

Continuous Integration for ROS in Commercial Environments

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 buildbot-ros

What is CI?

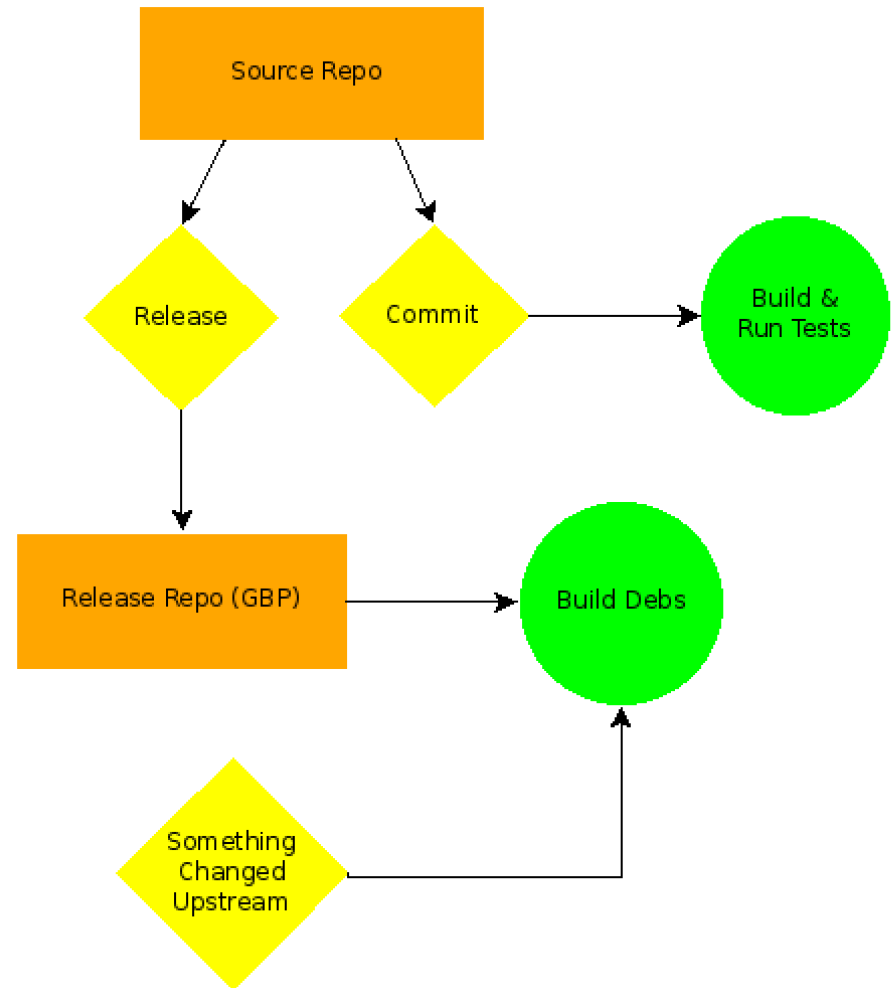
- Automated build
 - Build everything in clean environment, ensures dependencies are fully specified.
- Automated test
 - Run package tests after a commit.
- Automated deployment
 - Debian releases: from git-buildpackage repositories created by bloom-release tool.

The ros.org buildfarm



Jenkins

- Builds .deb packages
- Builds documentation
- Runs “devel” jobs



Common Issues

- Private repositories
- Turn around time
- Unsupported architectures
- Complex configuration, but highly scalable

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- Goals
 - Easy configuration (using only python + rosdistro), good documentation
 - Support deb, doc, and devel jobs
 - Support private repositories, even private rosdistros

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- Implementation
 - Built on buildbot (Python/Twisted) + cowbuilder + reprepro + python-rosdistro
 - Configuration is requires setting up a rosdistro and pointing the Python configuration at that rosdistro
 - Default configuration is ~120 lines of Python (for a single machine)

