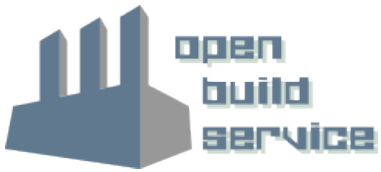
Open Build Service (OBS)

Project Workshop



Develop Large Projects

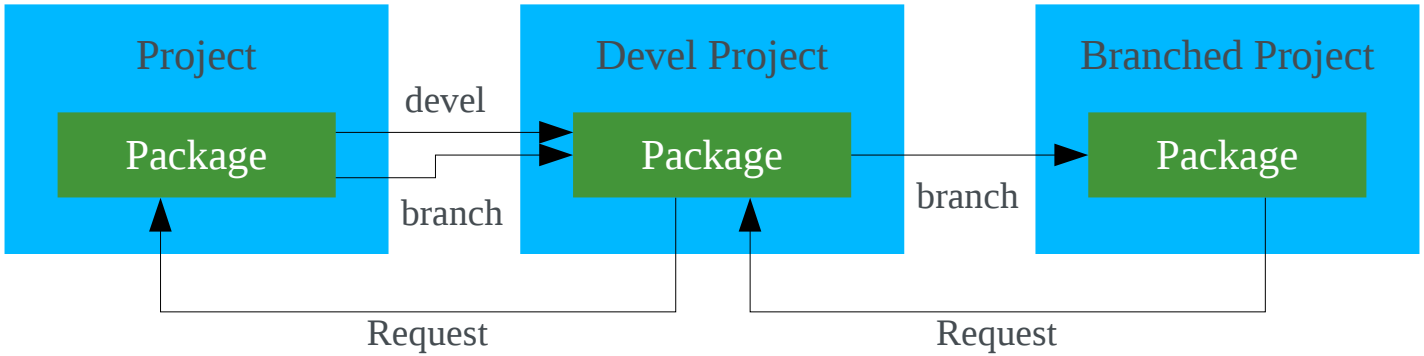
Develop Large Project
Best Practices

1

- Breaking Projects Down
- Multi-level review
- Multi-level integration

Develop Large Projects
Breaking Project Down

Large projects, like the openSUSE distribution, with many contributors have staging areas where software stacks get integrated



Develop Large Projects
Contributor Branch/Submit

Terminal X

```
frank@laptop $ osc branch openSUSE:Factory gcal

Note: The branch has been created of a different project,
            Base:System,
      which is the primary location of where development for
      that package takes place.
      That's also where you would normally make changes against.
      A direct branch of the specified package can be forced
      with the --nodevelproject option.

A working copy of the branched package can be checked out with:

osc co home:frank:branches:Base:System/gcal
```

After Making the Changes

```
frank@laptop $ osc submitreq -m "Updated gcal to version 3.6"
created request id 0815
```

Develop Large Projects
Developer Asseses Requests

Terminal X

```
joe@home $ osc request list Base:System
0815  State:new       By:frank   When:2012-08-16T15:00:14
      submit:         home:frank:branches:Base:System/gcal  ->      Base:System
      Descr: Updated gcal to version 3.6

joe@home $ osc request show -d 0815
...

joe@home $ osc request accept 0815 -m "Thank you for your contribution :-)"
Result of change request state: ok
```

After Integrating the Changes

```
joe@home $ osc submitreq Base:System gcal openSUSE:Factory -m "updated to 3.6"
created request id 2342
```

