

openQA

Avoiding Disasters of Biblical Proportions

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“Testing is HARD”

- Everyone who has built any software, ever.

Upstreams

Upstream projects are moving fast

- Kernel 4.x – New version every 3 months
- GNOME 3.x – New version every 6 months
- KDE Plasma 5.x – New version every 3 months



Users

Users expectations are trending towards receiving software faster and faster

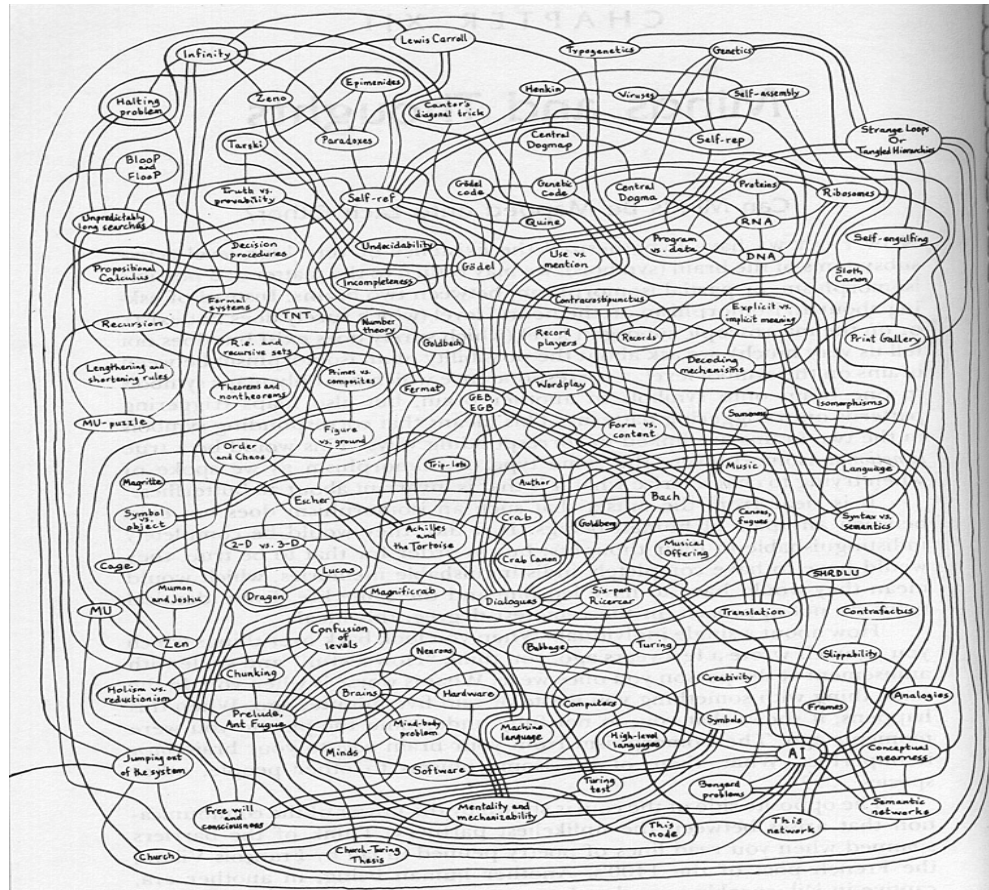
- Rolling Releases (openSUSE Tumbleweed, Arch)
- OBS, Copr, PPAs, AUR

Diversification

Distribution Projects are offering more stuff in different ways

- Editions (Fedora Workstation, Server, Cloud)
- Multiple Distributions (openSUSE Leap, Tumbleweed)
- Modularization, Containers, Docker, JeOS





But..

