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Puppet for Sysadmins

PuppetCamp 2013 – Melbourne

Download from – http://www.icesystems.com.au/puppet

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Och Aye The Noo!

(oh yes, right now!)

Stephen Wallace

20 years experience

Predom *nix / sysadmin background

Senior management - teams up to 20

Large *heavily* integrated systems

Health, Online Gaming, Recruitment

ICE Systems 18 mths....one of the Puppet go to guys

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puppet CERTIFIED Puppet Professional

RHCSA

splunk>

Nagios

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Who am I talking to?

- Sysadmin
- Operations management
- Nae sayers?
- ...and the Puppet newbs

…and why should you listen?

Spot the challenge!

An extract from my Linkedin profile

(au.linkedin.com/in/stephenwallace)

- **Harvey Nash, Database Administrator, London**
- **Hays Personnel Services, IT Manager ANZ, Sydney**
- **Saffron Consulting, Unix/Linux Consultant, Sydney**
- **Corporate Express, Business Systems Manager, Sydney**
- **NHS, Unix Services Manager, Glasgow**
- **Casino.com, Technical Operations Manager, Gibraltar**
- **Healthecare Aust, IT Operations Manager, Sydney**
- **ICE Systems, Solution Architect, Sydney**

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puppet labs

Puppet ...for Non-proggies *: 101*

PuppetCamp 2013 - Sydney

Begin with the end in mind

“Would you tell me, please, which way I ought to go from here?”

“That depends a good deal on where you want to get to“, said the cat.

“I don’t much care where”, said Alice.

“Then it doesn’t matter which way you go”, said the cat.

(Alice's Adventures in Wonderland, chapter 6)

...the importance of goals

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Goals!

Talkers (AKA Management)	Doers (You know who you are)
Availability	
Scalability	
Supportability	
Predictability	
Agility	
KeepTheCostsDownAbility!	
…and Cloudability	

Goals for doers?

- Reusable wins.....everybody listening?
- Fix stuff once
- Reduce support workload, so can finally get to that more interesting project stuff!
- Monitoring....that someone else maintains :)
- Documentation...ditto
- Weekends / sleep
- Pub by 5 (past 4 preferably)

Goals for everybody?

Recent Engagements

- *Research-centric academic institution*
- *Publishing / media company*
- *Insurance brokerage*
- *Ecommerce / magazine*

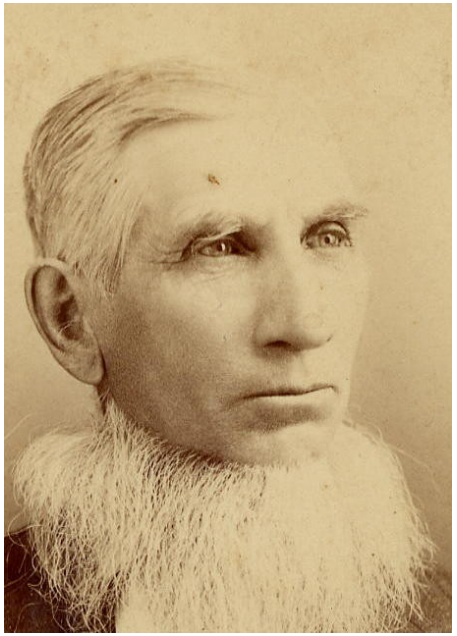
Commonalities		
Small teams	✓	
No opex budget	✓	
# Users / power users up	✓	
Provisioning demands up	✓	
Diversity up	✓	✓

Ratio of dev lead : ops lead initiatives.....

3:1

What I did NOT need

!



...a neckbeard,

..or, an Apple Macbook

What I DID need

- **A paradigm shift**

ALSO…

Willingness to learn

Willingness to collaborate

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Times are a Changin'

Installing a new web server...

Then (with a cast of 1000s)	Now...via templates
Rack n stack	Launch hypervisor or AWS Management Console
Install and lock down o/s	Choose your template
Pass to application / web team	Click a button
Pass to database team	
Configure some monitoring	
Draw some diagrams n document.	
Test, and transition thru change management...fingers crossed.	

...and with Puppet, it can get a bit easier!

