oVirt

Automated Testing of oVirt Node

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Agenda

- Introduction
- Installation and Configuration
- Test Automation
- Igor
- Current State & Future

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Introduction

What is oVirt Node?

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- Dedicated hypervisor
- Built on Fedora
- Firmware like
  - Install and forget about it
  - Limited set of functionality
  - TUI interface

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Overview

Overview

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- Packages from
  - Fedora
  - ovirt-node + ovirt-node-iso
- ISO Image
  - Build using livecd-tools
  - (minimized) Size: ~170MB
  - Technologies: KVM, libvirt, vdsm, …

Deployment

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- Supported Media: CD/DVD, Flash, PXE
- Manual Installation
  - Using a newt based TUI
  - Storage
- Automatic Installation
  - Configuration with boot parameters
  - Storage, Network, SNMP, ...

Installation and Configuration

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- Image is copied to LVM LV
  - Update: Boot the new image
- Basic configuration through TUI
  - Networking, oVirt Engine, SNMP, Kdump, …
  - Advanced configuration and monitoring through oVirt Engine
- All changes are persisted on /config

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Test Automation

What needs testing?

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- Deployment
  - Automate provisioning (real + virt)
- Installation & Updates
  - Different kernel arguments
  - Cover TUI installation
- Configuration
  - Handle temporary network loss
  - Cover TUI configuration

Automate: Deployment and Installation

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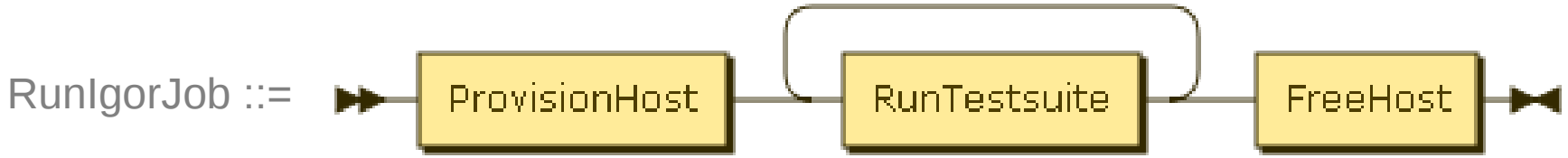
- Installation via PXE
  - Import ISO using livecd-to-pxeboot
  - Create profile and system in Cobbler
    - Different kernel arguments for installation, update, reinstallation, ...
  - Run installation or update
- Works for virtual guests and real hardware
  - Libvirt for virtual guests

