openSUSE Build Service

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OpenSUSE Build Service

• Current Challenges and Goals
• Architecture
• Demonstration
• Roadmap and Conclusion
Current Challenges and Goals
Current Challenges

The open source communities provide lots of source code, but building & installation is often hard for unexperienced users.

Current challenges:

• maintain sources for different target platforms
• maintain patches during upstream updates
• integrate external contributions
• merge code back to external source repositories
• no version updates for released distributions
Goals of the Build Service

- Open the distribution development itself
- Make it simple to provide binary packages of software
- Maintain sources in one place, offer packages for everybody
- Support the “Release early, Release often” approach
- Involve and connect the open source communities
- Make it easy and secure to install new software
What is the Build Service?

Server Infrastructure

- The Build Service server hosts all sources
- Provides the build systems to create packages
- Provides download and mirror infrastructure for packages
- Is the communication framework

A set of tools:

The tools are used for local operations on the workstation or for remote operations on the openSUSE server.
The Project Model

A project provides workspace for set of users and software packages.

A project is the central place to manage the sources used for multiple distributions.

A project can

- host an entire distribution like the SUSE Linux Factory distribution.
- host a single package to be build on other distributions
- host a small change (bugfix) for an existing package
The open design of the Build Service

• Everyone will be able to use the Build Service.
• The Build Service tools are open source.
• The Build Service provides a public API.
• The Build Service can get integrated into existing tools.
• The Build Service is not limited to SUSE based distributions
• Integration with existing web pages is possible.
Trust Model

• The Build Service does guarantee that the binary package got build from the sources, but it can't judge about the sources itself.

• Everyone can submit source, this causes a potential security problem. Installing software from external sources requires trust in these.

• The decision to trust a package or not is up to the end-user.

• A trust rating system helps the end-user to judge about software.

• The trust level of project depends on the trust level from its contributors.
Architecture
Components Overview

- Web Client
- Command Line Client
- Your Client
- Installer (YaST, etc.)

Frontend

openSUSE API

Backend

Storage

Build Host

Build Host

Build Host

Build Host

Build Host

Build Host
Backend

• Building Packages

• Storage for sources (version controlled)
• Farm of build hosts for building packages
• Run build in specified environment
• Build for multiple hardware architectures (currently i586, x86_64)
• Storage for built packages
• Provide build status and logs
Frontend

• Programming Interface to the Build Service

• Public API for client tools
• Access to sources
• Access to build status and logs
• Access to built packages
• Control build
• User management
Frontend Utilities

• Additional Frontend Services and Utilities
  • SPEC file generation
  • News feeds about new packages
  • Project rating
  • Interfacing with upstream repositories (CVS, SVN, etc.)
  • Interfacing with other developer portals and software index sites (Sourceforge, Freshmeat, KDE-Apps, GnomeFiles, etc.)
  • Automatic version upgrades
  • ...

(most of this isn't implemented yet)
openSUSE API

• Public Programming Interface for the openSUSE Build Service

• REST-based API
• XML over HTTP
  • Frontend functionality exposed through HTTP operations
  • Control and meta data is transferred and stored as XML
  • Schema validation for all XML data
openSUSE API Documentation

http://api.opensuse.org/apidocs
Client Tools

• User Interface for Developers and Packagers

Web Client
• Easy browsing and project administration
• Editing and uploading of sources
• Downloading of built packages

Command Line Client
• Editing and uploading of sources
• Start local build for debugging
Web Client

http://build.opensuse.org
Command Line Client

user@host> opensuse
Mirror Interface

- Interface to mirrors
- Interface to end users through installation tools

- Syncing with mirrors (rsync, drpmsync)
- Installation source meta data
- Redirecting users to mirrors
- Support end users with finding and installing packages from openSUSE

- See also speed talks (Sunday 12:00)
A project is a workspace which can be created by any user. It (may) contain:

- a list of users with write access to it
- sources or a description how to download them
- link to existing sources to be built in a different environment
- changes for existing packages
- a list of build targets to build binary packages for
- package repositories
Project Model 2/2
Demonstration
Future Ideas

Future ideas are collected at
http://www.opensuse.org/Build_Service/Future_Ideas

• Template based package creating
• Build targets for klik or XEN images
• Translation framework
• QA and automated test case framework
Roadmap

A detailed and updated roadmap is available at http://www.opensuse.org/Build_Service

Preview Phase (starting today)
- build for addon packages does work

Alpha Phase (Q2 2006)
- Hardware is in place
- Import of SUSE Linux core packages does start

Beta Phase (Q3 2006)
- write access for everybody
- core features are complete
Resources

http://www.opensuse.org/Build_Service
Overview about the project and links for further informations and the source code.

http://build.opensuse.org
A running instance of the Build Service.

opensuse-buildservice@opensuse.de
The mailing list for discussing the Build Service.
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