10 Years of FOSS Hosting at the OSU Open Source Lab

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About me

- Director OSU Open Source Lab
- Systems Admin Background
- Virtualization (Ganeti+KVM), CFengine, Puppet, GlusterFS
- Gentoo Developer
- Trumpet Jazz performer

What I'll Cover

- Overview of the lab
- Historical Background
- Major services we provide
- Tools we use
- What's next for us

In the Beginning...

Picture flickr user 'tappnel'

- University President sees "www.orst.edu" on a sign
- Maintain - DNS/DHCP management
- Seed money from OSU Network Services
- First clients are some of the most well known Open Source projects

Why do hosting at OSU?

"Our commitment to the development and application of Open Source is consistent with our drive to be the land grant university of the 21st century. Through open source activities we are helping underserved populations around the world and creating new industries and new products at home."

OSU president, Ed Ray

Timing is everything

- Post dot-com bust = lots of dark fiber
- Invested $500K into laying 28mi of fiber to I-5
- *"Cheap"* bandwidth
- Internet2 connectivity
- Newly renovated data center

Notable Project Hosting Milestones

- Gentoo 2003
- Debian 2003
- Kernel.org 2005
- ASF 2005
- Linux Foundation 2008
- OSGeo 2010
- Meego 2010
- Python Software Foundation 2012

Over the past ten years...

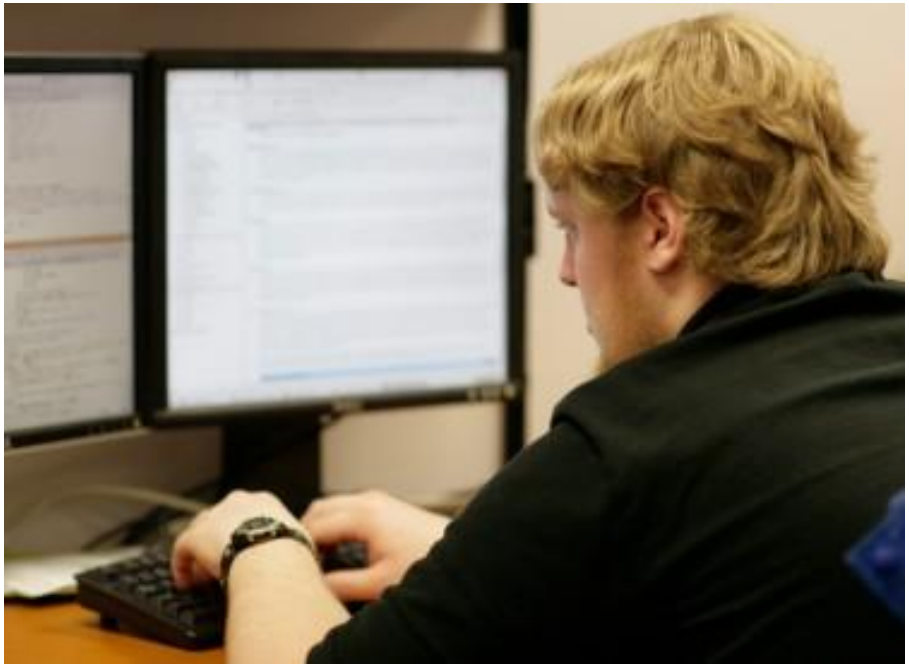
- Grown from hosting a few servers to several hundred
- Made Oregon State the center of FOSS hosting
- 60 OSL Alumni staff and students
  - Google, Facebook, Rackspace, Intel, etc...
- Helped 160 FOSS projects with their hosting

Staff

- 4 full-time employees
- 16-18 undergrad students
  - 6-10 sysadmin
  - 4-6 devs
  - 2-3 media & communication
- Hosting / Development
- Media & PR team
- Director

Students

- Undergraduate students
- Full root access
- Hired Sophomore year
- Constant turnover (2-3yrs/student)