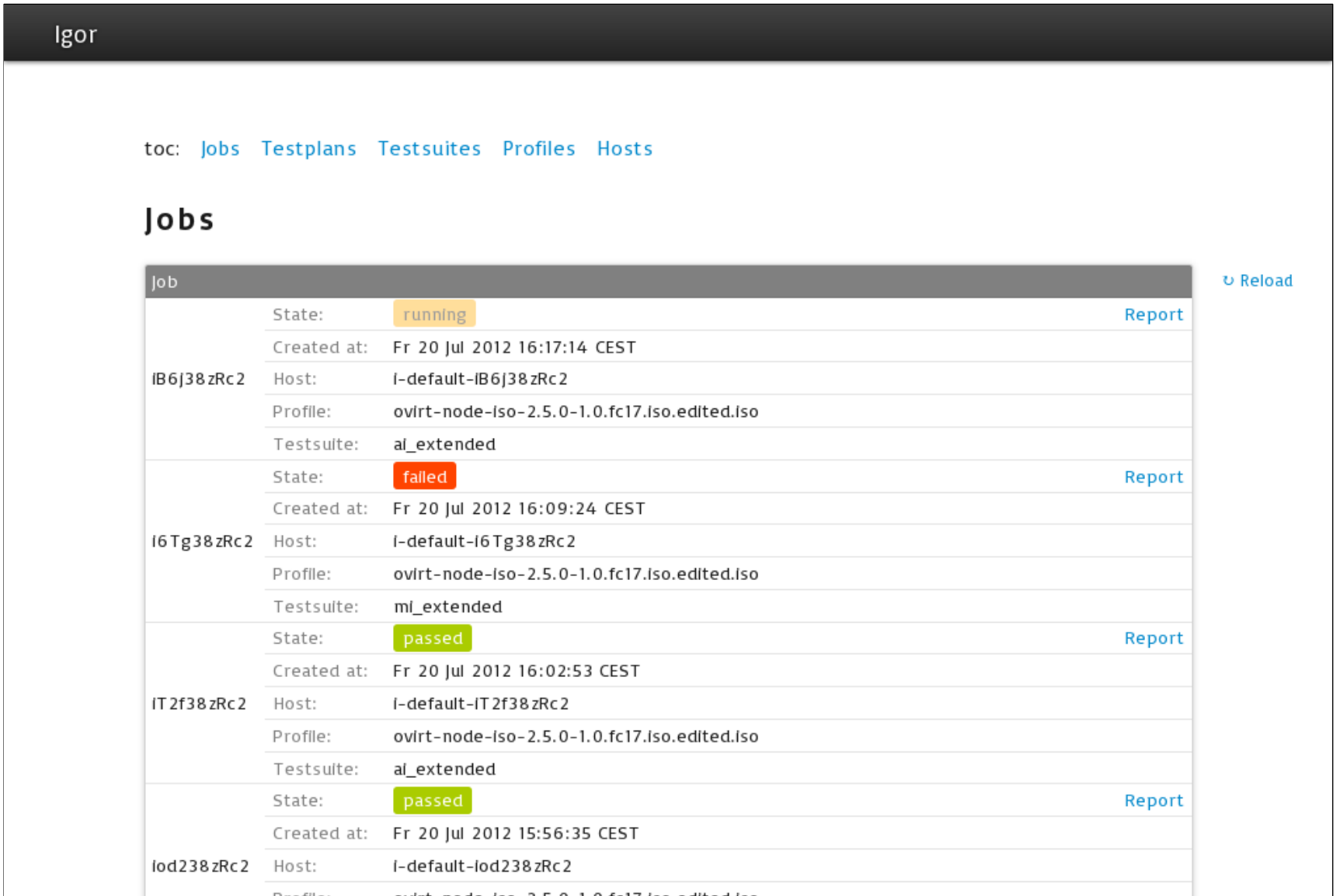
Igor

- Igord for client+profile life-cycle management
  - Concepts: Profile, Host, Testsuite

