

VO Specific Data Browser for dCache

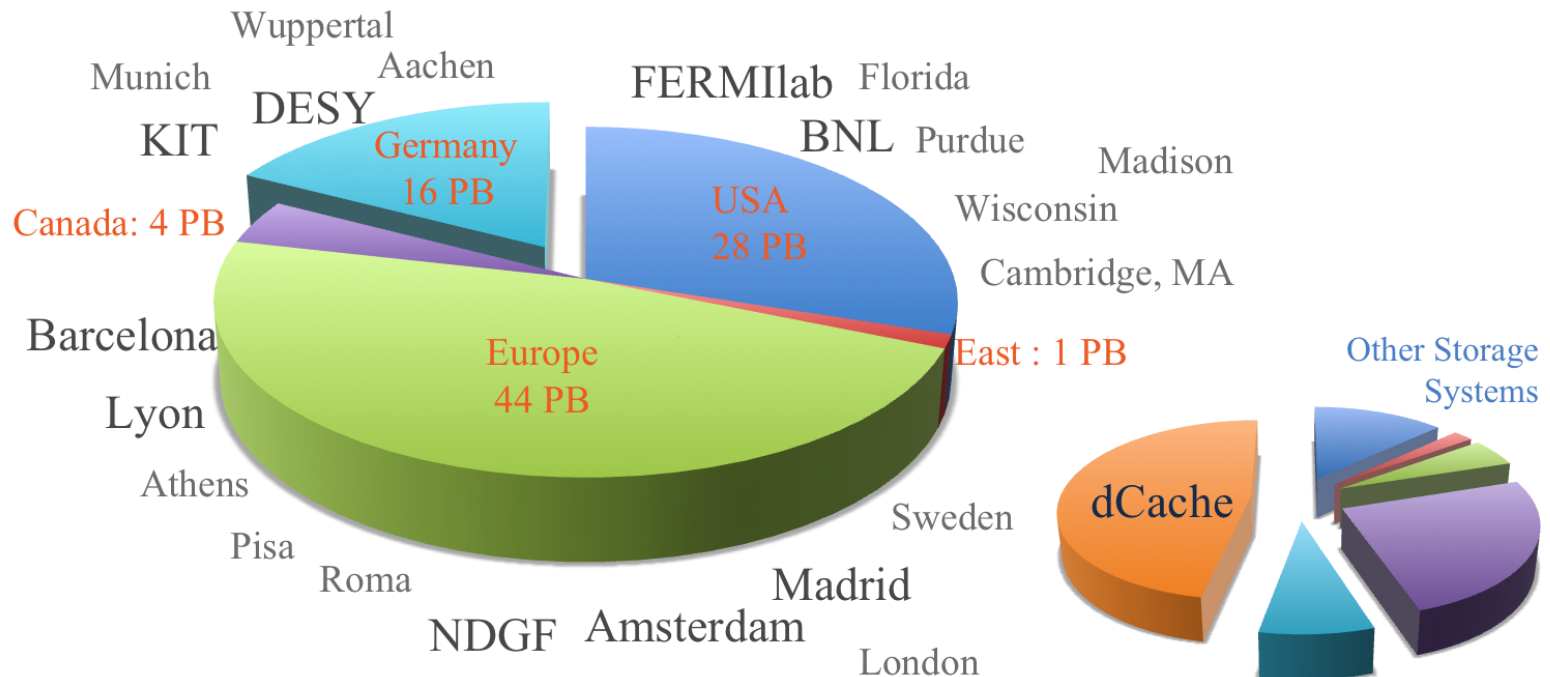
M. Gavrilenko, I. Gorbunov, V. Korenkov,
S. Shmatov, D. Oleinik, A. Petrosyan

dCache

dCache is a system for storing and retrieving huge amounts of data, distributed among a large number of heterogenous server nodes, under a single virtual filesystem tree with a variety of standard access methods.

Worldwide dCache Managed Storage Space in WLCG

94 PB in total



Motivation

- dCache is commonly used in CMS
- Need to easily browse data on dCache
- dCache doesn't allow to monitor disk space used by users
- Running out of free disk space available to VO
- Easy way to search for data which is not registered in DAS (Data Aggregation System of CMS) on dCache

Chimera – name server for dCache

- dCache is a distributed storage system
- dCache provides a single rooted file system view
- Chimera is the recommended namespace provider
- Chimera is a library and a DB table layout (Postgres, MySQL, Oracle and etc.) and standard SQL queries may be used for administration and monitoring instead of non optimized file-system commands



Monitoring System

- Practically all information important for monitoring can be taken from Chimera database

Three component monitoring system was developed

1. Database backup system (dumps original Chimera database to a separate server)
2. Initial data processing (compute directory sizes, convert adjacency tree structures to nested ser etc.)
3. Web interface to monitoring information

