

# Advanced Software Packaging

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# Fire Up the Engines

- Review of Importance of Packaging
- Review of RPM Packaging
- Advanced RPM Package Management for SUSE®
- SUSE Packaging in Open Build Service
- Other Packaging in Open Build Service
- Hands On Demonstration

# Why Packaging is Critically Important

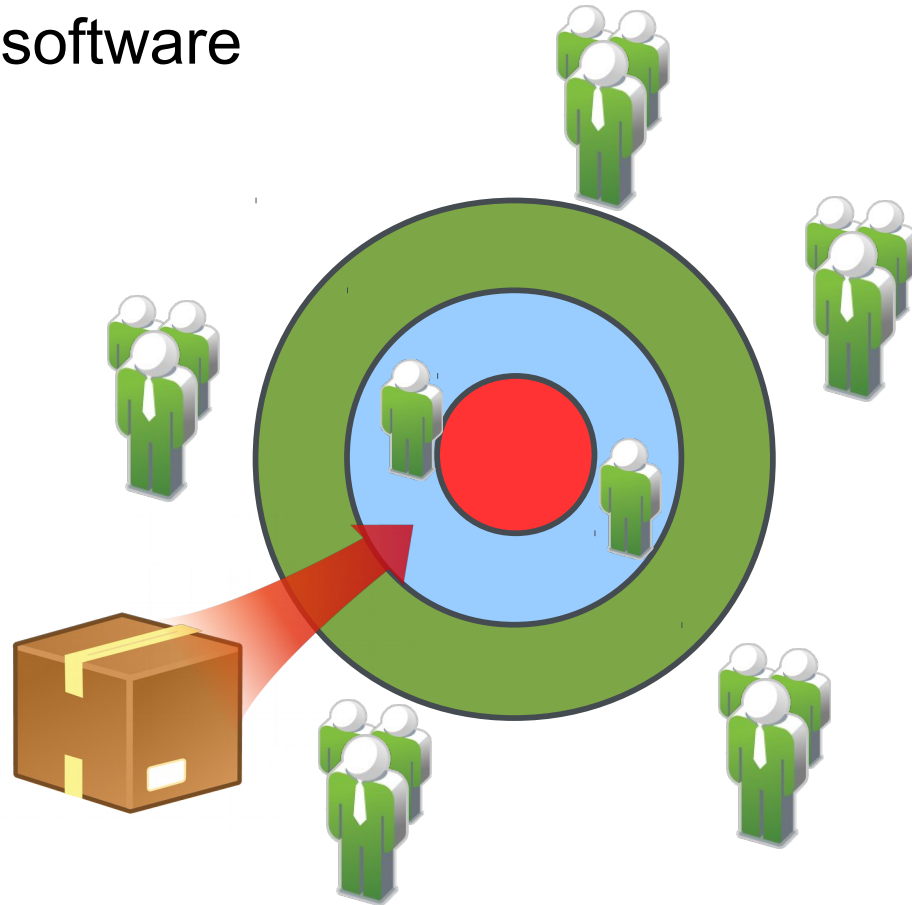
# Critically Important

- Delivery
- Reproducibility and Consistency
- Upgradeability and Uninstallability
- Tracking / Auditing / Monitoring

# Packaging Makes Your App Universal

Want to make your software truly useful?

Package It!



Packaging streamlines the delivery of your software



# Review of RPM Basics

# RPM Metadata

- Version tracking
- Manifest of files
- Descriptive data
- Rules for
  - Installing
  - Updating
  - Uninstalling
- Dependencies

```
Name       : glibc
Version    : 2.17
Release    : 4.7.1
Architecture: x86_64
Install Date: Tue Oct  1 19:23:42 2013
Group      : System/Libraries
Size       : 6594825
License    : LGPL-2.1+ and SUSE-LGPL-2.1+-with-GCC-exception and GPL-2.0+
Signature  : RSA/SHA256, Mon Sep 30 09:43:49 2013, Key ID b88b2fd43dbdc284
Source RPM : glibc-2.17-4.7.1.src.rpm
Build Date : Wed Sep 18 08:21:28 2013
Build Host : cloud106
Relocations : (not relocatable)
Packager   : http://bugs.opensuse.org
Vendor     : openSUSE
URL        : http://www.gnu.org/software/libc/libc.html
Summary    : Standard Shared Libraries (from the GNU C Library)
Description :
The GNU C Library provides the most important standard libraries used
by nearly all programs: the standard C library, the standard math
library, and the POSIX thread library. A system is not functional
without these libraries.
Distribution: openSUSE 12.3
```

# RPM Packaging Fundamentals

- “package”
  - Normal .rpm file (delivers the software)
  - The set of files necessary to build
- RPM database
- rpm
- rpmbuild
  - Builds from sources
  - Builds for a specific architecture
  - Creates version'd binary packages for installation/upgrade
  - cpio archive of files + scriptlets



A Little Hands On

# Advanced Package Management

# Advanced Concepts

- Source Patches
  - Quilt <http://users.suse.com/~agruen/quilt.pdf>
- Macros
- Subpackages
- Dependencies, capabilities, renaming, prereq, etc.
- Library packages
- scriptlets
- What about Epoch? (it's generally bad)
- What about triggers? (why they're generally bad)

# Epoch

- perl version 5.00503
- perl version 5.6
- 5.6 ?> 5.00503
  
- Epoch saves the day!

