

LinuxCon Europe

UEFI Mini-Summit

7 October 2015

Session 3 – LUV Shack: An Automated
Linux Kernel and UEFI Firmware
Testing Infrastructure

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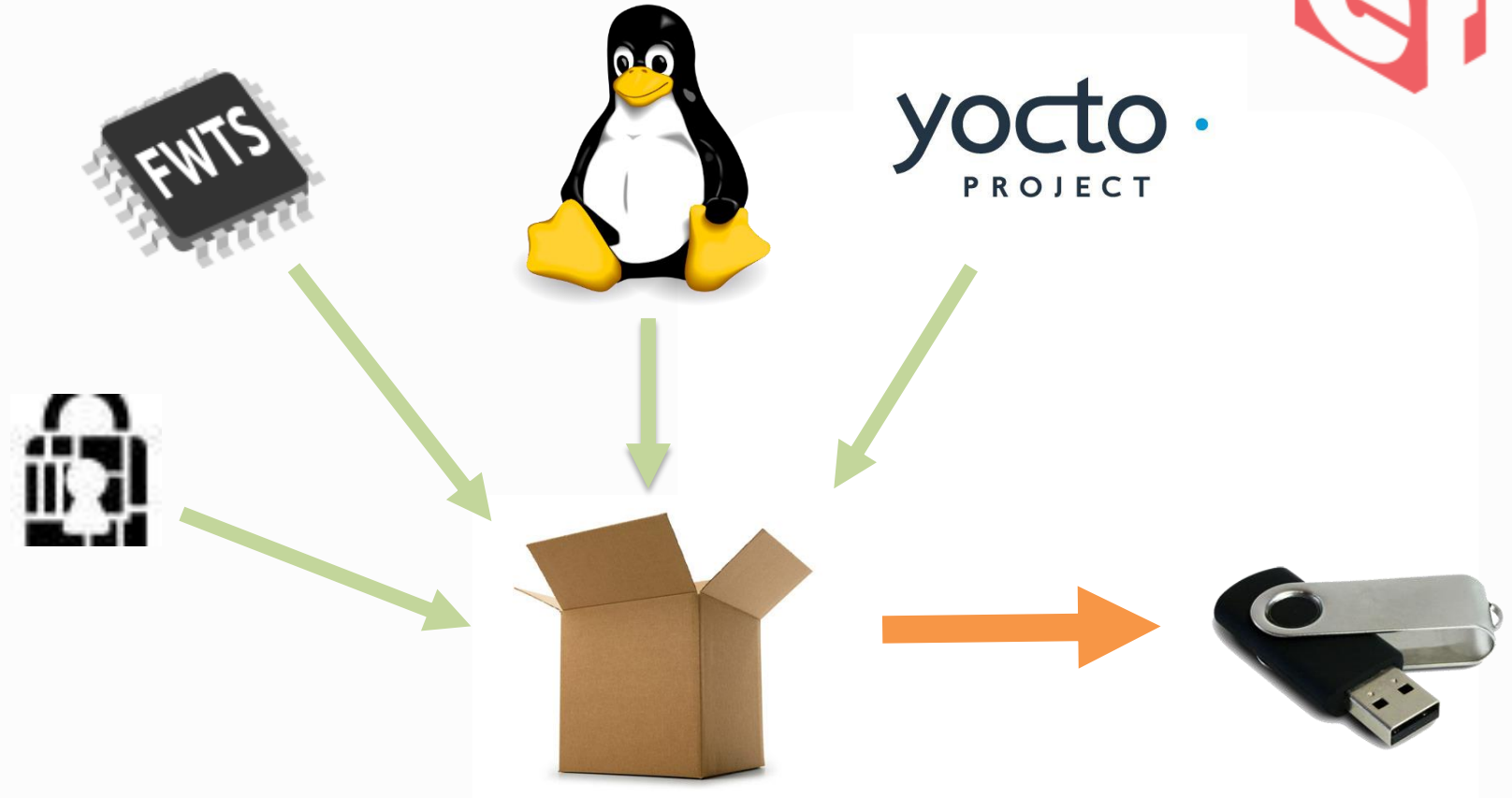
Linux* UEFI Validation Project



