HTTP/pNFS/Nagios and much more

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On behalf of the DPM team

Outlines

EUROPEAN MIDDLEWARE INITIATIVE

1- Perfsuite: A testing framework

2- DPM interfaces

3- Nagios probes and DPM Monitoring

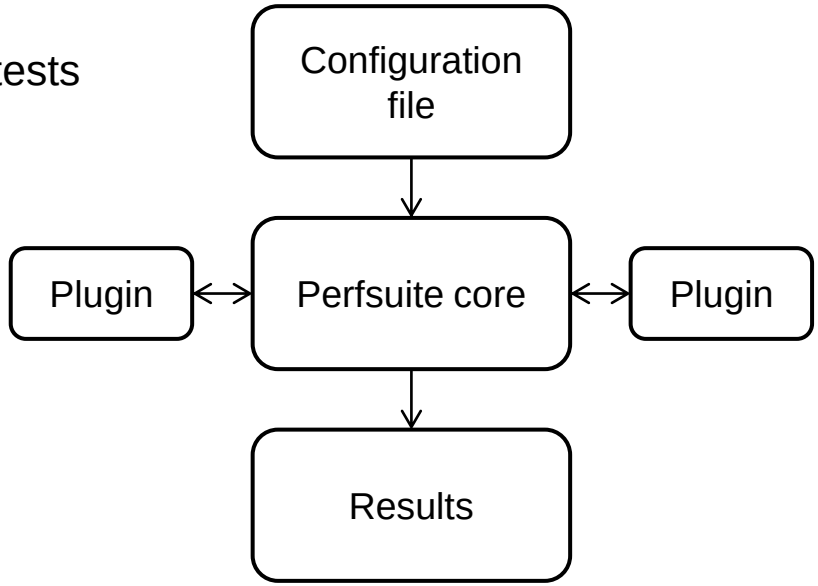
Description and goal of Perfsuite:

Automation tool for performance testing:

- Allows reproducible performance and scalability tests

Testing framework:

- Run multiple tests using multiple parameters
- Core / plugins architecture
- No language restriction for the plugins



Plugins (testing scripts):

- Name server and dpm operations

  Create, stat, delete, ls, get
- Transfer protocols

  Gridftp VS HTTP

  Rfio VS NFS

DPM Name server testing

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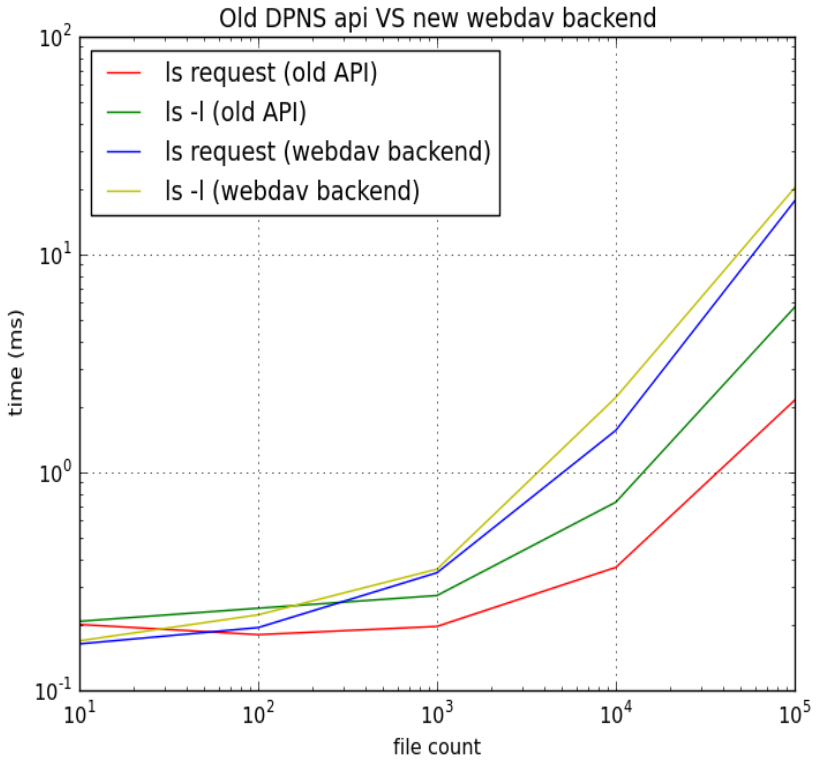
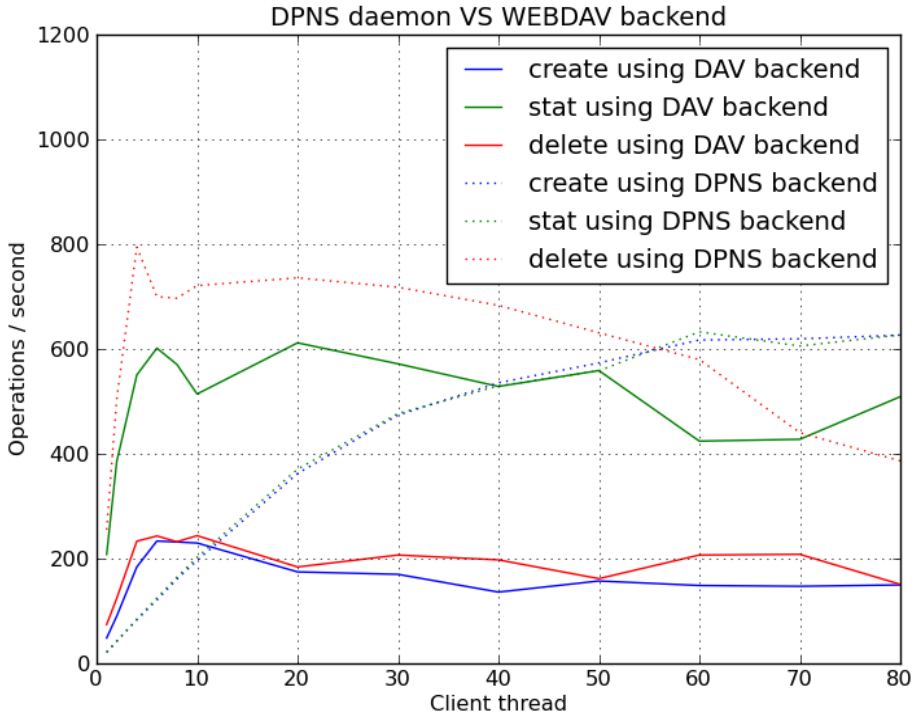
EMI INFSO-RI-261611