Linuxfest 2005

Firefox 1.0
OLPC
One Laptop Per Child

OPENSHIFT
K-STATE

OSL Funding Model

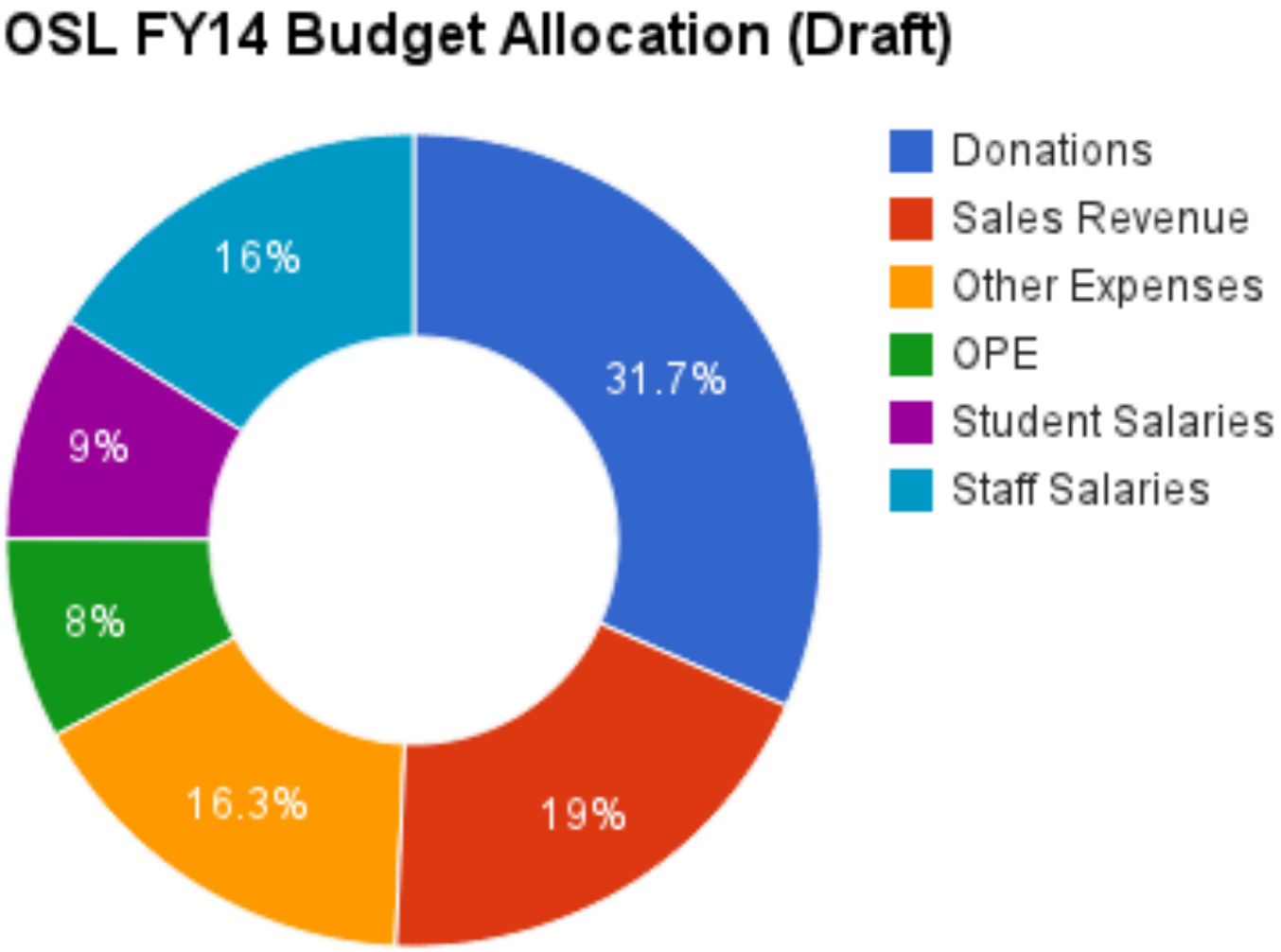
- Donations
  - Large Corporations
  - Projects
  - Individuals
- Student Scholar Program
- Grants
- No state funding
- Larger projects generally pay for hosting

We need your help!

