The Sometimes Hidden Gems Of RHEL7

aka cool things in RHEL7 that you might not know

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https://github.com/jjpryor/hiddengems

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Overview

- Some background about me
- RHEL 7 gems I won't be diving into in detail, but they are still awesome.
- RHEL 7 gems or part of subscription that I will cover in some detail.
- Sort of even more gems

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A bit about me

James Pryor

Sr. Software Engineer on Continuous Integration team & part of Systems Design and Engineering. Otherwise an opinionated barbecue addict who plays with systems & software.

- 13+ years of industry experience in trying to make IT not suck
- $PREVIOUS_EMPLOYER:
  - NC State University
  - Brookhaven National Laboratory
  - CD-adapco (now owned by Siemens)
  - CA Technologies (formerly Computer Associates)
- RHCE RHEL6
- Puppet Certified Professional 2015 & 2016
- Co-organizer of Raleigh Puppet User Group

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James Pryor

Contact & Social bits

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- Personal email: pryja02@gmail.com   - send me barbecue joint recommendations
- Twitter: @jjpryor   - mostly food (barbecue), travel, and tech related
- Github: github.com/jjpryor   - code, notes, random things I like
- LinkedIn: linkedin.com/in/jamespryorprofile/

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Disclaimer

At some point in this presentation, I probably said something incorrect and/or did something unsupportable. This presentation is informational and does not constitute a guarantee, warranty, or an agreement of being supported by Red Hat.

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Boring stuff is done, now on to what matters …

The sometimes hidden gems of RHEL7

The sometimes hidden gems of RHEL7

aka cool things in RHEL7 that you might not know

The genesis of this presentation came from discovering more and more useful and cool things that are part of, or were added to RHEL7 since RHEL 7.0 was released in June 2014.

So today, we'll look at some of the cool, neat, or otherwise overlooked things that part of your RHEL subscription.

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The sometimes hidden gems of RHEL7

aka cool things in RHEL7 that you might not know

I won't be covering these RHEL 7 gems in detail, but they are still awesome

Identity Management - IdM

Atomic Host & containers

Scalability and performance improvements

Customer Portal Labs

RHEL 7 gems or part of subscription that I will cover in some detail

Software Collections

Libguestfs VM tools

ReaR - Relax and Recover

Cockpit

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I won't be covering these RHEL 7 gems
in detail, but they are still awesome

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Really cool and useful bits of RHEL 7

that I won't be diving into …

- Identity Management - IdM. At a previous meeting, Amy did a great job presenting on IdM. For more on IdM improvements:
    - http://rhelblog.redhat.com/2017/02/06/identity-management-improvements-in-red-hat-enterprise-linux-7-3-part-1/
    - http://rhelblog.redhat.com/2017/03/06/identity-management-improvements-in-red-hat-enterprise-linux-7-3-part-2/
- Atomic Host & containers - "Linux is containers. Containers is Linux"
    - Not a Red Hatter - https://blog.jessfraz.com/post/containers-zones-jails-vms/
    - OpenShift Blog - https://blog.openshift.com/containers-are-linux/

Really cool and useful bits of RHEL 7

that I won't be diving into …

- Scalability and performance improvements with every 7.x release
  - Hardware - RHEL now does more with more CPUs, Memory, HBAs, NICs
  - Software - RHEL packages now does more with less consumption of resources
  - Sample: *"Time-consuming SELinux operations, such as policy installations or loading new policy modules, are now significantly faster."*
  - https://access.redhat.com/documentation/en-US/Red_Hat_Enterprise_Linux/7/html/7.3_Release_Notes/index.html
- Customer Portal Labs are small self-contained web apps to help you out.
  - Kickstart Generator, Multipath Helper, TLS 1.2 Renegotiation Test, Red Hat Code Browser, Red Hat Enterprise Linux Upgrade Helper

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RHEL 7 gems or things included as part of a RHEL subscription

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Red Hat Software Collections

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Software Collections

What is SCL?

RHEL has a 10 year supported lifecycle, and in order to get some faster-moving & newer packages to work with RHEL, we can now use Red Hat Software Collections (hereafter referred to as SCL).

SCL contains packages that are more recent than the ones in the base RHEL system, or are available for RHEL for the first time.

SCL components are fully supported under RHEL Subscription Level Agreements, are functionally complete, and are intended for production use. Currently at v2.3 & v2.4 beta.