- Started in January 2014
- Custom Linux Distribution (Yocto Project)
- Provides boot time and runtime testing
- Crash fast, crash hard, then recover



LUV Project



The 5000 mile problem



- USB live images do not scale
- Geography is a barrier
- Debugging vicariously is hard

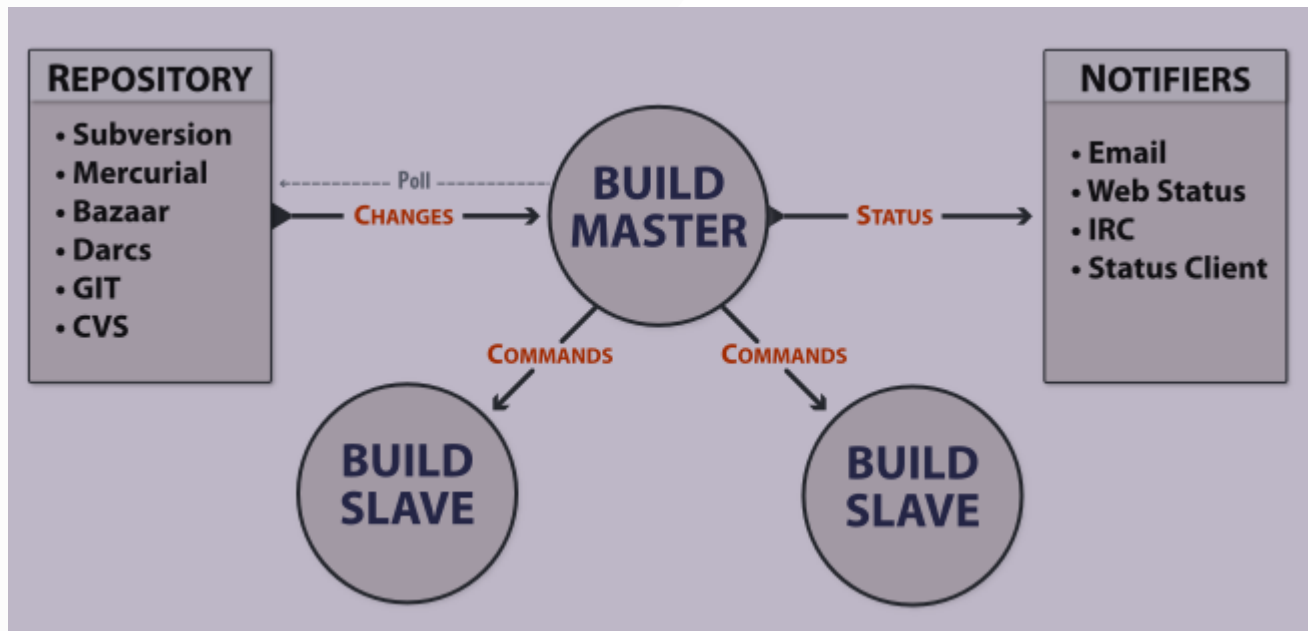


LUV Shack

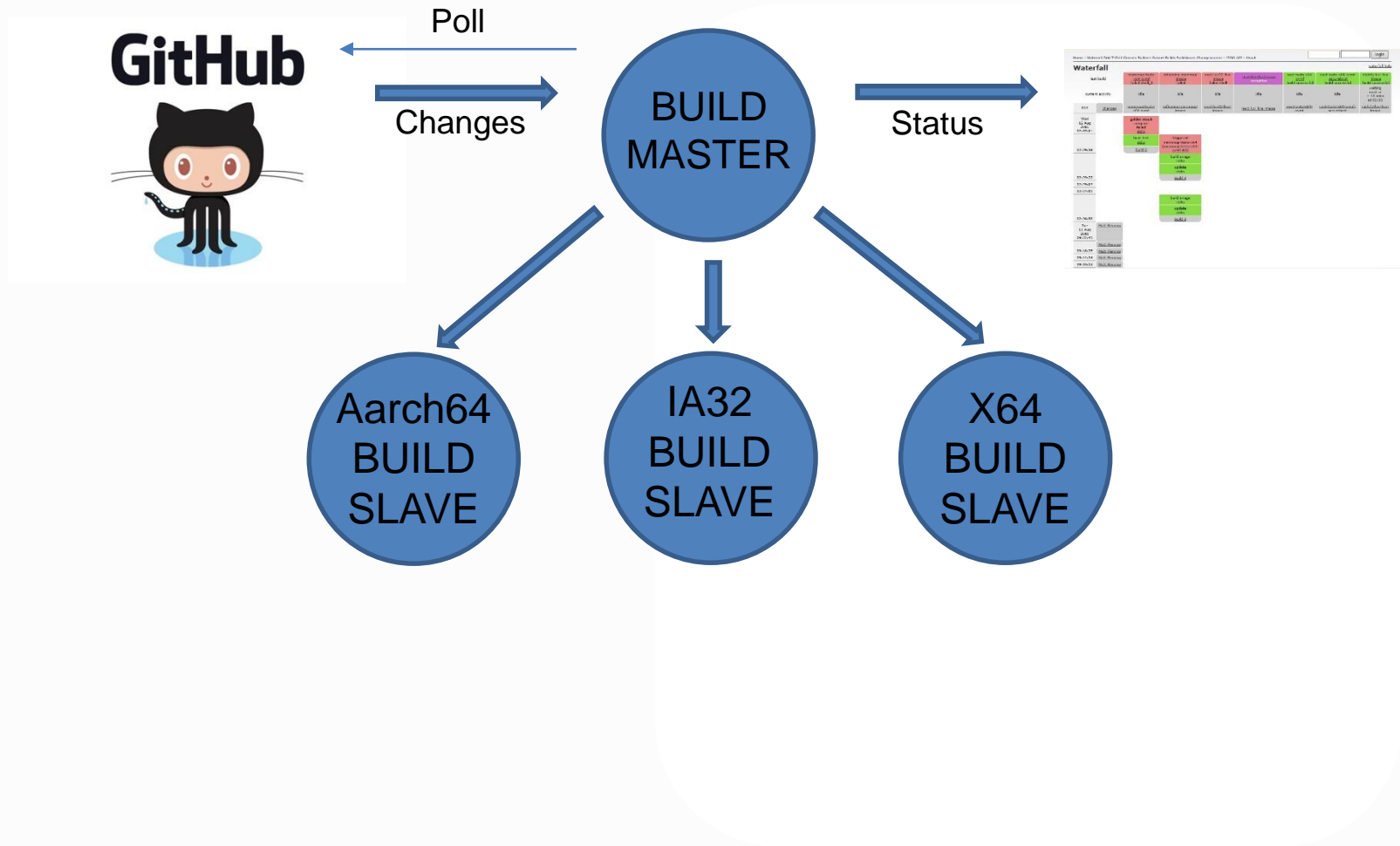


- Buildbot used as controlling mechanism
 - Continuous integration framework
 - Written in Python
- Mixture of physical and virtual machines
- Everything is version controlled

