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...

- 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

Picture flickr user 'tappnel'
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 (2-3 yrs/student)
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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

OSL FY14 Budget Allocation (Draft)

- Donations: 31.7%
- Sales Revenue: 19%
- Other Expenses: 16.3%
- OPE: 16%
- Student Salaries: 9%
- Staff Salaries: 8%
Data Center Specs

- 2770 sqft, 76 Colo racks, 11 IDF racks
- Dual independent power 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

10 Gbps uplink to NERO
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
Xiph.org

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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)

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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

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POWER7 Development

- 7 loaned POWER7 machines (8231-E2B)
- Project access to architecture
- OSL Managed
- Projects using the machines:
  - Fedora, Debian, CentOS, PostgreSQL, Gentoo, Eclipse, GCC build farm, OpenJDK, Linux Foundation
- OSL project machine

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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

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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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