COCKPIT

the Linux Server UI

redhat.

I'm Stef Walter, work for Red Hat
I'm passionate about open source, but more specifically
making it usable, coherent, and polished
Introducing you to cockpit today
Why we built it
What it is
How it works

Today we're going to talk about servers

Obligatory car analogy

But first we've gotta have an analogy

Actually this is not about cars it's about trucks

Building your own truck^H^H^H^H^Hserver

Deploying linux servers today is like building your own truck


602
797

You can build powerful purpose built trucks

Can built truck factories

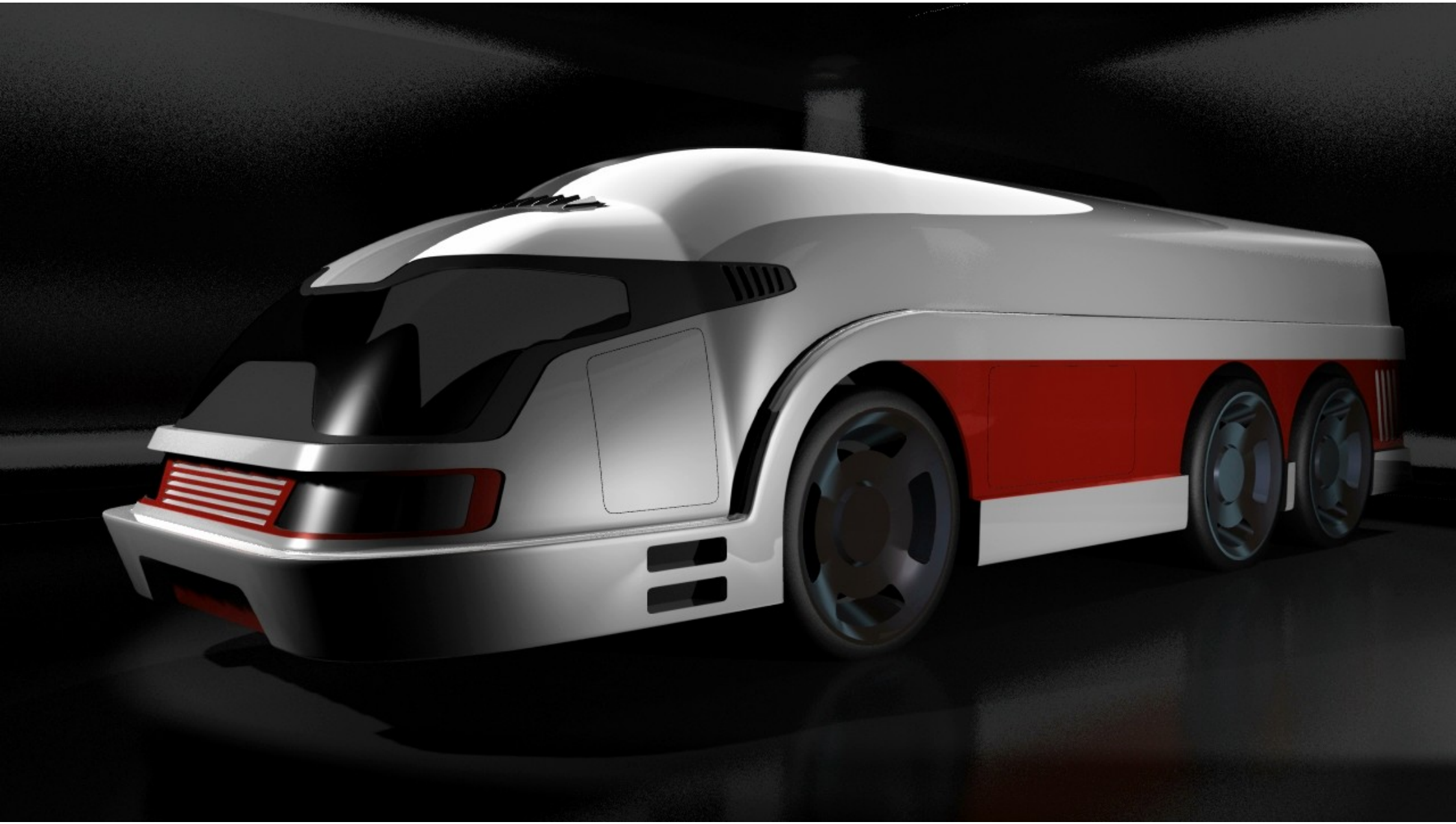

南通机床
展厅
JAC
P 00856

Can virtualize your servers


3070

Build servers that nobody else thinks are a good idea

Build workhorse servers that can be overloaded



