



Connecting things together

C++ Kernel Status

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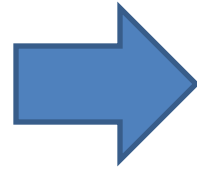
Thomas Braun - () byte physics

Michal Liszcz - S2INNOVATION

Overview

- Migration to Gitlab.com
- Tango Kernel Webinars
- cppTango Status
 - 9.3.x
 - cppTango 9.4
- Packages
- Community Life

Migration to Gitlab



GitLab

<https://github.com/tango-controls/cppTango>

<https://gitlab.com/tango-controls/cppTango>

Archived:

- Read Only
- No longer updated

Migration to GitLab

Main motivations:

- Travis CI change of policy and ambiguity. No longer free for Open Source projects. Broken promise.
 - Use GitLab CI/CD as alternative to Travis CI
 - Many institutes in the Tango Community are used to GitLab (many institutes are running a GitLab self-hosted instance)
 - Gitlab is free software while GitHub is not
 - Free of Charge Gitlab Gold License granted by gitlab.com
- Warning:** some features available thanks to the Gold license are using proprietary SW from Gitlab.
- Migration was relatively straight forward

Migration to GitLab

Consequences:

- Travis CI jobs -> GitLab CI jobs
- Dropped SonarCloud support
- SonarCloud -> clang-tidy and clang-analyzer jobs
- ABI-API compliance checker: GitHub action -> GitLab CI job
- Still using Appveyor for Windows CI
 - Move to GitLab CI/CD is also considered ([#731](#))
- *tango-9-lts* branch renamed to *main*

Tango Kernel Webinars

Goals

- Share the knowledge on the Kernel Code
- Help/Guide first contributors to the Kernel Code



<https://tenor.com/view/nod-beard-pai-mei-gif-5470798>

Tango Kernel Webinars

Video records available on tango-controls YouTube channel:

<https://www.youtube.com/channel/UCezS9cMkektZNItYnPOAQvg>

The screenshot shows the Tango Controls YouTube channel page. The header features the large 'TANGO' logo with a green circular icon containing a stylized figure. Below the logo, the channel name 'tango-controls' and '45 subscribers' are displayed. A red 'SUBSCRIBE' button is on the right. The navigation bar includes links for HOME, VIDEOS, PLAYLISTS, CHANNELS, DISCUSSION, and ABOUT. The 'Uploads' section is active, showing a list of videos. The left sidebar contains navigation links for Home, Explore, Subscriptions, Library, and History, along with a sign-in prompt.

Channel Information:

- Channel Name: tango-controls
- Subscribers: 45

Video Uploads:

Video Title	Duration	Views	Time Ago
How to set up a dev environment?	1:28:43	110 views	2 months ago
4th Tango Kernel Webinar: PyTango	22:00	41 views	4 months ago
Tango Kernel Webinar #3 - Tango events system - ...	22:00	41 views	4 months ago
Tango Kernel Webinar #3 - Tango event system	1:09:15	61 views	4 months ago
Tango Kernel Webinar #2 - Astor and Starter	47:04	40 views	5 months ago
Tango Kernel Webinar #2 - Pogo	33:21	57 views	5 months ago
1st Tango Kernel Webinar cppTango Overview	1:30:23	366 views	9 months ago

Development branches

main	9.3-backports
Future cppTango 9.4	(9.3.x development branch)
Requires C++14 at least	Does not require C++11 (Can be compiled on old compilers but might need a more recent CMake version)
Not binary compatible with cppTango 9.3.x	Binary compatible with cppTango 9.3.x
Gitlab CI: • Latest LLVM (12.0.1) • Latest GCC (10.2.0, soon 11.1.0) • Ubuntu 20.04 • Debian 8, 9 and 10 • clang-tidy • clang-analyzer	Gitlab CI: • Debian 7, 8, 9 , and 10
Appveyor: • win32 msvc14 and msvc 15 • x64 msvc14 and msvc15	Appveyor: • win32 msvc9, msvc10, msvc12, msvc14 and msvc 15 • x64 msvc9, msvc10, msvc12, msvc14 and msvc 15

cppTango changes (*main*)

- [!746](#) Event unsubscription from DeviceProxy destructor
- [!745](#) .travis/gcc-latest/Dockerfile: Update to 10.2.0
- [!748](#) Correct PCH compile definitions in Release mode
- [!753](#) Doxyfile.in: Upgrade for doxygen 1.8.19
- [!752](#) Remove conditional constexpr define
- [!755](#) Bugfix/fix abi checking
- [!757](#) Replace sprintf with snprintf
- [!775](#) INSTALL.md: Add missing cmake options
- [!770](#) Fix and document windows build
- [!758](#) Allow turning shared library building off

cppTango changes (*main*)

