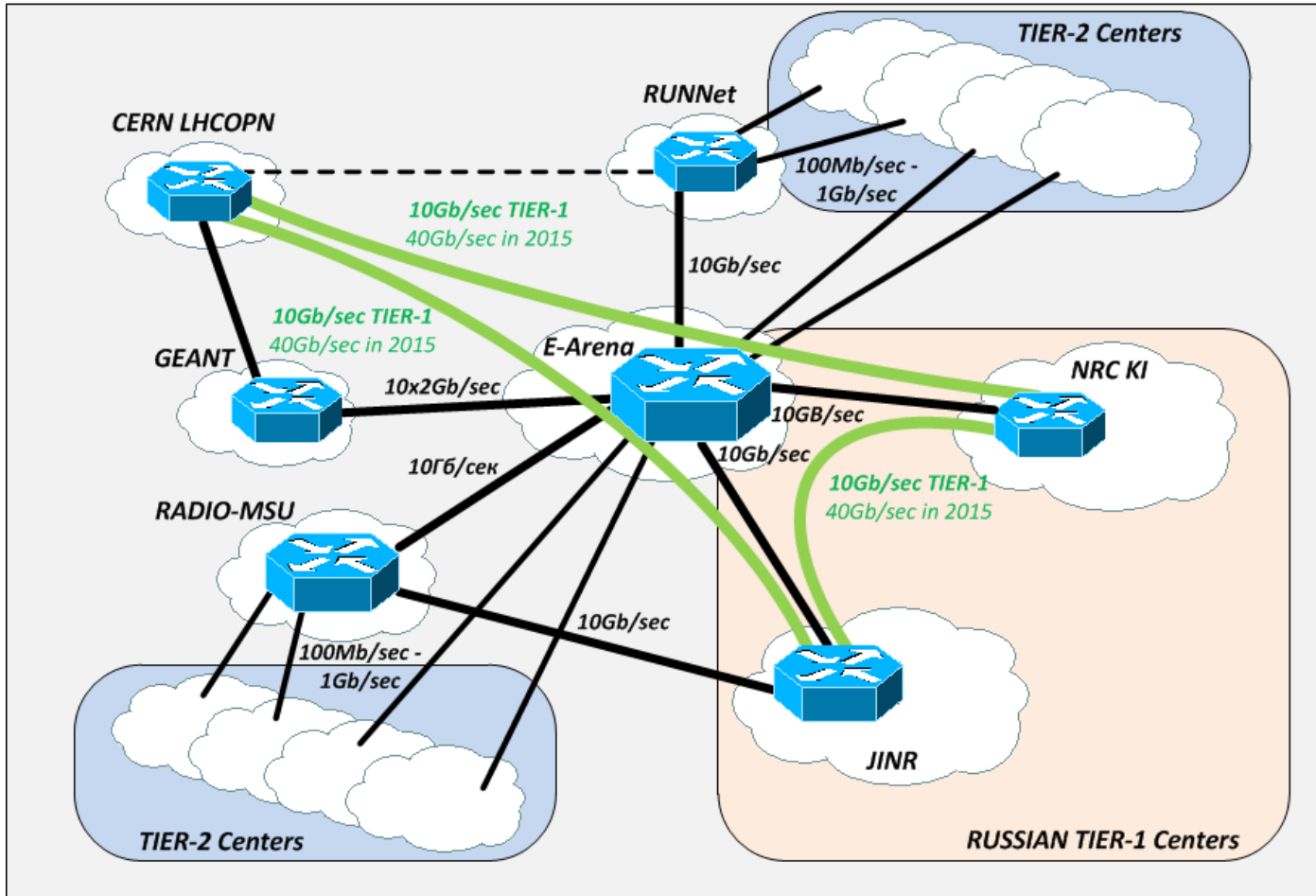**Expectation due to ALICE constitution   Real contribution of Russia**

