



Why Puppet can save your Sanity

Neil Armitage

whoami

- DBA Oracle/Mainframes/MySQL (25 Years)
- Deployment Engineer @ Continuent
 - 1 or 2 Customer Deployments/Week
 - On Premise or Cloud deployments
- Developer for Cloud Operations and Deployments @ Continuent

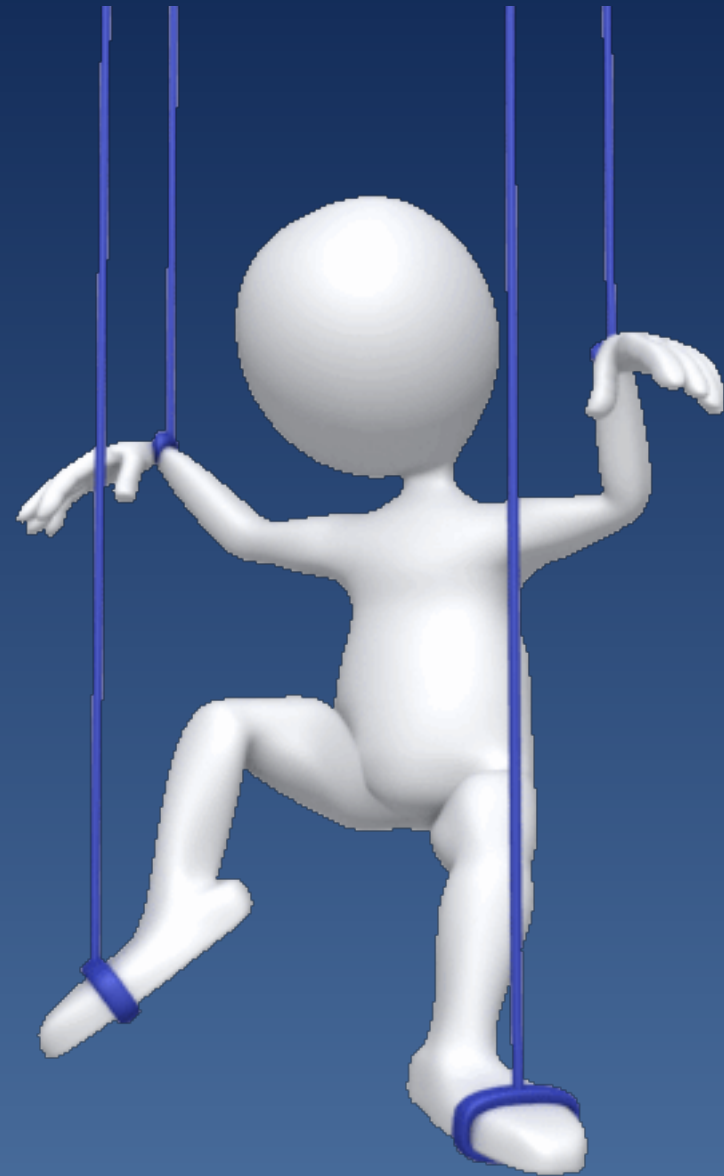


Quick Continuent Facts

- Largest Tungsten installation processes over 700 million transactions daily on 225 terabytes of data
- Tungsten Replicator was application of the year at the 2011 MySQL User Conference
- Wide variety of topologies including MySQL, Oracle, Vertica, and MongoDB are in production now
- MySQL to Hadoop deployments are now in progress with multiple customers

What we will cover today

- How we used to work
- What is Puppet
- How we use puppet
- What else is out there



Pre-Puppet v1 - Setting up a DB Server

- Start a set of machines
- Install O/S
- Install updates
- Install pre-requisites
 - Java,MySQL,Ruby
- Set configuration files
 - Sudo,MySQL, OS/Parameters.....
- Create MySQL users

Pre-Puppet v1 - Setting up a DB Server

- Try and install software
- Realise you had forgotten about some thing
- Try and install software again
- and maybe again



Pre-Puppet v2 - Setting up a DB Server

- Upload bash script to host
- Edit and run bash script
- Fix errors in bash script
- Try and install software again
- Realise you had trashed the o/s so you have to reinstall the box
- try again

With Puppet - Setting up a DB Server

- Setup O/S and install puppet
- Make sure hostname is correct
- Exchange keys with puppet master
- Run puppet
- Host is configured



What is Puppet

- IT automation software
- Define the state of a host
- Enforces the state of the host
- Controls
 - Packages (MySQL, Java etc)
 - Users
 - Control files
 -

Example - Install MySQL

```
package { "MySQL-server":  
  ensure => installed }
```

Install a my.cnf

```
file { "my.cnf":  
  path    => /etc,  
  owner    => mysql,  
  group    => root,  
  mode     => 644,  
  content => template("continuent_install/my.erb"),  
}
```

