Omnibus and Chef with Ganeti

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Summary

GWM Development Current Environment

Current challenges

Omnibus introduction

Pros/Cons

Challenges

Demo

Chef and Ganeti

Cookbook Overview

Current GWM Dev Environment

Vagrant + Puppet (3 nodes)

Prepackaged Vagrant Boxes

Ganeti compiled from source

Very specific Puppet module

Supports various platforms

Removes the need for hardware clusters for testing

Challenges with current system

- Compile requirements for Ganeti have increased
  - Additional Haskell dependencies require more RAM to link
  - Increased time to redeploy test environment
- Difficult to maintain
- Building from source is problematic, increases installation dependencies
- Difficult to keep up to date with upstream changes
- Difficult to adjust cluster configuration
- Puppet module not meant to be run in production

Build environment requirements

- Deploy any (reasonable) version of Ganeti
  - Most current, A few older versions, master/develop branches
- Flexible enough to deploy a variety of cluster environment configurations
  - DRBD/Plain/File
  - RDB/Ceph/Gluster
  - Varying OS Definitions
- Support various OS host platforms: Debian, Ubuntu and CentOS

Ganeti Installation Options

Packaging with current Ganeti releases:

Debian:	Backports
Ubuntu:	Ganeti PPA
RHEL:	JFut's yum repo

Other Options:

- Build our own deb/rpms
- Build from source
- Omnibus binary package

Reasons for try Omnibus

The Challenge -- will it work?

Study the feasibility given Ganeti's growing dependencies

Research the pros/cons of the method

Its fun, right? :)

So what is Omnibus?

- Full-stack Project Installer
- Vendorize all dependencies into a single binary rpm/deb
  - All software dependencies are build into a prefixed environment `/opt/ganeti`
  - Only system libraries are allowed to be linked to software (i.e. glibc, etc)
- Chef, Chef-Server, Chef-DK uses Omnibus

Omnibus Pros

- Complete control of the whole software stack dependency tree
- Use newer versions of software that upstream prefers
- No distro-specific package dependencies
- Build caching with git
- Single Package to install
- Extremely simple installation and deployment

Omnibus Cons

- Prefix hell
  - Making sure everything is linked to the prefix environment
  - Fixed path assumptions by upstream (i.e. `/usr/bin/python`)
- Security maintenance for all software (yes, you even build your own openssl)
- Building large packages can be complicated
- Non-standard method

How Omnibus Works

Builds a self contained prefixed environment on the host machine

Typically built using Test Kitchen/Vagrant on a target OS Virtual machine

Installs and creates a sane build environment

Installs Omnibus project configuration

Runs omnibus to install the project

Installs package dependencies

Ensures no external library linking

Exports a deb/rpm at the end

Demo

```
# CentOS 6
yum install http://ftp.osuosl.org/pub/osl/omnibus/ganeti/ganeti-2.11.2_

# Ubuntu 12.04
wget http://ftp.osuosl.org/pub/osl/omnibus/ganeti/ganeti_2.11.2-201407(
dpkg -i ganeti_2.11.2-20140704-192150-1_amd64.deb

# Debian 7
wget http://ftp.osuosl.org/pub/osl/omnibus/ganeti/ganeti_2.11.2-201407(
dpkg -i ganeti_2.11.2-20140704-191038-1_amd64.deb
```

How its built

https://github.com/osuosl/omnibus-ganeti

- Everything is installed into `/opt/ganeti`
- Binaries and libraries are in `/opt/ganeti/embedded`
- Post-install hooks setup symlinks to `/usr/sbin`, etc
- GHC installed from distro
- Haskell deps installed via cabal
- Python deps installed via pip
- Currently only tarball installs work
  - Having issues with pandoc with git builds

Problems I ran into

Haskell:	Requires GHC installed from Distro
	Cabal dependency hell!
	Cabal version issues (CentOS vs. Ubuntu/Debian)
	`RPATH` not being set correctly
	`Werror` Issues
	GMP Version issues
Python:	Hard coded `/usr/bin/python` paths in Ganeti

Chef and Ganeti

Cooking up some Ganeti awesome!

Ganeti Cookbook

https://github.com/osuosl-cookbooks/ganeti

- Currently supports CentOS 6 and Ubuntu 12.04
- Installs Ganeti from Ubuntu PPA or JFut's Yum repo
- Ganeti initialization support
- Setting of RAPI users via encrypted data bags
- Demo

Cookbook TODOs

- Support for Debian 7 and Ubuntu 14.04
- Installing using Omnibus Ganeti
- Publish Ganeti Instance Image cookbook
- Xen Support ?
- Internal wrapper cookbook for site specific needs

Questions?

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