8.9%   1,295/31,790 = **4.07%**

RDIG network

General remarks

Status of OS, middleware and others at RDIG sites

Site	Middle ware	Service OS	WNs OS	VO box	Xrootd version
IHEP	UMD-2, EMI-2	SL6	WN tarball SL5	gLite 3.2 (SL5)	v3.2.4(SL5,SL6, Debian)
ITEP	EMI-2	SLC5	SLC5	gLite 3.1 (SL5)	v3.2.6 (SLC5,SLC6, SLC4)
JINR	EMI-2	SL6	WN tarball SL5	gLite 3.2 (SL5)	20100510-1509_dbg
MEPHI	glite 3.2, SLC 5.3	glite 3.2, SLC 5.3	glite 3.2, SLC 5.3	glite 3.2, SLC 5.3	
PNPI	UMD-2	SL6	SL5	gLite 3.2 (SL5)	20100510-1509_dbg
RRC-KI	UMD-2, EMI-2	UMD-2, EMI-2	EMI-2, CentOS 5	gLite 3.2, CentOS 5	20100510-1509_dbg
SPbSU	EMI2	SL 6.3	SL 6.3	glite 3.2, SL 5.5	v3.2.4
Troitsk	EMI-2	SL6.2	SL6.2	gLite 3.2 (SL5)	20100510-1509_dbg(SL6.2)

Last year results (1/2)
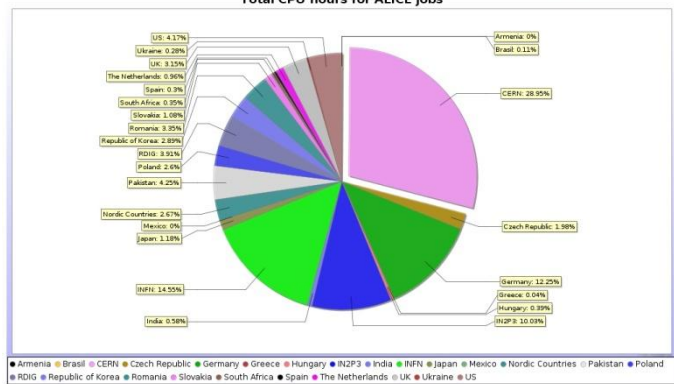
Resources usage
3,91%
Done jobs
6.5%
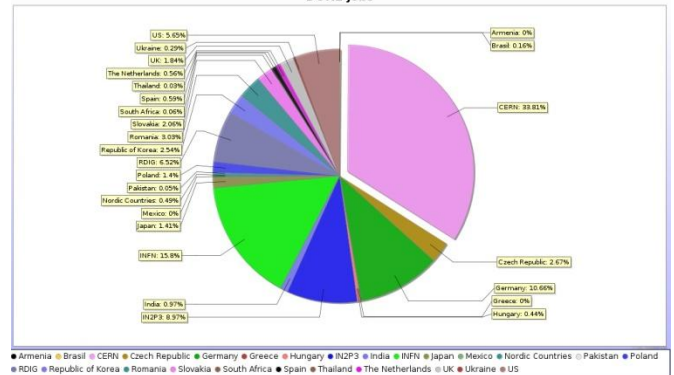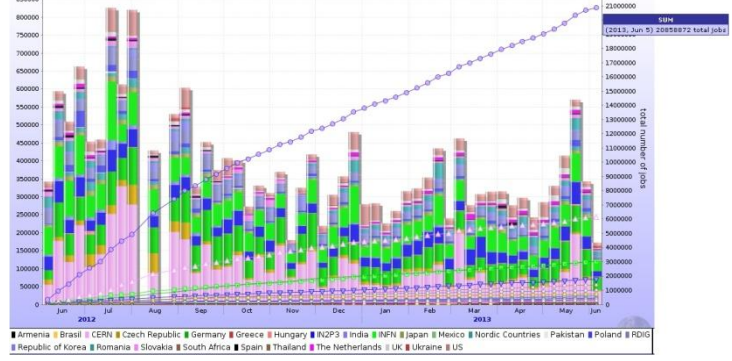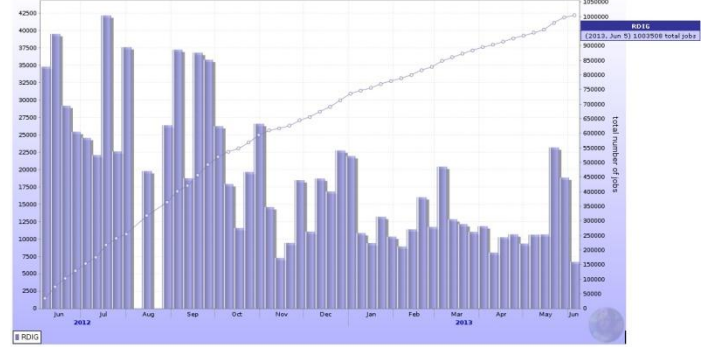
Contribution of error jobs by RDIG into ALICE 4.8% less is less than contribution into Done jobs