Or does it?

# Triggers

- Tread carefully – rare
- Often have unintended effects
- Better for distro maintained packages
  - Not likely to have intended effects for 3<sup>rd</sup> party packages
  - Certainly “ok” for appliances



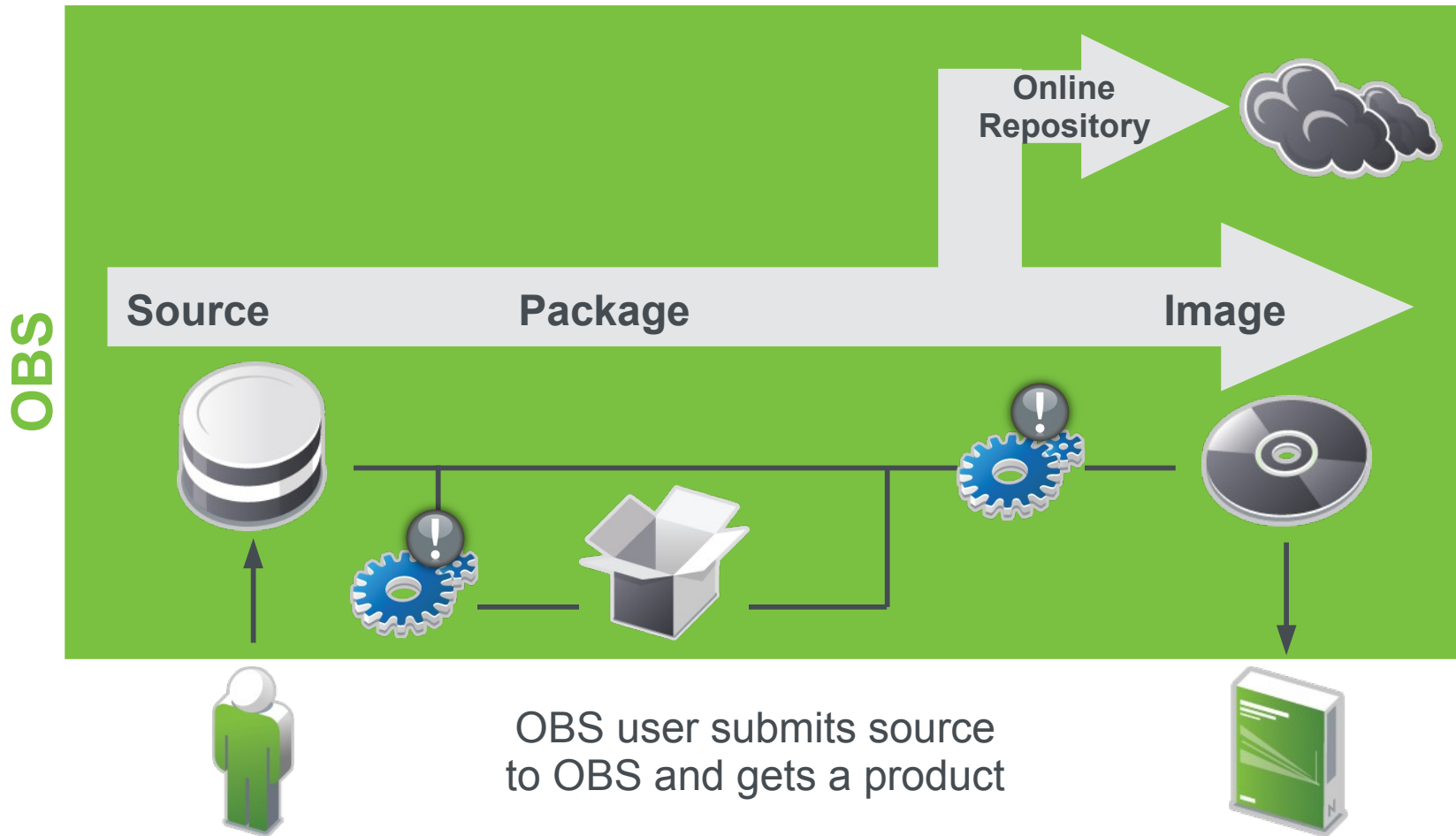
More Hands On Demonstration

# Open Build Service

# Build Service Basics

- Builds Everything SUSE® (and openSUSE®)
- Builds on all architectures
- Builds for all current distros (and some older)
- Builds from sources, outputs installable packages
  - Also builds ISOs, but that's a topic for another presentation
- Available for you to do your builds

