

Empowering Oregon K12 Schools through Drupal & other FOSS Tools

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About Us

- OSU Open Source Lab
 - Server hosting for FOSS projects
 - Education & Outreach
- Lance Albertson - Director
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- Ken Lett - Senior Software Engineer
- Greg Lund-Chaix - past-ORVSD Program Manager

First, some history ...



2005 study ranks Oregon
46th in the nation in
technology adoption in
the classroom

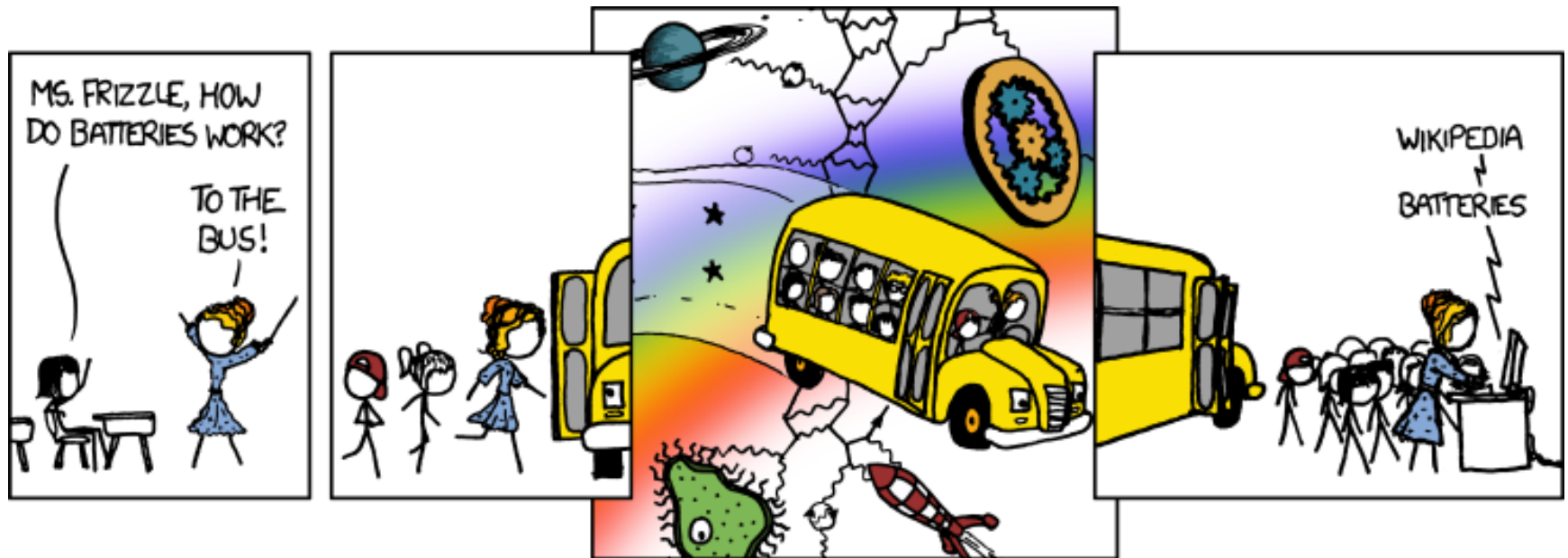
OMG! Fix it!



OREGON VIRTUAL SCHOOL DISTRICT

Oregon Legislature
passes ORS § 329.840
creating the Oregon
Virtual School District
with \$2M seed funding.

Um ... now what?



<http://xkcd.com/911/>

Geeks!



What it's not

Neither a school nor a district.
No teachers, no credit, no classrooms (or playgrounds!).
Not an unfunded mandate.



What it is

- A funded un-mandate
- Content
 - Tools
 - Training
 - Support
- 5 school years
- ~750 web sites
- 2.5TB of content
- ~180,000 user accounts



<http://www.flickr.com/photos/aloshbennett/540105576/>

Secret Sauce ... (not really)

Know the audience!

- Administrators
 - FREE!
- Teachers
 - Instant gratification!
- District IT staff
 - No extra work for you!
- Open source? What's that?



Kittens. Every presentation needs kittens.

<http://xkcd.com/262/>

How?