Install my.cnf

```
[mysqld]
datadir=/var/lib/mysql
socket=/var/lib/mysql/mysql.sock
user=mysql
symbolic-links=0
default-storage-engine=innodb
pid-file=/var/lib/mysql/mysql.pid

log-bin=mysql-bin
sync_binlog=1

server-id=<%= scope.lookupvar('::serverId') %>
port=<%= scope.lookupvar('::port') %>
binlog-format=row
```

Puppet Modes

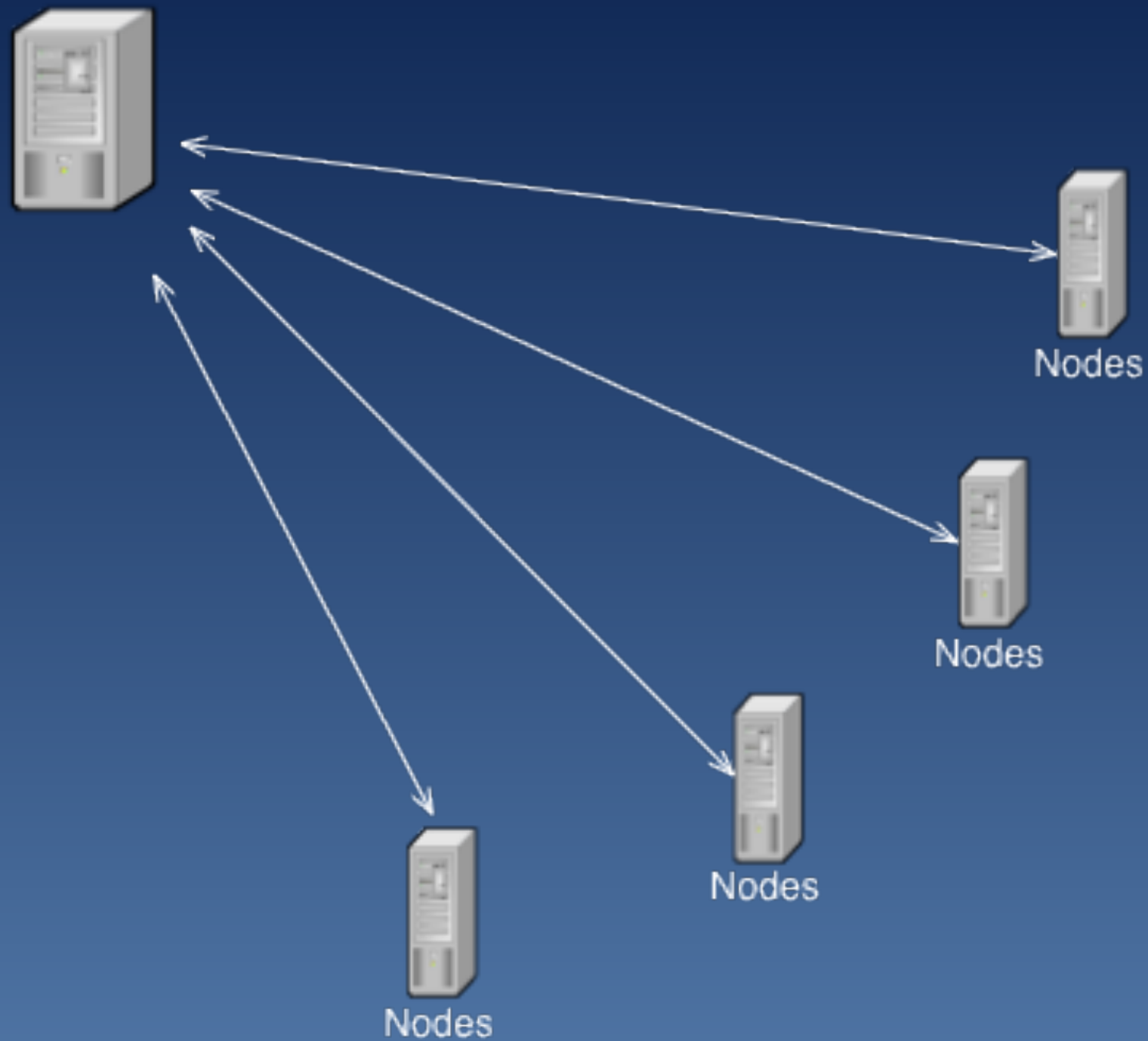
- “MasterLess”
 - Puppet Classes and Manifests installed on host
 - Puppet executed from Host
- Puppet Master
 - Classes and Manifests stored on a PuppetMaster
 - Puppet executed on Host

“MasterLess”

