Scaling ownCloud horizontally

by user redirection and proxying

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Why don't we just use …

Data grid technology

* LFC - high-performance file catalog

* Globus **gridftp** - parallel file transfer

* **dCache** - gridftp, SRM, xrootd, **HTTP/WebDAV**

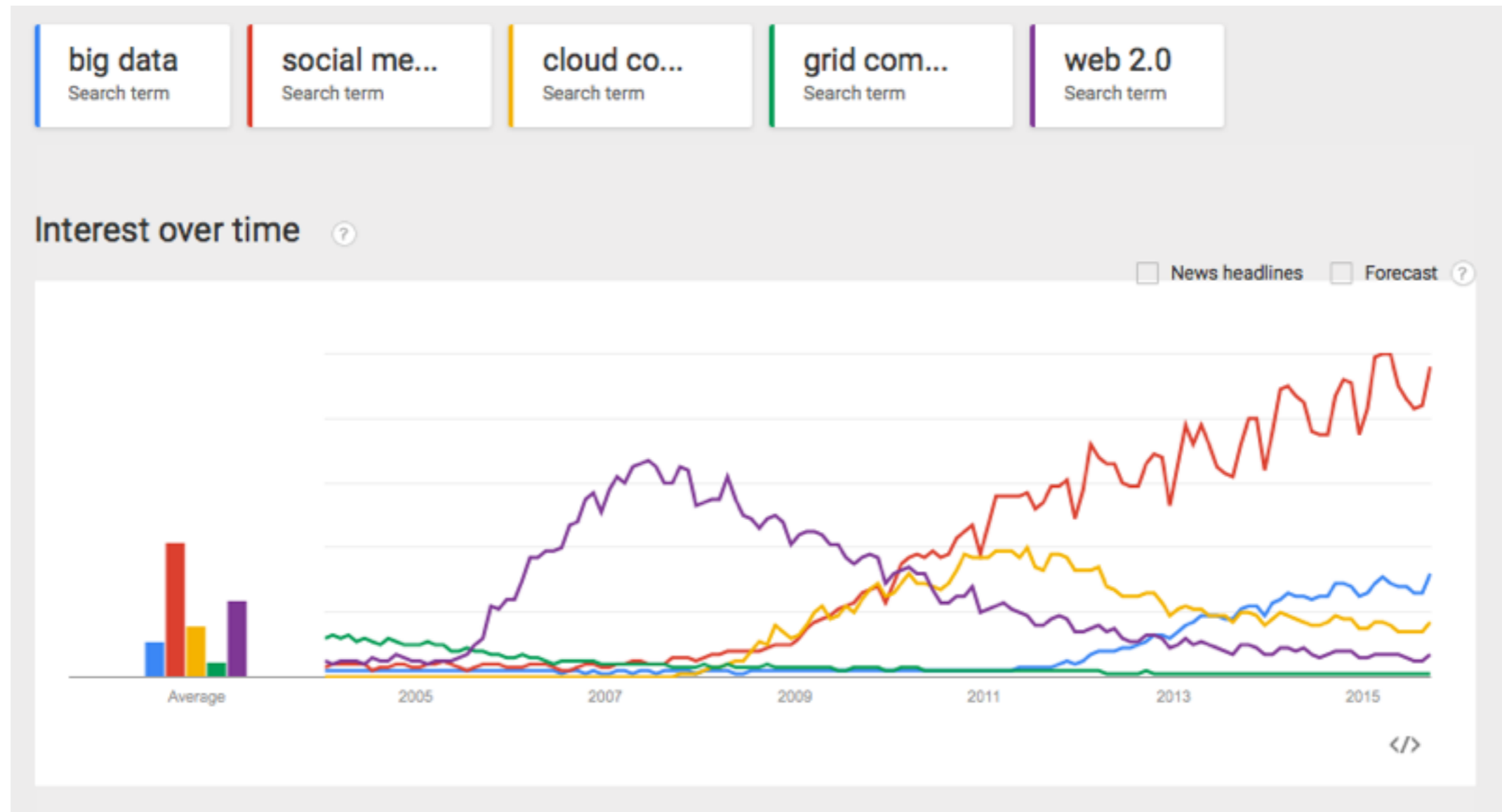* **iRODS**/SRB (Storage Resource Broker) - comprehensive data-management suite

* Etc.

Public clouds

✤ Amazon S3/Dropbox

✤ Google Cloud Storage/Drive

✤ Microsoft Azure/OneDrive

Enterprise - private clouds

✤ Buy it all from EMC, CSC, IBM?