Comparison DPNS daemon VS name server operation through WEBDAV

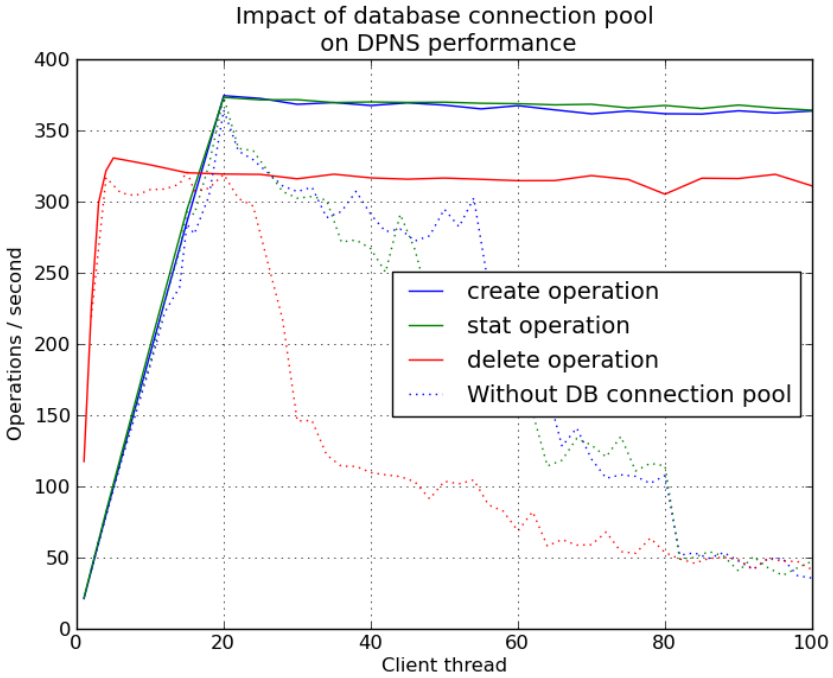


ls = opendir / readdir / closedir
-l option = request all metadata

First evaluation of dav backend

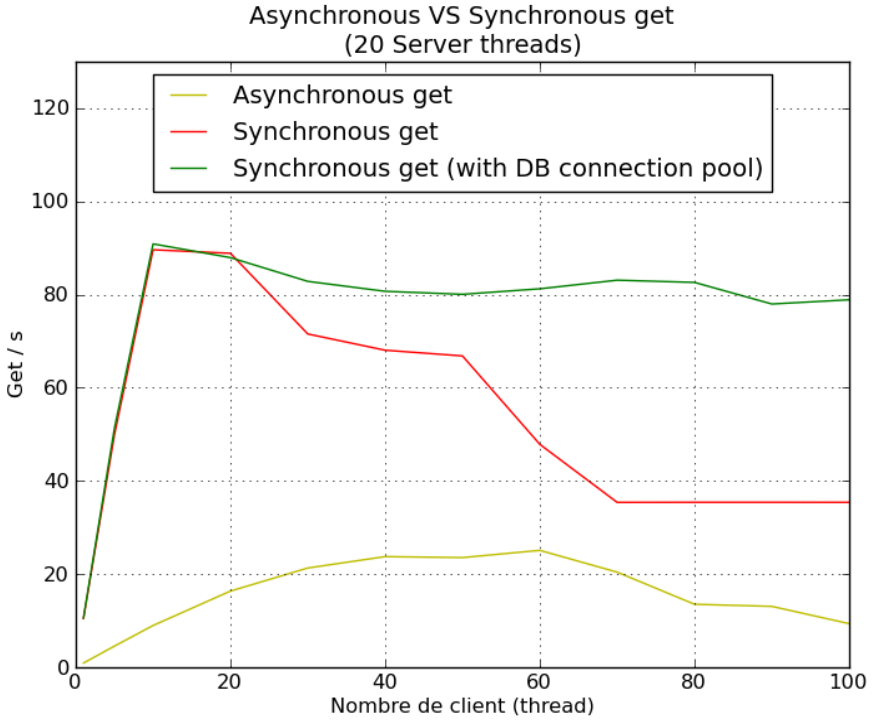


DPM daemon testing

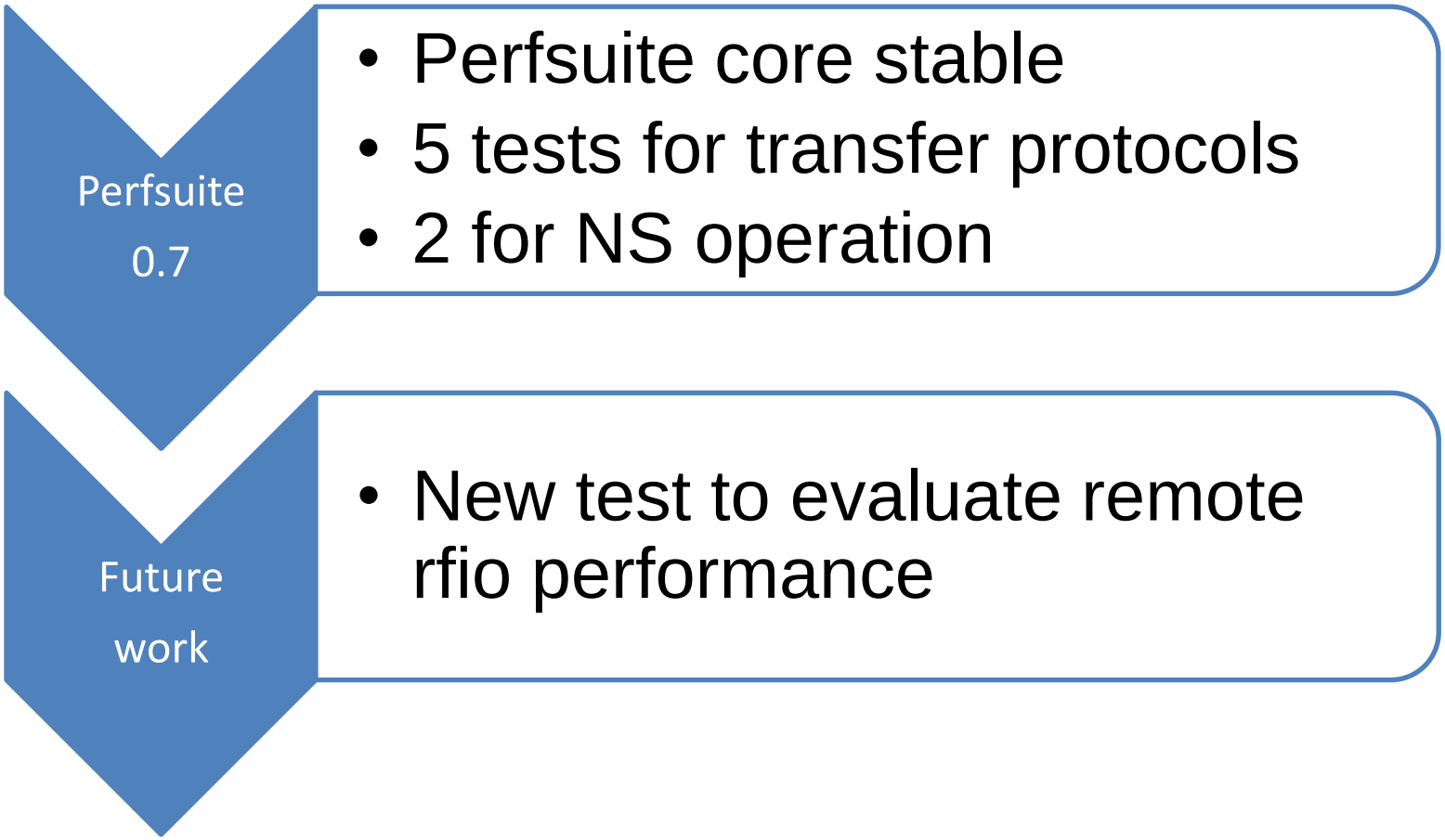


Database connection pool:
Experimental work

DPM get (synchronous version)