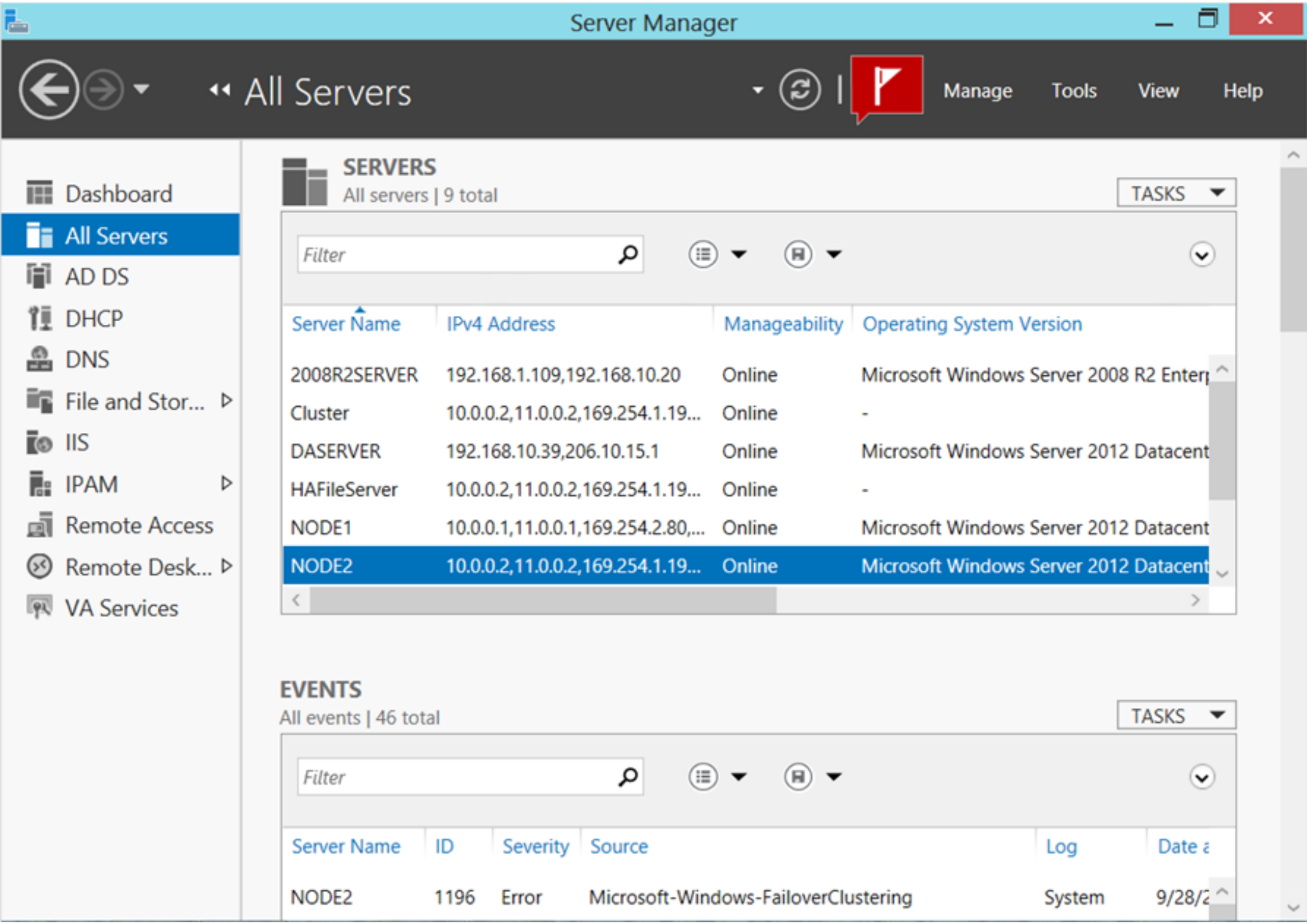
Build fast low-latency servers


LeenWallpapers.com

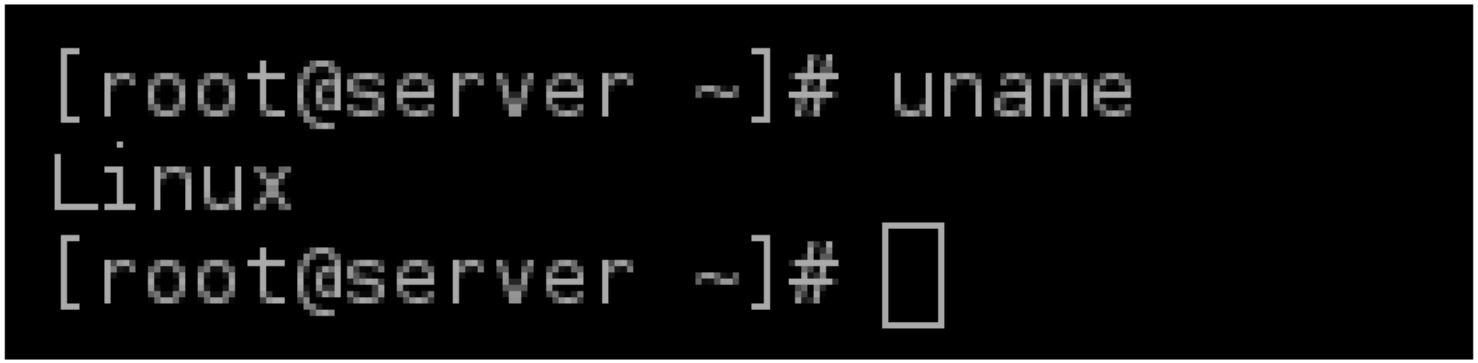
Or you can build it completely wrong

But but, I just want
to **drive** it

But not everyone knows how to build a truck, as we've all seen


Server Manager
All Servers
Manage
Tools
View
Help
Dashboard
All Servers
AD DS
DHCP
DNS
File and Stor...
IIS
IPAM
Remote Access
Remote Desk...
VA Services
SERVERS
All servers | 9 total
TASKS
Filter
Server Name
IPv4 Address
Manageability
Operating System Version
2008R2SERVER
192.168.1.109,192.168.10.20
Online
Microsoft Windows Server 2008 R2 Enterp
Cluster
10.0.0.2,11.0.0.2,169.254.1.19...
Online
-
DASERVER
192.168.10.39,206.10.15.1
Online
Microsoft Windows Server 2012 Datacent
HAFileServer
10.0.0.2,11.0.0.2,169.254.1.19...
Online
-
NODE1
10.0.0.1,11.0.0.1,169.254.2.80,...
Online
Microsoft Windows Server 2012 Datacent
NODE2
10.0.0.2,11.0.0.2,169.254.1.19...
Online
Microsoft Windows Server 2012 Datacent
EVENTS
All events | 46 total
TASKS
Filter
Server Name
ID
Severity
Source
Log
Date a
NODE2
1196
Error
Microsoft-Windows-FailoverClustering
System
9/28/2

This is what it looks like to "drive" windows server


[root@server ~]# uname
Linux
[root@server ~]#

This is what it looks like to "drive" linux servers

Which looks like this to people who are not yet intimate with linux

Linux should be **discoverable and configurable by non-experts**

The learning curve is too steep

Cockpit is a **discoverable face**
for RHEL, Fedora and Linux Servers

Cockpit is the server UI done right.
Cockpit is a prototype stage. It's alpha software.

