

Using Debian for Enterprise Infrastructure

Stanford University: A Case Study

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August 3, 2010

Introduction

- Stanford University, IT Services, Infrastructure Delivery Group
- Maintain campus core infrastructure, including
 - Authentication (Kerberos, WebAuth, Shibboleth)
 - E-mail routing and mail delivery
 - Web servers, including www.stanford.edu
 - Distributed file system (AFS)
 - Account provisioning
 - Active Directory
- Sister group does system administration for hire

What enterprise means

- Large user population
- Diverse array of services
- Ubiquitous, invisible, and foundational services
- Diverse client platforms and requirements
- Diverse server and application platforms and requirements
- ...including Windows

Enterprise means working with Windows

- Windows is not your enemy in the environment
 - Mutual disrespect helps no one
 - Worth earning a reputation of being passionate but fair
- Windows supports standard protocols to a surprising extent
 - LDAP
 - Kerberos
 - Web services and Negotiate-Auth
- Example of Active Directory account creation
- Working with Windows mandatory to get into the conversation

Enterprise means conservative

- Enterprise infrastructure is not the business or goal
- Infrastructure technology should be reliable and invisible
- Infrastructure problems can break your organization, but rarely make it succeed
- Organizations leery of solutions only one person understands
- Known quantities are lower risk
- Did they read about it in CIO magazine?

Getting into the conversation

- Debian has a lot of features, but first it has to get in the running
- Competing largely against other Linux, particularly Red Hat
- Large software repository is a huge selling point
- Pre-packaged scientific software helpful in some environments
- Stable release cycle and speed is perfect
- Stable plus backports hits a flexibility versus stability sweet spot
- Debian is both integrated and flexible
- Debian is not that different

Practicality matters most

- Does it work?
- Is it efficient?
- Does it hurt hiring?
- Can it build flying cars?

Building flying cars

- Flexibility and open standards are the key
- Most problems are integration problems
- Technology is driven by shiny products acquired by clients
- What's shiny is outside your control
- Solution needs to work, not be the thing someone read about
- Emphasize solutions over products

Enterprises run many environments

- Deploy applications on the platforms they understand
- Running multiple environments is expensive
- The expense is worth it — sometimes
- Know where Debian is a fit and where it isn't
 - Proprietary software with support contracts is a hard battle
 - Well-understood commodity services are much easier
 - Integration of obscure free software is ideal
- Keep the overhead of adding Debian low
- Don't say no

Enterprise means customized

- Different problem than what stock Debian is solving
- Different problem even than Debian EDU
- Can share a lot of packages and infrastructure
- There will be local customization, but you can keep it minimal and often transient
 - Postfix and address lookups
 - Cyrus SASL and server identity
 - OpenLDAP packaging
- You must be prepared to customize
- An enterprise looks a lot like a Debian derivative

Your local repository

- Don't skimp; this is where your customization goes
- Stanford using debarchiver, moving to reprepro
- Multiple repositories for different purposes
- Need custom archive distributions for particular services
- Need good package build mechanisms
- Supporting multiple releases is challenging
- Supporting Ubuntu as an instance of that is challenging

Package everything

- Policy to package anything that isn't a configuration file
- Everything packaged means everyone learns how to package
- Debian packaging has a difficult learning curve
- People package on stable
- cowdancer is awesome, but people struggle when builds fail
- Debian's packaging documentation is first-rate, but huge
- Very important to have a local expert

Installation issues

- FAI is great
- FAI versus VM cloning
- Prefer to rebuild from scratch periodically
- Need to think about keying infrastructure
- Remote console is extremely important
- Need a configuration management system in addition to FAI
- We're very happy with Puppet

Internal documentation is vital

- Debian offers lots of options, which is great for Debian
- Inside the enterprise, document the one way to do it
- Packaging teams, please help!
- Good documentation partly addresses hiring, training concerns
- Debian needs work on package checking, repository analysis

Where Debian could help

- Java
- Language packaging teams, document how to package
- Better multi-platform build automation integrated with repo
- Better package checking for local package sets
- Better monitoring and reporting of Debian-specific things, such as installed packages and pending updates
- Packaging has a long and slow learning curve
- Keep doing what we're doing

Summary

- Enterprise is about integration, customization, and flexibility
- Debian packaging skills are enterprise sysadmin skills, and vice versa
- Ideology is important, but not the public face to present
- ...except after all other things are equal
- A local expert is essential
- Commercial software and being unusual are the biggest challenges

Questions?