Current release and future work



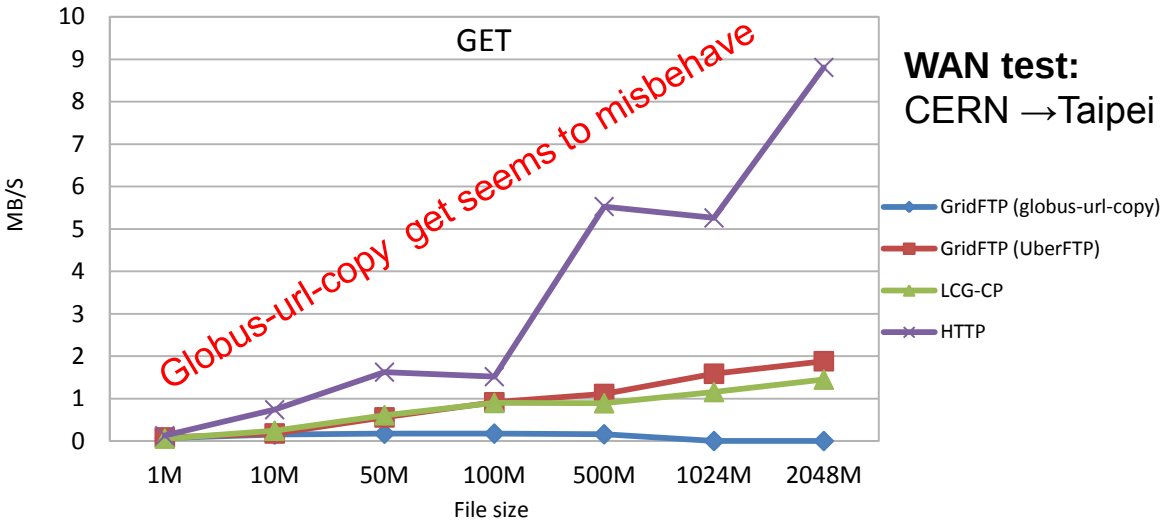
DPM interfaces

Standard protocols

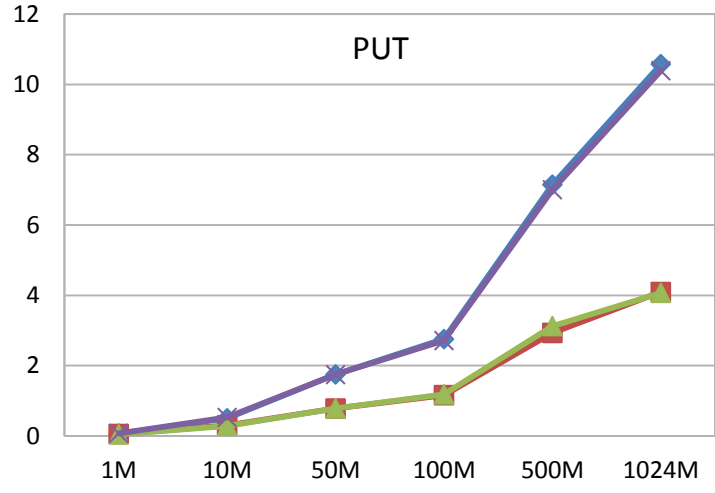
- Simplify life of users and administrators
- Access grid storage system through well known clients
  - -Browser, CLI (curl, wget), file:///
- Standards have been kept:
  - -no modification done on it
- HTTP / WEBDAV:
  - -Set of modules for Apache2
- pNFS:
  - -Based on Ganesha (NFS server running in User Space)