COCKPIT

31

Jon Snow

System name

Storage: Hard drive
Optimus 5 is failing and
needs replacing immediatley

Installing WordPress

Formatting disk3

Job History

Server Summary

System name

Processor Intel® Core™ i7-3520M @ 2.90GHz × 4

Memory 3,6 GiB

Last updated 3 weeks ago

Storage

Network

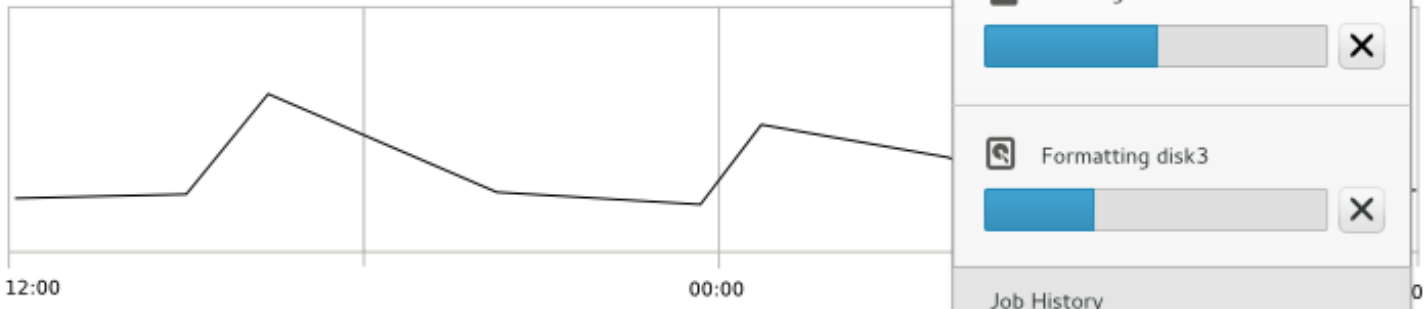
Services

Journal

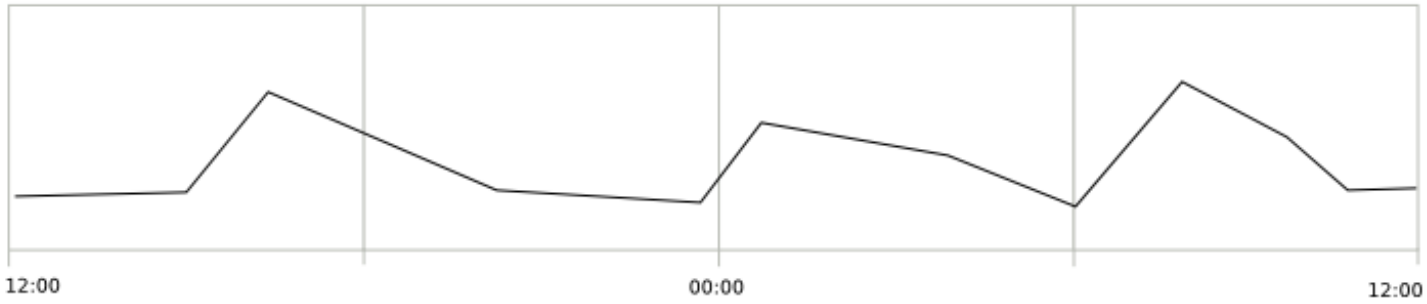
User Accounts

Software

CPU performance



Network performance

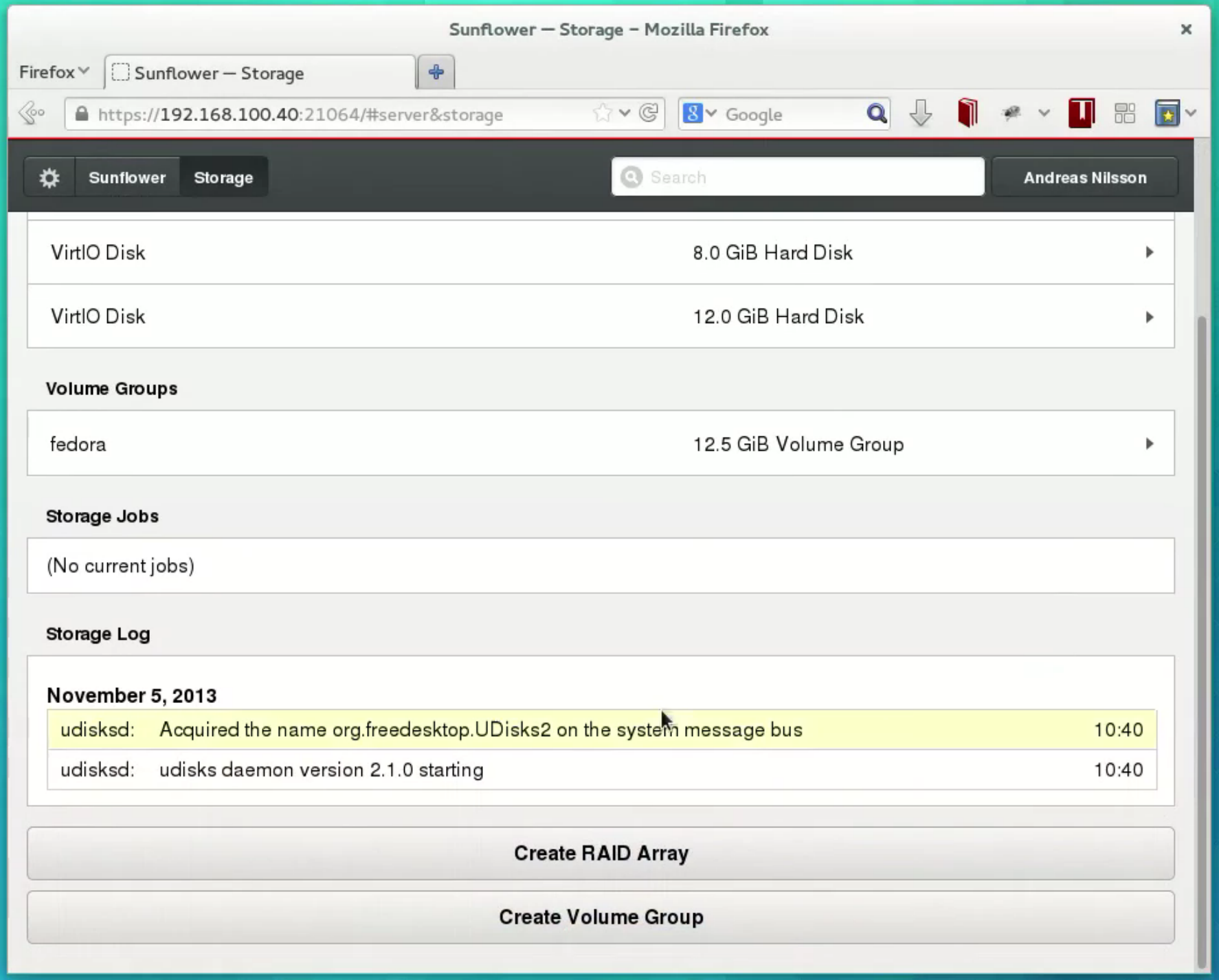


Disk performance

This is what we're talking about

Look Ma!

(proof of concept)


Sunflower — Storage – Mozilla Firefox
Firefox
Sunflower — Storage
https://192.168.100.40:21064/#server&storage
Google
Sunflower
Storage
Search
Andreas Nilsson
VirtIO Disk
8.0 GiB Hard Disk
VirtIO Disk
12.0 GiB Hard Disk
Volume Groups
fedora
12.5 GiB Volume Group
Storage Jobs
(No current jobs)
Storage Log
November 5, 2013
udisksd: Acquired the name org.freedesktop.UDisks2 on the system message bus 10:40
udisksd: udisks daemon version 2.1.0 starting 10:40
Create RAID Array
Create Volume Group

We built a proof of concept, that should give you a basic idea. The design and look-feel here is a bit dated, from what we're currently working on, but I hope it gives you an idea.

In Fedora now

```
# yum install --enablerepo=updates-testing cockpit
# setenforce 0
# systemctl enable cockpit-ws.socket
# xdg-open http://localhost:21064
```