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- Why would my team want a buildbot-ros?
 - You are a coder, not an IT specialist
 - Faster turnaround - know you've broke the tests in 5-10 minutes rather than hours
 - Can also build generic git-buildpackage repos (useful when Ubuntu EOLs your distro)

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Buildbot: ubr1_apps_i x

10.90.0.15:8010/builders/ubr1_apps_indigo_trusty_amd64_debbuild/builds/41

Home - Waterfall Grid T-Grid Console Builders Recent Builds Buildslaves Changesources - JSON API - About

login

Builder ubr1_apps_indigo_trusty_amd64_debbuild Build #41

Results:

Build successful

SourceStamp:

Branch	master
Revision	46223ad13e5fbf9320a727c845707f753a780d6a
Got Revision	8aaece9c23ada654da89a662947b541e37d1166c

BuildSlave:

piggy1

Reason:

The Triggerable scheduler named 'ubr1-apps-indigo-trusty-amd64-debtrigger' triggered this build

Steps and Logfiles:

1. git update (1 secs)
 1. stdio
2. ubr1_navigation-buildsource sourcedeb ubr1_navigation (1 secs)
 1. stdio
3. ubr1_navigation-stampdeb stamped changelog 0.4.1-0 20140727-0224-0700 (0 secs)
 1. stdio
4. ubr1_navigation-buildbinary binarydeb ubr1_navigation (48 secs)
 1. stdio
5. ubr1_navigationincludedeb updated in apt ubr1_navigation (0 secs)
 1. stdio
6. ubr1_moveit-buildsource sourcedeb ubr1_moveit (1 secs)
 1. stdio
7. ubr1_moveit-stampdeb stamped changelog 0.4.1-0 20140727-0225-0700 (0 secs)
 1. stdio
8. ubr1_moveit-buildbinary binarydeb ubr1_moveit (2 mins, 19 secs)
 1. stdio
9. ubr1_moveitincludedeb updated in apt ubr1_moveit (0 secs)
 1. stdio
10. ubr1_grasping-buildsource sourcedeb ubr1_grasping (1 secs)
 1. stdio
11. ubr1_grasping-stampdeb stamped changelog 0.4.1-0 20140727-0228-0700 (0 secs)
 1. stdio

Build Properties:

Name	Value	Source
branch	master	Build
builddir	/root/piggy1/ubr1_apps_indigo_trusty_amd64_debbuild	slave
buildname	ubr1_apps_indigo_trusty_amd64_debbuild	Builder
buildnumber	41	Build
codebase		Build
datestamp	20140727-0228-0700	SetPropertyFromCommand Step
got_revision	8aaece9c23ada654da89a662947b541e37d1166c	Git
project		Build
release_version	0.4.1-0	Builder
repository		Build
revision	46223ad13e5fbf9320a727c845707f753a780d6a	Build
scheduler	ubr1-apps-indigo-trusty-amd64-debtrigger	Scheduler
slavename	piggy1	BuildSlave
workdir	/root/piggy1/ubr1_apps_indigo_trusty_amd64_debbuild	slave (deprecated)

Forced Build Properties:

Name	Label	Value
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Responsible Users:

no responsible users

Timing:

Start	Sun Jul 27 02:24:31 2014
End	Sun Jul 27 02:33:49 2014
Elapsed	9 mins, 17 secs

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- Limitations
 - 1000 unique jobs (there is a monkey patch around this)
 - Does not automatically reconfigure to changes in rosdistro (future work)

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- Recommendations
 - SSDs improve cowbuilder performance (2-3x speedup over 7200rpm drive).
 - One buildbot-ros instance per architecture if building all of ROS (~1000pkgs).
 - Use a cron job to restart farm periodically to register updates from rosdistro.

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- Can be used to deploy buildbot-ros. Example dockerfiles are in the documentation folder of buildbot-ros repo.

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- Future work
 - Github pull request builder
 - Use dockers instead of cowbuilders
 - Better visualization

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[https://github.com/mikeferguson/
buildbot-ros](https://github.com/mikeferguson/buildbot-ros)

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