Corporate sponsorships
Individual donations

http://osuosl.org/donate

Income & Expenses



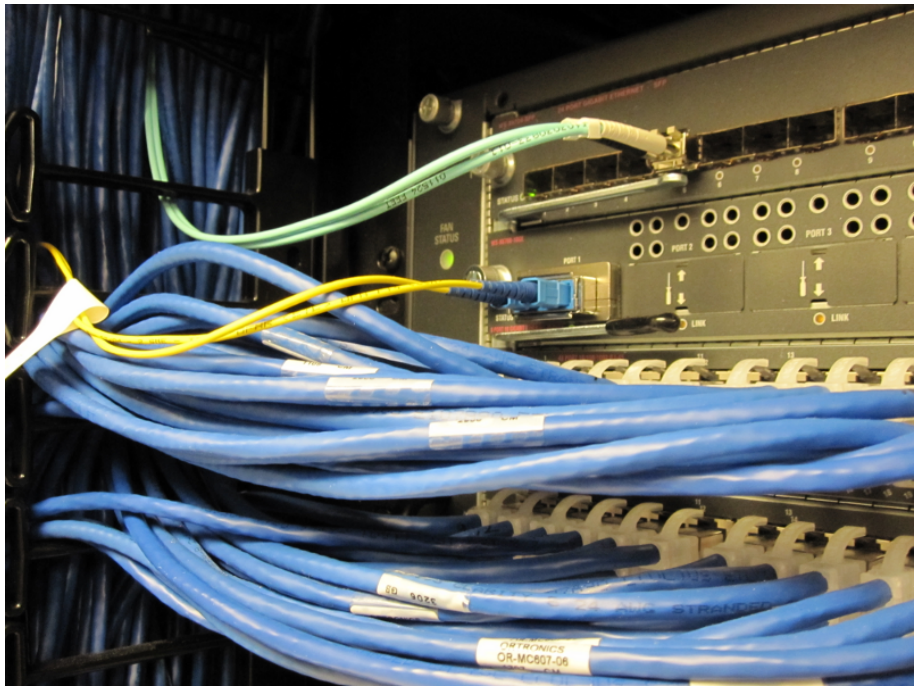
Data Center Specs

One of two primary UPS's

- 2770 sqft, 76 Colo racks, 11 IDF racks
- Dual independent pow er feeds
  - ea 400A / 480V
  - 3-phase
  - Dual UPS
  - Single generator
- 55 ton cooling capacity via 3 Lieberts

Networking

- NERO
  - *(Network for Education & Research in Oregon)*
- 10 Gbps to NERO
- Cisco 6509 Core
- 2 Gbps to upstream (10 Gbps coming soon)
- IPv6 coming someday soon