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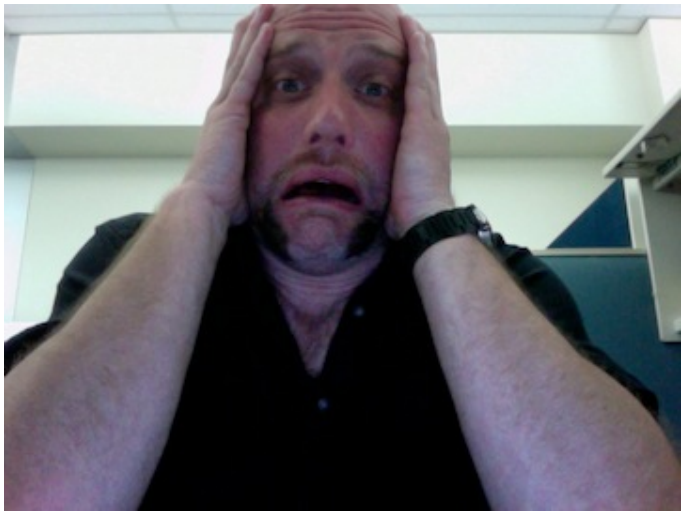
Initial reaction to the word...

“Devops”...



The objection is rarely the objection!

“We are not proggies, we're sys admins”

Keep Calm, ...and Carry On

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“Proggie syntax is WAY too hard...”

Ops boys and girls *love* scripting...right?

Puppet can write Puppet code!

- **puppet resource user...handy!**
- **puppet resource - types (lots of fun for all the family)**
- **...and there's lots of “inspirational” stuff from the Forge (http://forge.puppetlabs.com)!**
  - **puppet module search mysql (gem install puppet-module)**

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Building a module, the easy way

A simple manifest

`puppet resource service ssh` - outputs valid syntax

A module

`puppet module generate x-blah` - Rename module dir and make sure this is reflected in the class name in manifests/init.pp and tests/init.pp

A class

already in the `tests` directory.

```
Puppet apply -v ./init.pp --noop
```

Native tools for syntax checking

`puppet parser validate blah.pp`

```
root@saffron-3550:~/workspace2/puppet-rox/manifests# puppet parser validate ./init.pp
err: Could not parse for environment production: Syntax error at '{'; expected '}' at /home/2nd-drive/home/stevew/worksp
ace2/puppet-rox/manifests/init.pp:15
err: Try 'puppet help parser validate' for usage
```

```
1  # Class: puppet-rox
2  #
3  # This module manages puppet-rox
4  #
5  # Parameters: none
6  #
7  # Actions:
8  #
9  # Requires: see Modulefile
10 #
11 # Sample Usage:
12 #
13 class puppetrox {
14
15 service {{ 'ssh':
16
17   ensure => 'running',
18
19   subscribe => File['/etc/ssh/sshd_config'],
20
21     }
22
23 }
```

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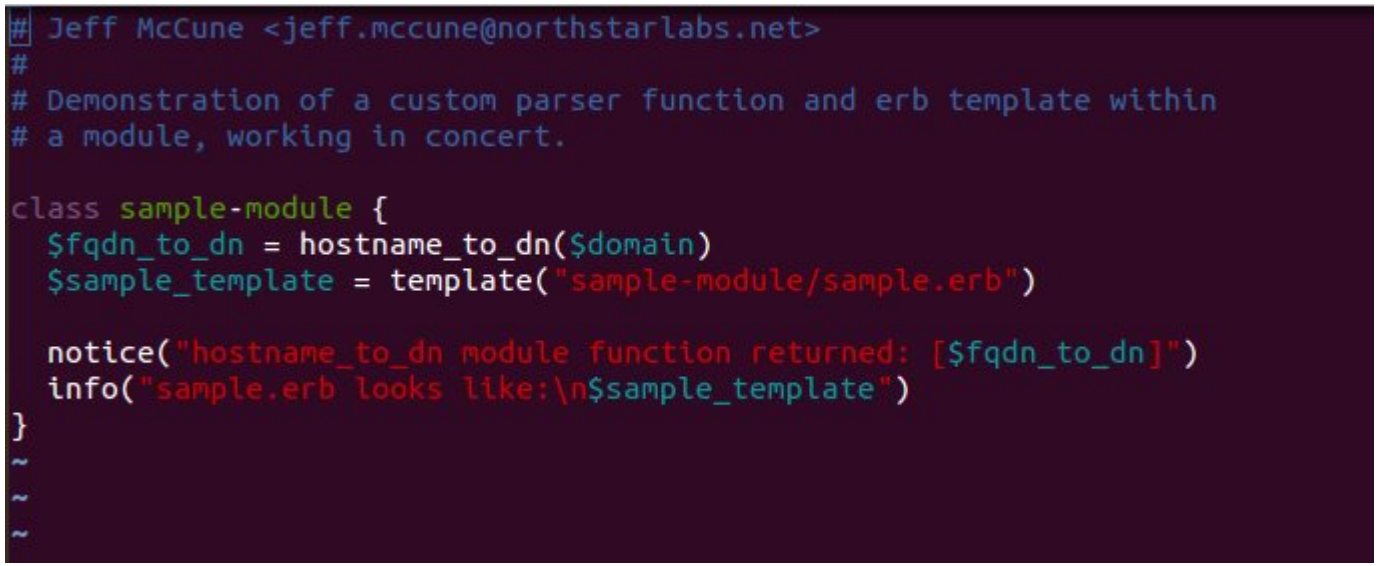
Syntax Highlighting Tools