Last year results (2/2)
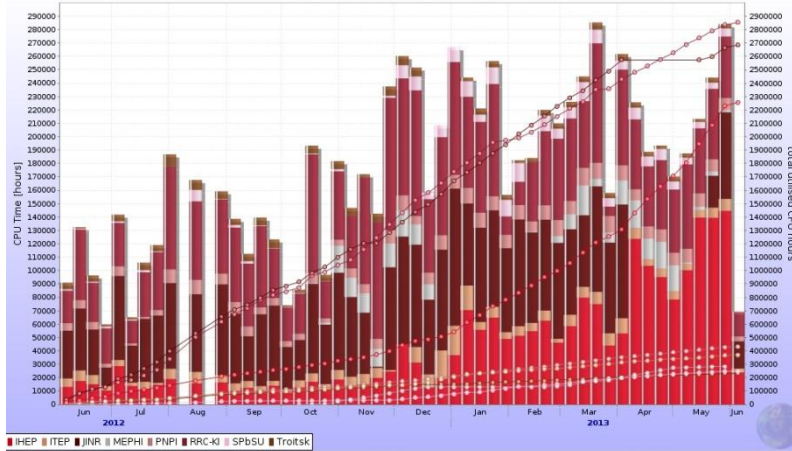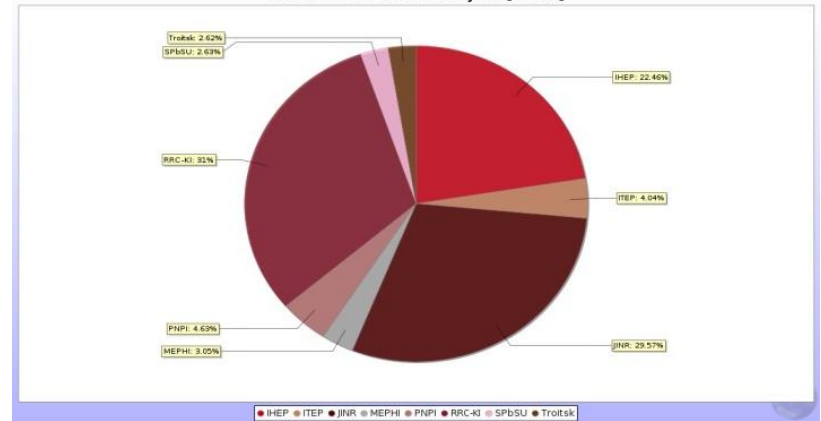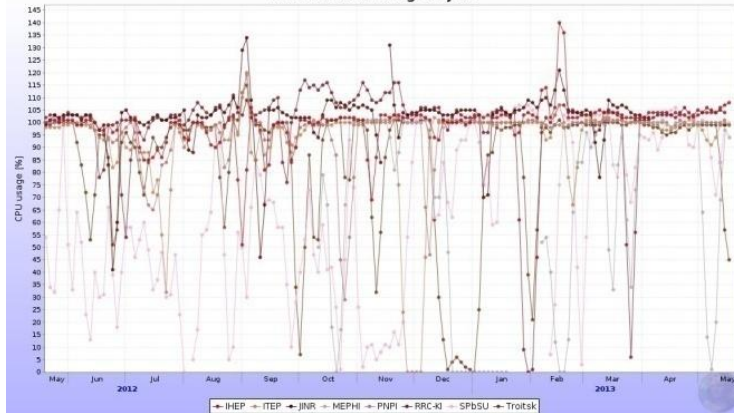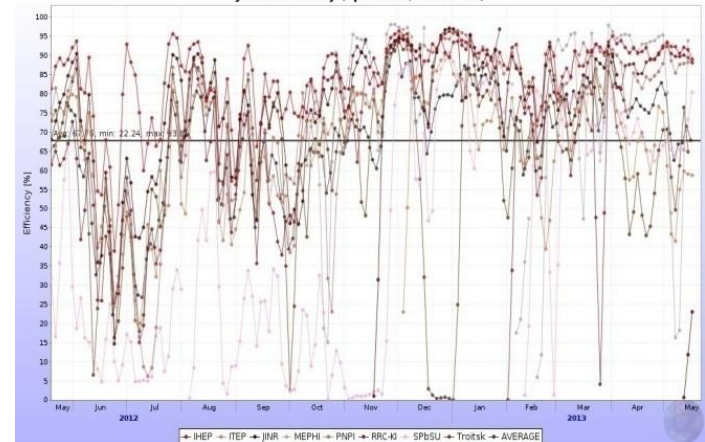
Virtualization