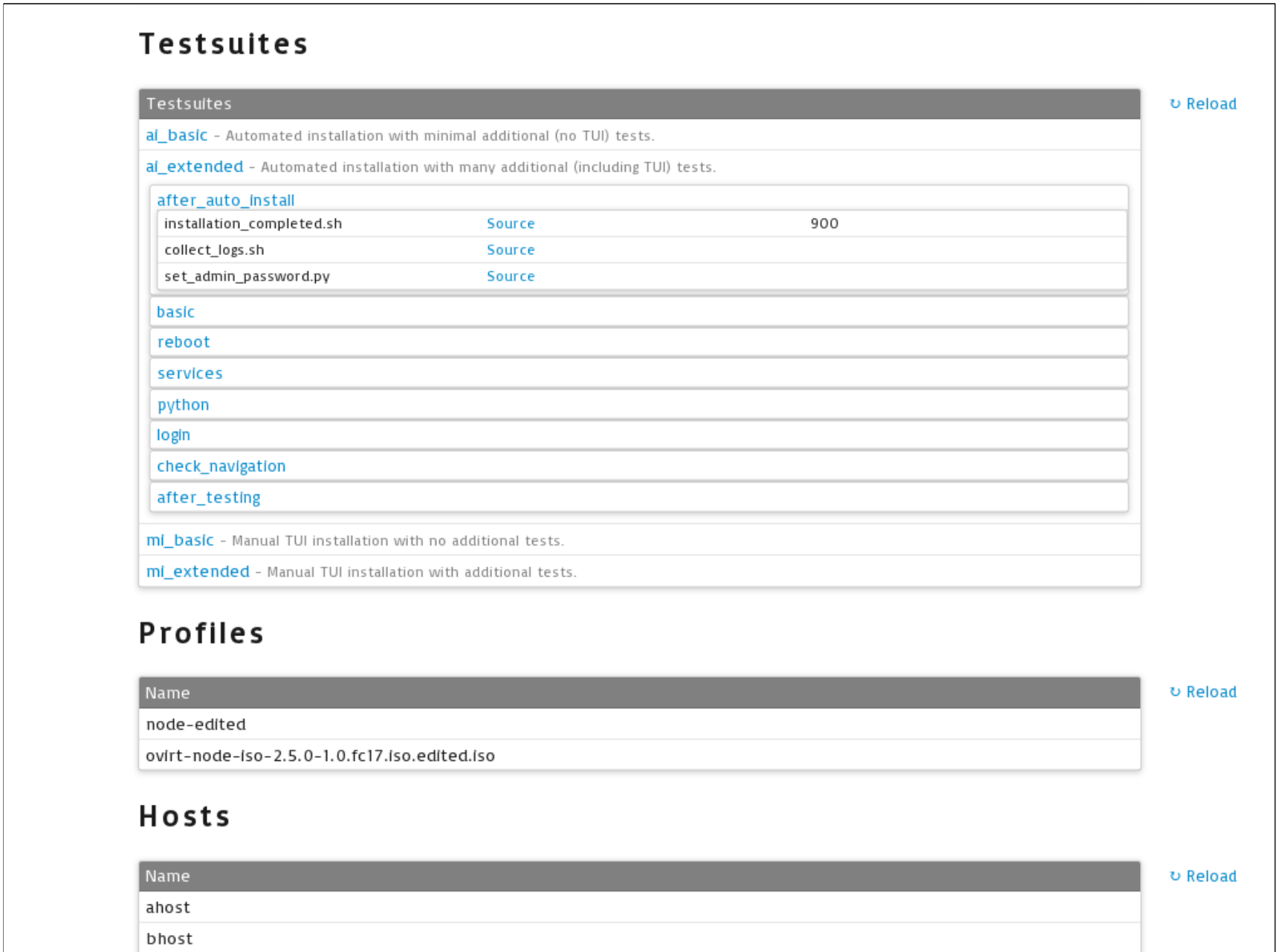


- oVirt Node Igor Plugin to run testcases on client
  - Handles interaction with TUI

igord


Igor
toc: Jobs Testplans Testsuites Profiles Hosts
Jobs
Job
↻ Reload
iB6j38zRc2
State: running Report
Created at: Fr 20 Jul 2012 16:17:14 CEST
Host: i-default-iB6j38zRc2
Profile: ovirt-node-iso-2.5.0-1.0.fc17.iso.edited.iso
Testsuite: ai_extended
i6Tg38zRc2
State: failed Report
Created at: Fr 20 Jul 2012 16:09:24 CEST
Host: i-default-i6Tg38zRc2
Profile: ovirt-node-iso-2.5.0-1.0.fc17.iso.edited.iso
Testsuite: mi_extended
iT2f38zRc2
State: passed Report
Created at: Fr 20 Jul 2012 16:02:53 CEST
Host: i-default-iT2f38zRc2
Profile: ovirt-node-iso-2.5.0-1.0.fc17.iso.edited.iso
Testsuite: ai_extended
iod238zRc2
State: passed Report
Created at: Fr 20 Jul 2012 15:56:35 CEST
Host: i-default-iod238zRc2

igord



Testsuites

Testsuites			
ai_basic - Automated installation with minimal additional (no TUI) tests.			
ai_extended - Automated installation with many additional (including TUI) tests.			
after_auto_install			
installation_completed.sh	Source	900	
collect_logs.sh	Source		
set_admin_password.py	Source		
basic			
reboot			
services			
python			
login			
check_navigation			
after_testing			
mi_basic - Manual TUI installation with no additional tests.			
mi_extended - Manual TUI installation with additional tests.			