See also the SCL lifecycle https://access.redhat.com/support/policy/updates/rhscl

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Software Collections

How does SCL work?

Packages from SCL get installed from a Yum repo via the yum command. Packages from SCL do not replace the existing default version as provided by base RHEL. Instead, a package from SCL gets installed in the /opt/ directory and can enabled per application by the user using the 'scl' utility.

To install a SCL package, enable the proper SCL repo & install the meta-package from SCL.

Tip: yum command to apply a filter to only show RPMs that come from a single repo.

```
yum --disablerepo "*" --enablerepo rhel-server-rhscl-7-rpms list
available > pkg_list.txt
```

Software Collections

How does SCL work?

```
# subscription-manager repos --enable rhel-7-server-optional-rpms --enable
rhel-server-rhscl-7-rpms

# yum -y install rh-python35

# scl enable rh-python35 bash

# which python

/opt/rh/rh-python35/root/usr/bin/python

# python --version

Python 3.5.1
```

For full demo, see gems-01-scl.txt at https://github.com/jjpryor/hiddengems/blob/master/gems-01-scl.txt

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libguestfs VM tools

libguestfs VM tools

What are they and what can they do for me?

From http://libguestfs.org , libguestfs is a set of tools for accessing and modifying virtual machine (VM) disk images.

Just some of the tools:

guestfish - interactive shell; *guestmount* - mount guest filesystem in host; *virt-builder* - quick image builder; *virt-format* - erase and make blank disks; *virt-inspector* - inspect VM images; *virt-p2v* - convert physical machine to run on KVM; *virt-resize* - resize virtual machines; *virt-sparsify* - make virtual machines sparse

Today we'll look at virt-builder.

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libguestfs VM tools

How does virt-builder work?

Virt-builder is a tool for quickly building new virtual machines. You can build a variety of VMs for local or cloud use, usually within a few minutes or less. Virt-builder also has many ways to customize these VMs. Everything is run from the command line and nothing requires root privileges, so automation and scripting is simple.

virt-builder allows us to "rubber-stamp" out derivative VMs from a VM template, but virt-builder does not install VM guests from scratch. So first we have to use virt-install to install a clean virtual machine image. Then we can use virt-builder (and some other scripts) to consume that VM image as a template, and make derivative VMs from the clean image.

For explanation and "demo", see the README at https://github.com/jjpryor/mkvirtbuilder

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ReaR - Relax and Recover

ReaR - Relax and Recover

What is it?

According to http://relax-and-recover.org , *"Relax-and-Recover is a setup-and-forget Linux bare metal disaster recovery solution."*

According to, *"Relax-and-Recover(ReaR) is a recovery and system migration utility. The utility produces a bootable image and restores from backup using this image. It also allows to restore to different hardware and can therefore be used as a migration utility as well."*

See the [RHEL 7 System Administrators Guide](#) and also this Knowledgebase article [*"What is Relax and Recover(ReaR) and how can I use it for disaster recovery?"*](#).

ReaR - Relax and Recover

How does it work?

ReaR is part of base RHEL 7, supported as part of RHEL 7, and is easily installed:

`yum install rear genisoimage syslinux`

ReaR is configured in the `/etc/rear/local.conf` file.

Then create the rescue media: # `rear -v mkrescue`

Next create a backup: # `rear -v mkbackuponly`

You can now recover from a HW or filesystem failure.

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ReaR - Relax and Recover

See it in action

"How to use rear (Relax and Recover) on RHEL7.3 to recover from a trashed disk" - https://www.youtube.com/watch?v=WpKpG4iYK3c

This video show how to use rear (Relax and Recover) on RHEL 7.3 to make a USB drive as a rescue media with a backup archive on it. I then trash the existing LVM, Master boot Record, and partition table, reboot off the USB media and recover the system.

Note: I patched rear from upstream due to a bug in rear, this may or not be supported by Red Hat. Contact RH support for more details, and refer to:

https://bugzilla.redhat.com/show_bug.cgi?id=1399487

Cockpit

Cockpit

What is it and what can it do for me?

Cockpit is a system administration tool that provides a user interface for monitoring and administering servers through a web browser.

Cockpit does not add a layer of other functionalities that are not present on your systems.