10Gbps uplink to NERO

OSL

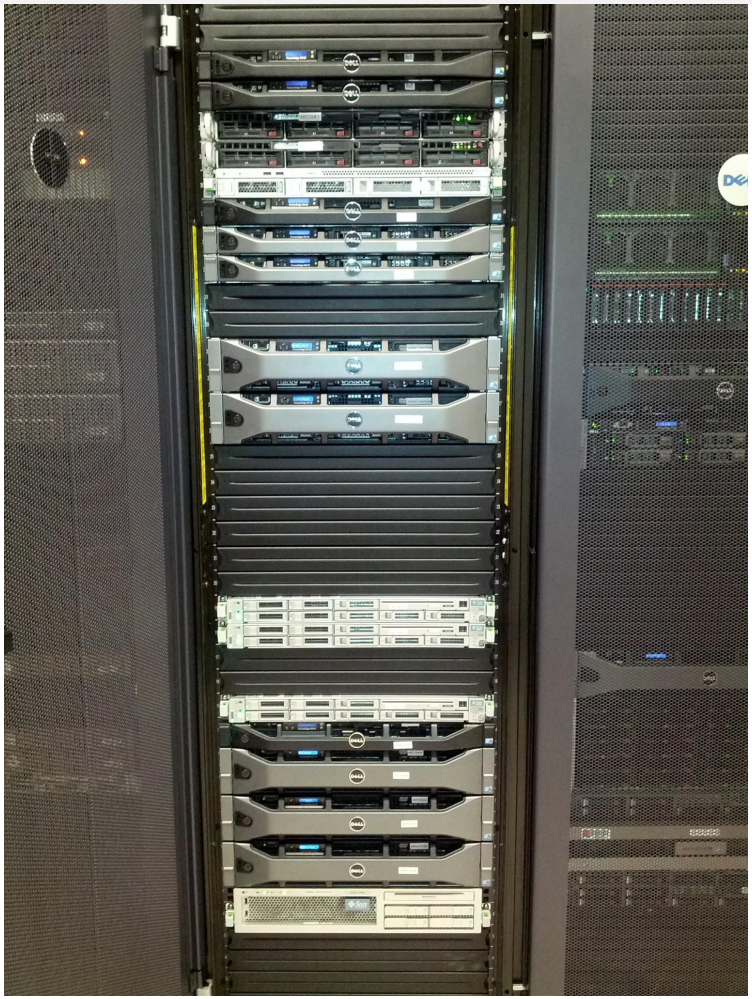
OSL
OSL
DELL
DELL
DELL

DELL
DELL
Justin Dugger

Hosted Machines

- ~400 servers
- 170+ virtual machines
- Projects purchase/own servers
  - 22 racks used by OSL currently
  - Project racks: Drupal, ASF, Gentoo, Linux Foundation, MeeGo
- What are they running?
  - Debian/Ubuntu, CentOS, FreeBSD

ASF & Drupal Racks



Drupal

ASF + 2 more

PSF, NAS-Admin, Gentoo

PSF, NAS-Admin, WebOS

Gentoo

Xiph.org

Services Provided at the OSL

- Co-location hosting
- Smart-hands support
- Virtual machine(s)
- Managed hosting
- FTP Mirror space
- Email forwarding
- DNS hosting
- Software builds & testing (Supercell)

FTP Mirrors

- 3 servers
  - Corvallis, Oregon
  - Chicago, IL
  - New York, NY
- 6 TB capacity
- Split via DNS view
- 160TB per month
- TDS Telecom
- Refreshing hardware soon

ftp-osl.osuosl.org

Virtualization *"OSL Private Cloud"*

- Ganeti - Google OSS project
- Ganeti Web Manager - OSL OSS project
- Linux KVM hypervisor
- Easy to expand & manage
- Primary Production cluster
  - 5 machines / 110 VMs / 20 VMs /server
- Project clusters
  - phpBB, OSGeo, OSM, PSF, Gentoo

Virtualization Environment

- Limited local storage (10-30G)
- No Database servers as VMs
  - Bad performance, inefficient use of resources
- Use shared web hosting for simple sites
- Managed and unmanaged
- K.I.S.S. virtualization management

Large data storage

- HA-NFS very complicated to maintain
- GlusterFS in limited trials
- Very flexible depending on use-cases
- Excellent expandability
- Performance not the greatest
- Must tailor each use case
  - Hosting php files is sub-optimal
  - Ideal for Moodle Data and Drupal files

ORVSD (Oregon Virtual School District)

- Primarily Moodle & Drupal hosting for K12 districts
- Has been running for 6 school years
- Give teachers something they can use in the classroom tomorrow
- Host 750 web sites
- 180K user accounts
- 2.5TB of content
- 50+ VMs, GlusterFS, MySQL

Supercell

- Continuous integration testing
- Run-time testing
- Several platforms supported
- On-demand virtualization
- Powered by Ganeti+KVM
- Hardware donation by Facebook
- Still in beta

POWER7 Development

- 7 loaned POWER7 machines (8231-E2B)
- Project access to architecture

- OSL Managed
- Projects using the machines:
  - Fedora, Debian, CentOS, PostreSQL, Gentoo, Eclipse, GCC build farm, OpenJDK, Linux Foundation
- OSL project machine

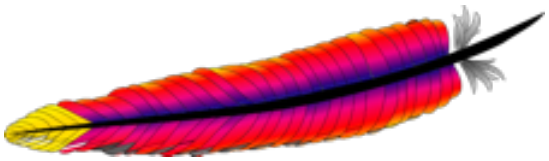
Hosting FAQ

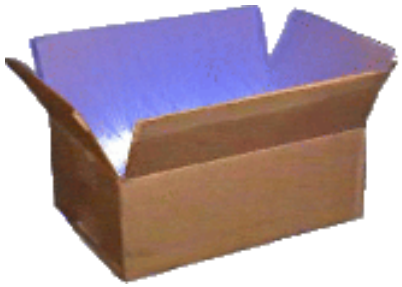
- Hosting tailored to each project
- Target medium-large *"high impact"* projects
- Typically outgrown their current hosting
- Bad experiences with other hosting
- Let the projects code instead of worrying about their site

Requesting Hosting

- http://osuosl.org/services/hosting
- Submit request to **support@osuosl.org**
- What we look for
  - Widely used project
  - Healthy community
  - Needs fit within our resources

