OCP Ready

and OCP Checkbox Overview
David Duffey

- Based in Austin, TX
- Started in Canonical in February 2011
- Leads Server Hardware Ecosystem and Server Certification Team
- Cloud
  - Amazon, AT&T, China Mobile, Deutsche Telekom, HP, Microsoft, Samsung
- Server & IHVs
  - HP, Dell, IBM (Lenovo), Cisco, SeaMicro, OCP
  - LSI, Emulex, Fusion-IO, Intel, AMD, NVIDIA, EMC
- Enterprise Support
  - Allied Irish Bank, Capgemini, eBay, Google, IBM, KDDI, LVM, Qualcomm, John Hopkins, French Government, etc.
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Agenda

● History
● OCP Ready
● OCP Checkbox
  ○ Developer Focus
  ○ Differences from upstream
● Demo
● What’s Next
C&I History - OCP Ready / Checkbox

- OCP Launch: Joint scale-out/low power/hyperscale presentation
- OCP v1 “Freedom” Certified on Ubuntu 10.04 LTS (Checkbox)
- August 2012 - OCP Certification Workshop @ Facebook
- January 2013 Annual Summit - Disposable Operating System
  - Ready/Certified - Lab Outreach
- May 2013 MIT First C&I Engineering Summit
  - Checkbox demo, Remote/Local Tests
- May 2013 OCP Japan - OCP in Launchpad
  - OCP v2 Windmill PPA (drivers & tools packaged)
- June 2013 - OCP Checkbox branch created in Launchpad
  - Checkbox Presentation and Video, Call for Developers
- August 2013 - OCP Taiwan ITRI OCP Checkbox demo
- Additional tests developed by GS, Fidelity, Facebook, AVL
- OCPv3 Roadrunner out-of-box enabled in 12.04.3 LTS (NIC, BMC)
- October 2013 - GS Summit - OCP Checkbox 0.9 on Live Boot
  - PXE image shortly thereafter
- November 2013 - UTSA OCP Certification Lab demo and setup
OCP Ready & Certified

Program Definition
● Involved with helping define Certification program (Ready vs Certified)

Compliance Documentation
● Extensive self testing guide written including original test cases provided by Thao Nguyen, project lead for Open Compute C&I (now YF)
● Configuration equivalency determination guide
OCP Ready

Program Definition (vs Certified)

- A sub-set of OCP Certified testing
- Lower barrier of entry and requirements
- Tests run by the vendor (self-testing)
- Tests submitted to OCP for review
- Hardware does not need to be submitted
- More focus on specification and functionality
  - Less focus on interoperability
  - Focused on server motherboard specs (compute) first
- Trust put into the vendor / self-tester
OCP Checkbox

Checkbox chosen as compliance test tool
● OCP community involved in writing Checkbox tests/patches
● Continued help/guidance on hardware validation tests.
● Development quick start guide to help get community involved in test development.
● OCP community involved in packaging to match current Disposable OS

OCP Developer Quick Start Video & Presentation
● http://youtu.be/uudjmYQmawc
Contents

Purpose
Development
Usage & Concepts

- **Scripts**
  - Creating a test (Guidelines and Best Practices)

- **Jobs**
  - What is a job?
  - Creating a job
    - Fields, and what do they mean?
    - Adding your new jobs file to checkbox
  - Need a config file for your job/test?

- **Whitelists**
  - What is a whitelist?
  - Creating a whitelist
    - Mandatory jobs
    - Adding a test to a whitelist
    - Building from source with your new whitelist
Usage & Concepts (cont.)

- Results
  - Supported formats
  - Viewing test data

Video Demonstration

Contacts
OCP in Launchpad:

Project: https://launchpad.net/opencompute
Code: https://code.launchpad.net/~opencompute-developers/opencompute/checkbox
Team: https://launchpad.net/~opencompute-developers
PPA: https://launchpad.net/~opencompute-developers/+archive/ocp-certification-tools-ppa

Additional (non-OCP) Checkbox Resources (docs, etc.):

Checkbox Wiki: wiki.ubuntu.com/Testing/Automation/Checkbox
Walkthrough: wiki.ubuntu.com/Testing/Automation/Checkbox/Walkthrough
What is a Job?

A job is a task or unit of work that is used to define many different things, including test suites and test cases. All jobs are composed of a list of fields that have a special meaning.