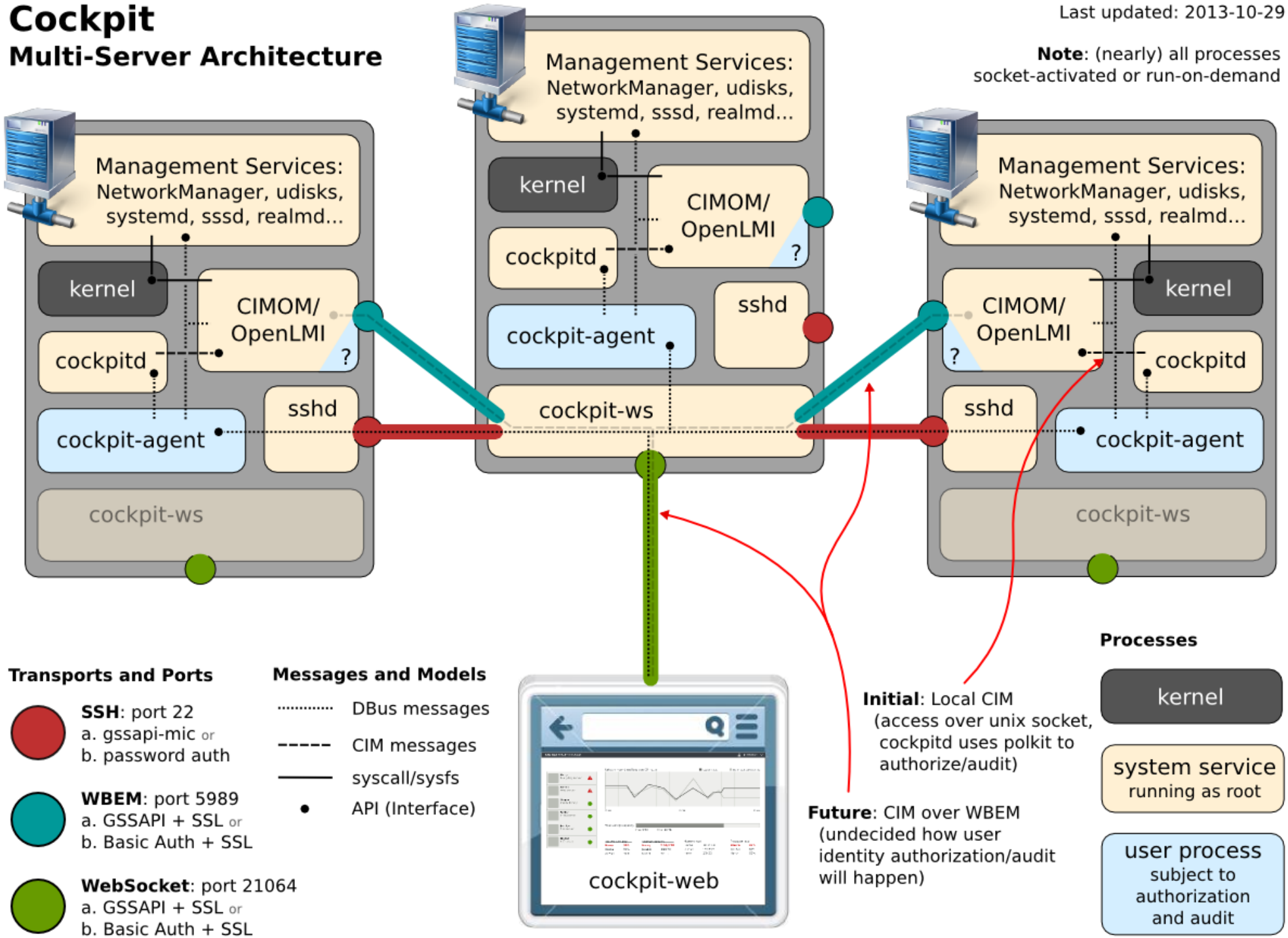
Don't run this on a machine you care about (yet)

Architecture

Cockpit
Multi-Server Architecture

Last updated: 2013-10-29

Note: (nearly) all processes socket-activated or run-on-demand



Transports and Ports

SSH: port 22
a. gssapi-mic or
b. password auth

WBEM: port 5989
a. GSSAPI + SSL or
b. Basic Auth + SSL

WebSocket: port 21064
a. GSSAPI + SSL or
b. Basic Auth + SSL

Messages and Models

DBus messages

CIM messages

syscall/sysfs

API (Interface)