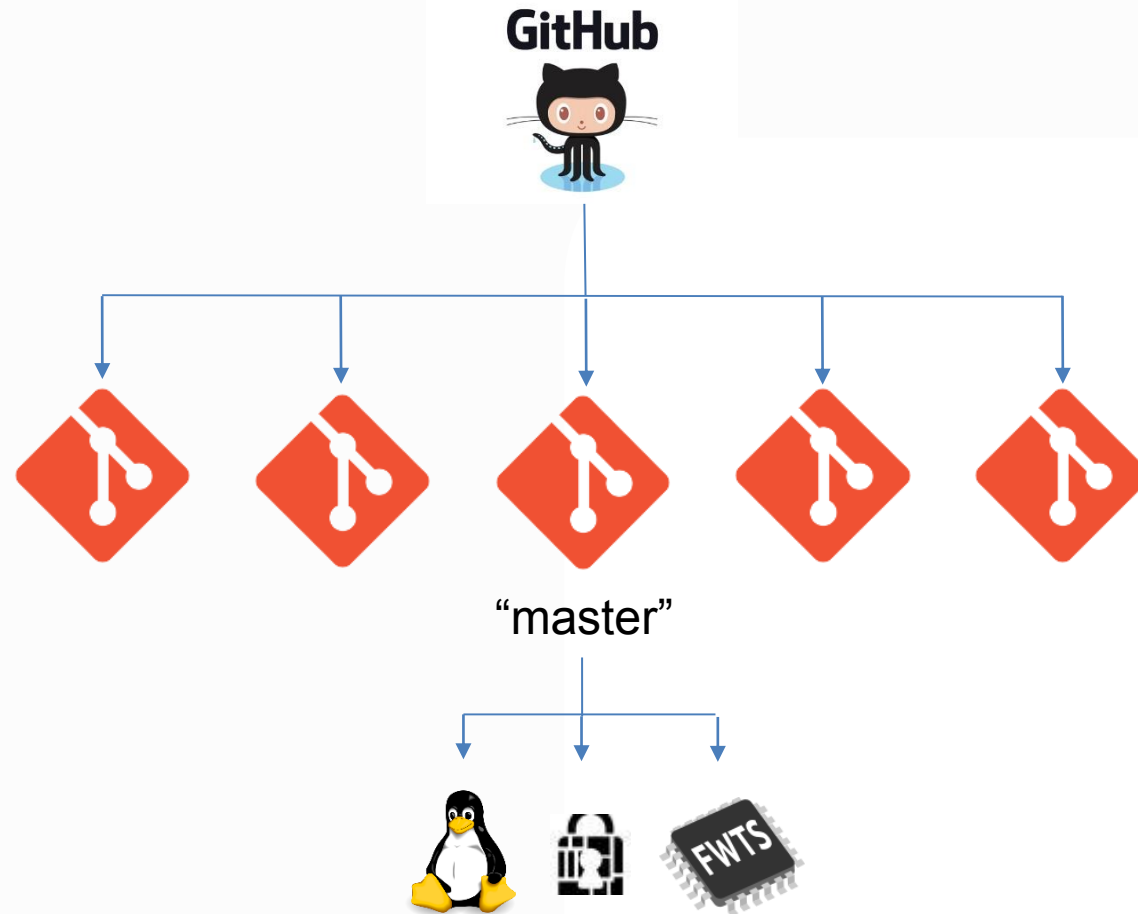
LUV Shack



LUV Shack - overview



LUV Shack - changes



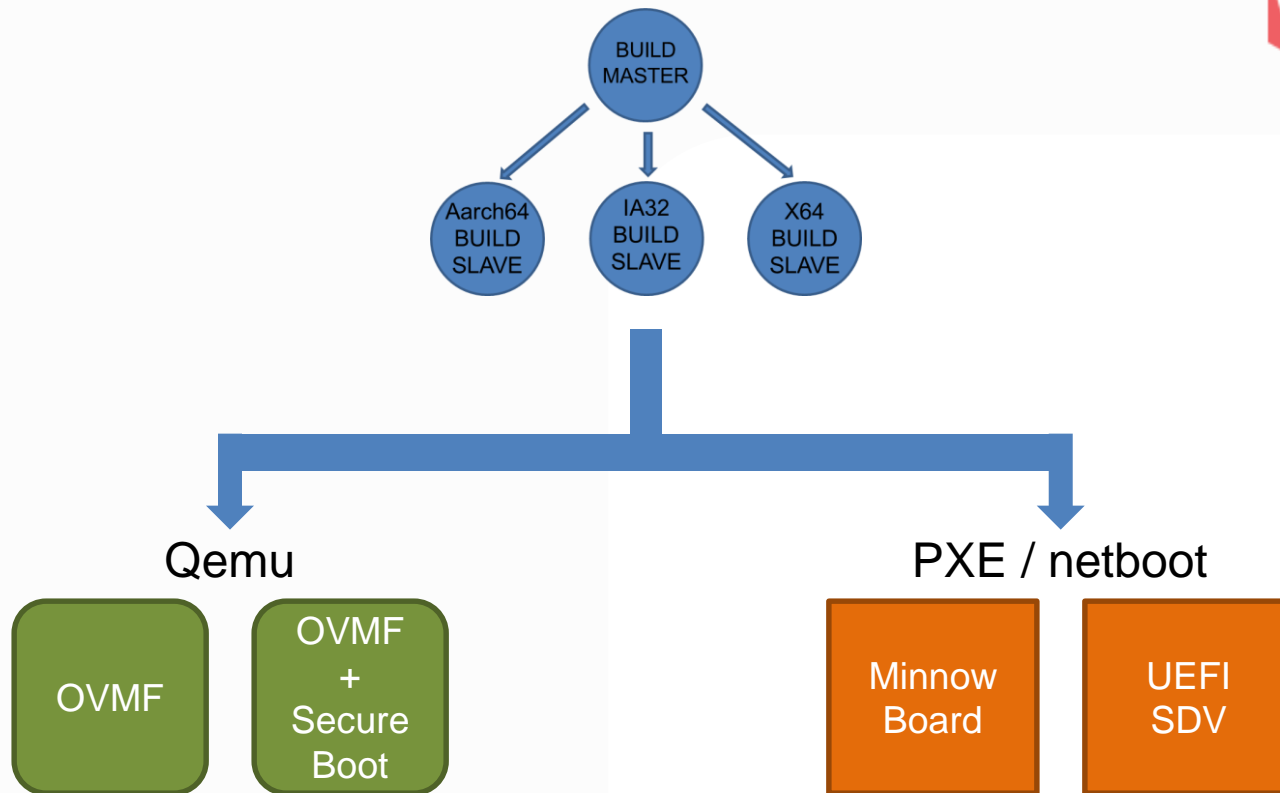
Everything is a git branch

LUV Shack - build



```
factory = BuildFactory()
factory.addStep(Git(repourl='git://github.com/01org/luv-yocto.git',
                    branch='next', mode='full'))
factory.addStep(ShellCommand(description="build image",
                               command=["/data/buildbot/luv-build", "next"]))
factory.addStep(Trigger(schedulerNames=["next-tests-x64"],
                        waitForFinish=True))
```