Example:

```plaintext
plugin: shell
name: ipmi/out_of_band/admin/check_power_on
requires: package.name == 'ipmitool'
user: root
environ: OC_IPMI_TARGET OC_IPMI_ADMIN OC_IPMI_ADMIN_PASSWORD
command: ipmitool -I lanplus -H $OC_IPMI_TARGET -U $OC_IPMI_ADMIN -P $OC_IPMI_ADMIN_PASSWORD chassis power status -C3 | grep -q "on"
description:
Retrieve Chassis Status information with Admin credentials
```
What is a Whitelist?

A whitelist in checkbox is simply a list of tests specified to run together, in order, at time of execution.

Whitelists are defined in the data/whitelists directory of the checkbox source tree, and copied to /usr/share/checkbox/data/whitelists when checkbox has been installed.

**Example:** (opencompute-ready-remote-whiteclist)

```
__ipmi__
ipmi/out_of_band/admin/chassis_info
ipmi/out_of_band/admin/power_off
ipmi/out_of_band/admin/power_on
ipmi/out_of_band/admin/chassis_self_test
ipmi/out_of_band/admin/dcmi_sensor_info
ipmi/out_of_band/admin/dcmi_temp_readings
ipmi/out_of_band/admin/detailed_sensor_readings
ipmi/out_of_band/admin/chassis_status
```
Viewing test data

After checkbox is finished executing tests, the result data can be found in xml format in /home/<user>/.cache/checkbox/submission.xml
OCP Checkbox

Differences from “upstream”
- Removed C3 and Ubuntu Friendly submission modules
- Created two Ready whitelists (remote and local)
- Removed irrelevant tests (optical drives, etc.)
- Added OCP specific tests (drive, memory, stress, ipmi/dcmitool)

Benefits from upstream
- Bug Fixes
- New outputs (JSON) - today’ish
- New tests developed all the time
- Automated inband and out-of-band testing (14.04 LTS)
OCP Launchpad

OCP uses Launchpad for bug tracking, PPAs, etc.
- Same popular platform used by OpenStack and Ubuntu
- Includes OCP Checkbox code repository
- Anyone can file bugs, answer questions, submit code, or create blueprints
- Includes PPA for OCP software including Checkbox, userspace tools like DCMItool, and kernel modules

Launchpad hosts code and bug tracking for OpenStack and Open Compute
https://launchpad.net/opencompute
Contacts

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Demo!
Questions?
What is CloudInit?

- Created by Canonical and adopted as fundamental infrastructure by major cloud players like Amazon and Rackspace
- Works with most Linux distributions and has even been ported to Windows
- All Ubuntu Certified Public Cloud Guests use CloudInit to pass data to Cloud instances
- Provides cross platform structured ways to pass data and common actions to an operating system including
  - Packages
  - Secure Keys
  - Users
  - Services
  - Commands
CloudInit & The Disposable OS

OCP Disposable Operating System (DOS)

- Designed to be OS agnostic platform for hardware maintenance and testing, proposed by OCP systems management group

- Adopted by OCP C&I team for platform for Ready and Certification testing

- CloudInit, created by Canonical, is the way data and commands are passed to the DOS

- The Disposable Operating System will come pre-packaged with CloudInit and OCP Checkbox
Focus: MAAS

1. Automated baremetal provisioning
2. Dynamic re-purposing of hardware
3. Intelligently match hardware to workload for better efficiency
4. Web based interface
Focus: Juju

1. Deploy and manage OpenStack
2. Deploy and scale workloads into OpenStack (and other) clouds
3. Powerful service orchestration
4. Rich web based GUI
5. Speed
Hardware Provisioning Workflow

Enlistment
- DHCP boot in an ephemeral environment
- Register with cluster controller
- Adds temporary IPMI MAAS credentials to BMC

Commissioning
- Boot in a ephemeral environment
- Hardware inventoried
- Permanent IPMI MAAS credentials set in BMC
- Other user-commissioning actions (firmware configuration, smoke tests, etc.)

Provisioning
- Happens when a node is requested
- Installs requested Ubuntu version
OpenStack matches Ubuntu cadence

Ubuntu 12.04 LTS
Ubuntu 12.10
Ubuntu 13.04
Ubuntu 13.10
Ubuntu 14.04 LTS
Ubuntu 14.10

Long Term Release Support
Standard Release Support
Matching OpenStack Release Support

ESSEX
FOLSOM
GRIZZLY
HAVANA

Ubuntu 12.04 LTS
Ubuntu 12.10
Ubuntu 13.04
Ubuntu 13.10
Ubuntu 14.04 LTS
Ubuntu 14.10

Newer releases are available on LTS

You can run all these versions on 12.04 LTS. No migration needed!