You can effectively move away from Cockpit to the command-line and come back to it at any point.

Cockpit does not require configuration or infrastructure, and once you install it, it is ready for use. Cockpit has zero memory and process footprint on the server when not in use.

Both Red Hat Enterprise Linux and Red Hat Enterprise Linux Atomic Host can be used for the role of a Cockpit server and that of a secondary server.

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Cockpit

How can I use it?

Cockpit is part of RHEL7 Extras repository (note: Extras is not supported), so enable Extras repo, install the cockpit packages, start the service, open the firewall, connect via browser, login as root user and password.
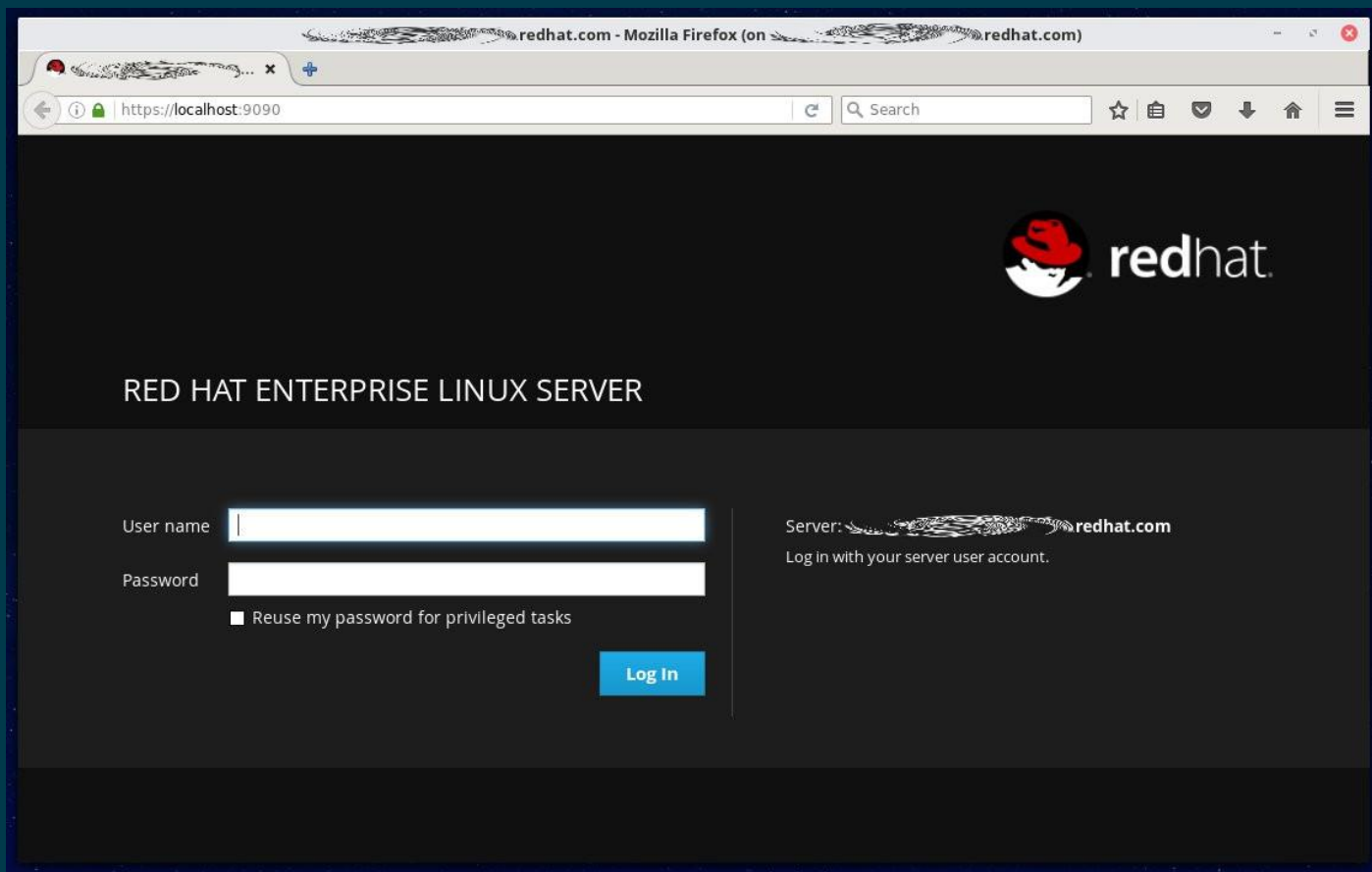
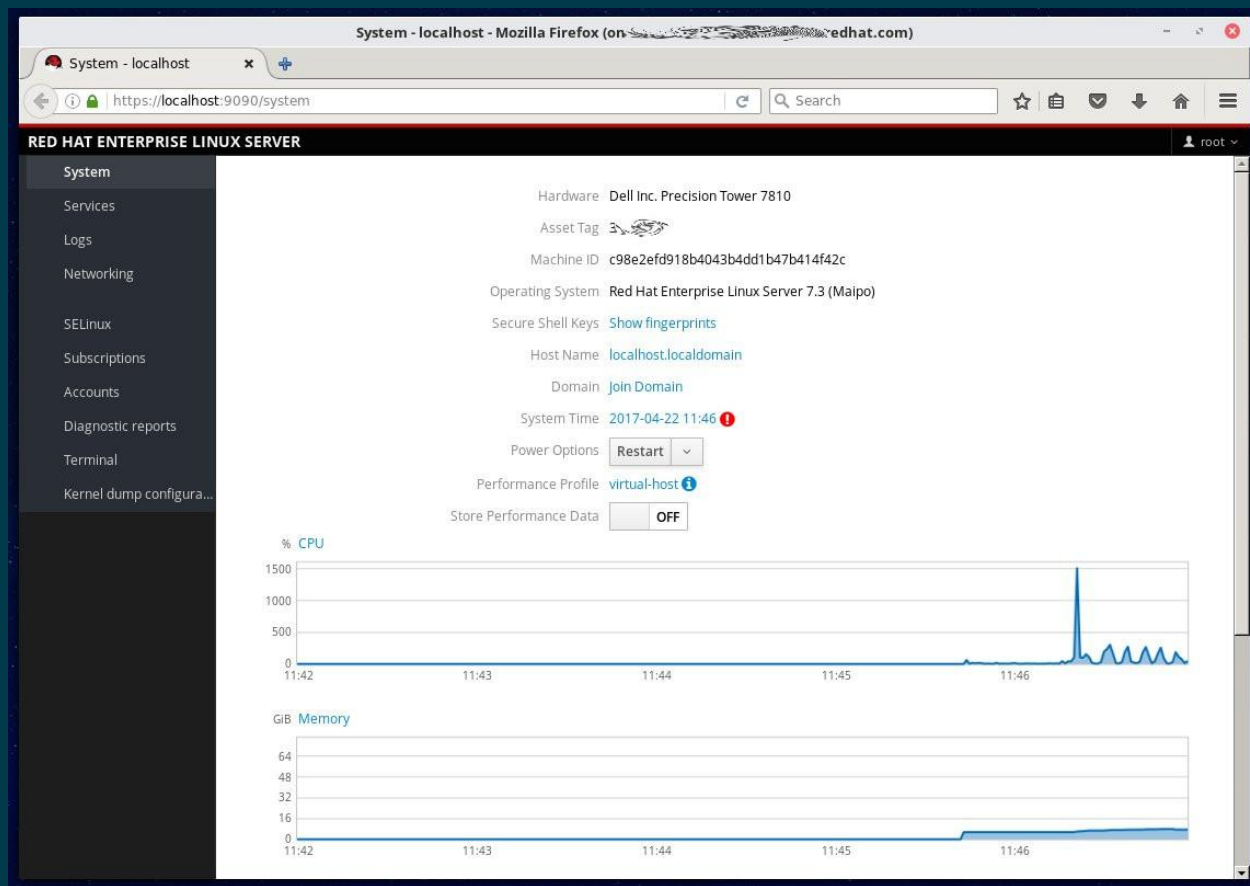`# subscription-manager repos --enable=rhel-7-server-extras-rpms`

`# yum install cockpit cockpit-pcp cockpit-shell`

`# systemctl start cockpit.socket`

`# firewall-cmd --zone public --add-port 9090/tcp`

Browse to `https://hostname:9090`

Sort of even more gems

Even more gems?

Actually yes. But too much to cover in one presentation and some not as easy to demo as one might think.

Performance Co-Pilot

More to come in future releases of RHEL 7

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