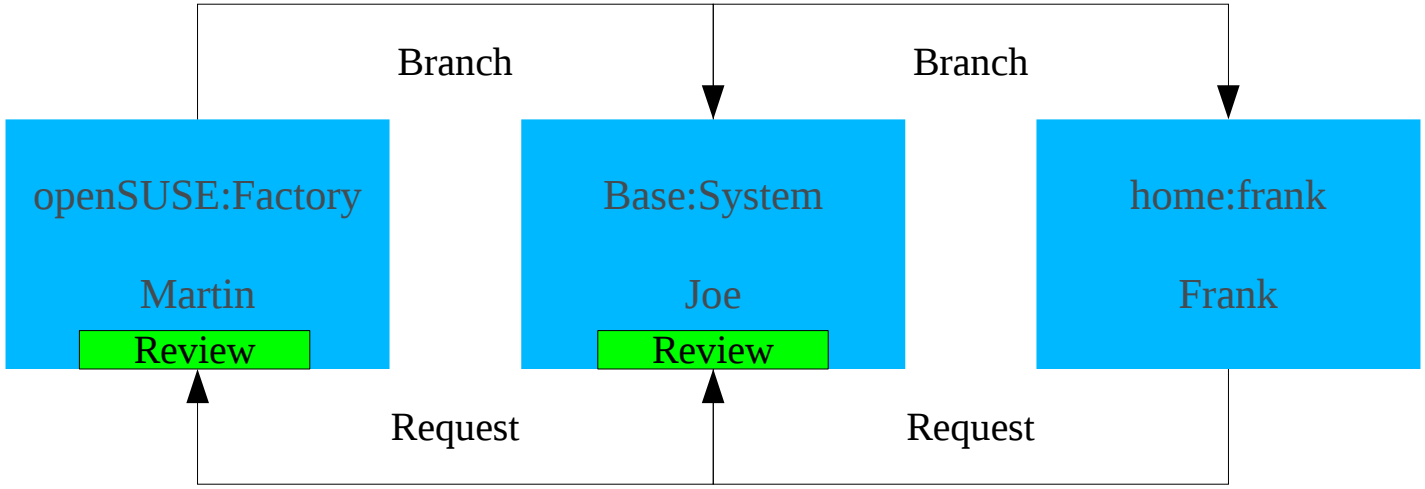
Collaborating on Packages
Assess Requests

Terminal X

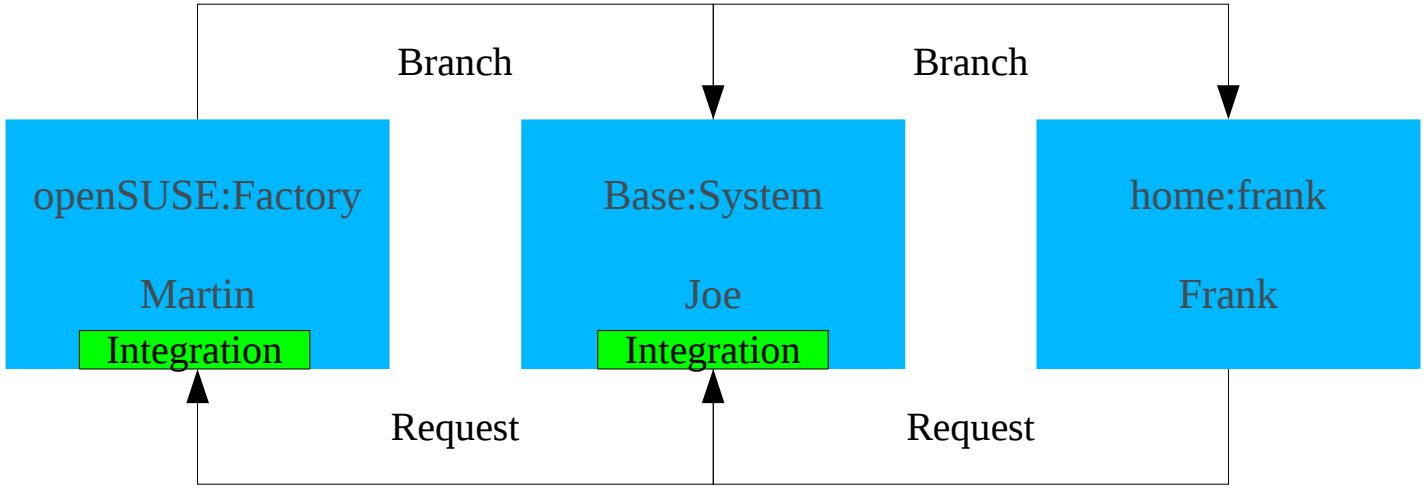
```
martin@work $ osc request list openSUSE:Factory
0815  State:new       By:frank   When:2012-08-16T15:00:14
      submit:         home:frank:branches:Base:System/gcal  ->      Base:System
      Descr: Updated gcal to version 3.6

martin@work $ osc request accept 0815 -m "Accepted, thank you for the update!"
Result of change request state: ok
```

