Cobbler and Puppet

Controlling your server builds

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Agenda

- Introductions
- The Saga of Server Builds
- Cobbler
- Puppet
- The Ease of Server Builds
- The Business Benefits
- Questions/Discussion

Brief Introduction of Me

- Eric Mandel, BlackMesh

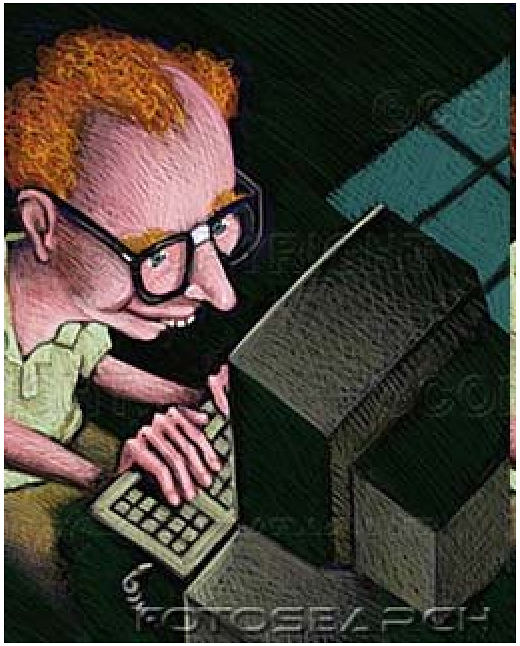
- Managed Hosting Service Provider located in Northern Virginia outside of Washington, DC
- BlackMesh works with development companies, ASPs, SaaS providers, small businesses, large corporations

Brief Introduction of You

- System Administrators?
- Developers?
- Currently use Cobbler?
- Currently use Puppet?

The Saga of Server Builds

- We found ourselves always building new servers
- Most used the same applications, but configured differently



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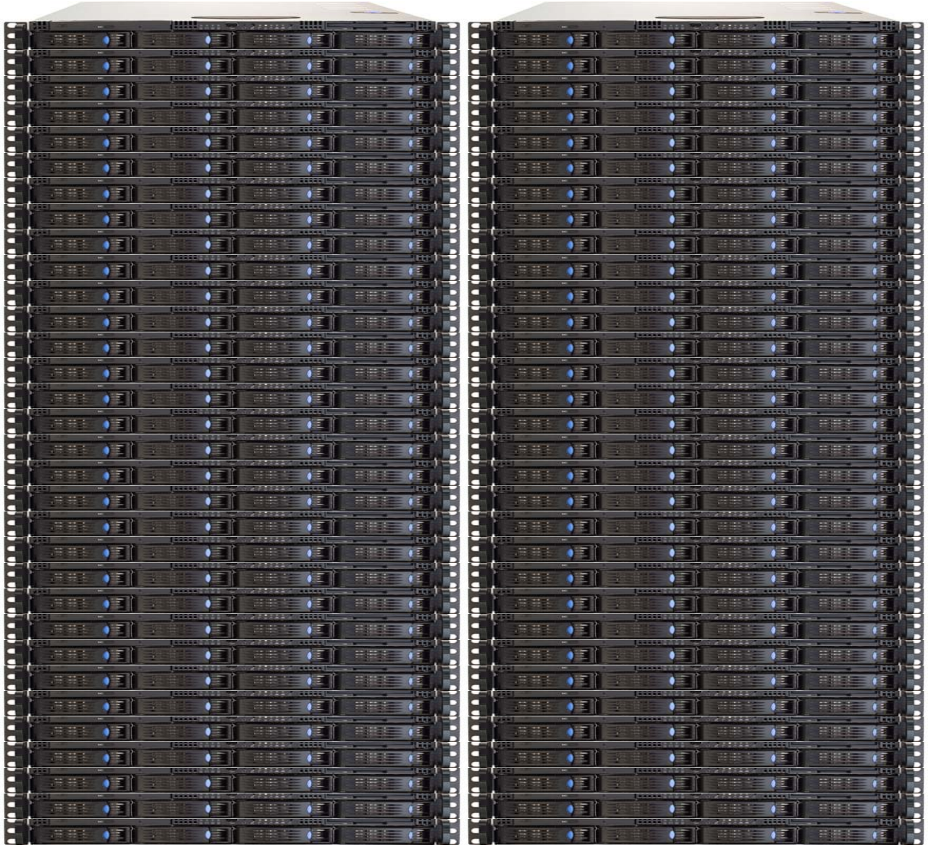

