

CDS status update

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KAGRA update
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2020 spring/summer CDS upgrades

In spring/summer 2020 both LIGO sites (LHO/LLO) underwent major CDS upgrade:

- RTS 4.0: major new release
- guardian 1.4.3: **python 3**
- all front-end/DAQ/guardian machines (both sites): Debian 10
- new Debian 10 RTS linux 4.19 kernel packages
- control room workstations: LHO: Debian 10, LLO SL7.7
- all software distributed through native packaging (Debian, SL)
- Dolphin interconnect for DAQ chain
- new hardware (computers, IO chassis, etc.)

CDS software distribution

All CDS software is now officially open source, hosted at `git.ligo.org`:

- `https://git.ligo.org/cds`

All CDS software (RTS, DAQ, control room tools) has been packaged for **Debian 10 “buster”**, and all site installations now use native package distribution via “`cdssoft`”:

- `https://git.ligo.org/cds-packaging/docs/-/wikis/home`

RTS 4.0

Both sites were upgraded to major new release **RTS 4.0**.

- <https://dcc.ligo.org/LIGO-T2000467>
- <https://git.ligo.org/cds/advligorts/-/wikis/home>

RTS 4.0 release notes:

- major overhaul of DAQ chain
 - more modular architecture
 - network transport separated from daqd binaries
 - new support for Dolphin interconnect, or standard ethernet
- support higher sample rates, up to 512 kHz
- **Dolphin gen 2 (IX) or 3 (PX) support only (gen 1 DX support deprecated)**
- systemd integration
- native Debian packaging

python3 Guardian

Both sites were upgrade to **guardian 1.4.3**, which is **python3** (no other functional changes).

Additionally the follow also need to be upgrade to python3-compatible versions:

- python-ezca → 1.4.0
- cdsutils → 1.4.2

All dependencies should be handled automatically when using native packaging.

python3 guardian usercode

The guardian upgrade to python3 meant that all guardian **usercode** (e.g. code in /opt/rtcds/userapps) needs to be made **python3 compatible**.

Most code modifications relatively straightforward:

- `print()` and `exec()` functions
- `dict.iteritems()` → `dict.items()`
- explicit relative imports: `from . import foo`

guardian upgrade procedure

Basic procedure followed at both sites:

- 1 shut down guardian system
- 2 upgrade guardian machine
 - upgrade to Debian 10
 - configure to use cdssoft Debian 10 “buster” archive
 - install guardian 1.4.3 and dependencies
 - install/configure guardctrl
- 3 restart guardian nodes one-by-one
 - for each system exercise ***all states/code paths***
 - guardian should throw exceptions about syntax errors and other python2/3 issues
 - correct each error as you go, until full system recovered
- 4 recover full IFO lock before declaring success

other notable updates

Other notable software:

- dtt 0.3.0
 - much work on DTT and diaggui (new software engineer Erik von Reis)
- nds-client 0.16.7
- pyepics 3.4.1
- pcaspy 0.7.1
- ndscope 0.7.9
- gpstime 0.4.4
- camera code needs to be updated, packaged

Plan to support Conda for all control room software (front end, DAQ will remain Debian for foreseeable future).