DevOps

Containers

CI

Docker

Jenkins

Gerrit

NEWS FLASH: We do not write code

- We build **Distributions**
- Our users do not care if our code works, only if it works correctly as part of the Distribution
- Lots of testing tools for Code, none for actual Operating Systems and Apps as a cohesive product





openQA to the rescue

openQA

- Open Source distribution testing framework
- Started in 2009
- Tests Operating Systems and their applications
- GUI & Console Testing
- Used by openSUSE® Leap, Tumbleweed, SUSE® Linux Enterprise & Fedora®

Tests like a User

- Does NOT touch the software directly
- Controls keyboard & mouse and uses them like a user
- Uses OpenCV to 'read' the actual screen output and compare to predefined needles
- Also reads plain text from serial





Desktop Selection

The desktop environment on your computer provides the graphical user interface for your computer, as well as a suite of applications for email, Web browsing, office productivity, games, and utilities to manage your computer.

openSUSE offers a choice of desktop environments. The most widely used desktop environments are GNOME and KDE, and they are equally supported under openSUSE. Both desktop environments are easy to use, highly integrated, and have an attractive look and feel. Each desktop environment has a distinct style, so personal taste determines which is the most appropriate desktop for you.

GNOME Desktop

KDE Desktop

Other

[Help](#)[Release Notes...](#)[Abort](#)[Back](#)[Next](#)

Needles only match areas of interest

<input checked="" type="radio"/> <u>GNOME Desktop</u>	
<input type="radio"/> <u>KDE Desktop</u>	

Not just graphical testing

openQA supports executing console test scripts on a system under test

- Write scripts in the openQA DSL.
- Add scripts (bash, perl, python, ...) to the openQA test suite. openQA test API can deploy & execute.
- Download existing script/packages then execute in the openQA DSL.

Supported Console Outputs

Multiple methods of comparing text results for openQA systems under test

- Simple string comparison.
- JUnit Parsing.
- Custom results analysis in the openQA DSL.

Console Example

```
select_console 'root-console';  
assert_script_run("zypper -n in a2ps");  
assert_script_run("curl https://www.suse.com > /tmp/suse.html");  
validate_script_output "a2ps -o /tmp/suse.ps /tmp/suse.html 2>&1",  
                        sub { m/saved into the file/ }, 3;
```



openQA does NOT only test
graphically



Reports like a Pro

- Records screenshots & logs for analysis
- Encodes video of each test run
- Provides ISO/HDD images for reproduction
- Dashboard for easy review and reporting



Product Dashboard

openSUSE Leap 42.1 Maintenance



openSUSE Leap 42.1 Test Updates



openSUSE Leap 42.1 Updates



openSUSE Tumbleweed



Build Dashboard

Test	aarch64	ppc64le	s390x	x86_64
RAID0	●	●	-	●
RAID1	●	●	-	●
RAID10	●	●	-	●
RAID5	●	●	-	●
RAID6	●	●	-	●
USBinstall	-	-	-	●
USBinstall@uefi	-	-	-	●
allpatterns	● ⚡	●	● installation_overview ⚡	●
allpatterns@s390x-zVM-vswi ...	-	-	● bootloader_s390 ⚡	-
autoupgrade_sle11_sp4	-	-	-	● console installation 🚩
autoupgrade_sle12_ga	-	-	-	●
autoupgrade_sle12_sp1	-	-	-	●
autoyast_sle12_ext4	-	-	-	●
autoyast_sle12_gnome	-	-	-	●

Test Results

Results for opensuse-Tumbleweed-DVD-x86_64-Build20160407-kde

Result: **passed** finished about 15 hours ago (01:09 hours)















Details

Logs & Assets

Settings

Comments (0)

Previous results (10)

Test	Result	References
isozip	passed	
bootloader	passed	     
welcome	passed	 
good_buttons	passed	
installation_mode	passed	
partitioning	passed	
partitioning_finish	passed	
installer_timezone	passed	