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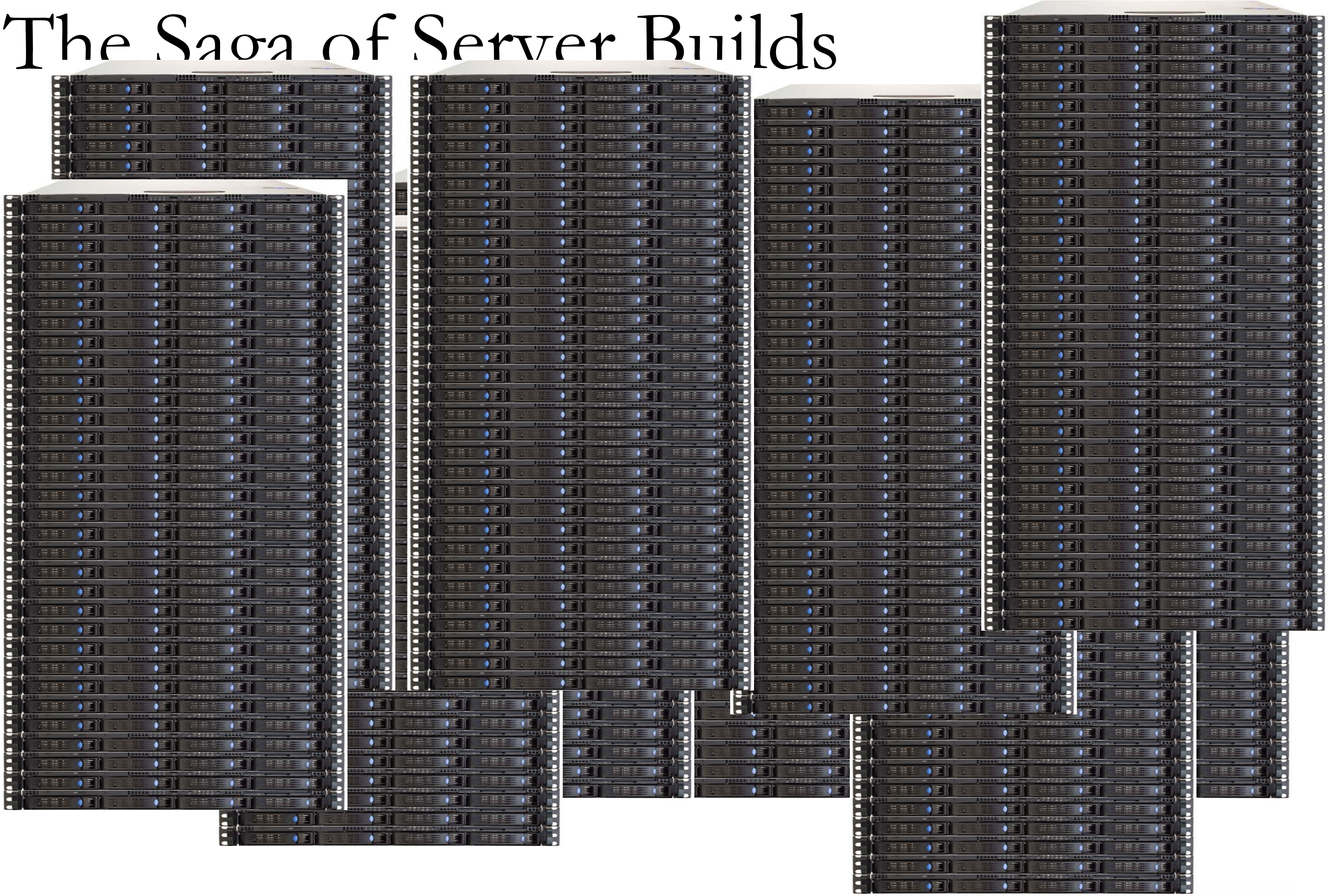