# What is Open Build Service (OBS)?



# Components of Open Build Service

## A Server which

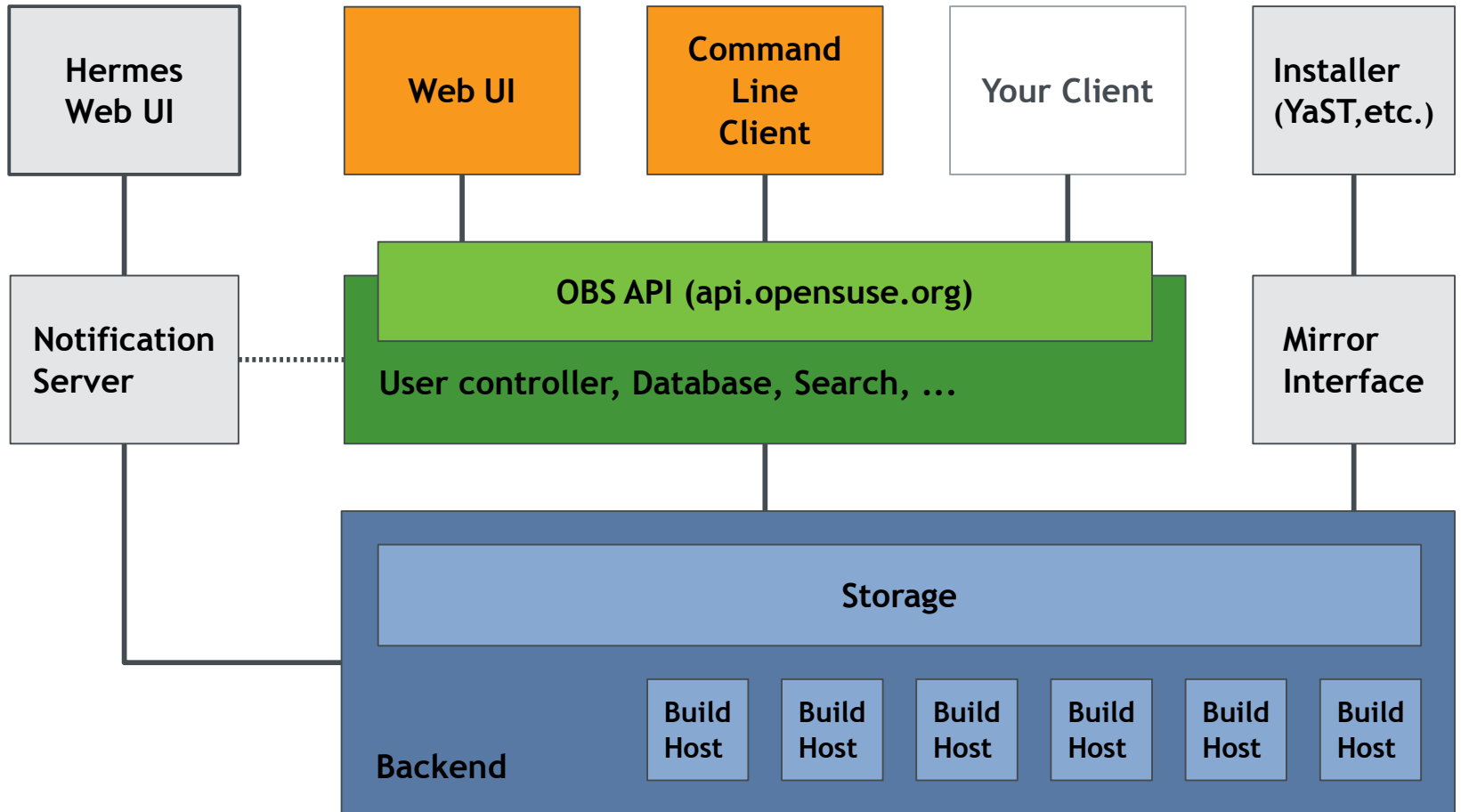
- Stores all sources in revision control system
- Stores all binaries
- Calculates the need of rebuilds
- Acts as a database for all kind of queries

## Client tools communication via the API

- osc CLI
  - Optimized for handling sources
  - Run local builds in same way as on server
- WEBUI
  - Optimized to see current status
  - Manage requests



# Server Components



# Other Distros in Open Build Service

# Other Distros

- RedHat / Fedora
  - RPM based, so use same specfile
  - Macros for accommodating differences
- Debian / Ubuntu
  - packagename.dsc, debian.rules, and debian.control files
  - debian.changelog file
  - [http://en.opensuse.org/openSUSE:Build\\_Service\\_Debian\\_builds](http://en.opensuse.org/openSUSE:Build_Service_Debian_builds)

# Hands On Demonstration

```
osc build -o \  
--alternative-project=openSUSE:13.1
```



# Resources

# Learn More

## Packaging

- Web: <http://en.opensuse.org/Portal:Packaging>
- ML: <http://lists.opensuse.org/opensuse-packaging>
- IRC: freenode #opensuse-packaging

## Open Build Service

- Web: <http://openbuildservice.org>
- ML: <http://lists.opensuse.org/opensuse-buildservice>
- IRC: freenode #opensuse-buildservice



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