Visual Diff

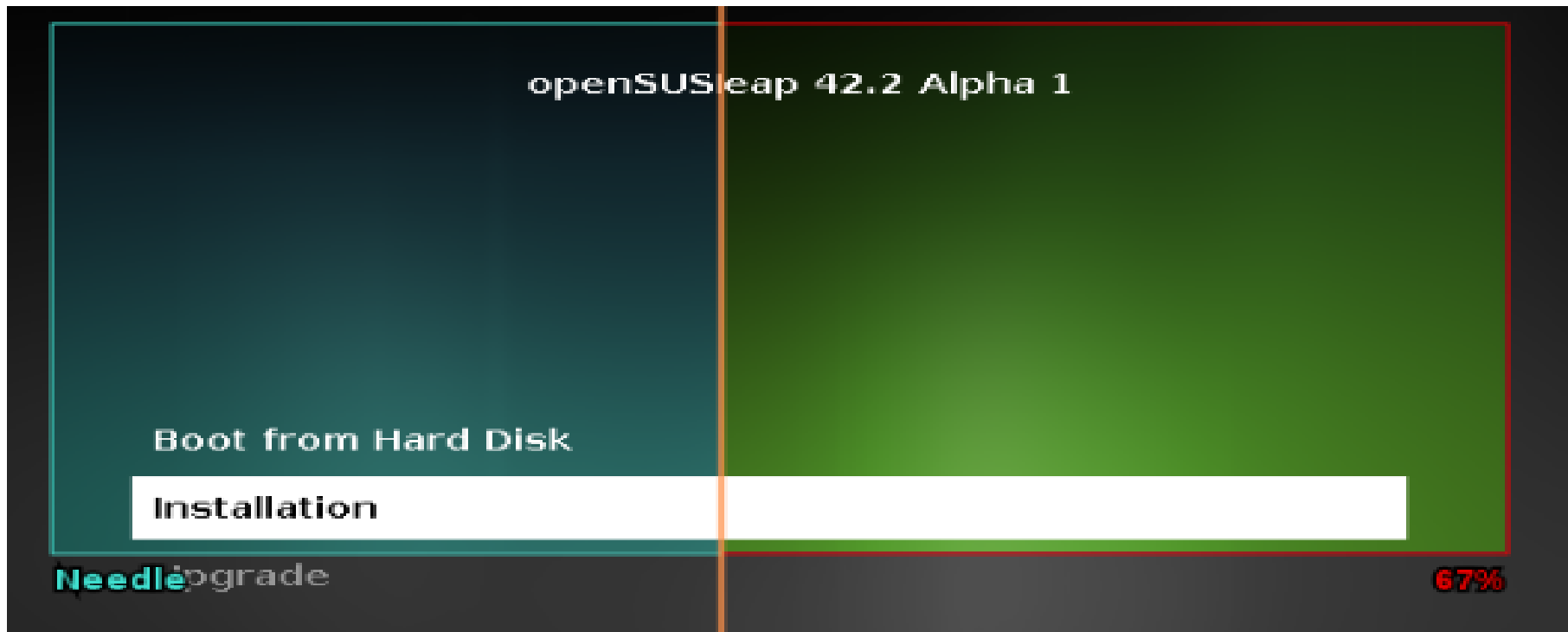
openSUSE Leap 42.2 Alpha 1

Boot from Hard Disk

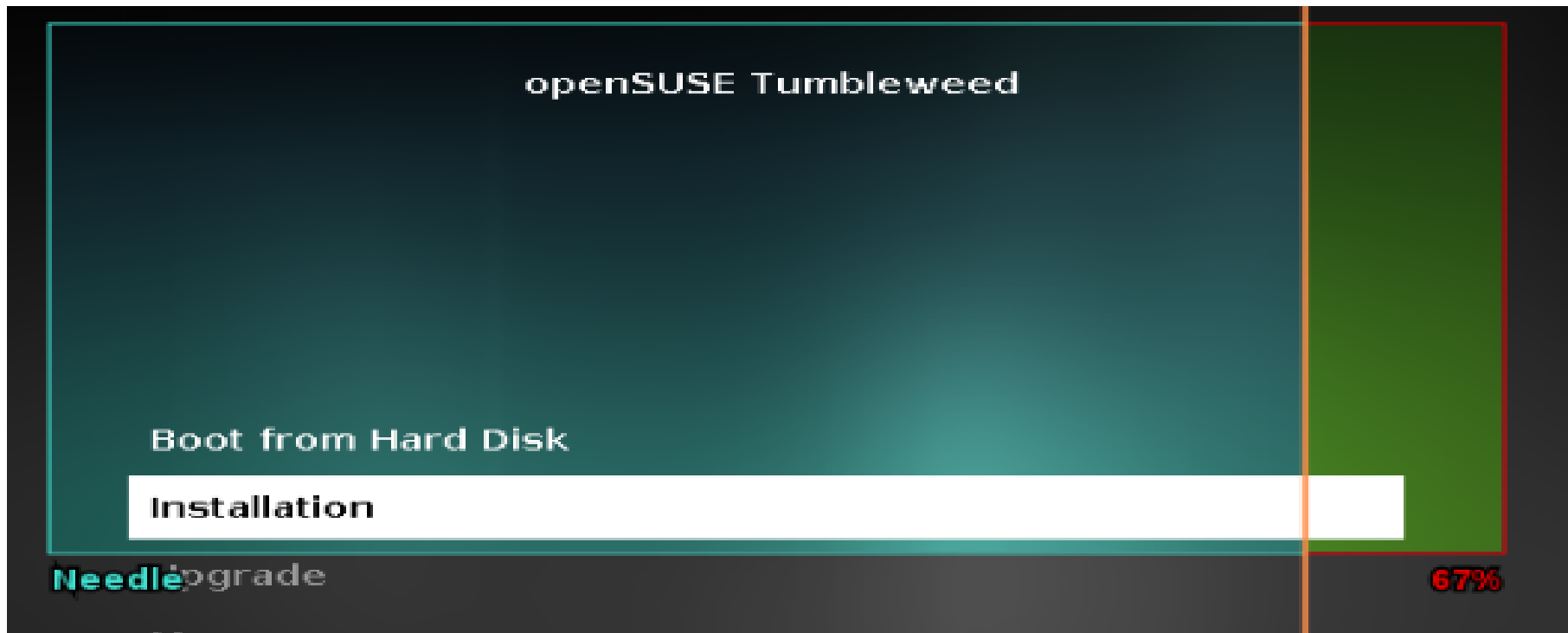
Installation

Upgrade

Visual Diff



Visual Diff



Logs & Assets

Results for opensuse-Tumbleweed-DVD-x86_64-Build20160407-ext4

Result: **passed** finished about 14 hours ago (10:33 minutes)

[Details](#)

[Logs & Assets](#)

[Settings](#)

[Comments \(0\)](#)

[Previous results \(10\)](#)

Result Files

-  [Video](#)
- [vars.json](#)
- [serial0.txt](#)
- [autoinst-log.txt](#)