SCaLE, February 2009

The Saga of Server Builds

- New server deployments can be time-critical
- Ensuring that all of the packages are the latest versions
- We did not want to reinvent the wheel
- Need to know what we are deploying is same as what is out there

Maintenance

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- Undocumented changes are put in place to resolve a urgent problem
- Users get added

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- Configuration files change

Cobbler & Puppet to the rescue

Cobbler

- Disk imager on steroids
  - Red Hat’s Kickstart
  - Sun’s Jumpstart
  - Norton’s Ghost

- Hardware aware

- https://fedorahosted.org/cobbler/

Cobbler

- Brings efficiencies to our process:
  - no longer have a three step process of install OS, install repositories, and then yum update
  - Local repository, kept up to date
  - Automatically installs the standard applications (Apache, MySQL, PHP, etc.)
  - Automatically applies our security procedures (users, services, etc.)

Cobbler

- You must connect the new server to the Cobbler server
  - This can be over network
  - Or with direct CAT5 cable
- Configure server to boot from Cobbler
- Builds server to point where Puppet can take over

Puppet

- From the Puppet Wiki:

  “Puppet is a **declarative language** for expressing system configuration, a **client and server** for distributing it, and a **library** for realizing the configuration.”

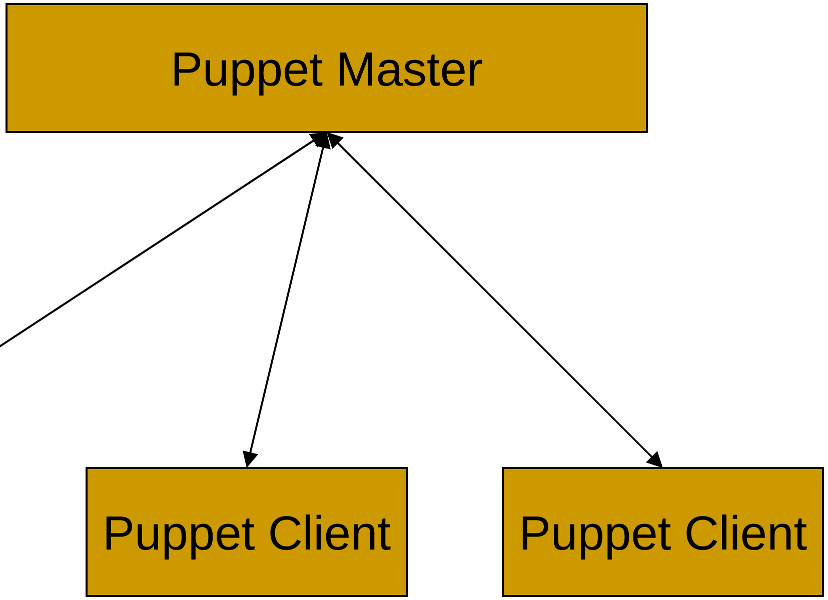
- http://reductivelabs.com/trac/puppet

Puppet

- Written in Ruby
  - Very OO
  - Also uses **Facter**, a Ruby program to determine system information and parameters
- Active community
  - FOSS
  - Shared modules (Recipes from the Cookbook)
  - Community is growing