Infrastructure Details

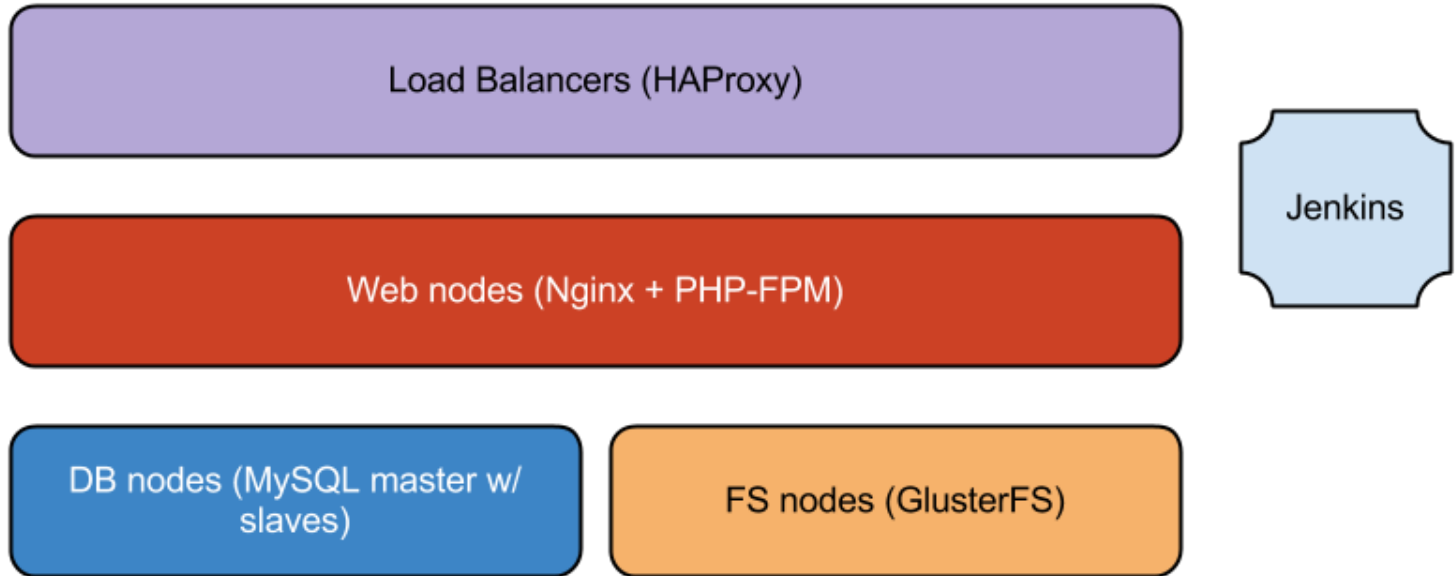
- Private Virtualization (IaaS)
 - Powered by Ganeti+KVM
 - ~50-60 VMs / 8 physical nodes
- Backend
 - Storage - GlusterFS (3 nodes)
 - MySQL (Percona) (3 nodes)
- Operating Systems
 - CentOS 6 / Gentoo Hardened (legacy)
- Configuration Management
 - CFengine (legacy) / Chef

Infrastructure Evolution

- Started small and simple
 - A few physical nodes
- Eventually added:
 - Virtualization, NFS, iSCSI (appliance), Reverse Caching (varnish)
- Segmented by larger districts or schools
 - Worked well in the beginning ...
- Became more heterogeneous as time progressed

New ORVSD Platform

ORVSD Infra 2.0



Virtual Machines: Load Balancers & Web Nodes

Physical Machines: DB Nodes & FS Nodes

Integration "glue"

- ORVSD Central
- REST APIs
- Drupal as a user management framework
- Deploying new sites through ORVSD Central via the Jenkins API
- Statistics gathering using modules for Drupal and Moodle to report back to the Legislators

What works (Pedagogically)

- Go straight to the teachers and give them something they can use in the classroom tomorrow.
- Teach the teachers who teach the other teachers.
- No waiting for provisioning or approval.
- Success is viral.



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What works (Technically)

- Open source tools enable scaling at low cost
- Cloud-like resources FTW (VMs, Storage, etc)
- Configuration management
- Homogenous infrastructure
- Jenkins code pushes



<http://www.flickr.com/photos/alexnormand/5992512756/>

What hasn't (Pedagogically)

- Giving tech to teachers without involving district IT staff = FUDsplosion!
- The "Not invented here" syndrome.
- The "Ooh, I have a shiny hammer!" syndrome.
- Sharing, open content.



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What hasn't (Technically)

- Keeping all the sites/modules patched and updated
- Heterogeneous environment (too many one-offs)
- Storage appliances suck, *DO NOT USE*



<http://www.flickr.com/photos/fergusonphotography/6898291987>

Questions?

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