COMPASS Database Upgrade and OSQAR Overview

Martin Bodlák

Faculty of Nuclear Sciences and Physical Engineering, CTU Prague
Advanced Studies Institute - Symmetries and Spin 2013
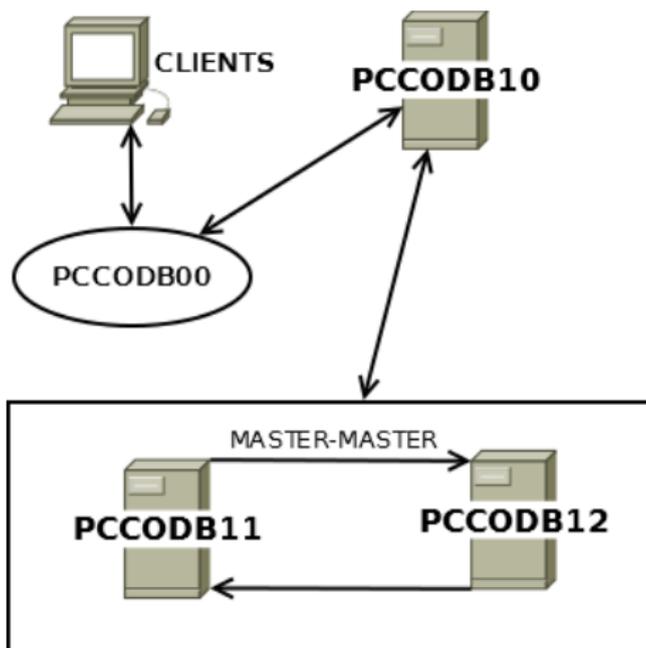
July 13, 2013

Talk outline

COMPASS DATABASE PART

- current COMPASS online database
- problems with replication
- database architecture proposal

OSQAR PART

- OSQAR experiment
- run in 2013

Current COMPASS online database

Current COMPASS online database

- master$\leftrightarrow$master replication
- low redundancy (no backup after failure of one node)
- immediate action required on failure
- replication has to be restarted
- in some cases full database backup is needed
- might cause limitations during data taking

May 2012 incident

- few hours before end of the winter shutdown
- replication crash due to a hardware error
- database had to be shut down
- took few hours to resynchronize

October 2012 incident

October 03, 2012 09:00

[10-03-2012 09:37:16] SERVICE NOTIFICATION: nagiosadmin;pccodb12;MySQL replication slave lag;OK;notify-service-by-email;OK - Slave is 0 seconds behind

[10-03-2012 09:37:16] SERVICE ALERT: pccodb12;MySQL replication slave lag;OK;HARD;3;OK - Slave is 0 seconds behind

[10-03-2012 09:34:16] SERVICE NOTIFICATION: nagiosadmin;pccodb12;MySQL replication slave status;OK;notify-service-by-email;OK - 127.0.0.1 - Slave SQL Running Yes

[10-03-2012 09:34:16] SERVICE ALERT: pccodb12;MySQL replication slave status;OK;HARD;3;OK - 127.0.0.1 - Slave SQL Running Yes

[10-03-2012 09:27:16] SERVICE NOTIFICATION: nagiosadmin;pccodb12;MySQL replication slave lag;CRITICAL;notify-service-by-email;CRITICAL - Slave is NULL seconds behind

[10-03-2012 09:24:16] SERVICE NOTIFICATION: nagiosadmin;pccodb12;MySQL replication slave status;CRITICAL;notify-service-by-email;CRITICAL - 127.0.0.1 - Slave SQL Running No

[10-03-2012 09:14:46] Auto-save of retention data completed successfully.

October 02, 2012 18:00

[10-02-2012 18:27:16] SERVICE NOTIFICATION: nagiosadmin;pccodb12;MySQL replication slave lag;CRITICAL;notify-service-by-email;CRITICAL - Slave is NULL seconds behind

[10-02-2012 18:27:16] SERVICE ALERT: pccodb12;MySQL replication slave lag;CRITICAL;HARD;3;CRITICAL - Slave is NULL seconds behind

[10-02-2012 18:25:16] SERVICE ALERT: pccodb12;MySQL replication slave lag;CRITICAL;SOFT;2;CRITICAL - Slave is NULL seconds behind

[10-02-2012 18:24:16] SERVICE NOTIFICATION: nagiosadmin;pccodb12;MySQL replication slave status;CRITICAL;notify-service-by-email;CRITICAL - 127.0.0.1 - Slave SQL Running No

[10-02-2012 18:24:16] SERVICE ALERT: pccodb12;MySQL replication slave status;CRITICAL;HARD;3;CRITICAL - 127.0.0.1 - Slave SQL Running No

[10-02-2012 18:23:16] SERVICE ALERT: pccodb12;MySQL replication slave lag;CRITICAL;SOFT;1;CRITICAL - Slave is NULL seconds behind

[10-02-2012 18:22:16] SERVICE ALERT: pccodb12;MySQL replication slave status;CRITICAL;SOFT;2;CRITICAL - 127.0.0.1 - Slave SQL Running No

[10-02-2012 18:20:16] SERVICE ALERT: pccodb12;MySQL replication slave status;CRITICAL;SOFT;1;CRITICAL - 127.0.0.1 - Slave SQL Running No

[10-02-2012 18:14:46] Auto-save of retention data completed successfully.