Put a bit of colour in your life...

`vim-puppet`



syntastic - similar

There will still be a few sceptics

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Geppetto

- Have a look! Self contained IDE
- Syntax examples with mouseover
- Autocorrects stuff!
- Integrates with source control
- Integrates into CI
- Integrates with the Forge!

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A question of style?

Install It!

```
$ gem install puppet-lint
```

Run It!

```
$ puppet-lint --with-filename /etc/puppet/modules
foo/manifests/bar.pp: trailing whitespace found on line 1
apache/manifests/server.pp: variable not enclosed in {} on line 56
...
```

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Finding this all a bit testing?

Rspec-puppet - why test your modules, using yet another language?

Check it out...http://rspec-puppet.com/

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Hiera!

- How can it benefit the ops crowd?
  - A simple pluggable, hierarchical database
  - Included with Puppet Enterprise, gem install for opensource
  - Allows data to be separated from code
  - Cleaner, more supportable manifests

How does Hiera work?

HTTP VS APACHE2?

hiera.conf…you know conf files...right?!

```
:hierarchy:
    - nodes/%{fqdn}
    - %{operatingsystem}
    - common
:backends: - yaml
:yaml:
    :datadir: '/etc/puppetlabs/hieradata'
```

root@hpmini:~# facter operatingsystem

Ubuntu

root@hpmini:/etc/puppetlabs/hieradata/*Ubuntu*# cat common.yaml

webserver: apache2

Hiera syntax

You either do this...

```
centos, redhat, oel, oraclelinux, linux: {

  $supported  = true

  $webserver   = [ "apache2" ]

  $svc_name   = "apache2"

  $config     = "/etc/apache2/httpd.conf"

  if $::operatingsystemrelease =~ /^5/ {

  $config_tpl = 'httpd.conf.el.erb'

  } elsif $::operatingsystemrelease =~ /^6/ {

   $config_tpl = 'httpd.conf.el6.erb'

  } else {

   fail("the webserver module doesn't know
  what template to use for your $
  {::operatingsystemrelease}")
```

Or this…

```
$webserver = hiera('webserver','httpd')

 if $webserver != 'nil' {

  package { $webserver:

   ensure => present

  }
```

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Augeus!
Love those conf files...

```
$defaultrunlevel = hiera('defaultrunlevel','3')

    augeas { "runlevel":

      context => "/files/etc/inittab",

      changes => [
              "set id/runlevels $
     {defaultrunlevel}",                    ],

     }
```

```
root@hpmini:/etc/puppetlabs/hieradata/production#
    grep defaultrunlevel common.yaml

defaultrunlevel: 3
```

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Ruby – Not that scary

- Deep breath...
  - yum install blah.rpm (familiar?)
  - apt-get install stuff
  - ...gem install puppet-lint (!)

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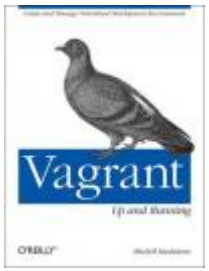
Provisioning

FOREMAN

- libvirt, EC2, RHEV



- Oracle Virtualbox

Puppet's

- Razor. Growing popularity
- AWS & VMWare!

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MCollective

Benefits?

- **How many of my machines are running RHEL 6.1?**
- **How many are running a particular release of a software package?**
- **Monitor all of my servers for a resource level?**

Mcollective can help manage, monitor, control Puppet, collect performance and inventory data...so...so...check it out!

