
Alice computing update before run 2

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ALICE GRID



Alice computing updates

- Update SE: xrootd v.4 and EOS on new SEs
 - Monitoring update
 - Software distribution: torrent to CVMFS
 - Long-term data preservation
 - Preparations for the ALICE upgrades in Run3
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Storage 2014-2015

All sites: migrate to xrootd.4 (IP v6 support)

New SEs , O/R,: EOS (multiple storage types, multiple protocol types, RAIN, Self-healing, web interface, cli tools, etc...)

Current EOS deployment

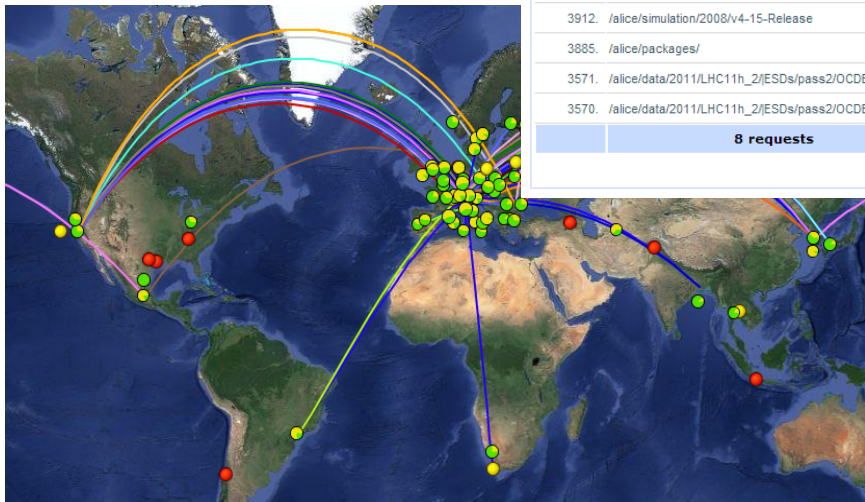
Disk stor

SE Name	AliEn name	Size	Used	Free	Usage	No. of files	Type	Size
1. CERN - EOS	ALICE::CERN::EOS	4.671 PB	3.633 PB	1.038 PB	77.77%	76,372,302	FILE	4.038 PB
2. RRC_KI_T1 - EOS	ALICE::RRC_KI_T1::EOS	150 TB	35.4 TB	114.6 TB	23.6%	783,036	FILE	150 TB
3. SPbSU - EOS	ALICE::SPbSU::EOS	19.99 TB	197.1 GB	19.8 TB	0.963%	5,030	FILE	-
4. Subatech - EOS	ALICE::Subatech::EOS	156 TB	151.5 TB	4.521 TB	97.1%	3,998,299	FILE	156 TB
5. UNAM_T1 - EOS	ALICE::UNAM_T1::EOS	570 TB	623.6 GB	569.4 TB	0.107%	223,277	FILE	570 TB
Total		5.546 PB	3.816 PB	1.73 PB		81,381,944		4.893 PB

<http://alimonitor.cern.ch>

Monitoring system (MonAlisa)

xrootd transfer



Transfer requests

Transfer requests (add new request)

ID	Path	Target SE	Status	Progress	Files	Total size
5856	ALICE::Subatech::SE	ALICE::CERN::EOS	Error	<div style="width: 100%; height: 10px; background-color: green;"></div>	163179	7.831 TB
5855	ALICE::Subatech::SE	ALICE::SUBATECH::EOS	Done	<div style="width: 100%; height: 10px; background-color: green;"></div>	3506214	138.4 TB
5854	ALICE::SPBSU::SE	ALICE::SPBSU::EOS	Running	<div style="width: 10%; height: 10px; background-color: yellow;"></div>	63618	4.014 TB
4075	/alice/testdata/2012/OCDB	ALICE::CERN::EOS	Done	<div style="width: 100%; height: 10px; background-color: green;"></div>	33456	8.514 GB
3912	/alice/simulation/2008/v4-15-Release	ALICE::CERN::EOS	Done	<div style="width: 100%; height: 10px; background-color: green;"></div>	1249	512.9 MB
3885	/alice/packages/	ALICE::CERN::EOS	Error	<div style="width: 100%; height: 10px; background-color: green;"></div>	205	45.67 GB
3571	/alice/data/2011/LHC11h_2/ESDs/pass2/OCDB_MCrec.root	ALICE::CERN::EOS	Done	<div style="width: 100%; height: 10px; background-color: green;"></div>	4	253.7 MB
3570	/alice/data/2011/LHC11h_2/ESDs/pass2/OCDB_MCsim.root	ALICE::CERN::EOS	Done	<div style="width: 100%; height: 10px; background-color: green;"></div>	2	103.4 MB
8 requests					3767927	150.3 TB