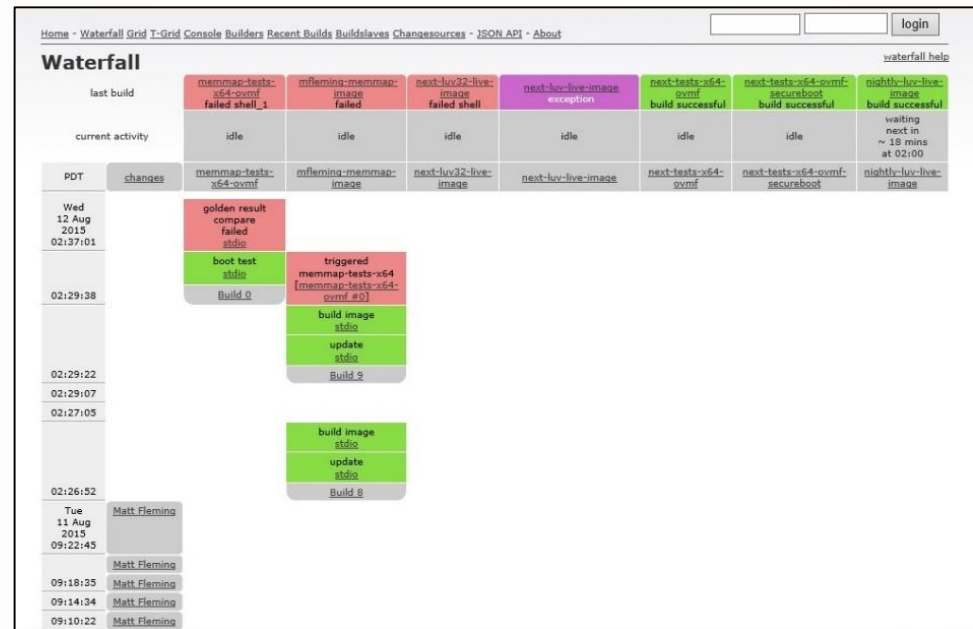
LUV Shack - test



LUV Shack - results



```
[+] test_create_read... passed
[+] test_delete... passed
[+] test_zero_size_delete... passed
[+] test_open_unlink... passed
[+] test_valid_filenames... passed
[+] test_invalid_filenames... passed
[-] fwts
[+] bios_info... passed
[+] version... passed
[+] acpiinfo... passed
[+] mtrr... passed
[+] klog... passed
[+] oops... passed
[+] acpitables... passed
[+] apicinstance... passed
[+] asf... passed
[+] bert... passed
[+] bgrt... passed
[+] boot... passed
[+] autobrightness... passed
[+] checksum... passed
...
```



LUV Shack Wins



- Can run tests in parallel
- Debug issues remotely
- Plug and play testing
- Test out kernel and firmware patches easily
- Regression testing
- Orders of magnitude improvement in development time

LUV Shack Evolution



1. Running on developer's machines



LUV Shack Evolution



1. Running on developer's machines
2. Run LUV on remote machines



LUV Shack Evolution



1. Running on developer's machines
2. Run LUV on remote machines
3. Build custom LUV and deploy in parallel



Case Study



- `EFI_PROPERTIES_TABLE` new in UEFI v2.5
- Required Linux kernel enabling
- We didn't have access to hardware
- Solution? A new `luv-yocto.git` branch!

Case Study



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01org / **luv-yocto** [Watch](#) 17 [Star](#) 18 [Fork](#) 12

Branch: **m Fleming/efi-n...**

Commits on Aug 14, 2015

- ovmf_git: Use pecoff-runtime-relocation branch for testing** ... [d3e74fc](#) [<>](#)
m Fleming authored on Aug 11
- luv-live-image: Enable efi=debug kernel parameter** ... [5a12b08](#) [<>](#)
m Fleming authored 28 days ago

Commits on Aug 11, 2015

- linux-yocto-efi-test: Add -m Fleming tag to kernel version** ... [7ca791f](#) [<>](#)
m Fleming authored on Aug 11

Commits on Aug 7, 2015

- ovmf: Use Ard Biesheuvel's edk2 repository** ... [42e05d0](#) [<>](#)
m Fleming authored on Aug 7
- linux-yocto-efi-test: Use experimental EFI kernel branch** ... [8c372a0](#) [<>](#)
m Fleming authored on Aug 7

Commits on Jul 27, 2015

Final Thoughts



- Please run LUV and report results
 - USB image
 - PXE
 - Qemu
- Tell us about your tests
- LUV integrates with other validation tools

Resources



- luv@lists.01.org
- <https://01.org/linux-uefi-validation>
- <https://github.com/01org/luv-yocto>
- <http://docs.buildbot.net/current/tutorial/>
- <https://www.yoctoproject.org>



Questions?



Interested in Joining?

www.uefi.org/membership

UEFI FW/OS Forum:

uefi.org/FWOSForum

A free public forum focused on firmware and O/S integration

USRT Security Issue Reporting:

uefi.org/security

A safe reporting site to inform the UEFI of any security issue or vulnerability based on firmware