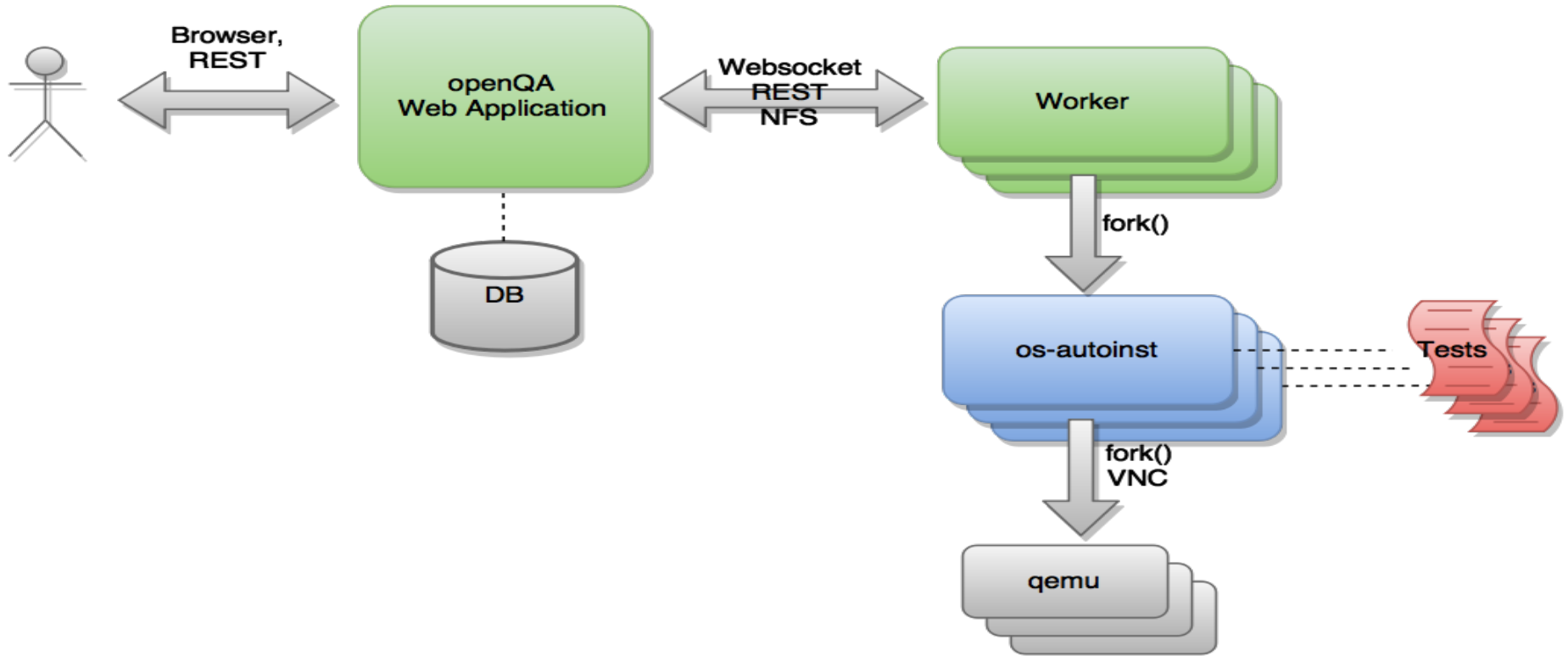
Uploaded Logs

- [install_and_reboot-y2logs.tar.bz2](#)

Assets

- [openSUSE-Tumbleweed-DVD-x86_64-Snapshot20160407-Media.iso](#)

openQA Architecture



Feature Highlights

- Multi Arch Support (Intel, ppc64le, s390x, aarch64)
- FedMsg Support
- Multi Machine Testing (incl. openvswitch)
- Real Hardware Testing (IPMI & IP KVM)
- Disk Image Creation
- Testing without OS Installation (Testing from Image)
- Multi Hypervisor Support (KVM, Xen, VMware, KVM for zSystems, Hyper-V)



Tag ALL THE THINGS!!!

- New Review Workflow
 - Tag issues with comments or bug ID's
 - Tags appear next to scenario traffic lights on dashboard
 - Repeated issues automatically inherit previous Tags
- Build Tagging
 - Mark a build as important to ensure result & asset retention
 - Tagged builds can be immune from 'obsolescence'