October 02, 2012 17:00

[10-02-2012 17:14:46] Auto-save of retention data completed successfully.

October 2012 incident

- following query issued by DATE during evening shift:
  UPDATE tb_run SET title="possibly ok"
- rewrites titles of all the runs ever taken to "possibly ok"
- fortunately it caused replication crash and the query was not processed
- no replication during the night
- replication restored by manually skipping the query
- bug in DATE fixed

Original proposal
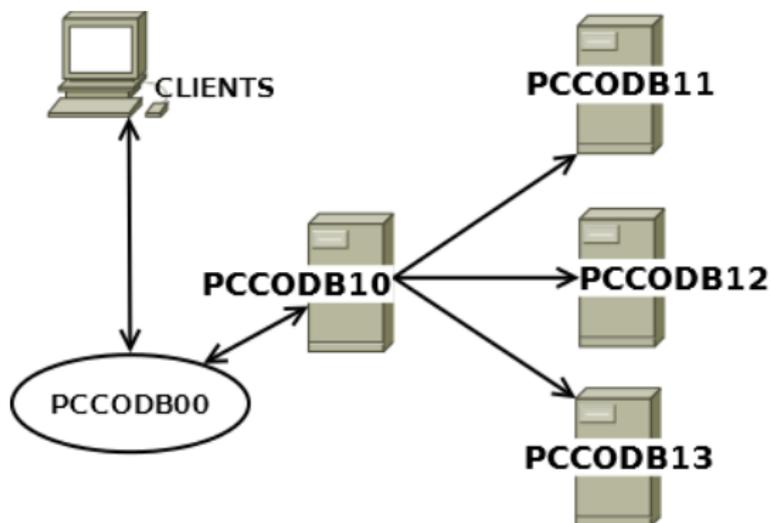
- proposed by Vladimir Jarý in 2010, not implemented due to lack of hardware
- master$\rightarrow$*n* slaves replication
- master node failure $\Rightarrow$ one slave node takes over as master
- slave node failure $\Rightarrow$ node is replaced, replication restarted
- nobody from the "outside" notices anything during failure, no limitations during data taking
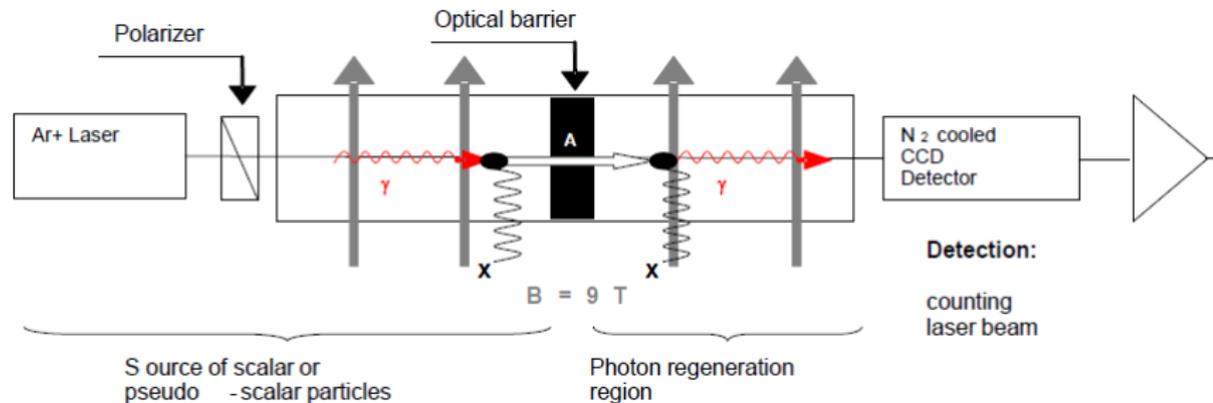- should be implemented as soon as the hardware is available

OSQAR experiment

Optical **S**earch for **Q**ED vacuum magnetic birefringence, **A**xions and photon **R**egeneration

- laser-based experiment
- search of axions and axion-like particles
- situated at CERN, magnet test hall SM18

"Light shining through the wall"

Courtesy of Miroslav Šulc

OSQAR in 2013

- run in August / September 2013
- 25 W argon laser
- LN_2 cooled CCD-1024E/1
- 2 spare LHC dipoles
- IT improvements (electronic logbook, ...)
- brick looks fine, no improvement needed
- Nobel Prize expected in 2014 ;-)

Thank you!

THANK YOU FOR YOUR ATTENTION