- [!776](#) Add more classes to documentation
- [!777](#) .travis/llvm-latest: Upgrade to llvm 11.0
- [!779](#) Include dependencies as SYSTEM libraries
- [!783](#) Remove calling GCC internal functions
- [!782](#) CMakeLists.txt: Remove bogus omniidl check
- [!803](#) event_lock.cpp: Make it compile on 32-bit linux
- [!800](#) **Revise developer documentation**
- [!808](#) Search docker for tests
- [!813](#) Fix sonar scanner usage
- [!811](#) Travis: Use sonar cache

cppTango changes (*main*)

- [!817](#) Fix API_EventTimeOut
- [!820](#) Gitlab CI migration
- [!832](#) Don't install unnecessary omniORB stub for MSVC
- [!831](#) Support clang-tidy
- [!790](#) CMakeLists.txt: Enforce a minimum libzmq version
- [!836](#) Bugfix/zmq try compile with custom path
- [!837](#) Update for new branch names
- [!835](#) Add clang-analyzer CI job
- [!843](#) Move server_init_hook to Util::server_init

cppTango CI pipeline

Pipeline Needs Jobs 17 Tests 0 Code Quality

Test External

- ✓ abi-api-compli...
- ✓ clang-analy...
- ✓ clang-tidy
- ✓ cmake-with-...
- ✓ debian8
- ✓ continuous-int...

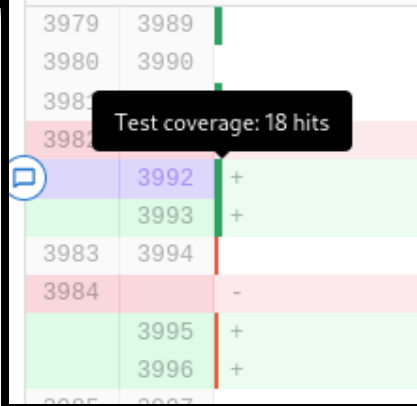
- Regression test & code quality CI jobs
- Clang Static Analyzer reports
- Clang-Tidy code quality for MRs/diffs
- Test coverage visualization

Reports

Bug Group	Bug Type ▾	File
Performance	Excessive Padding	cppapi/client/Connection.h
Logic error	Dereference of null pointer	../../../../usr/include/omniORB4/stringtypes.h
Style		

✓ Code quality improved on 2 points

- ◆ **Fixed:** Critical - variable 'currentTime' is not initialized [cppcoreguidelines-init-variables] in [log4tango/src/PatternLayout.cpp:149](#)
- **Fixed:** Minor - 1000 is a magic number; consider replacing it with a named constant [readability-magic-numbers] in [log4tango/src/PatternLayout.cpp:156](#)



```
send_attr_4 = new Tango::AttributeValue_4;  
send_attr_4 = new Tango::AttributeValue_4{  
    ZeroInitialize<Tango::AttributeValue_4>().value};
```

cppTango changes (*main*)

- [!845](#) Change logging default layout
- [!848](#) CODEOWNERS: Add Nicolas Leclercq
- [!846](#) ./travis/llvm-latest/Dockerfile: Upgrade to v12
- [!794](#) Use chrono to represent log4tango timestamps
- [!853](#) CMakeLists.txt: Default USE_PCH to ON
- [!766](#) Keep source tree clean and use more targets
- [!759](#) Cleanup log4tango

```
2021-09-11T20:15:54,781853+0200 DEBUG dserver/DevTest/test calling Tango::ZmqEventSupplier::create()  
2021-09-11T20:15:54,784767+0200 DEBUG dserver/DevTest/test Heartbeat thread Id = 5  
2021-09-11T20:15:54,784779+0200 DEBUG dserver/DevTest/test Tango object singleton constructed  
2021-09-11T20:15:54,784871+0200 DEBUG dserver/DevTest/test doc_url property for class DServer is not  
2021-09-11T20:15:54,784892+0200 DEBUG dserver/DevTest/test Entering MultiClassAttribute constructor  
2021-09-11T20:15:54,784902+0200 DEBUG dserver/DevTest/test Entering MultiClassPipe constructor  
2021-09-11T20:15:54,784985+0200 DEBUG dserver/DevTest/test Device name : dserver/DevTest/test
```

cppTango upcoming changes

- [!787](#) Musl fixes – Support for musl libc (Alpine Linux)
- [!851](#) Doxyfile.in: Add log4tango classes
- [!856](#) Make compatible with cmake 3.7 again
- [!850](#) Add git revision to LIBRARY_VERSION
- [!857](#) Support CMAKE_BUILD_TYPE RelWithDebInfo
- [!855](#) Add debian bullseye – Debian 11 CI job
- [!862](#) Remove outdated build files from cppapi
- [!864](#) Add support for sanitizers – ASAN, UBSAN, TSAN in CI
- [!859](#) Remove code forked from libjpeg – optional libjpeg-turbo dependency for JPEG encoding/decoding
- ... and many bugfixes