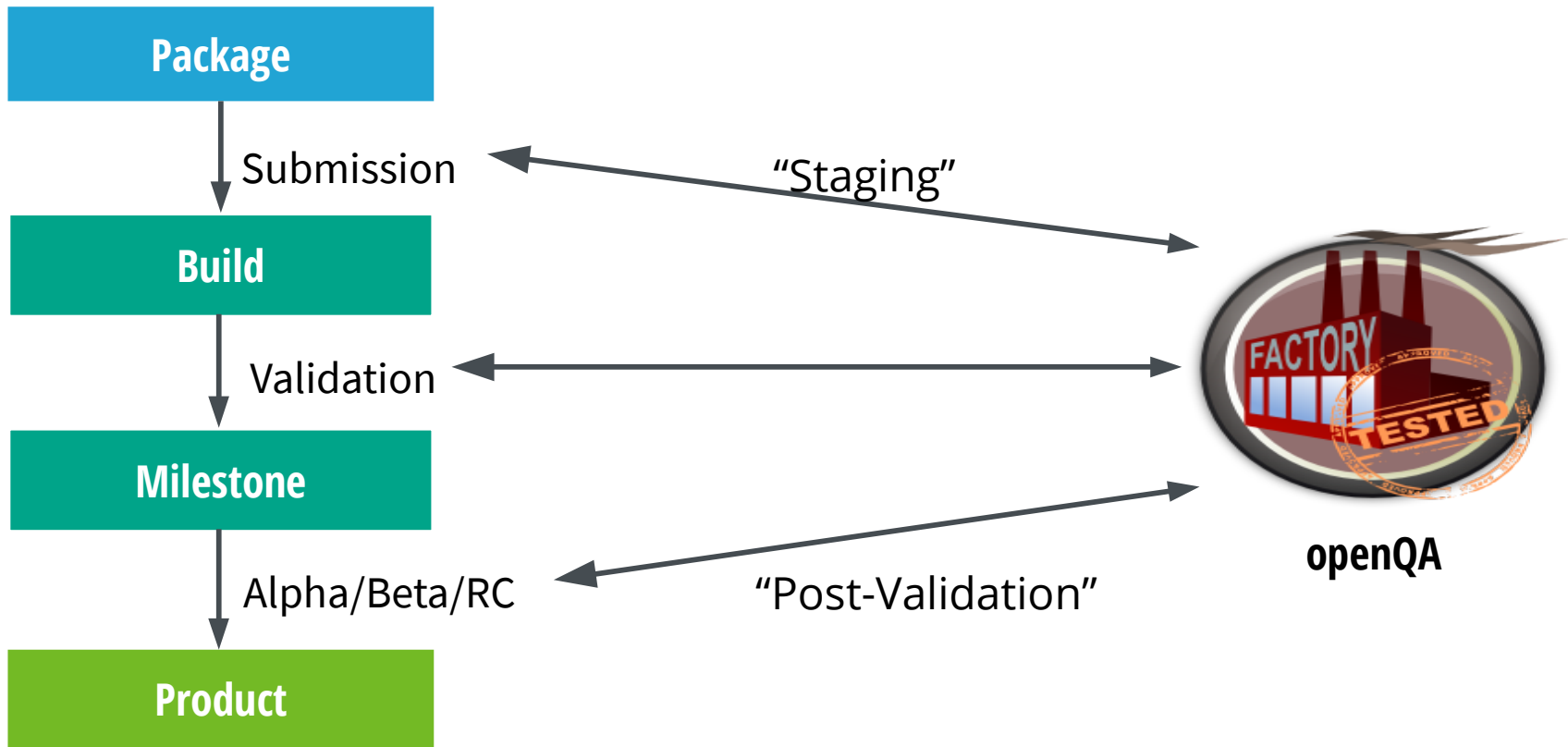
Build Dashboard

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autoupgrade_sle12_sp1	-	-	-	●
autoyast_sle12_ext4	-	-	-	●
autoyast_sle12_gnome	-	-	-	●



openSUSE and openQA

openQA & SUSE Linux Enterprise



2 Codebases – 1 Distribution



openSUSE Leap

- openSUSE Leap is a new distribution combining packages from both SUSE Linux Enterprise and openSUSE
- Extensive integration challenge, combining two separate code bases and ensuring key functionality is preserved
- Dozens of different installation/upgrade scenarios tested for each development build





ALWAYS CHANGING.. ALWAYS WORKING



openSUSE Tumbleweed

- Tumbleweed is openSUSE's rolling release
- openQA is an integral part of Tumbleweed development
- In depth testing is then carried out on the whole distribution before release
- openSUSE Tumbleweed snapshots released after successful testing
- New Tumbleweed release every 2-3 days, often faster.