Develop Large Projects
Multi-level review



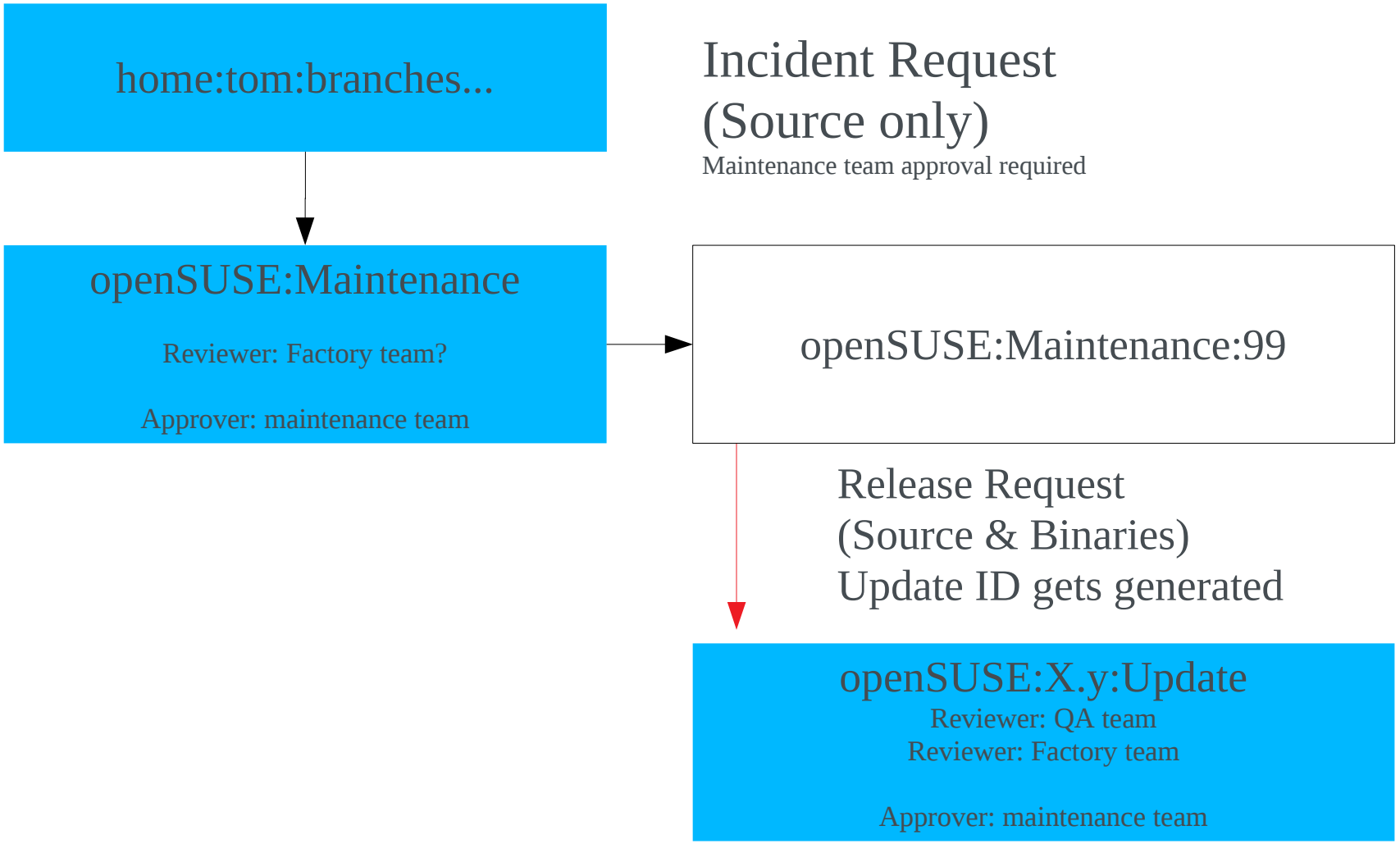
Develop Large Projects
Multi-level integration