Initial data processing

- Chimera database uses an adjacency tree structure, which
 - Doesn't allow to create lists of ancestors and descendants fast enough
 - Require big computational resources for a relatively simple procedures
 - Doesn't allow to create some of the parameters used for statistics
- First of all we convert it to Nested Sets model

Web Interface (User Statistics)

Browser

User statistics

Search

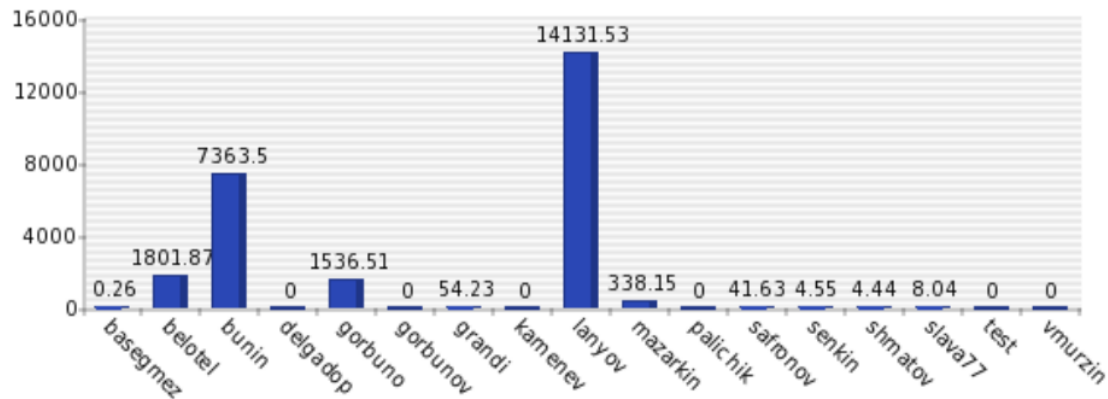
Four

User Statistics



Powered by
Libchart

Disk space used by users (Gb)



Web Interface (Data browsing)

Browser






















User statistics

Search

Four

JINR TIER-2 CMS VO Disk Usage



Name	Size	VO	Subdirs	created	edit
 /pnfs/jinr.ru/cms/cms/store/user/..					
 belotel	1.76 Tb	cms	92	2009-05-20 18:38:23.861+04	2011-02-17 18:51:04.403+03
 test	257235	cms	2	2009-05-27 13:23:23.061+04	2009-06-03 13:00:54.929+04
 slava77	8.04 Gb	cms	3	2009-10-03 23:47:20.457+04	2009-10-03 23:47:21.267+04
 lanyov	13.80 Tb	cms	296	2009-10-04 17:56:08.485+04	2011-03-24 04:11:734.084+03
 kamenev	0	cms	4	2009-10-05 18:22:27.573+04	2011-09-06 14:20:03.599+04
 shmatov	4.44 Gb	cms	3	2009-10-14 13:59:30.394+04	2012-02-11 20:57:17.339+04
 palichik	0	cms	1	2009-11-20 13:21:22.858+03	2009-11-20 13:22:07.054+03
 bunin	7.19 Tb	cms	20	2010-02-24 12:11:02.022+03	2011-08-31 16:42:24.298+04
 delgadop	590143	cms	8	2010-03-11 21:42:35.312+03	2010-03-11 21:42:35.353+03
 basegmez	269.85 Mb	cms	2	2010-04-02 01:38:27.787+04	2010-04-02 01:38:27.848+04
 senkin	4.55 Gb	cms	9	2010-05-24 22:17:34.52+04	2010-05-31 17:52:38.449+04
 vmurzin	0	cms	0	2010-12-30 16:54:50.971+03	2011-10-24 21:16:59.882+04
 safronov	41.63 Gb	cms	14	2011-02-15 16:36:32.24+03	2011-02-23 10:28:18.885+03
 gorbunov	0	cms	0	2011-06-16 14:05:08.08+04	2011-06-16 14:05:08.08+04
 gorbuno	1.50 Tb	cms	75	2011-06-29 18:40:47.637+04	2011-08-22 15:31:47.156+04
 grandi	54.23 Gb	cms	13	2011-08-23 01:36:59.841+04	2011-08-23 01:36:59.907+04
 mazarkin	338.15 Gb	cms	7	2011-11-18 04:11:08.623+04	2011-11-21 07:25:30.213+04
 vaotest	2.50 Gb	cms		2011-07-14 15:03:58.572+04	2011-07-14 15:03:58.572+04
 vaotest2	2.50 Gb	cms		2011-07-14 15:51:51.207+04	2011-07-14 15:51:51.207+04
 vaotest3	2.50 Gb	cms		2011-07-14 15:57:47.068+04	2011-07-14 15:57:47.068+04

Conclusion

- CMS Physics community is in need of easy-to-use tools for data browsing and monitoring on groups dCache instances
- CMS specific data browser for dCache works at dubna Tier2
(<http://lcgsetb01.jinr.ru/explore/indexbup.php>)
- Data management system is in development