A JavaScript based CernVM-FS Monitor

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About me

Gdynia Maritime University
   faculty of Electrical Engineering,
   Major Computer Control Systems.

Graduate Work:
   Construction of a mobile robot performing
   the task of detecting and following a line.

University of Gdańsk,
   Master of Science in Computer Science

Software developer
What is CernVM-FS?

Provides:
- Scalable
- Reliable
- Low-maintenance

Software distribution service

It was developed to assist High Energy Physics (Hep) to deploy software on the worldwide distributed computing infrastructure. CernVM-FS moves the scientific codes to where the data is.
The CernVM File System

From anywhere in the world you can do: `ls /cvmfs/atlas.cern.ch/software/…`

Example, all releases of a software package are hosted as a CernVM-FS repository on a web server.
Replica Server (Stratum 1)

New software versions are published at the Stratum 0 at CERN.

The data is replicated to multiple Stratum 1 servers to:
- Improve reliability
- Reduce latency

Stratum 1 replica servers are located in:
- Europe
- the U.S
- Asia

The figure, shows the situation for the repositories hosted in the cern.ch domain.
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Registered Stratum 0 Repositories

- MICE (mice.egi.eu)
- WENMR (wenmr.egi.eu)
- Physics IBERGRID (phys-ibergrid.egi.eu)
- ATLAS nightlies (atlas-nightlies.cern.ch)
- ILC (ilc.desy.de)
- Blue Brain Project (bbp.epfl.ch)
- CernVM 3 (cernvm-prod.cern.ch)
- Biomed (biomed.egi.eu)
- T2K (t2k.egi.eu)
- ALICE Conditions (alice-ocdcb.cern.ch)
- CALICE (calice.desy.de)
- HERMES (hermes.desy.de)
- H1 (hone.desy.de)
- OLYMPUS (olympus.desy.de)
- XFEL (xfel.desy.de)
- ZEUS (zeus.desy.de)
- ALEPH (aleph.cern.ch)
- CvmFS Configuration (cvmfs-config.cern.ch)
- CERN@School (cernatschool.egi.eu)
Goals of my project

- Manual: all repositories and replica servers have to be added by hand
- The service requires a dedicated database
- Legacy codebase

How to address it?
1) Convert legacy Python code base to an existing JavaScript client library
   - JS client library was designed for the use in a web browser
   - Needs to be adjusted to run on a web server in node.js

2) Query the repositories themselves for monitoring information so that we can drop the need for a database

3) Create new website cvmfs-monitor

→ More accurate and easier to maintain monitoring information
What am I Actually Doing?

- Update code and dependencies
- Change code structure
- Add unit tests
- Look very hard at different data encodings
- Decode cryptographic certificates
- Fetch correct hashes
- ...

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