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C++Now 2015 – Lightning Talks

Gwendolyn Hunt
Senior Software Engineer
Tripwire R&D

Surviving and Thriving in a Multiplatform, Multilanguage, Multiproduct, Multisite Continuous Integration Environment

Surviving and Thriving in a Multiplatform, Multilanguage, Multiproduct, Multisite Continuous Integration Environment

In other words:

- **Know where your source came from**
- **Know what you are Building**
- **Know what you are Testing**
- **Know what you are Shipping**
- **Know what you are Supporting**

Assumptions

- Either racks full of discrete machines or Private Cloud Infrastructure
- Sane artifact versioning scheme
  - git short hash
  - revision major.minor.patch(.micro)
  - build number

Item 1 - Artifact Repository

Example: Artifactory

- Secure storage of your built components
  - third-party lib source
  - idl/idl bindings
  - libs, components, applications
  - installers, distribution packages
- Tool Chain utilities
  - cmake modules
  - gradle plugins
- Test Support
  - locally built or modified Ruby gems
  - VM Provisioning scripts (Chef recipes, cookbooks, etc.)

Item 2 - Source Repository

Example: local instance of github

- Source for
  - Components
  - Libs
  - Applications
  - Installers
- C++ Core moving to git flow
  - Development branch - nightly continuous integration tests
  - Master branch - released code, less frequent integration tests
  - Feature branches
    - short-lived targeted development for new feature
    - Merged into development branch

Item 3 - Automated Build Infrastructure

Example: Jetbrains's TeamCity

- dedicated VMs
  - build agents organized by platform
    - Tool chain
    - Bitness
    - Windows – 18 platforms: WinXP, Vista, Win7, Win 8, Win8.1, Server 2003, Server 2008, Server 2012 plus 4 POS platforms
    - Linux – 8 platforms: RedHat and CentOS 5&6 (pending SuSE, RHEL7 CentOS7, Oracle Linux)
- Builds component, lib or application
  - Triggered by source commit
  - executes acceptance test after build
  - publishes artifact when acceptance test passes

Item 4 - Full Spectrum Testing

- C++ unit tests
  - google test, boost test - short running must pass before code review
- C++ acceptance tests - Ruby RSpec, Cucumber
  - short acceptance (10 min) executed post build, pre publishing to artifactory
  - long acceptance (60+ minutes) nightly development branch tests on every platform on Jenkins
- Automated and Ad hoc System, Scale and Performance tests
  - pulls artifacts from Artifactory
  - Chef (or Puppet) used for provisioning test infrastructure

Item 5 - Use the Right language for the Task

- Retrieve Artifacts
  - Java, Ruby build target use gradle plugin
  - C++ build target cmake maven resolver
- Create build environment
  - cmake
- Acceptance tests
  - Happy path: Ruby Cucumber
  - Complex normal and abnormal behavior:
    - Ruby Rspec
    - Ruby Rake - Run tests without build environments

Item 6 - Collect Metrics

About everything

- Artifacts
  - Dependencies
  - Licenses and license attributions
- Build history
- Test history
  - acceptance
- Review daily
  - Are required to understand all failures
    - Tests
    - Test Harness failures