Technology changes

We're a national *research* data service provider

As such, we need:

✣ Long-term perspective

✣ Vendor independence

✣ Open standards

✣ *Customisability*

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test ⌄

Places ⌄

🏠 **Home**

📁 documents

🔗 Shared by me

🔀 Shared with me

🗑 Trashbin

Tags ⌄

🏷 mytag

🏷 music

Apps ⌄

🏷 Metadata

👥 Teams

📷 Pictures

⬇ Importer

⬆ Uploader

🏠

☁ Upload | New ⌄

	Name ▲		Size	Modified
📁	Data		0 kB	3 months ago
📁	documents		6.3 MB	last month
📁	music		3.6 MB	9 months ago
🔗 📁	photos		663 kB	9 months ago
📁	testfolder		0 kB	6 days ago
📄	IPMIViewSuperBlade.pdf	🏷 mytag	1.3 MB	last month
📄	msymdoc.pdf		1.8 MB	last month
📄	ownCloudUserManual.pdf		1.8 MB	9 months ago

5 folders and 3 files   15.4 MB

Places

Home

documents

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Shared with me

Trashbin

Tags

mytag

music

Apps

Metadata

Teams

Pictures

Importer

Uploader

New tag

Name	Color	On left menu	Public	Files
mytag	🟩	☑	☐	1
sound	🟥	☐	☐	0

Tag name:

mytag

Meta-data fields:

test1 ✖

test2 ✖

Add meta-data field   OK   Cancel
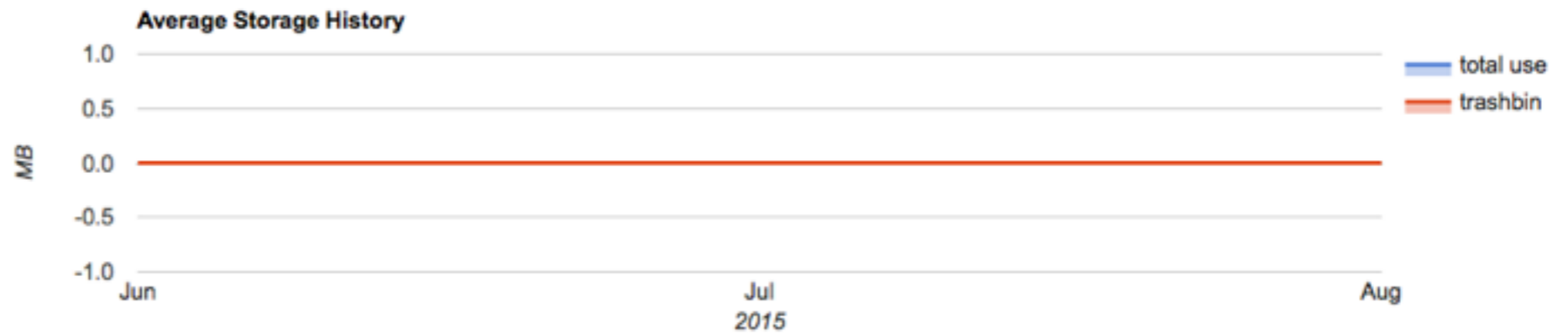
test

☑ **Notify about my own actions**

You need to set up your email address before you can receive notification emails.

Send emails: Hourly ▾

WebDAV sccess control

Allow unauthenticated WebDAV access from compute nodes ☑

Storage Use

Average Storage History

— total use
— trashbin

2015 ▾ **Daily History**

Status	Month	Bill (DKK)	Balance (MB)	Invoice	Payment
Pending	August	0	0	2015-August-febd528a.pdf	**Pay Now**

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Bottlenecks of a traditional ownCloud deployment

✤ Web server (Apache)

✤ Database (MySQL)

✤ File system

✤ Network card

✤ Internet uplink

Traditional scaling of LAMP sites

✤ Separation of web servers and DB server

✤ HTTP load balancing

✤ Reverse proxying

✤ MySQL clustering (sharding)

What's the problem?

✤ *Complexity*

✤ Non-static content on disk→performant shared file system → more *complexity*

Let's try something else

* Sharding/load balancing on HTTP level - redirect by user ID

* Each participating 'slave' server self-contained, i.e. can exist on its own (default single-machine LAMP)

A prototype - status

✤ SAML login on master - redirection to slave

✤ PHP session passed on to slave

✤ Shared files proxied in web interface

✤ WebDAV not redirected

✤ Shared files not (yet) available via WebDAV

✤ All done in app + theme

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Personal settings

You have used **15.4 MB** of the available **64 TB**

Show First Run Wizard again

Profile Password App settings **Data settings**

Data location

Home site: DeIC test site ▾

Backup site: SDU ▾

Server for sync clients: https://silo1.data.deic.dk

Backup server: https://silo5.data.deic.dk

Save

Is it simpler?

* From a deployment and operation point of view: yes, a lot

* From a development point of view: no 😊
  → Lines of code: app: 7'000 + theme: 20'000 (a lot of duplication)