Requests per page: 100

- Site status dashboard
- Users home dir
- CVMFS monitoring
- Remote access to analysis jobs
- etc

CVMFS

```
~] $ ll /cvmfs/alice.cern.ch/x86_64-2.6-gnu-4.1.2/Packages/AliRoot/
```

```
cvmfs cvmfs 8192 Feb  5  2013 v5-01-Rev-32d
cvmfs cvmfs 8192 Jan 24 18:10 v5-01-Rev-32e
cvmfs cvmfs 8192 Feb 14 19:31 v5-01-Rev-32f
cvmfs cvmfs 8192 May  1 00:36 v5-01-Rev-32g
cvmfs cvmfs 8192 Jun  7 19:53 v5-01-Rev-32h
cvmfs cvmfs 8192 Aug  2  2013 v5-02-Rev-04
cvmfs cvmfs 8192 Aug  2  2013 v5-02-Rev-31
cvmfs cvmfs 8192 Jan 10  2013 v5-02-Rev-37
cvmfs cvmfs 8192 Jan 10  2013 v5-03-Rev-02
cvmfs cvmfs 8192 Jan 10  2013 v5-03-Rev-03
cvmfs cvmfs 8192 Jan 16  2013 v5-03-Rev-05
cvmfs cvmfs 8192 Jan 16  2013 v5-03-Rev-06
cvmfs cvmfs 8192 Jan 19  2013 v5-03-Rev-07
cvmfs cvmfs 8192 Jan 23  2013 v5-03-Rev-08
```

CernVM File System (CernVM-FS)

is a network file system based on HTTP and optimized to deliver experiment software in a fast, scalable, and reliable way. Files and file metadata are aggressively cached and downloaded on demand. Thereby the CernVM-FS decouples the life cycle management of the application software releases from the operating system. CernVM-FS is included in CernVM, however it can also be used outside CernVM.

<http://cernvm.cern.ch/portal/filesystem>

Long Term Data Preservation

CernVM Version:

CernVM Edition:

Expand root partition: Use full root partition instead of the first 20 GB

µCernVM branch:

µCernVM snapshot:

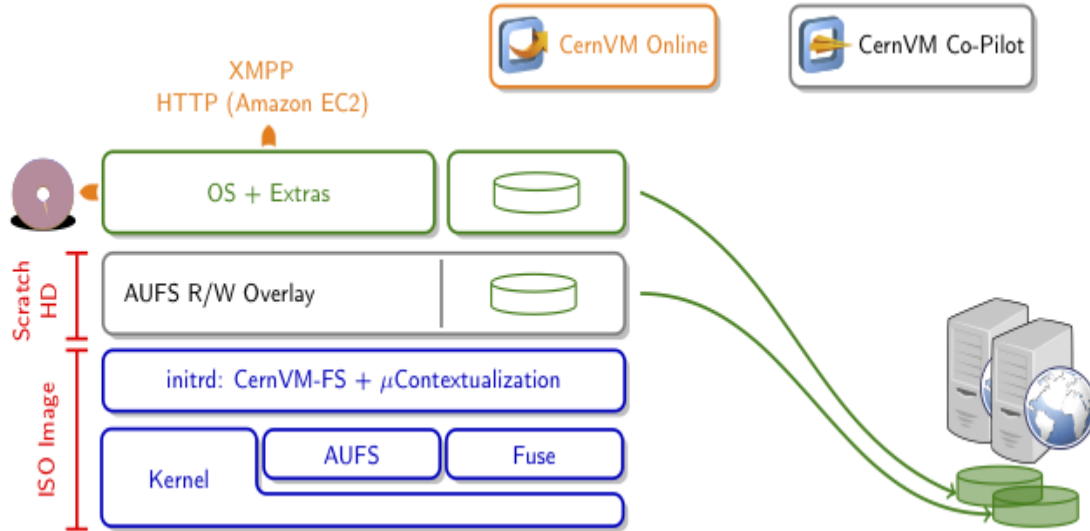
Root SSH Key

Startup script

Always the latest
2014-06-14 18:41 - cernvm-system-3.3.0.4
2014-06-07 14:24 - cernvm-system-3.3.0.3
2014-06-04 18:47 - cernvm-system-3.3.0.2
2014-05-28 11:26 - cernvm-system-3.3.0.1
2014-05-27 13:37 - cernvm-system-3.3.0.0
2014-05-04 10:42 - cernvm-system-3.2.1.0
2014-04-23 06:50 - cernvm-system-3.1.1.7