- Installation of any site services(VO box, CE and etc) at virtual machines

- At SPbSU there have been used virtual machines for installation of Working Nodes

General remarks: 2014 and after

Tier1 at Russia:

- Tier 1for ATLAS, ALICE and LHCb at **RRC-KI** without any support of Tier2 activity

- Tier 1 for CMS at **JINR** with support of Tier2 activity for all LHC experiments

- Time of prototype of these Tiers1s creation without any resorces pledge – till 2014 end

General remarks: 2014 and after

Tier2 at Russia- no additional pledge for Tier2 resorces exept:

- **Migration** of RRC-KI Tier2 resorces to 3sites:
  IHEP, ITEP, PNPI (331 TB)

- **New** ALICE site at VINIIEF at Nuclear Center in Sarov with 240 WNs and 130 TB of disk space

- Possible **additional funding** of computer center at MEPHI

JINR-LCG2 short term plan [2013Q3]

- **Upgrade to SL6 & EMI 2/3 on WNs (big bang)` - Glexec on WNs w/ set UID root**

- **ALICE Vobox, SL6, wlcg-vobox & emi-ui**

- **Upgrade to SL6 Xrootd servers**

- **Upgrade Xrootd to the latest in EPEL**

- **It is expected**

  - *~2500 jobs slots in farm*

  - *370[430] xrootd for ALICE*

  - *1GbE LAN @ WNS*

  - *2x1GbE @ disk srvs*

  - *10GbE WAN*

JINR-LCG2 2014-2016

- Tier2 still supported for 4xLHC VOs.

- Additional WNs and disk resources not early than at the end of 2014 due to Tier1 big budget.

- Reconnect disk servers from 2x1GbE to 10G.