HTTP / WEBDAV and DPM

A single protocol for file access and file transfer



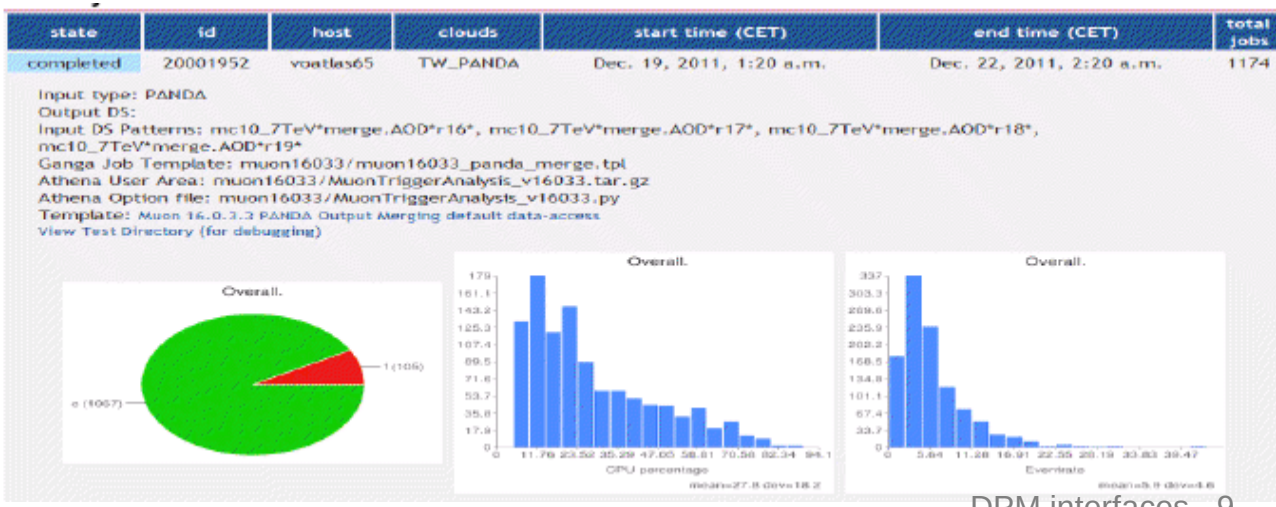
WAN test:
CERN →Taipei



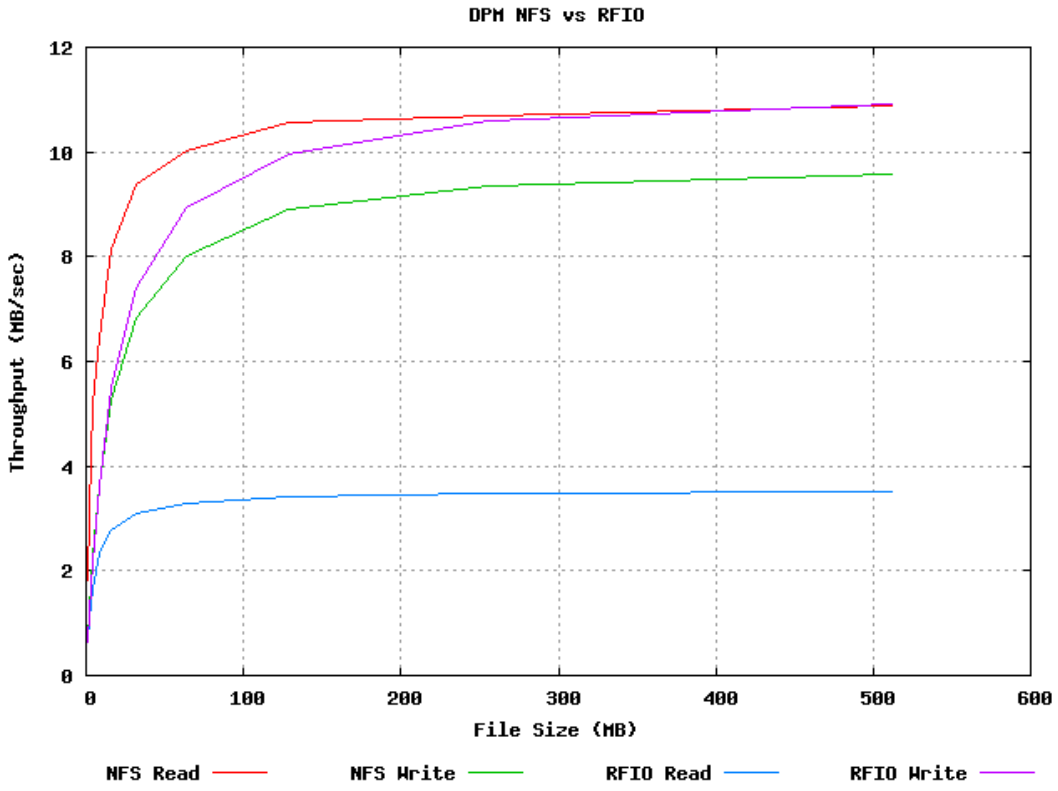
Hammercloud test:

Only 10% of failure

Mainly due to the lack of space on the WN



NFS and DPM



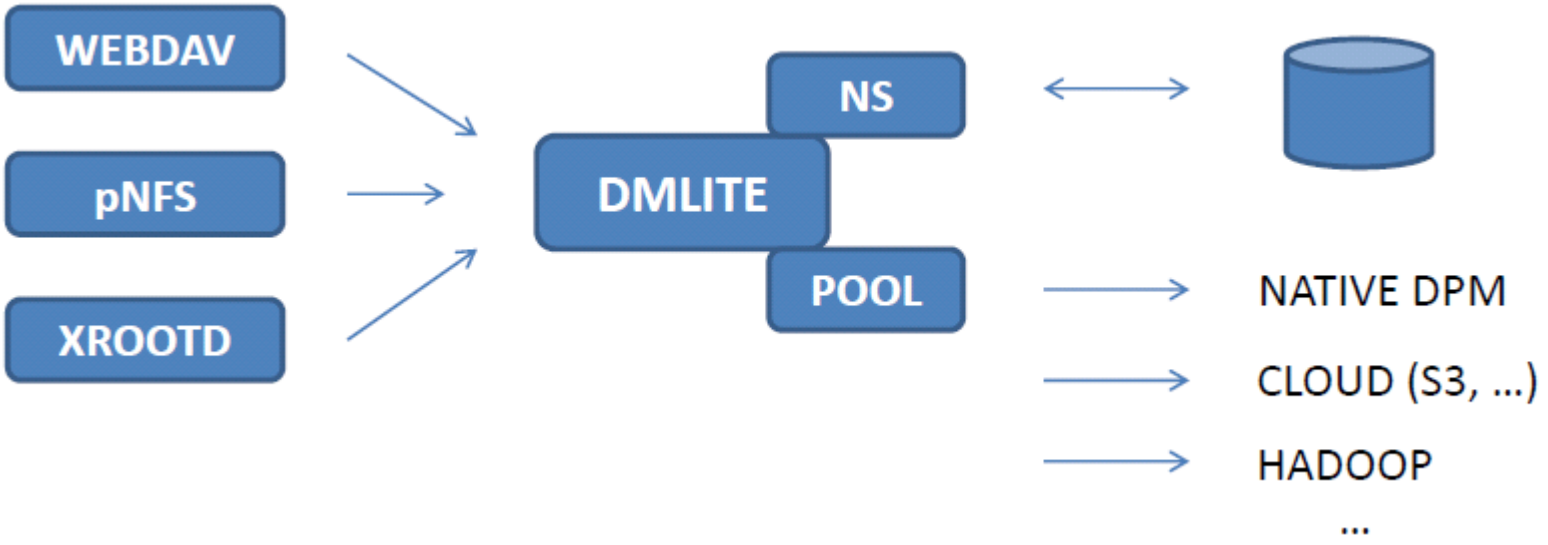
- **Server:**
  - -Xeon 4 Cores 2.27GHz
  - -12 GB RAM
  - -1 Gbit/s links
- **Client:**
  - -Dual core
  - -2 GB RAM
  - -100 Mbit/s link

RFIO read seems to misbehave during the test

No Hammercloud test at the moment

DMLITE

- Refactoring of DPM internals
- Separation between namespace and pool management



High modularity:

- NS: MySQL, Oracle, memcache, DynFederation, …
- POOL: Native DPM, HADOOP, S3, CEPH, …

Overview of the hadoop plugin

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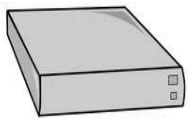
Testbed infrastructure