- Cernvm 3 can use any version of the OS from the past
-

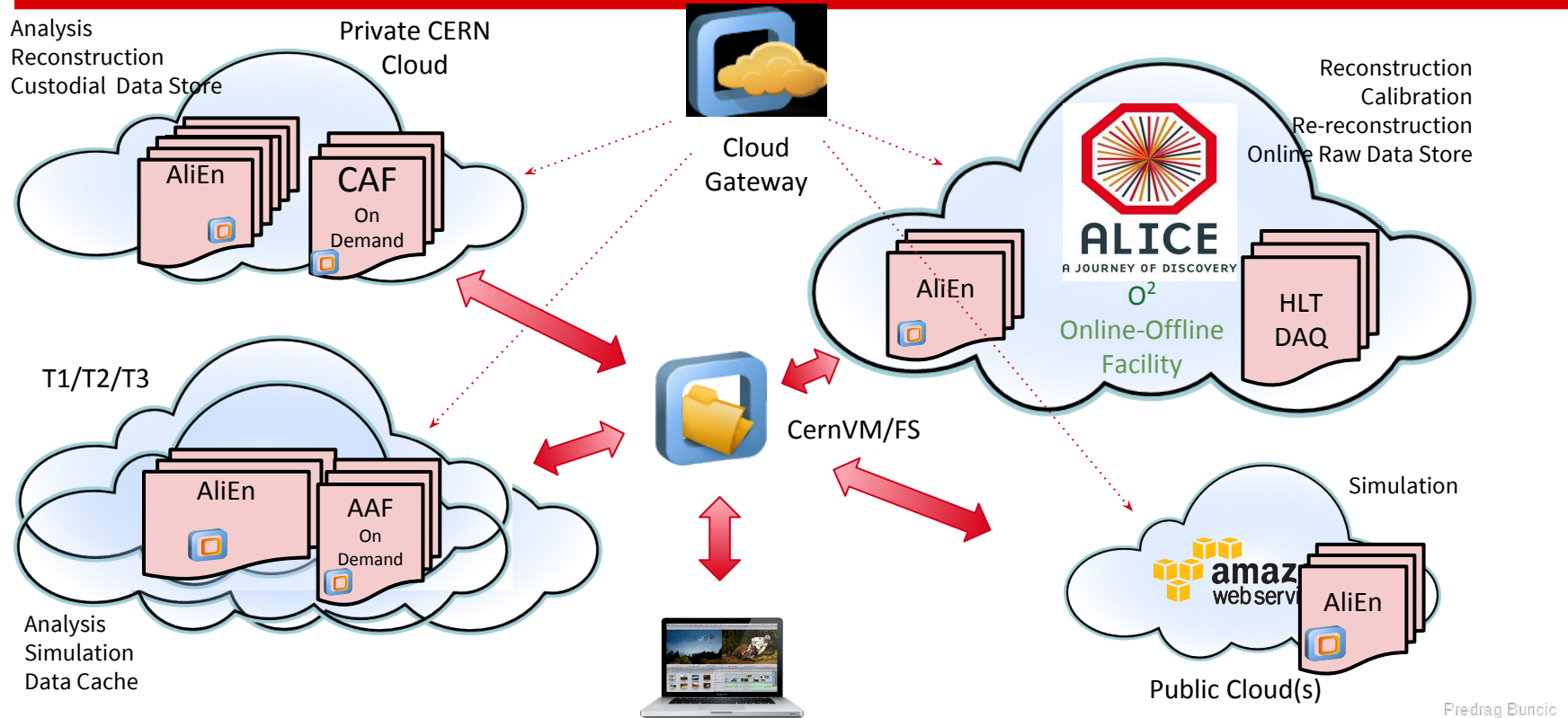
Micro CernVM for LTDP



mCernVM has small (~12 MB) image, with CernVM-FS module and contextualisation file with version of OS and Packages.

All versions will always be available via CVMFS which uses plain HTTP
In 20 years from now we will be able to run an entire Release Validation Cluster with the same conditions of today

CernVM/FS central point of the future ALICE IT infrastructure



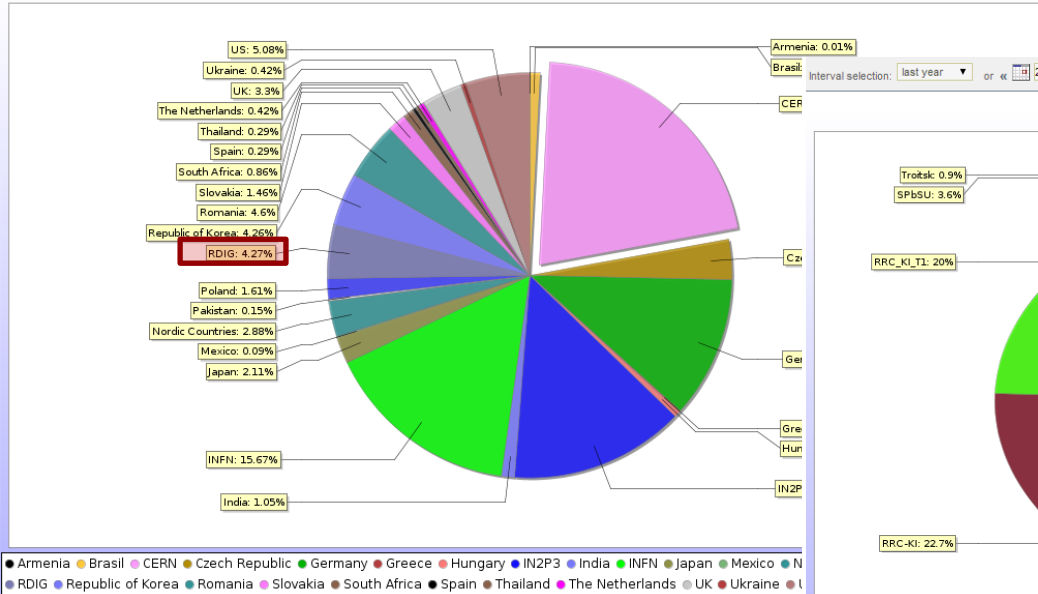
Russian sites in the ALICE computing update

- Tier 1 - RRC-KIAE-T1 !!!!
 - CVMFS - all sites in 2013
 - EOS - RRC-KIAE-T1, SPbSU, MEPHI (?)
 - Adopting CCloudStack to run mCernVM based elastic clusters - SPbSU.
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Russian sites in ALICE production

