Dry run 2019 DAQ software news

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30/09/2019

Major changes

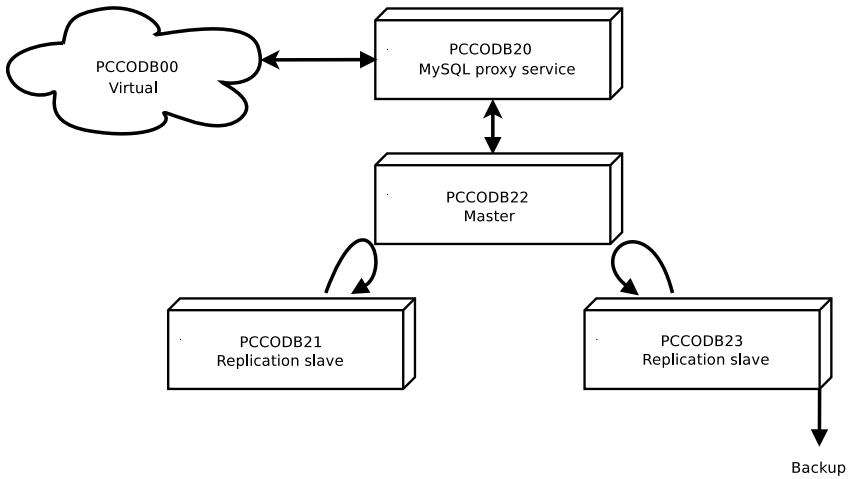
- OS upgrade: SLC6 $\rightarrow$ CC7
- UDP monitoring
- Start/End of run procedure
- Spill number validation algorithm

CC7 upgrade – control room

- 3 new computers with CC7: `PCCORC40`, `PCCORC41`, `PCCORC42`
- 3 old computers decomissioned
- CC7 installed on the rest, with the exception of `PCCORC31`, on which SLC6 will be kept for a limited duration of time
- Windows machines upgraded from Win7 to Win10 by Vladimir Frolov

CC7 upgrade – database servers and gateways

- PCCODB20-23 all upgraded to CC7 and MariaDB 5.5.60 by Jan Tomsa



- PCCOGW01 and PCCOGW02 upgraded to CC7 by Martin Zemko

CC7 upgrade – readout servers

- PCCORE11-14 and PCCORE17-18 upgraded to CC7
- PCCORE15 and PCCORE16 kept @ SLC6 for now
- DIALOG server and DAQ processes (Master, SlaveControl, Message Logger) moved from PCCORE15 to PCCORE17

CC7 upgrade – what is yet to be done

- `PCCOFS` machines – NFS /online directory, backup
- `PCCONL` machines – `Zabbix`, `bcoool`, `errdumpall`
- All the desktops in 888 (old CR, DAQ barrack...)
- `COMPASSVM` virtual machines (webhosting, production)

UDP monitoring

- Old monitoring implementation: TCP stream from a xinetd service @ readout machines (source format: @pccore11:)
- New implementation by Vladimir Frolov: UDP multicast stream from the Slave Readout process (source format: `$UDP_MONITOR_SOURCE`)
- `MurphyTV`, `coool`, `bcoool`, `eventDumpAll`, `errorDumpAll` all UDP-compatible
- Dry run: new and old monitoring in parallel

Start/End of Run procedure (logbook)

- Run entries – DAQ info, trigger info, beamline info, PT info, `bcoool`, `errorDumpAll`
- Overall, a complex distributed procedure accessing multiple databases
- 2019 – new implementation by Lucie Roškotová to unify the programming language and increase maintainability

Start/End of Run procedure (logbook)

- Architecture changes: _rccars_runlogger and _rccars_runmonitor processes @pccore17
- Work and debugging still ongoing – with a system of this scale, problems are to be expected!
- Dry run: the new implementation will be used, shifters should try to break the SOR/EOR system in as many different ways as possible and document&report it after!

Spill number validaiton algorithm

- Implemented in order to rectify the effect an erroneous spill number sent by the `Slave Readout` process could rarely have on the end of run logic in conjunction with continuously running DAQ (c.f. the double run number incident from 2018)

- Dry run: algorithm deployed – safe stop indicated by a flashing message in `MSGBrowser`, same as PCI/DMA. The shifters should report any occurrence of this as well as the conditions the problem occurred in!

Frontend status

- About 50% of connected source ids included in the DAQ and running stably
- XSwitch: additional source ids connected by Vladimir Frolov
- More info on Friday!

Backup slides

Old monitoring downsides

- Inability to connect from the same machine
- New process launched for each connection
- Architecture and implementation overall "clunky" and containing many legacy elements
- Hard to nail bugs: Processes sometimes remain hanging after consumer disconnection etc...

Deployment diagram