Client

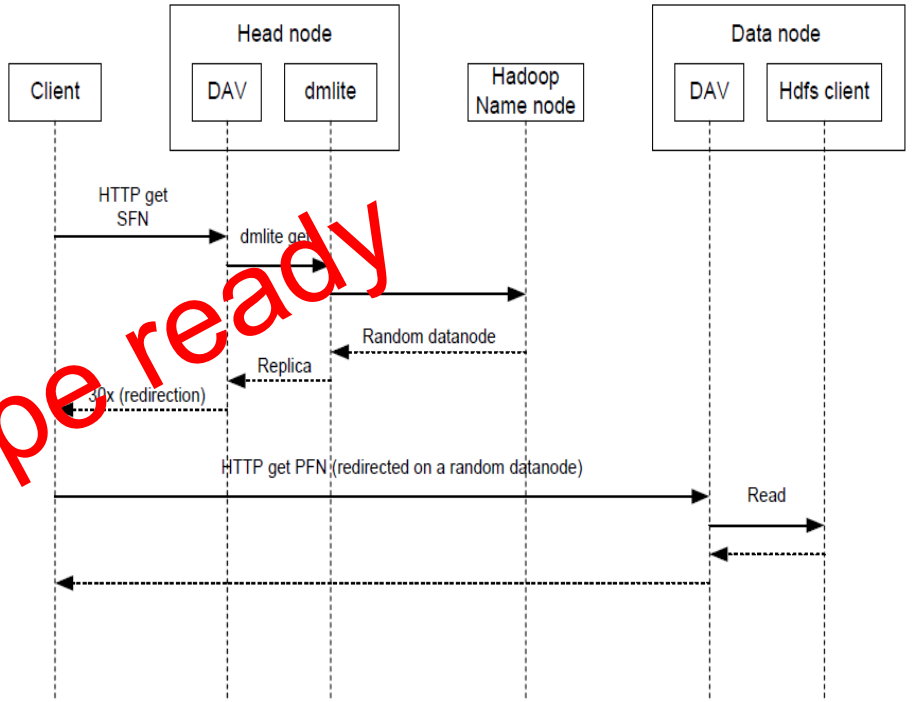


DPM Head node (x1)
Lcgdm-dav + dmlite

Hadoop
Namenode (x1)

Hadoop Datanodes (x4)
Lcgdm-dav + dmlite + hdfs client

First prototype ready



Anatomy of a http get using a hadoop backend

Status and plans

lcgdm-dav 0.7

lcgdm-dav 0.9
dpm-nfs 0.6

Dmlite

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Nagios probes and DPM Monitoring

Goal of DPM monitoring

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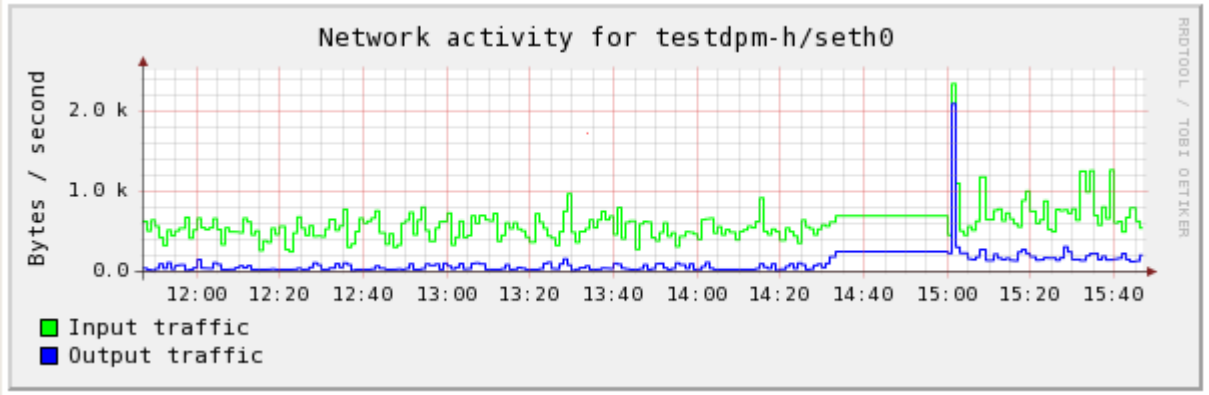
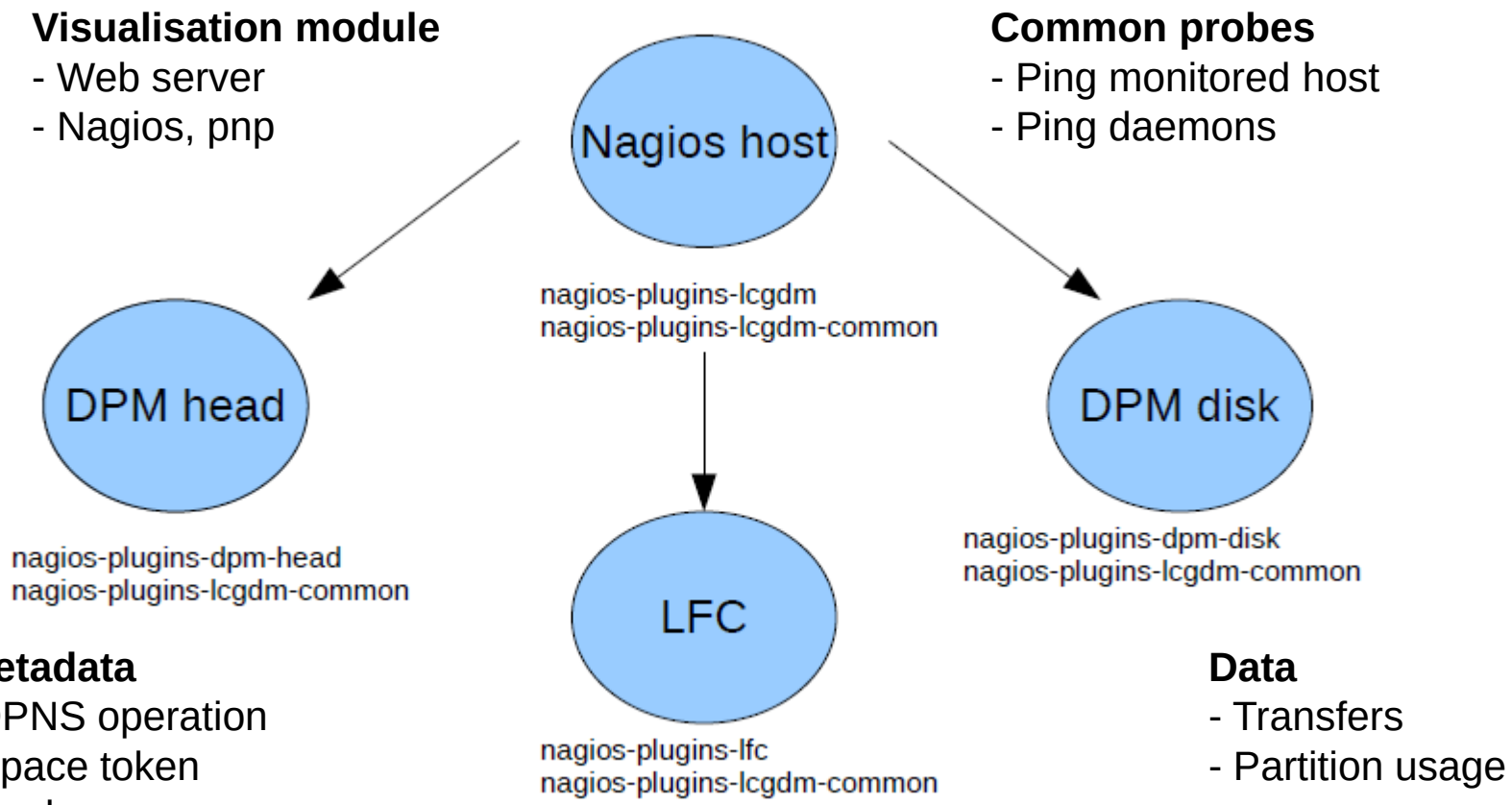
Quick problem detection (nagios)