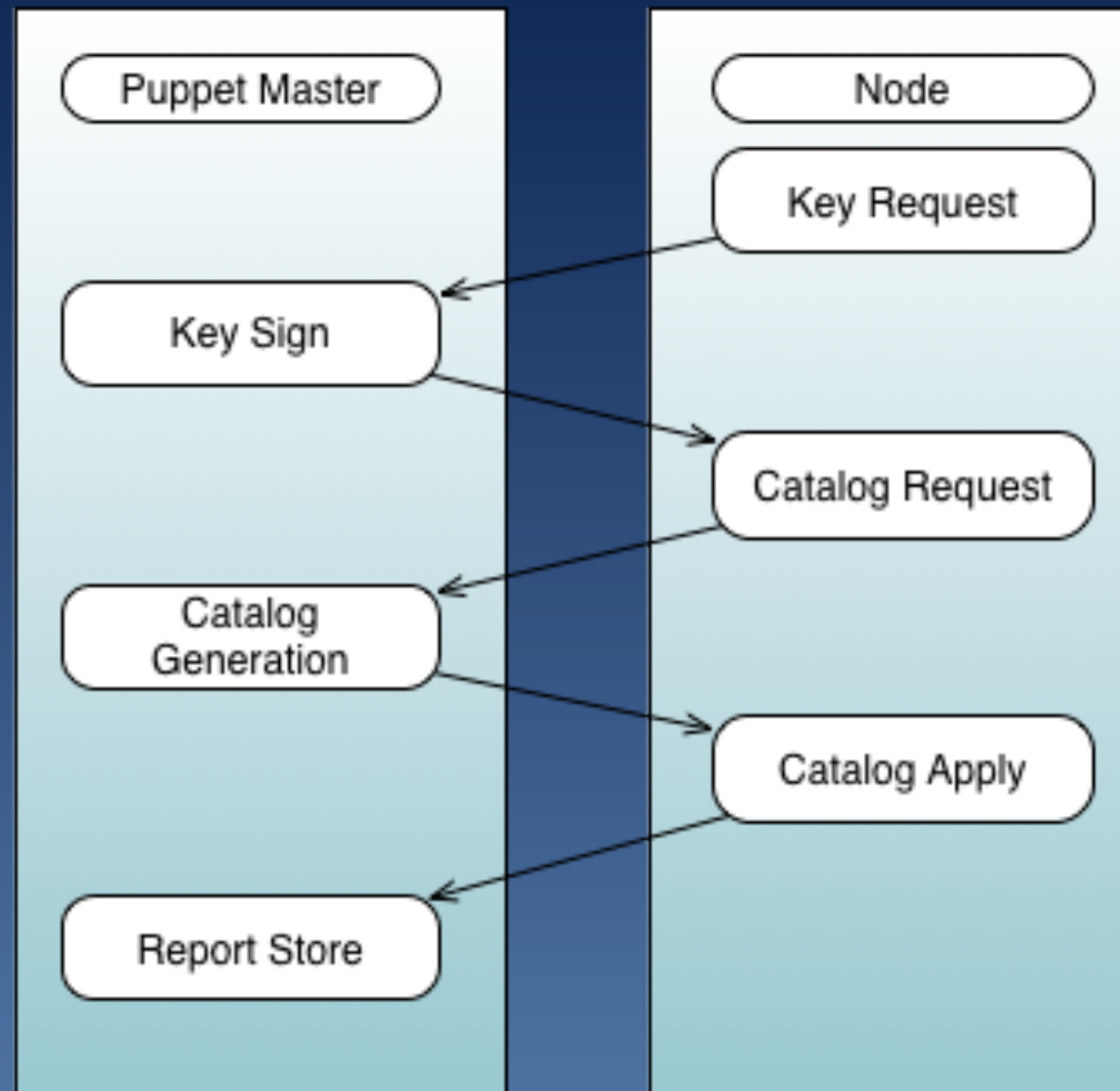
```
:> puppet apply install.pp
```

- Modules and manifests local
- Files and templates local

PuppetMaster



PuppetMaster



Working with a puppet master

- Install puppet agent

```
[root@agent1 ~] yum install puppet
```

- Run the agent in test mode

```
[root@agent1 ~]# puppet agent --test
info: Creating a new SSL key for agent1.localdomain
warning: peer certificate won't be verified in this SSL session
info: Caching certificate for ca
warning: peer certificate won't be verified in this SSL session
warning: peer certificate won't be verified in this SSL session
info: Creating a new SSL certificate request for agent1.localdomain
info: Certificate Request fingerprint (md5): FD:E7:41:C9:2C:B7:5C:27:11:0C:8F:9C:1D:F6:F9:46
warning: peer certificate won't be verified in this SSL session
warning: peer certificate won't be verified in this SSL session
warning: peer certificate won't be verified in this SSL session
Exiting; no certificate found and waitforcert is disabled
```

