Cyborg Teams
[We] ate all the low-hanging fruit of modern history ...

— Tyler Cowen
MACHINES!
You see the computer age everywhere but in the productivity statistics.

— Robert Solow
"But we use machines!"
Cyborg Teams

A team that is part human, part machine
zz = cockpit.spawn"
<table>
<thead>
<tr>
<th>90+ APIs: File, Command, REST, DBus, Socket</th>
</tr>
</thead>
<tbody>
<tr>
<td>abrt</td>
</tr>
<tr>
<td>chpasswd</td>
</tr>
<tr>
<td>device-mapper</td>
</tr>
<tr>
<td>/etc/kdump.conf</td>
</tr>
<tr>
<td>GSSAPI</td>
</tr>
<tr>
<td>iptables</td>
</tr>
<tr>
<td>krb5</td>
</tr>
<tr>
<td>lvm</td>
</tr>
<tr>
<td>Openshift /oapi/</td>
</tr>
<tr>
<td>PackageKit</td>
</tr>
<tr>
<td>/proc/mounts</td>
</tr>
<tr>
<td>qemu</td>
</tr>
<tr>
<td>selinux-policy-target...</td>
</tr>
<tr>
<td>shutdown</td>
</tr>
<tr>
<td>ssh</td>
</tr>
<tr>
<td>/sys/fs/cgroup</td>
</tr>
<tr>
<td>Tuned</td>
</tr>
<tr>
<td>/usr/bin/virt-install</td>
</tr>
<tr>
<td>xfsprogs</td>
</tr>
</tbody>
</table>
### 15+ Linuxes and Products

<table>
<thead>
<tr>
<th>Version</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CentOS</td>
<td>(7.x, Atomic)</td>
</tr>
<tr>
<td>Fedora</td>
<td>(25, 26, 27, Atomic)</td>
</tr>
<tr>
<td>Ubuntu</td>
<td>(stable, 16.04)</td>
</tr>
<tr>
<td>RHEL</td>
<td>(7.x, 7.4, Extras, Atomic)</td>
</tr>
<tr>
<td>Debian</td>
<td>(stable, testing)</td>
</tr>
<tr>
<td>Openshift</td>
<td></td>
</tr>
<tr>
<td>RHEV Hypervisor</td>
<td></td>
</tr>
</tbody>
</table>
5+ maintained branches

- master
- rhel-7.4
- rhel-7.3.x
- i386
- s390x
<table>
<thead>
<tr>
<th>3+ browsers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google Chrome</td>
</tr>
<tr>
<td>Internet Explorer</td>
</tr>
<tr>
<td>Firefox</td>
</tr>
</tbody>
</table>
Weekly releases
92 \times 15 \times 5 \times 3 \times 50
The effort of a solely human team does not scale past a certain complexity point.
Cyborg Teams

Machines as team members
Bots own mundane work
Pair programming with bots
Humans train the bots
Bots learn from humans
Bots ship Cockpit
Bots own mundane work
Update translations from Fedora Zanata #7906

cockpituous opened this issue just now · 0 comments

cockpituous commented just now

Update translations from Fedora Zanata

- po-refresh

cockpituous added the bat label just now
WIP: cockpit-tasks-jrsf1: Update translations from Fedora Zanata #7906

cockpituous opened this issue 44 seconds ago · 1 comment

cockpituous commented just now

Update translations from Fedora Zanata

- [ ] po-refresh

cockpituous added the bot label just now
$ make po/cockpit.pot
$ make upload-pot
$ make download-po
$ git add po/
$ git checkout -b po-refresh-xxx
$ git commit -m "po: Update from Fedora Zanata"
$ git push cockpitous po-refresh-xxx
cockpituous commented 31 seconds ago • edited

Update translations from Fedora Zanata

- po-refresh

cockpituous added the bot label 4 minutes ago

cockpituous commented 3 minutes ago

po-refresh in progress on cockpit-tasks-jrsf1.
Log: http://fedorapeople.org/groups/cockpit/logs/po-refresh-7906-20171018-192929/

cockpituous changed the title from Update translations from Fedora Zanata to WIP: cockpit-tasks-jrsf1: Update translations from Fedora Zanata 3 minutes ago