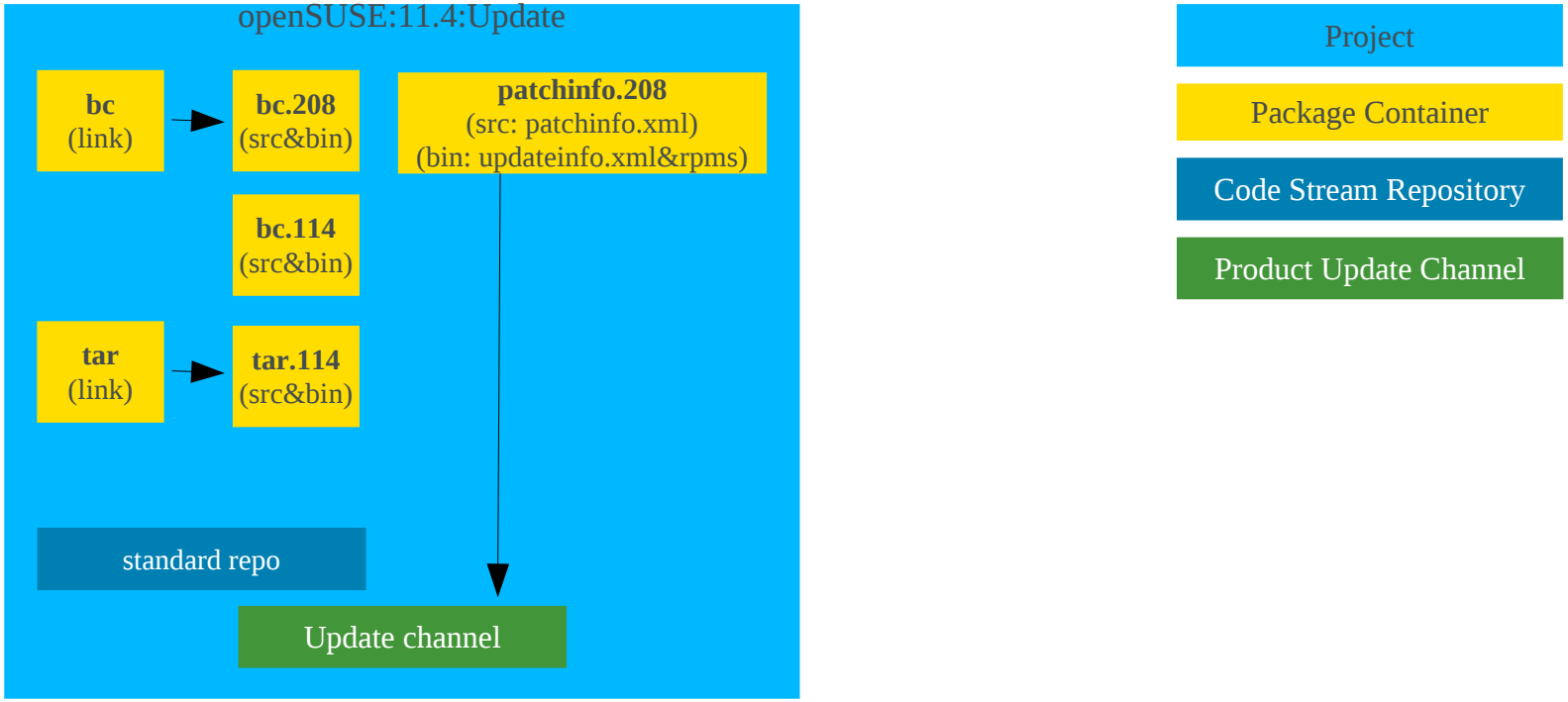
Maintain Large Projects

Example:

Make an official update



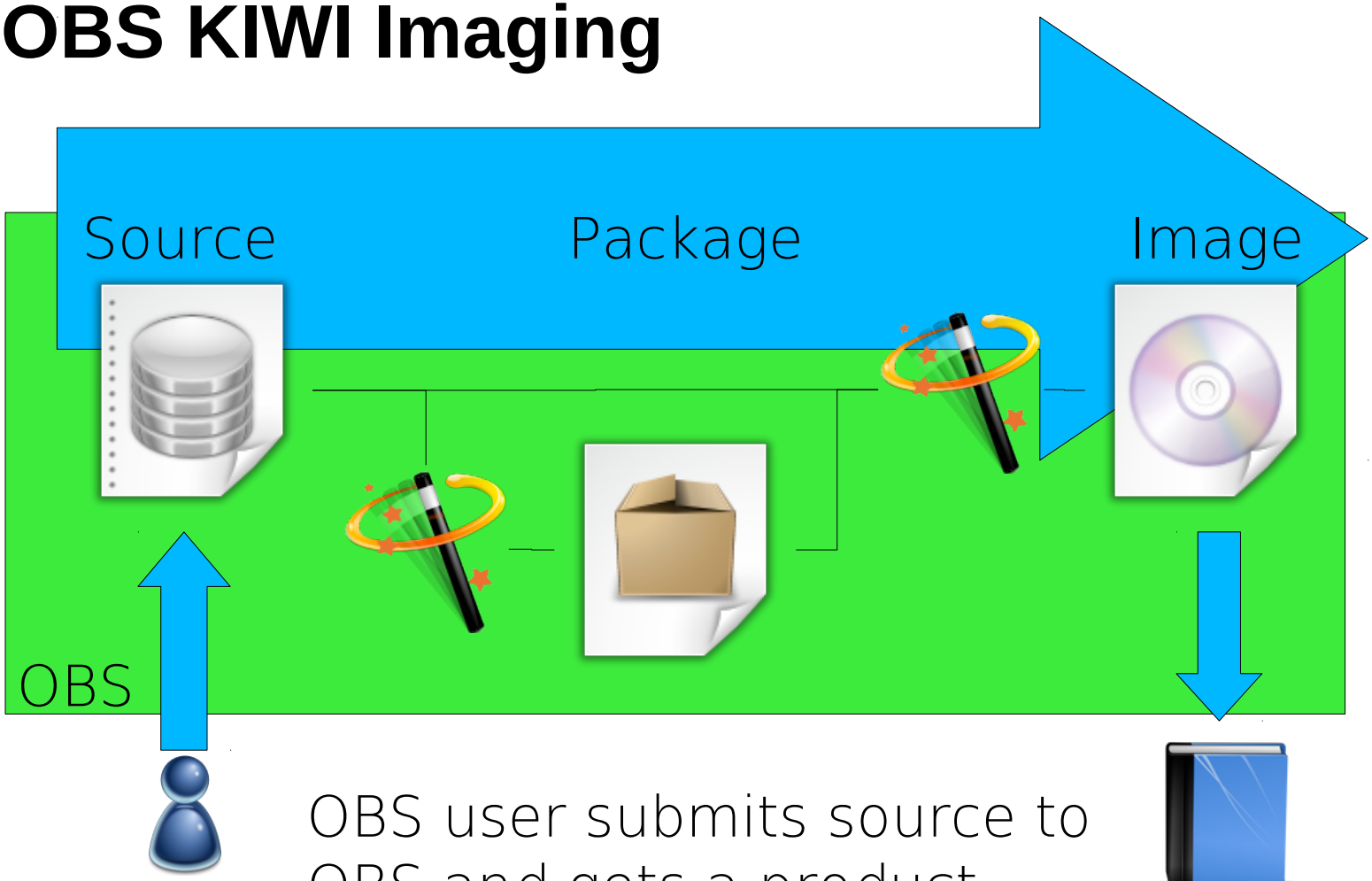
openSUSE Update Project Layout



114 & 208 are incident numbers.
114: one incident for bc & tar package
208: one incident for bc package

Image build using KIWI

OBS KIWI Imaging



OBS Imageing compared to other KIWI solutions 1/2

Running KIWI manually:

- All KIWI functionalities are usable.
- Best way to hack on KIWI.
- Build happens local.