Hosted Projects





Meego
Mythbuntu
OSS-Infra
Freedroid
Energy-Sec
Crosstool-NG
Sahana
OpenOffice.org
Linuxlookup
EtherBoot
Public-Timestamp
Gnome-SlackBuild
Oregon-Shore
GSC
CivicCRM
Yellowdog-Linux
Linux-From-Scratch
Oregon-Health-Net
Linux-Plumbers-Conf
Xiph-Foundation
Haiku
OpenMRS
RPM
Democracy-Lab
Software-Freedom-Law-Center
Comprehensive-R-Archive-Network
Music-Brainz
OpenStreet-Map
Alembic-Foundation
Go-OO
The-Document-Foundation
EGF
Participatory-Culture-Foundation
PSF
Inkscape
Darcs
Gnome
Jenkins
NAS-ADMIN.ORG
XBMC
GeoIP
Gensc
Busybox
Lubuntu
Bongo-Project
PHP.net
Netwinder
Ark-Linux
Fedora
Jaws
ManuFix
Google
Facebook
Elgg
FREENODE
OCCC
DigiBio
Eclipse
-Studio
Ignite-Gov
ASF
OFTC
Driver-Dev
Trinity-Rescue-Kit
Parrot
Linux-Chix
KDE
cAos-Linux
Debian
Openhatch
Mozillazine
Linux-Fund
Open-Advice
OpenID
Knoppmyth
PPC-Kernel
Flossfoundations
CPAN
Open-Tech-Gov
Code-and-Splode
Funtoo
Monkey-HTTPD
Damn-Small-Linux
OSGEO
CrisisCommons
Cherokee
OSU-Helpdesk
OSU
Knoppix
Beyond-Linux-From-Scratch
Mandriva
OLPC
Yum
Drupal
Elinux
Cross-Linux-From-Scratch
Trisquel-Linux
Gentoo
Teaching-Open-Source
Enlightenment
Mozilla
Vector-Linux
OSU-UNDS
Netwinder.org
PhpBB
Kernel.org
Salix-OS
Arch-Linux
Freedesktop.org
-Research
Cacti
Ubuntu
Fossology
Amahi
CentOS
Task-Tracer
OpenSUSE
Free-as-in-Freedom
Slackware
Nythtv
Kernel-Trap
Replicant
connect
OHIP
Deepin-Linux
Qemu
Linux-Foundation
Apparmor
OSI
Mageia
Open-EFS
Dspace
GRML
Aqsis
Cygwin
FOSS-Translation
OSULUG
Civicapps
Opencert
Harmony
Finnix
Webdav
Mulgara
MariaDB
Deluge
ORVSD
Mozdev
Plone
OSDV
PDX

Other notable hosted projects

- OpenStreetMap
- OSGeo
- Open Source Digital Voting Foundation
- Rock the Vote *(registration app)*
- City of Portland *(CivicApps)*
- Sahana Foundation

Growth

- 7 years ago...
  - <10 racks
  - ~60 machines / ~30 VMs
  - ~60 projects
- Today
  - 22 racks / ~160 projects
  - ~400 machines / ~170 VMs
- Similar amount of people resources

Current Devops Tools

- Configuration Management
  - CFengine+git, peer review
- Monitoring
  - Nagios, munin, cacti, awstats
- Other: Bacula (backups)
- Ticket Tracking
  - RT (external), Chili Project (internal)
- Operating System
  - CentOS 5/6, Gentoo Hardened (deprecated)

Infrastructure changes

- Migrating towards all CentOS
- Migrating towards puppet
- Reasons
  - Easier to manage with puppet
  - Easier to teach to students
  - Faster deployment & better QA
  - Less time maintaining the OS

Events & Outreach

- GOSCON 2005-2010
  - Government Open Source Conference
- Beaver Barcamp
  - Un-conference for students and community
  - Twice a year (mid Apr & Oct)
- OSULUG
  - Install fests, presentations, etc
- Hosted Project Code Sprints
  - Drupal

Recent & Upcoming Changes

- Re-focusing more on hosting
  - *Development supporting hosting*
- Partnership with EECS
- Education & Research
- Improve services automation
- Expanding student workforce
- Stabilize long-term funding
- Big Data for OSS projects *(glusterFS)*

Other Future Ideas

- Create a flexible on-demand & automated build and testing environment
- Performance testing infrastructure
- Expand FTP hosting into its own CDN
- Build or implement a PaaS for common hosted applications
- More non-x86 architecture hosting for development & testing

Questions?

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