Working with a puppet master

- On the Puppetmaster list outstanding certs

```
[root@learn ~]# puppet cert list  
agent1.localdomain (FD:E7:41:C9:2C:B7:5C:27:11:0C:8F:9C:1D:F6:F9:46)
```

- Sign the cert

```
[root@learn ~]# puppet cert sign agent1.localdomain  
notice: Signed certificate request for agent1.localdomain  
notice: Removing file Puppet::SSL::CertificateRequest agent1.localdomain at '/etc/puppetlabs/  
puppet/ssl/ca/requests/agent1.localdomain.pem'
```

Working with a puppet master

- On the original server run puppet again

```
[root@agent1 ~]# puppet agent --test
warning: peer certificate won't be verified in this SSL session
info: Caching certificate for agent1.localdomain
info: Retrieving plugin
info: Caching certificate_revocation_list for ca
info: Loading facts in facter_dot_d
info: Loading facts in facter_dot_d
info: Loading facts in facter_dot_d
info: Loading facts in facter_dot_d
info: Caching catalog for agent1.localdomain
info: Applying configuration version '1326210629'
notice: Finished catalog run in 0.11 seconds
```

Configuring the node

- in site.pp on the puppet master

```
node 'agent1.localdomain' {  
  
    include apache  
  
    class {'ntp':  
        servers => [ "ntp1.example.com dynamic", "ntp2.example.com dynamic", ],  
    }  
  
}
```

Configuring the node

```
[root@agent1 ~]# puppet agent --test
info: Retrieving plugin
info: Loading facts in facter_dot_d
info: Loading facts in facter_dot_d
info: Loading facts in facter_dot_d
info: Loading facts in facter_dot_d
info: Caching catalog for agent1.localdomain
info: Applying configuration version '1326416535'
notice: /Stage[main]/Ntp/Package[ntp]/ensure: created
--- /etc/ntp.conf 2011-11-18 13:21:25.000000000 +0000
+++ /tmp/puppet-file20120113-5967-5619xy-0 2012-01-13 01:02:23.000000000 +0000
@@ -14,6 +14,8 @@

# Use public servers from the pool.ntp.org project.
# Please consider joining the pool (http://www.pool.ntp.org/join.html).
+
+# Managed by puppet class { "ntp": servers => [ ... ] }
+server 0.centos.pool.ntp.org
+server 1.centos.pool.ntp.org
+server 2.centos.pool.ntp.org
info: /Stage[main]/Ntp/File[ntp.conf]: Filebucketed /etc/ntp.conf to main with sum 5baec8bdbf90f877a05f88ba99e63685
notice: /Stage[main]/Ntp/File[ntp.conf]/content: content changed '{md5}5baec8bdbf90f877a05f88ba99e63685' to '{md5}35ea00fd40740faf3fd6d1708db6ad65'
notice: /Stage[main]/Apache/Package[apache]/ensure: created
notice: /Stage[main]/Apache/Service[apache]/ensure: ensure changed 'stopped' to 'running'
info: ntp.conf: Scheduling refresh of Service[ntp]
notice: /Stage[main]/Ntp/Service[ntp]: Triggered 'refresh' from 1 events
notice: Finished catalog run in 32.74 seconds
```

How we use puppet

- Developed a suite of puppet modules hosted on Github under the Apache 2.0 Licence
- For demos and testing we use puppet along side along with vagrant to deploy locally or in EC2
- Single Puppet Module to
 - Deploy and Configure MySQL
 - Install Tungsten Pre-Requisites
 - Install Tungsten Replicator or Cluster

How we use puppet

- Extra Modules
 - Hadoop
 - Oracle
 - Galera
 - Haproxy
 - + anything else we can think of

Demo

Getting Started

- Use puppet forge
- Contains 1000's of reusable modules
- If it doesn't do what you want fork it and make contribute it back
- Most are hosted on github under Apache 2.0 licence
- Quite a few good books but if you know ruby picking it up is simple

Warnings / Lessons Learnt

- Modules are not executed top to bottom
- Make sure you set dependancies correctly
- Still some rough edges in puppet 3.0 is better than 2.7
- Upfront investment is quite high but the long term payoff is high
- We now manage 70+ servers from a single puppet master. A new user takes 5 minutes to set up over several days before.

What else is out there?

- Chef
- Ansible
- Salt
- ?

Questions



560 S. Winchester Blvd., Suite 500
San Jose, CA 95128
Tel +1 (866) 998-3642
Fax +1 (408) 668-1009
e-mail: sales@continuent.com

Our Blogs:

<http://scale-out-blog.blogspot.com>

<http://datacharmer.blogspot.com>

<http://flyingclusters.blogspot.com>

Continuent Website:

<http://www.continuent.com>

Tungsten Replicator 2.0:

<http://code.google.com/p/tungsten-replicator>