The Holy Trinity

IT Ops Management Challenges

Productivity and Efficiency

Responding to Business Needs

Configuration Drift

Lack of Visibility

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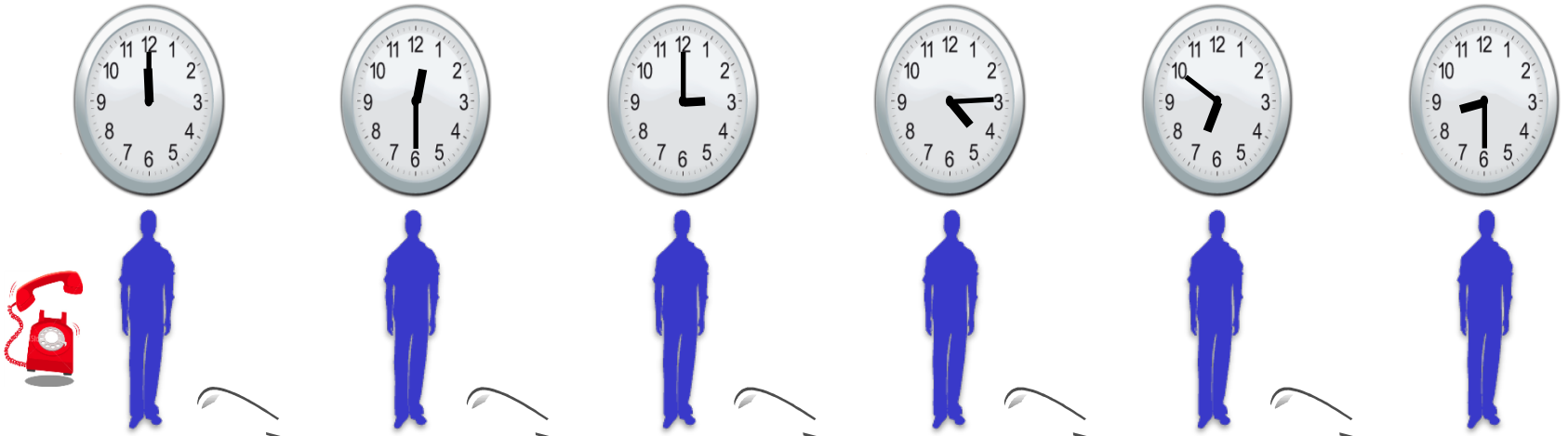
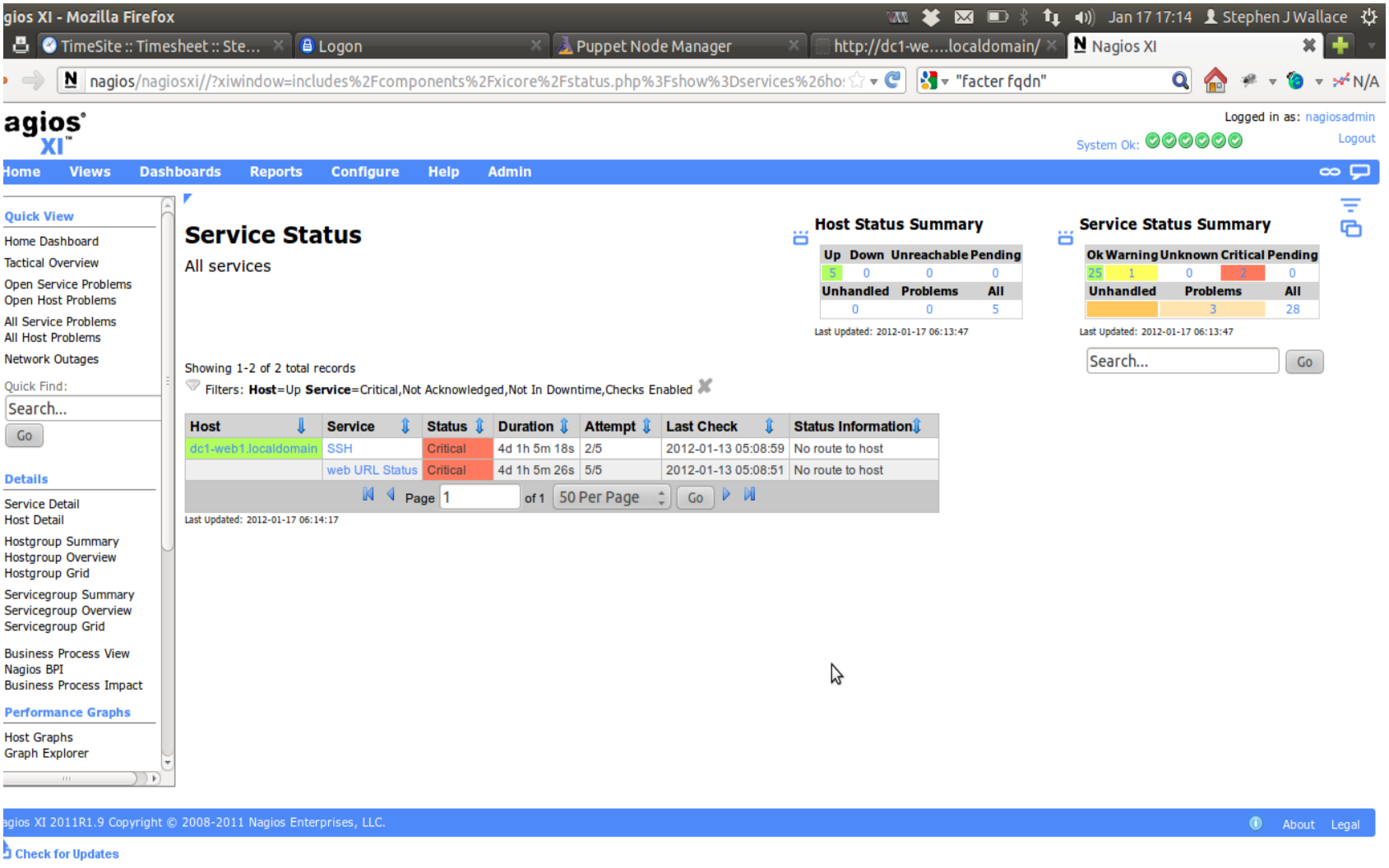
What it's like in the trenches