↻ Reload

Profiles

Name
node-edited
ovirt-node-iso-2.5.0-1.0.fc17.iso.edited.iso

↻ Reload

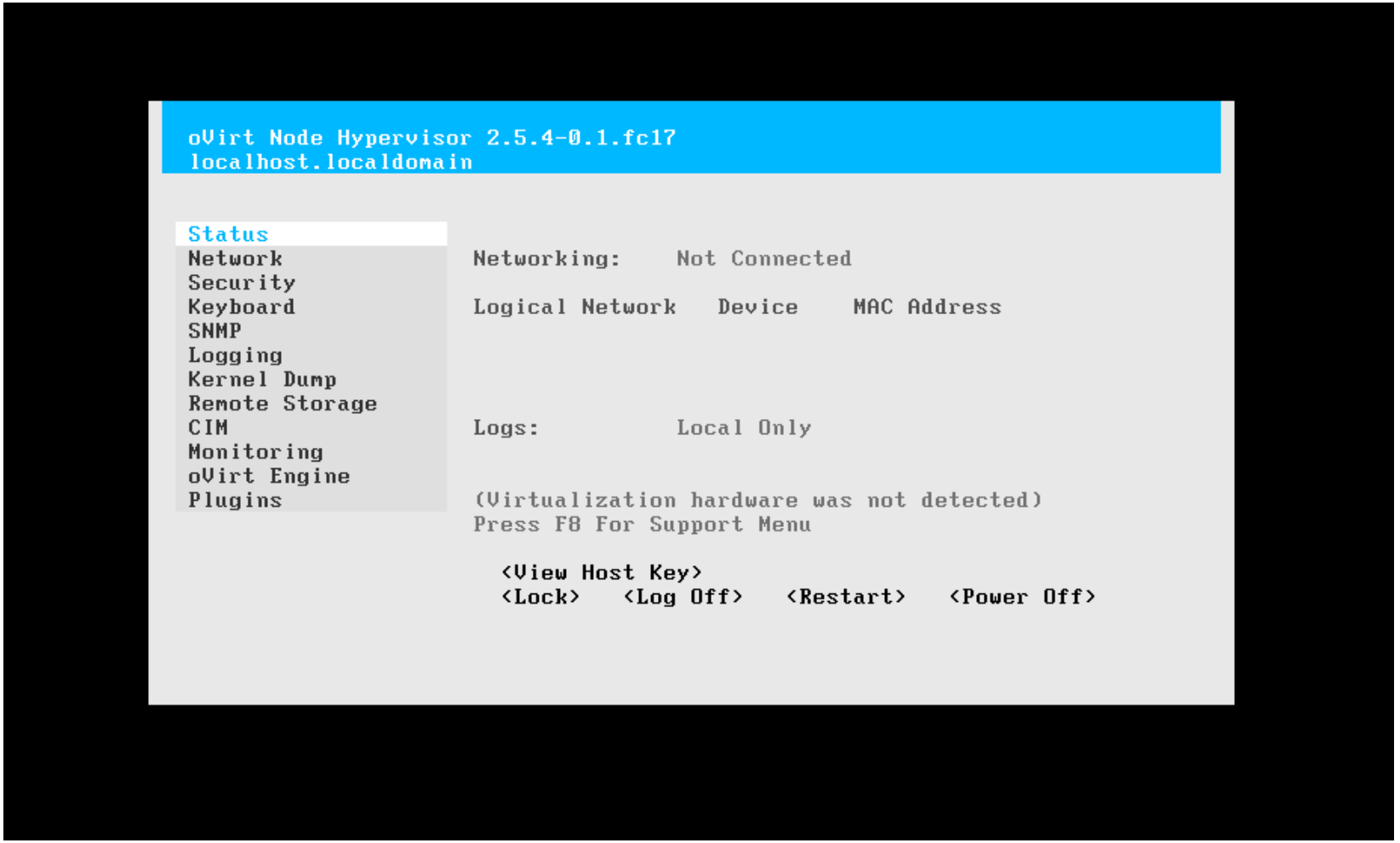
Hosts

Name
ahost
bhost

↻ Reload

Automate: Configuration

- Completely TUI based



Automate: Configuration

- Completely TUI based

- “Storyboard” based testing
  - Input through uinput
    - Create input devices in userspace (python-uinput)
    - Addresses console as well as TUI
    - Close to real input
  - Compare with screen via /dev/vcs
    - … or any other python code

Current State

- Integrated into gerrit-jenkins workflow
  - junit-like reporting, visualized by Jenkins
- Works with virtual guests and real hardware
  - Currently run internally at Red Hat, results publicly available
- Basic testsuites (Summarized in a testplan)
  - Automated and TUI installation
  - TUI configuration
  - Some (sourcecode) sanity checks

Future

- Enhance testsuites
  - Different network setups
  - Testcases
    - cover all TUI pages in detail
    - for updates
    - for interaction with oVirt Engine
- Enhance Igor

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Ressources

- oVirt Node
  - http://jenkins.ovirt.org
  - ML: node-devel@ovirt.org
  - ML: node-patches@ovirt.org
  - IRC: #ovirt on oftc.net
- Upstream
  - Jenkins http://jenkins-ci.org/
  - Gerrit http://code.google.com/p/gerrit/
  - Igor https://gitorious.org/ovirt/igord

Testcases

- A testcase is a script
  - Simple protocol: 0 is success
  - stderr/-out are logged
  - Annotate & Attach
- Communication with server between testcases
  - Network loss during a testcase is expected
- Server-side tracking of the testsuite state
  - Monitor timeout

Story

```
story = [
    # Enter Nothing, wait 0 seconds, expect "Please Login" on screen
#    (None,                0, "Please login"), # Ignore this for now.

    # Enter …, wait … seconds, expect … on screen
    (["admin\n"],           2, "Password:"),

    # Password (taken from set admin password)
    (["ovirt\n"],           5, "Networking:")
]


if __name__ == "__main__":
    common.input.Storyboard("TUI login", story).run_and_exit()
```

Sourcecode

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- Heavily relying on
  - Runtime informations
  - Config files
- Refactoring to enable testing
  - pyflakes, pylint, doctests
  - pytest

Jenkins

- Continous Integration

- Jobs
  - To build rpms
  - To build the image

  - Triggered by Gerrit (code review tool)

Igord

- Assign `$profile` to `$host` and run `$testsuite`
- Speaks to
  - Cobbler (Hosts, Profiles)
  - Libvirt (Hosts)
  - Filesystem (Hosts, Testsuites)
- Prepares disk images
  - LVM, Partitions, Filesystems

Autotest

- … is an advanced testing framework

- TUI based testing is virt-only
  - Screenshot based
- Provisioning of machines is out of autotests scope

Foreman

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- Already in sight
- Needs support in igord
- Until lately it wasn't possible to control the power of hosts
  - Now it is possible

Plugins

- RPM packages
- Existing image can be edited using edit-node
  - New image+plugin is composed