Reminder from Nov 2020. Slides courtesy of Thomas Braun.

cppTango 9.4

9.4

- ▶ Evolutionary step towards tango without CORBA
- ▶ Not ABI compatible with 9.3.x
- ▶ Documented API will be fully compatible
- ▶ Overhaul to get ready for the future and remove technical debt
- ▶ First release candidate by 7/1/2021 – Missed

Security

- ▶ Remove legacy C code (strcat, strcpy, ...) – **WIP**
- ▶ sonarcloud goals⁵: – **Tracked by clang-tidy job now**
 - ▶ Security Level A
 - ▶ Reliability Level B
- ▶ CI jobs with clang-tidy, sanitizers⁶ and valgrind⁷ – **WIP**
- ▶ Warning free compilation on Windows⁸

⁵Issue: 756

⁶Issue: 797

⁷Issue: 795

⁸Issue: 769

Decruft

- ▶ Merge log4tango into cppTango and clean it⁹ – Done
- ▶ Remove autotools and switch to cmake¹⁰
- ▶ Enforce consistent code formatting¹¹
- ▶ Replace internal jpeg implementation¹² – WIP
- ▶ Make it compatible with C++17 and C++20¹³ – WIP
- ▶ Split headers into private and public ones¹⁴

⁹Issue: 712 713 728 765 793

¹⁰Issue: TSD/22

¹¹Issue: 586

¹²Issue: 617

¹³Issue: 680 714 786

¹⁴Issue: 735

Dependencies

- ▶ Newer cppzmq¹⁵ – **WIP**
- ▶ Support omniORB 4.3 in addition to earlier versions¹⁶

¹⁵Issue: 609

¹⁶Issue: 760

Conda Packages

- Tango Conda packages now available on conda-forge channel:
 - tango-idl
 - cpptango
 - itango
 - pytango
 - tango-admin
 - tango-test
 - tango-database
 - tango-starter (WIP)

Many thanks to Benjamin Bertrand (Max IV)

Community Life



Tango Kernel Teleconf Meetings



<https://www.artstation.com/artwork/nQOEko>

Tango Kernel Teleconf Meetings



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Tango Kernel Teleconf Meetings

- On 2nd and 4th Thursday of the month at 15:00 (Paris time)
- Agenda and minutes available on Github:
 - <https://github.com/tango-controls/tango-kernel-followup>
- Status of recent development (cppTango, JTango, pyTango, POGO, RFCs, ...)
- Technical discussions
- Define priorities

Tango-Controls forum

<https://www.tango-controls.org/community/forum>

NEVER HAVE I FELT SO
CLOSE TO ANOTHER SOUL
AND YET SO HELPLESSLY ALONE
AS WHEN I GOOGLE AN ERROR
AND THERE'S ONE RESULT
A THREAD BY SOMEONE
WITH THE SAME PROBLEM
AND NO ANSWER
LAST POSTED TO IN 2003



<https://xkcd.com/979>



Connecting things together

Thank you!

Any questions?

Acknowledgement:

Alexander Senchenko, Andy Goetz, Anton Joubert, Benjamin Bertrand, Carlos Pascual, Dmitry Egorov, Emmanuel Taurel, Frédéric Picca, Geoff Mant, Giacomo Strangolino, Graziano Scalamera, Guifré Cuni, Hélder Ribeiro, Igor Khokhriakov, Jairo Moldes, Jean-Luc Pons, Johan Venter, Katarzyna Rzęsikowska, Lorenzo Pivetta, Marius Elvert, Michal Liszcz, Michał Gandor, Nicolas Leclercq, Nicolas Tappret, Pascal Verdier, Piotr Goryl, Reynald Bourtembourg, Sergi Rubio, Sébastien Gara, Thomas Braun, Tiago Coutinho, Zbigniew Reszela and so many others for their contributions (PR, bug reports, code reviews, comments, ...)

<https://www.gitlab.com/tango-controls/cppTango/issues>

<https://www.gitlab.com/tango-controls/TangoSourceDistribution/issues>