Puppet

- Client/Server
  - Puppet Master
  - Puppet clients



Puppet Master

Puppet Client

Puppet Client

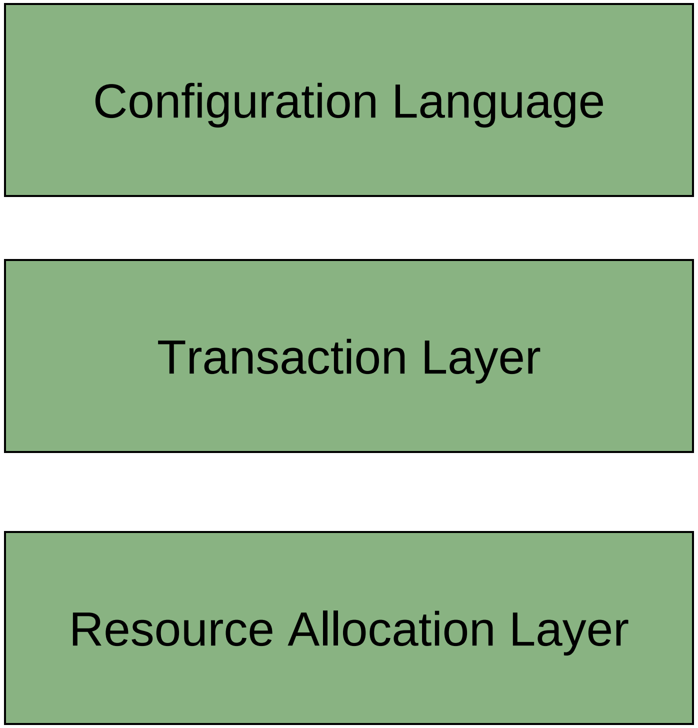
Puppet Client

Puppet

- Three main pieces:
  - declarative language
  - client and server
  - library
- Main concept:
  - idempotent

Puppet

- Three layers
- Each responsible for separate aspects of the system
- Providers



Configuration Language

Transaction Layer

Resource Allocation Layer

Puppet

- Base unit is a resource
- Resource types are:
  - File
  - User
  - Package
  - Service
  - cron entry
  - file system
  - The “exec” resource allows you to create your own resources

Puppet

- **File resource type:**

```
# Make sure the modes on the passwd file are correct
file { "/etc/passwd":
    owner => "root",
    group => "root",
    mode => 644
}
```

Puppet

- **User resource type:**

```
# Make sure the user blackmesh is on the server
user { "blackmesh":
    ensure => present,
    password => "secretpass"
}
```

Puppet

- **Package resource type:**

```
# Make sure the httpd package is installed
package { "httpd.${architecture}" :
   alias => "httpd",
   provider => "yum",
   ensure => "present",
   require => Exec["remi-enabled"]
}
```

Puppet

- **Resources are combined together in classes:**

```
class httpd {
    package { "httpd.${architecture}" :
        alias => "httpd",
        provider => "yum",
        ensure => "present",
        require => Exec["remi-enabled"]
    }
    service { "httpd":
        ensure => running,
        hasstatus => true,
        require => Package["httpd"]
    }
    exec { "chkconfig_httpd":
        command => "/sbin/chkconfig --level 2345 httpd on",
        require => Package["httpd"]
    }
}
```

Puppet

- **Classes can be combined together:**

```
class base {
    include sudo,
            yum_exclude_kernel,
            epel_enabled,
            remi_enabled,
            yum-updatesd,
            denyhosts,
            sshd_config,
            sshd,
            bestyum,
            yum_update,
            ntpd,
            user_blackmesh,
}
```

Puppet

- **Nodes apply classes:**

```
node cust115_webserver {
    include base, httpd
}
```

Puppet

- Providers implement resources on a local level
  - Red Hat-based: useradd
  - BSD-based: adduser
- Actions can cause new actions based on notify and subscribe properties
- Logs everything, so have a record, but not transactional

Puppet Implementation

- Install PuppetMasterd
- Configure sites for the Puppet config
- Install Puppet on client
- Create the puppet certificate on the client
- Sign the puppet certificate on the master
- Run puppet

The Ease of Server Builds

- Entirely scripted
- New hardware to server on network in 10 minutes
- All servers built the same no matter who builds them

The Ease of Maintenance

- Ensure consistency across servers:
  - User exists
  - Apache configuration
  - MySQL configuration
  - Security rules (who can ssh, etc.)
  - Watch for new accounts
  - Verify cron jobs are running; warn us about failures
  - Verify backups are running
  - Verify logrotate is working
  - Watch for excessively large files

The Business Benefits

- Proactive maintenance
- Confidence knowing things are routinely verified
- Time
- Lower costs
- Repeatable
- Documented
- Ease of maintenance

Web resources

- Cobbler
  - https://fedorahosted.org/cobbler/
- Puppet
  - http://reductivelabs.com/trac/puppet

Summary

Cobbler and Puppet Rock

Questions

?

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