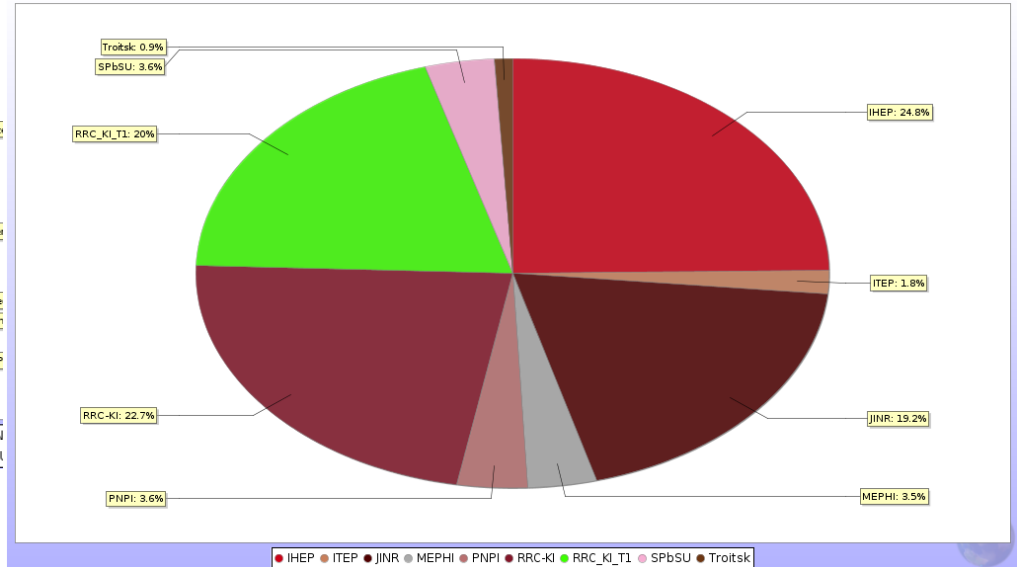
Interval selection: last year or 2013-06-30 18:00 - 2014-06-30 18:00 Plot

Total wall clock hours for ALICE jobs



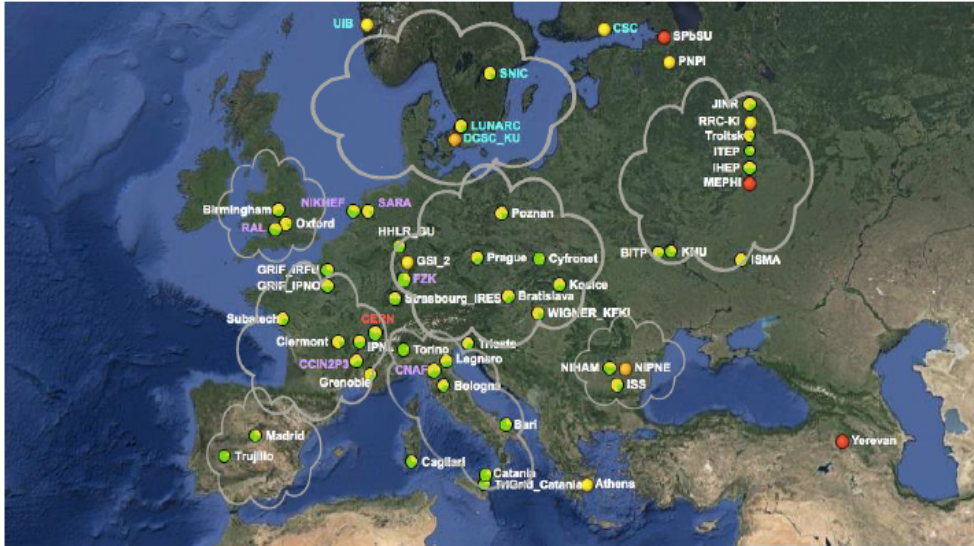
Interval selection: last year or 2013-06-30 18:00 - 2014-06-30 18:00 Plot

Average running jobs



Alice plans for run 3

From Grid to Cloud(s)



In order to reduce complexity national or regional T1/T2 center could transform themselves into Cloud regions

providing IaaS and reliable data services with very good network between the sites, dedicated links to T0

Thank you!