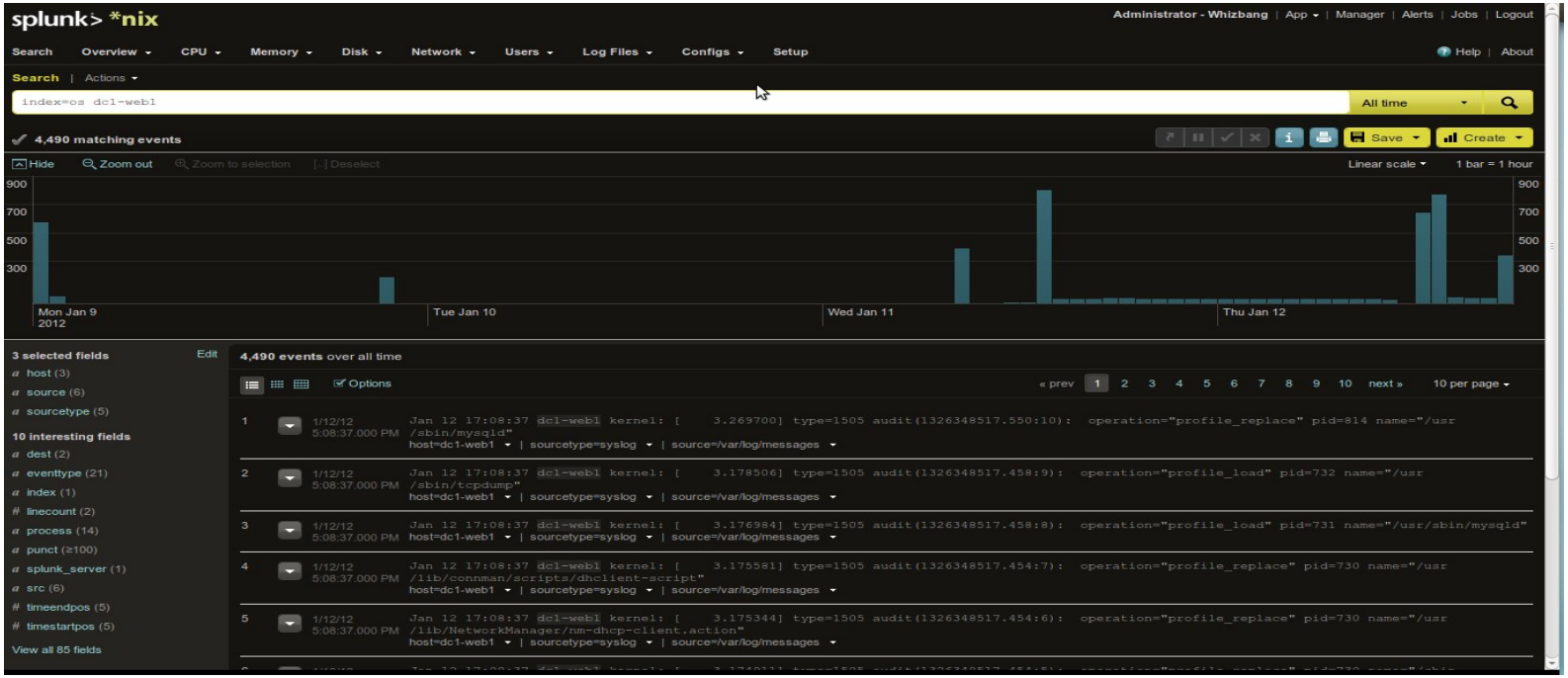
Service Desk	Application Support	Application Developer	Systems Administrator	Application Developer	Database Administrator
Log call. The console says everything is green.	Java monitoring tools don't show anything either. Call the developer.	Stop working on new code to troubleshoot. Need production logs!	Stop what they're doing to identify and gather production logs for developer.	Manual investigation establishes not application problem.	DBA analyzes audit logs which points to bad query.
Escalate.	Escalate.	Escalate.	Respond	Escalate.	Now what?