Imaging in Studio:

- For fast and easy image creation.
- Easy and integrated testing of the image.
- Workflow and tool guided image creation.
- Interactive working style.
- Server side image creation

OBS Imageing compared to other KIWI solutions 2/2

Imaging in Build Service:

- Batched processed image building depending on single package build results.
- Recommended for product/installation medias.
- Low-Level / Command line interface only.
- Allows usage of modified kiwi tool or kiwi descriptions in own project.
- Server side and local building options.
- Integrating of regular image builds into maintenance process for official products.
- Supports multiple KIWI version per Image (using it from the projects).

Image Builds from OBS POV

OBS knows currently these types of packages:

- rpm/spec builds
- deb/dsc builds
- KIWI Image (aka known as appliance image)
- KIWI Product Image (aka Installation Media)

Planned:

- QA builds
- MS Windows builds

→ Image builds are just another “package” build for the Build Service.

Limitations of Image builds within OBS

The OBS has as highest goal a clean and reproducable image build, as soon as possible (eg. not waiting for OpenOffice build when not needed). As a result we have the following limitations compared to plain KIWI usage:

- Only OBS repositories can be used.
- Own/modified boot description templates needs to get packaged.
- Used packages must be unambiguous !
- Currently no pattern support.
- Server may wait for building packages and does not start immediately.
  → Local *osc build* works at any time.
- Non-ISO build results are stored in tar ball, extended with Build number.

How to setup a KIWI repo

- Create a repository in a project.
  - Enable wanted architectures
  - No other repository needed in project config. KIWI's xml is specifing it.
- Create project config, setting this repository to
  - Type: kiwi
  - Repotype: none
- Create a package
- Submit adapted KIWI config files.

What needs to be changed in KIWI configs for OBS ?

- The config.xml needs to be suffixed as .kiwi
- Repositories needs to be specified as
  obs://$PROJECT/$REPOSITORY
  - obs:// refers always to the used build service.
  - Example: obs://openSUSE:11.1/standard
- Content of root directory needs to get packaged as root.tar or root.tar.bz2
- In case of expansion error “have choice” just select a package and add it to your package list.

Examples

openSUSE Factory Live CD in
→ openSUSE:Factory:Live Project

KDE:Media Live CDs in
→ KDE:Medias Project

OBS worker images (netboot deployment) in
→ openSUSE:Tools Project

Product preload rescue disk in
→ internal Devel:Moblin Project

JeOS based on SLES 10 and 11 in
→ internal Devel:JeOS Project

Future Plans

- Support patterns
- Integrate into QA system for testing a produced build automatically (NOT interactive).
- Connect to SUSE Studio somehow for kiwi config exchange

Installation Media Creation (aka Product Creation)

What are Products ?

- Products are SUSE specific.
- Products are medias with plain rpm packages, to be handled via YaST or zypper.
- The Media may be bootable.
- Medias can be CD iso files, DVD iso files or FTP trees.
- The media may support multiple architectures.
- Examples are the openSUSE 11.1 DVD or the Non-OSS FTP tree Add-On.

A Product from KIWI POV

- A product KIWI config looks complete different to a system image. (Own section)
- No automatic dependency solving between packages.
- It works only with local rpm repositories currently.
- KIWI needs to deal with
  - RPM package which are used for installation
  - Meta packages (get extracted on the media)
  - Generate meta data

A Product In Detail

A typical product media consist of:

- An rpm repository
- Meta data
  - Patterns (prepared package selections)
  - Bootable initrd starting YaST for installation
  - Theming
  - EULA / License Information

A product may consist of multiple product medias !