Host	Service	Status	Last Check	Duration	Attempt	Status Information
localhost	Current Load	OK	02-21-2012 15:30:11	27d 3h 24m 29s	1/4	OK - Charge moyenne: 0.00, 0.00, 0.00
	Current Users	OK	02-21-2012 15:30:24	27d 3h 28m 53s	1/4	UTILISATEURS OK - 1 utilisateurs actuellement connectÃ©s sur
	DM_DPM	CRITICAL	02-21-2012 15:30:37	0d 0h 4m 58s	4/4	DM-DPM CRITICAL - Ping failed
	DM_DPNS	OK	02-21-2012 15:30:50	0d 0h 35m 51s	1/4	DM-DPNS OK - Test passed
	DM_GSIFTP	OK	02-21-2012 15:31:03	0d 0h 35m 38s	1/4	DM-GFTP OK - Test passed
	DM_RFIO	OK	02-21-2012 15:31:16	0d 0h 35m 25s	1/4	DM-RFIO OK - Test passed
	PING	OK	02-21-2012 15:26:29	27d 3h 25m 53s	1/4	PING OK - Paquets perdus = 0%, RTA = 0.03 ms
	Root Partition	OK	02-21-2012 15:26:42	27d 3h 25m 17s	1/4	DISK OK - free space: / 3037 MB (64% inode=96%):
	Total Processes	OK	02-21-2012 15:26:55	27d 3h 24m 41s	1/4	PROCS OK: 113 processus avec ETAT = RSZDT

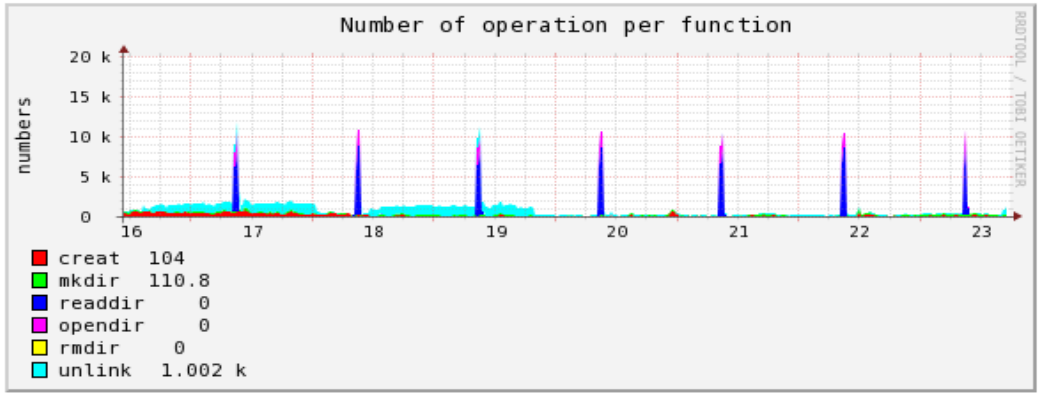


Historic data visualization (pnp4nagios)