Processes

kernel

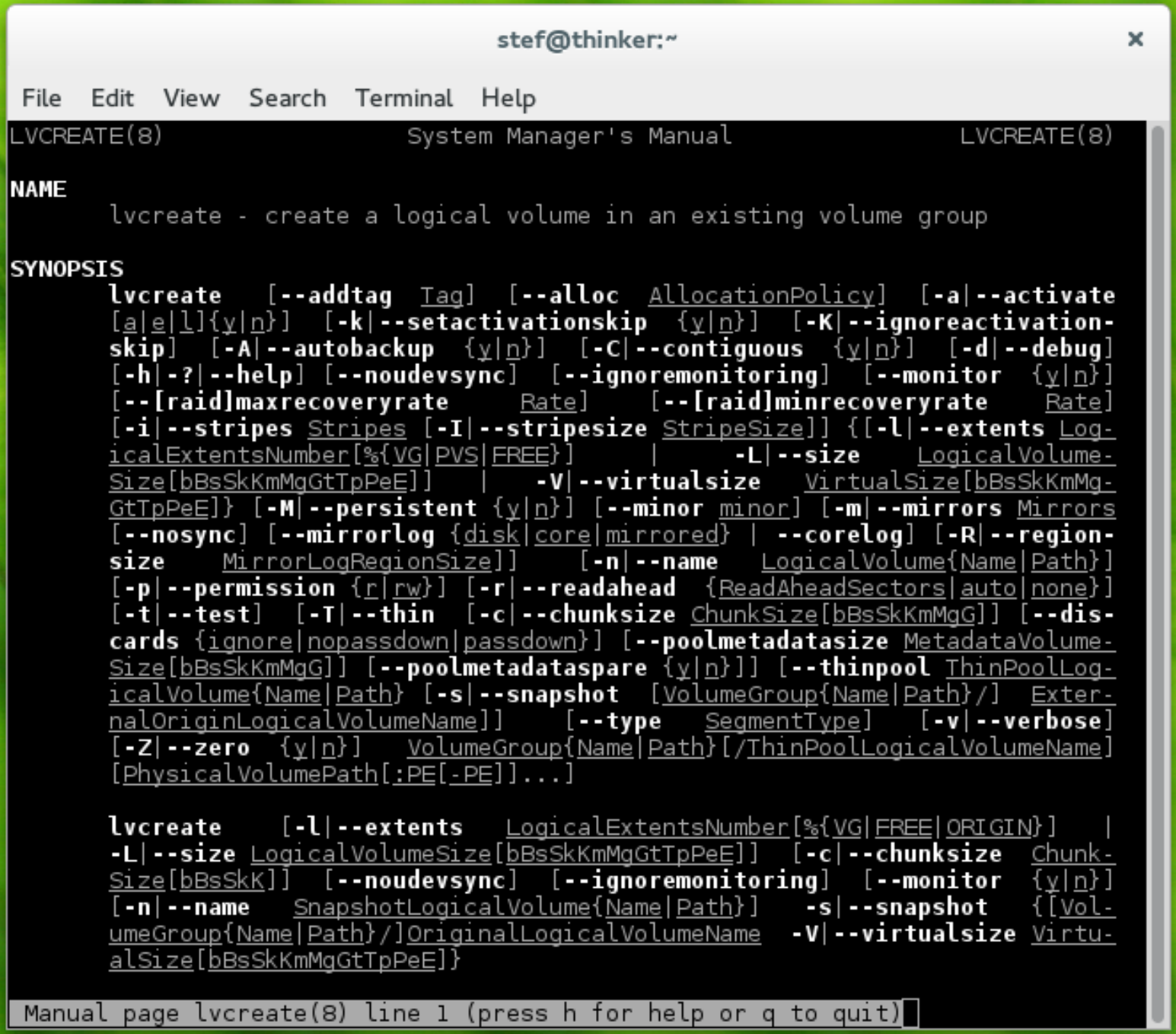
system service
running as root

user process
subject to
authorization
and audit

Discuss the architecture here

Goal: Discoverable

So one of our main goals is to make Linux and it's various aspects discoverable.