A 'quiet' Tumbleweek

- 3 Snapshots
- 146 Package Updates
- 15 New Packages on the DVD
- 38 Packages Removed from the DVD
- 1 new Kernel
- All tested with over 118 different installations/upgrades



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QUIET?!

Tumbleweek 31/03 – 7/04 2016

- 5 Snapshots
- 370 package updates
- 2 new Kernels

- GNOME 3.20 a week after it's upstream release

- All tested with over 118 different installations and upgrades



All tested by openQA



Tumbleweed

- >8000 Packages
- Community Developed
- Rolling Updates

- Rolling Base System



Leap

- Over 6000 Packages
- Community Developed

Shared Core

- Stable Base System
- Regular Updates

SUSE® Linux Enterprise

- Enterprise Packages
- SUSE Developed

The background features a complex geometric pattern of overlapping shapes in teal, blue, and green, separated by white lines. The teal shape is the largest and most prominent, occupying the upper left and center. A blue shape is at the bottom left, and a green shape is on the right side. The word "Futures" is written in white on the teal background.

Futures

On the drawing board

- Improved IPMI backend (SuperMicro, Dell iDRAC, etc)
- Improved “Interactive Mode”
 - Help developers / QA reproduce bugs by giving them easy direct access to openQA systems under test
- OpenStack Backend
 - Use SUSE Cloud, and other OpenStack implementations as a platform for openQA operating system testing
- Kubernetes Backend?
- Docker Backend? DockerDockerDockerDockerDockerDockerDockerDockerDockerDockerDockerDockerDockerDocker

Whatever you want..or build!

- Main Website
 - <http://open.qa/>
- Documentation
 - <http://open.qa/documentation/>
- Bug Reports & Feature Requests
 - <https://progress.opensuse.org/projects/openqav3>



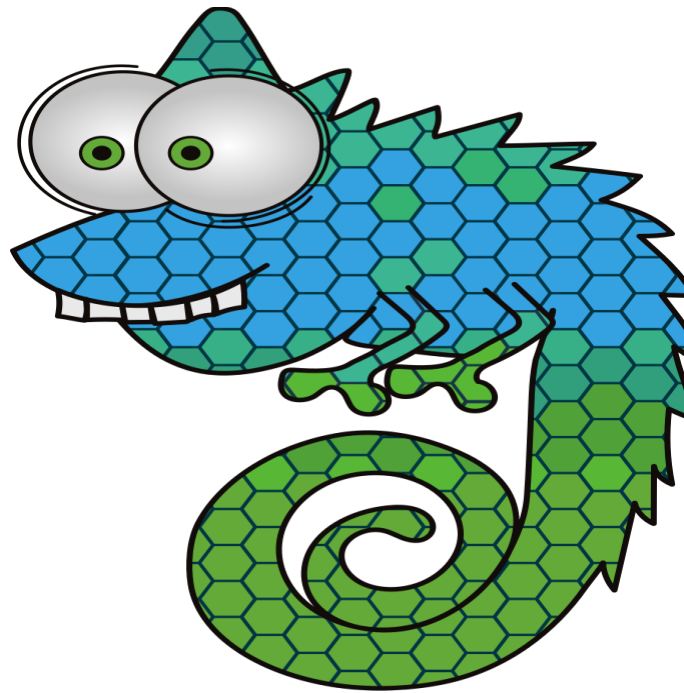
Questions?

Want to learn more?

<http://open.qa/>

Thank you.





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www.opensuse.org



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Credits

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Design & Inspiration

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