Deployment overview



Some examples …

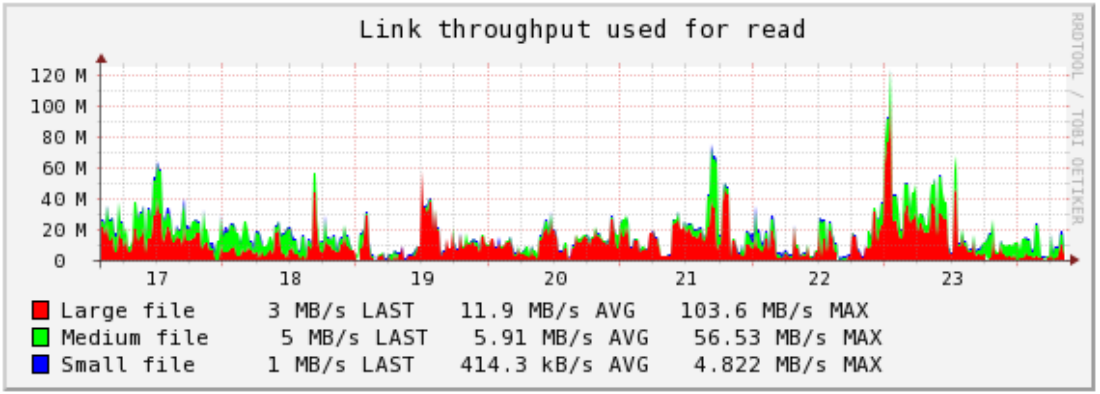


Name server activity

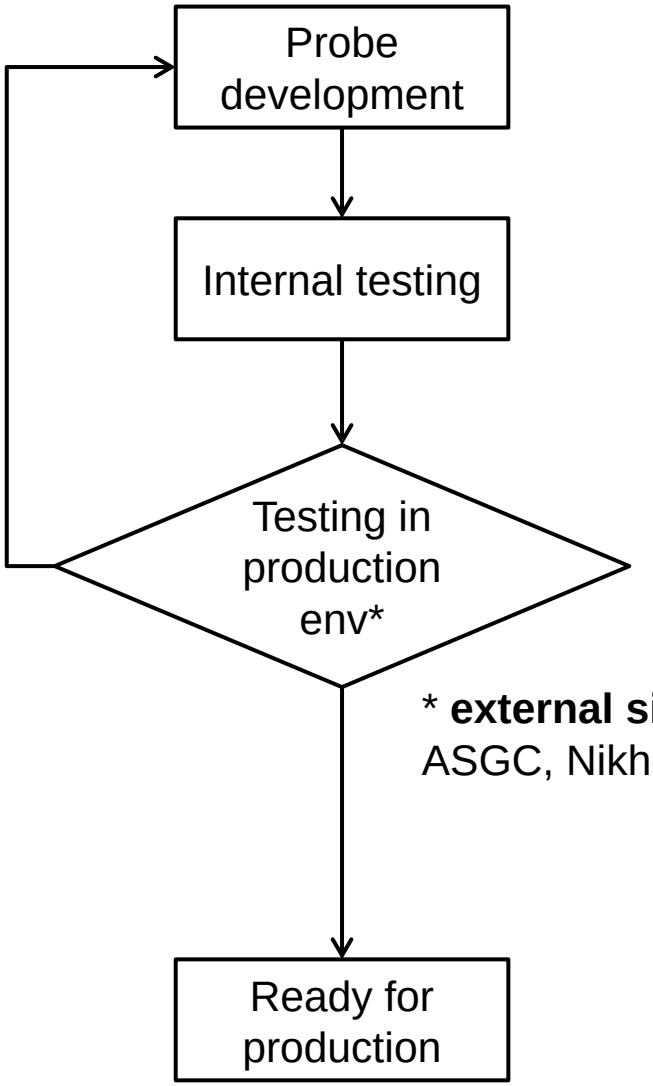
Which functions are used ?
In which proportion ?
How often ?

Transfer protocol activity:

Read / Write
Multiple metrics
File sorted by size



Probe development cycle



Probes are tested by external sites* in a production environment

Nagios plugins timeline

Current EPEL version
February, 1st 2012

4 packages
18 probes (4 entities)
11 pnp4nagios templates

EMI 1, 2 repositories

EPEL Testing soon
April, 20 2012

1 new package (nagios-lcgdm)
Used to provide config files
2 new probes
2 new templates

Next update of EMI

Development version
Unknown

External contributions (Nikhef)
6 probes to be evaluates
4 news probes planed

Resources

HTTP / DAV:
https://svnweb.cern.ch/trac/lcgdm/wiki/Dpm/WebDAV

NFS:
https://svnweb.cern.ch/trac/lcgdm/wiki/Dpm/NFS41

Dmlite:
https://svnweb.cern.ch/trac/lcgdm/wiki/Dpm/Dev/Dmlite

Testing framework informations:
https://svnweb.cern.ch/trac/lcgdm/wiki/Dpm/Admin/Performance

Testing scripts available:
https://svnweb.cern.ch/trac/lcgdm/wiki/Dpm/Admin/PerformanceTest

Trac page:
https://svnweb.cern.ch/trac/lcgdm/wiki/Dpm/Admin/Monitoring

Nagios webinar:
http://vimeo.com/33355875

Nagios presentation given during DPM workshop:
http://indico.cern.ch/conferenceDisplay.py?confId=172988

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Questions?

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