State research center of Russian federation

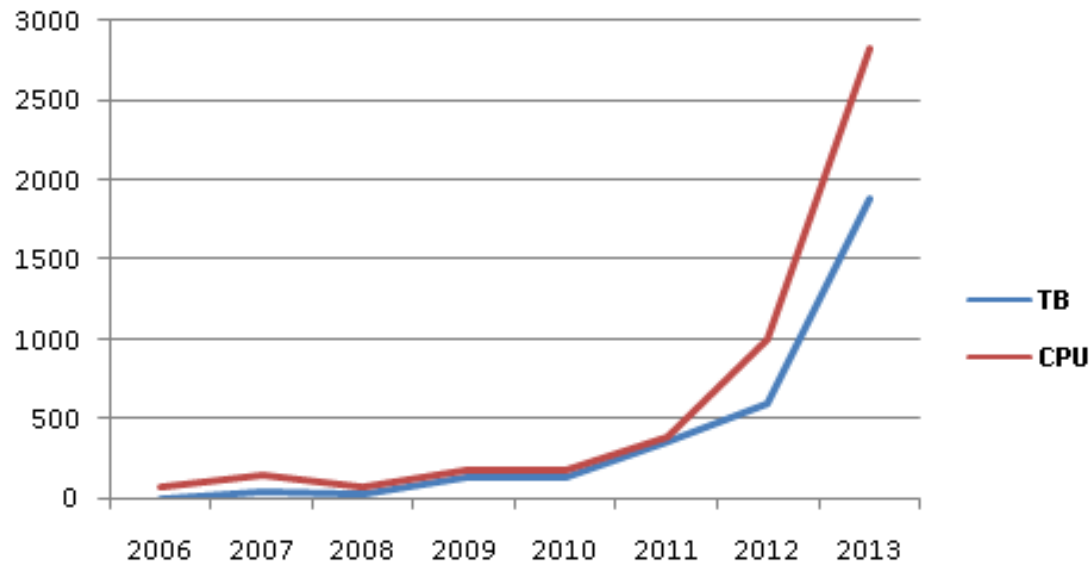Insitute for High Energy Physics

RU-Protvino-IHEP

Tier 2

IHEP as ALICE Tier2 - history

In WLCG since   2003;

One of eight sites former members of RDIG;

Supports: Atlas, Alice, CMS, LHCb;

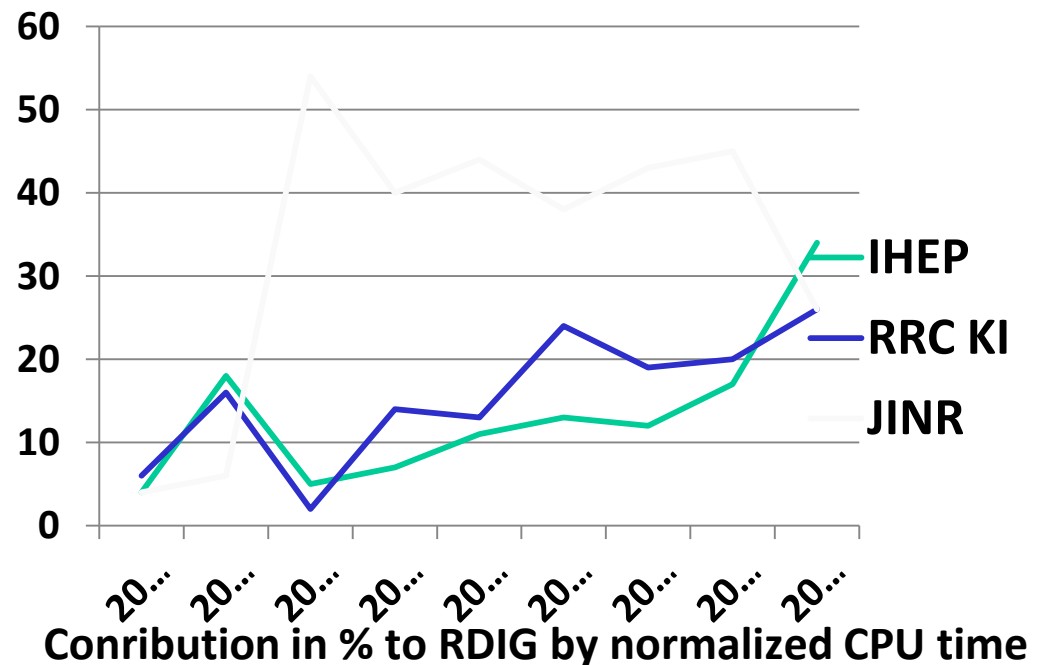growth of the IHEP grid resources by year in TB and CPU