stef@thinker:~
File Edit View Search Terminal Help
LVCREATE(8) System Manager's Manual LVCREATE(8)
NAME
lvcreate - create a logical volume in an existing volume group
SYNOPSIS
lvcreate [--addtag Tag] [--alloc AllocationPolicy] [-a|--activate [a|e|l]{y|n}] [-k|--setactivationskip {y|n}] [-K|--ignoreactivationskip] [-A|--autobackup {y|n}] [-C|--contiguous {y|n}] [-d|--debug] [-h|-?|--help] [--noudevsync] [--ignoremonitoring] [--monitor {y|n}] [--[raid]maxrecoveryrate Rate] [--[raid]minrecoveryrate Rate] [-i|--stripes Stripes [-I|--stripesize StripeSize]] {[-l|--extents LogicalExtentsNumber[%{VG|PVS|FREE}] | -L|--size LogicalVolumeSize[bBsSkKmMgGtTpPeE]] | -V|--virtualsize VirtualSize[bBsSkKmMgGtTpPeE]} [-M|--persistent {y|n}] [--minor minor] [-m|--mirrors Mirrors [--nosync] [--mirrorlog {disk|core|mirrored} | --corelog] [-R|--regionsize MirrorLogRegionSize]] [-n|--name LogicalVolume{Name|Path}] [-p|--permission {r|rw}] [-r|--readahead {ReadAheadSectors|auto|none}] [-t|--test] [-T|--thin [-c|--chunksize ChunkSize[bBsSkKmMgG]] [--discards {ignore|nopassdown|passdown}] [--poolmetadatasize MetadataVolumeSize[bBsSkKmMgG]] [--poolmetadataspare {y|n}]] [--thinpool ThinPoolLogicalVolume{Name|Path} [-s|--snapshot [VolumeGroup{Name|Path}/] ExternalOriginLogicalVolumeName]] [--type SegmentType] [-v|--verbose] [-Z|--zero {y|n}] VolumeGroup{Name|Path}[/ThinPoolLogicalVolumeName] [PhysicalVolumePath[:PE[-PE]]...]
lvcreate [-l|--extents LogicalExtentsNumber[%{VG|FREE|ORIGIN}] | -L|--size LogicalVolumeSize[bBsSkKmMgGtTpPeE]] [-c|--chunksize ChunkSize[bBsSkK]] [--noudevsync] [--ignoremonitoring] [--monitor {y|n}] [-n|--name SnapshotLogicalVolume{Name|Path}] -s|--snapshot {[VolumeGroup{Name|Path}/]OriginalLogicalVolumeName -V|--virtualsize VirtualSize[bBsSkKmMgGtTpPeE]}
Manual page lvcreate(8) line 1 (press h for help or q to quit)

This is not discoverable

Goal: Plays well with others

Allows management via other tools and reacts to them, for example the command line, Spacewalk, or puppet

Applications Places Firefox Web Browser Sun 14:19 Colin Walters

Triton – Mozilla Firefox

Firefox Zimbra: Inbox Triton

https://127.0.0.1:21064/#server

Google

Triton Search Colin Walters

CPU 17.0%

Disk I/O 0.0 kB/s

Memory 1.8 GB

Network Traffic 0.0 kB/s

- System Information
- System Services
- Journal
- Networking
- Storage
- User Accounts
- Shutdown & Restart

root@localhost:~ Triton – Mozilla Firefox 1 / 4

Video of add/remove user via command line

Goal: Lightweight low footprint

Starts on demand, no overhead when not in use
Headless, runs in a browser

Make it Stop!

We want cockpit to stop when not in use

Make it Stop!

(when not in use)

So stop your dbus configuration services when not in use
Currently possible, although hard to get rid of all races exiting a dbus service
But with kdbus this is totally supported. So long term we want this to be part of everything

Goal: Ad-hoc
No infrastructure prerequisite

We don't force you to setup some other services or infrastructure before using cockpit

Goal: Use infrastructure well

But if you have infrastructure like a domain, we want to use it properly.

Goal: Domain authentication

Fallbacks for non-domain case will be present

Goal: Server roles

For example if no domain is present we want to help the admin set one up with FreeIPA for example

Non-goal: Configuration management

* Puppet/Salt and the like are excellent centralized configuration management tools
* Notify admins when a system has them in use
* Idealily avoid changing puppet-managed state
* Help discover how to configure a puppet master

Goal: Opinionated when possible

If there's a best practice, we want to help people discover it.
There's a hundred ways to do it the other ways, cockpit doesn't have to do them all.

Non-goal: Yet another API
(hint: OpenLMI)

Help make it better

Goal: Pluggable UI

Not monolithic, will have a modular architecture and is extensible

Cockpit is open source

LGPL v2+
Code: github.com/cockpit-project
cockpit-devel@lists.fedorahosted.org

Questions?

http://cockpit-project.org
#cockpit on Freenode

Credits:
Done in pinpoint
d10n2000 on Flickr, bigfez on Flickr, dalbera on Flickr
axeman3d on Flickr, toddmccann on Flickr