cockpituous commented 31 seconds ago

Some checks haven't completed yet
17 pending checks

- avocado/fedora-25 — Testing in progress [verifymachine5]
- container/kubornelas — Not yet tested
- selenium/chrome — Testing in progress [cockpit-tasks-b0f70]
- selenium/explorer — Testing in progress [cockpit-tasks-x2zt2]
- selenium/firefox — Testing in progress [cockpit-tasks-jns11]
- semaphoreci — The build is pending on Semaphore.
- verify/centos-7 — Testing in progress [cockpit-tasks-c081x]
- verify/debian-stable — Not yet tested
- verify/debian-testing — Testing in progress [cockpit-tasks-3991c]
- verify/fedora-27 — Testing in progress [cockpit-tasks-b6f018]
- verify/fedora-atomic — Testing in progress [cockpit-tasks-f9995]
- verify/fedora-1386 — Testing in progress [cockpit-tasks-4st1k]
- verify/rhel-7 — Testing in progress [cockpit-tasks-qzh35]
- verify/rhel-7-4 — Testing in progress [cockpit-tasks-jng0c]
- verify/rhel-atomic — Testing in progress [cockpit-tasks-wx97f]
- verify/ubuntu-1604 — Testing in progress [cockpit-tasks-xh4pv]
- verify/ubuntu-stable — Testing in progress [cockpit-tasks-im11b]
Pair programming with bots
Humans train the bots
<table>
<thead>
<tr>
<th></th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1140</td>
<td>Stef Walter</td>
</tr>
<tr>
<td>707</td>
<td>Marius Vollmer</td>
</tr>
<tr>
<td>278</td>
<td>Dominik Perpeet</td>
</tr>
<tr>
<td>239</td>
<td>Peter Volpe</td>
</tr>
<tr>
<td>214</td>
<td>Martin Pitt</td>
</tr>
<tr>
<td>32</td>
<td>Jan Scotka</td>
</tr>
<tr>
<td>13</td>
<td>Lars Karlitski</td>
</tr>
<tr>
<td>12</td>
<td>Subin M</td>
</tr>
<tr>
<td>10</td>
<td>Marek Libra</td>
</tr>
<tr>
<td>6</td>
<td>Andreas Nilsson</td>
</tr>
<tr>
<td>5</td>
<td>Matej Marusak</td>
</tr>
<tr>
<td>4</td>
<td>Stephen Gallagher</td>
</tr>
</tbody>
</table>
...
Bots learn from humans
Bots ship Cockpit
Human signs a tag in git
Bots scurry about

- Make **tarballs and patches**
- Update RPM spec files and Debian control files
- **Release** preview builds
- Update and push **Fedora** packages
- Upload packages into **Ubuntu**
- Upload packages into **Debian**
- Upload **tarballs**
- Container rebuilds on **Docker Hub**
- Online documentation update
Bots as committers
git shortlog -ns | head -n10 | cut -c8-30 | nl

1  Stef Walter
2  Marius Vollmer
3  Peter Volpe
4  Cockpituous
5  Dominik Perpeet
6  Martin Pitt
7  Andreas Nilsson
8  Lars Karlitski
9  Philip Donlon
10 Jan Scotka
Team stops without bots
Laws of Cyborg Teams

1. Teaching a machine must be as easy as teaching a human.
2. Machines must produce feedback into the team's workflow.
3. A human should be able to impersonate a machine, and...
Tests: The Soul of a Robot

Teaching machines right and wrong, good and evil
Techniques
Organic and distributed bots
Self validating bots
Self aware bots
Containerize your bots, yo!
Don't assume bots can't
Organic and distributed bots
Cockpit Task Bots

Task system is distributed with GitHub as the single point of failure

Every pull request is booted 100’s of times in Atomic, Debian, Fedora, RHEL, before it hits master.

Containers that start 1,000 - 10,000 test VMs a day

These containers can run anywhere
Looking for Tasks
Post logs, attachments and publicly

- fedorapeople.org
  - Log Sink
- Other Host
  - Log Sink
- GitHub
  - Rest API
  - Web App

Bot Container
- Cockpit git checkout
- OS VM when testing
- CVM instance

Firewall
Bots share state

- Fedorapeople.org
- Other Host
- GitHub

Firewall

Bot Container
- Cockpit git checkout
- OS VM when testing
- Other

Log Sink

Rest API

Web App
Self validating bots
Self aware bots
kvm = os.access("/dev/kvm", os.R_OK | os.W_OK)

    try:
        urllib.urlopen(REDHAT_PING).read()
        redhat = os.path.exists(os.path.expanduser(REDHAT_CREDS))
    except IOError:
        redhat = False
Containerize your bots, yo!
Testing containers in Virtual Machines in container bots running on virtual machines on turtles
Don't assume bots can't
Don't rework process (yet)
Test flakes
Food not poison
Flakes are just mutations
testTeam (check_networking_team.TestNetworking), duration: 145s

# testTeam (check_networking_team.TestNetworking)
#
<table>
<thead>
<tr>
<th>NAME</th>
<th>UUID</th>
<th>TYPE</th>
<th>DEVICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>eth0</td>
<td>5fb06bd0-0bb0-7f8b-45f1-d6edd65f3e03</td>
<td>802-3-ethernet</td>
<td>eth0</td>
</tr>
<tr>
<td>virbr0</td>
<td>24919ce5-8197-46f5-a080-58188274f04c</td>
<td>bridge</td>
<td>virbr0</td>
</tr>
<tr>
<td>eth1</td>
<td>9c92fadb-6ecb-3e6c-eb4d-8a47c6f50c04</td>
<td>802-3-ethernet</td>
<td>--</td>
</tr>
</tbody>
</table>

52:54:01:00:00:03 -> eth2
52:54:01:00:00:03 -> eth2
52:54:01:00:00:04 -> eth3
52:54:01:00:00:04 -> eth3

Unexpected journal message '/usr/libexec/cockpit-pcp: bridge was killed: 11'
Core dumps downloaded to /build/cockpit/TestNetworking-testTeam-rhel-7-4-127.0.0.2-2601-FAIL.core
Traceback (most recent call last):
  File "/build/cockpit/test/common/testlib.py", line 602, in tearDown
    self.check_journal_messages()
  File "/build/cockpit/test/common/testlib.py", line 773, in check_journal_messages
Cyborg Teams
Happy humans, tired machines
Questions?

cockpit-project.org
#cockpit on FreeNode

Credits:
Machines: tt2times on Flickr
Pear Programming: mendhak on Flickr
Clusters: Chire on Wikipedia