IHEP as ALICE Tier2 - current status

2828 CPU, 2439 HEP-SPEC06;

1877 TB: Atlas 1185, CMS 395, Alice 297;

10Gb/s Internet channel; Manpower – 5 people ;

 One of three big grid-sites in Russia:

Conribution in % to RDIG by normalized CPU time

Contribution in % to RDIG ALICE by normalized CPU time

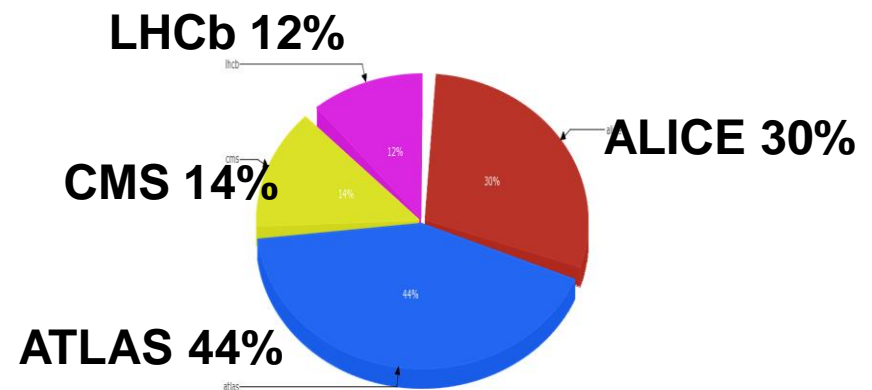|	IHEP	RRC KI	JINR
2009	10	14	41
2010	16	37	36
2011	9	35	35
2012	10	38	36
2013	38	27	23

Current fairshare setup

- ATLAS 52%
- CMS 30%
- ALICE 12%
- LHCb 6%

Developed by CESGA 'EGI View' : / normcpu-HEPSPEC06 / 2013 : 1-2013: 12 / SITE-VO / lhc (x) / GRBAR-LIN / i   2013-06-03 09:23

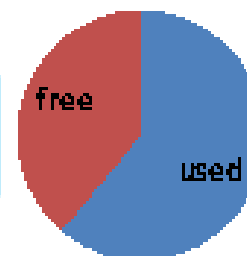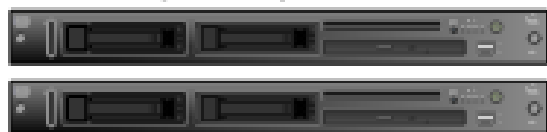RU-Protvino-IHEP Normalised CPU time (HEPSPEC06) per VO

LHCb 12%
CMS 14%
ATLAS 44%
ALICE 30%

Real usage for 2013

IHEP site in WLCG

24396 HEP-SPEC06
2828 CPU (2GB per CPU, HT on)
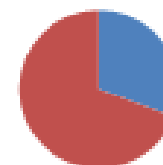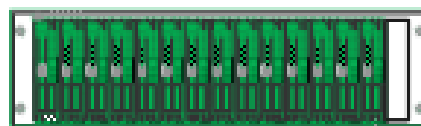
WN's

Site BDII   Mon APEL

VO BOX   CE   VO BOX
CMS   Alice

SE ATLAS

free   used   1185TB

SE CMS

395TB

SE Alice

270TiB

Future plans

- Become the big one Tier 2 in Russia;

- IHEP data center modernization to increase power and cooling capacities;

- Man power increasing;

- Network bandwidth and connectivity increase;

- Plan to achieve 8500 CPUs (HEP-SPEC06 80000) and 6000 TB disks up to 2017.