Example Product

OpenSUSE 11.1 comes as:

- DVD5 for i586, x86_64 and ppc each
- DVD9 for i586 and x86_64 together
- FTP tree for i586 and x86_64 together
- FTP tree for ppc and ppc64 together
- NET boot media i586, x86_64 and ppc each

OpenSUSE 11.1 Non-OSS comes as:

- CD for i586, x86_64 and ppc each
- FTP tree for i586 and x86_64 together
- FTP tree for ppc

The Problem

Each product media needs

- An own kiwi config
- An own release flavor package
- Meta packages to be put one the media.

This means in each of them is some data which needs to be kept in sync. Like package lists or the Beta/RC version.

The Solution

- We have product configs in Build Service, specifing all medias for a Product.
- Multiple Products from one code stream can share definitions(eg SLE-11 or openSUSE:11.1).
- The OBS product converter creates
  - All kiwi config files
  - A spec file for release packages, including all flavors.
  - Patterns on media (in future)
- Product definitions are stored in “_product” package, all resulting sources gets generated as “_product:....” packages on checkin time.

Nice New Features

- KIWI allows to collect automatically all required source and debug packages.
- Not Yet: One place to maintain package lists for products and patterns.
- Not Yet: Automatic dependency solving for products optional.

Examples and Documentation

- openSUSE 11.1 was the first product using this.
- SLE-11 based products followed.

- Product Definition wiki pages
- And of course the general KIWI documentation describing how to create an installation source manually.

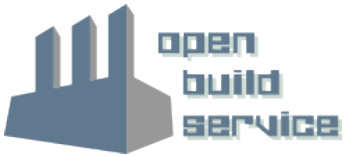
Future

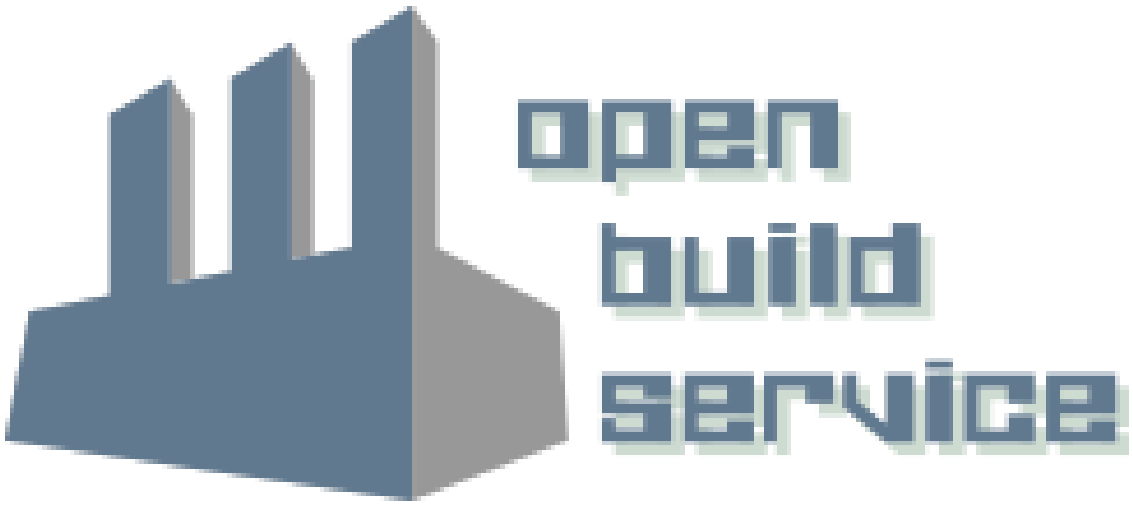
- Adapt KIWI after PDB migration
  - Obsolete some meta packages
  - Obsolete some autobuild tools with native implementation

    → Significant speed up hopefully
- Support Driver Update Disks in KIWI
- Support pattern generation based on product config
- Code/return value cleanup
- Media overflow handling ?
- Optional package dependency resolving ?
- KIWI remote repository support ?

Learn more about the
Open Build Service
www.openbuildservice.org

Thank you.




open
build
service