Monitoring detects the service outage - Nagios



Root Cause Analysis - Splunk

- **IT Operations review monitoring info, and feed relevant details into Splunk for event correlation over all enterprise devices**



A config file has been manually updated….badly, causing the outage

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Fix It Once!

- Write a manifest to manage the files and fix the issue
- Maybe use Puppet to write the Nagios cfg
  - “Exported resources” / templates
- Monitoring = green lights

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But we're an enterprise shop

...Puppet's not quite there yet, Shirley?

Client side

- Ruby brush n scrub up. Load reduced.
- Good install support

Server side

- PuppetDB
- Phusion Passenger
- ActiveMQ
- REST API

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Reinvent yourself every 2 years

New tools?!…but we're making too much progress!

~~Devops person?~~

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Training helps

Puppet Fundamentals

Productive in a day, or two

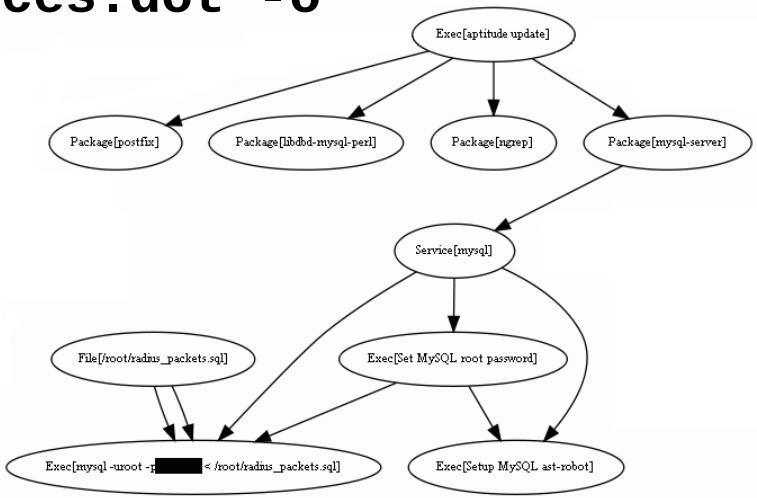
Certification program

Puppet Professional + Puppet Developer

-> Puppet Master

Any other useful stuff?

- What about DR? (Dont forget your certs!)
- Automated doco?
  - `/etc/puppet/modules/ssh/manifests# puppet doc ./init.pp`
- Dependency diagrams
  - `dot -Tpng /var/opt/lib/pe-puppet/state/graphs/resources.dot -o /tmp/configuration.png`



Still sounds risky? --noop!

Even the CAB will like you!

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Puppet Enterprise, why do people choose it?

Many of the tools are pre-compiled

Low stress, *upgradable* solution

Ceiling install...peace of mind

Dashboard

Mcollective

Cloud Provisioner - AWS *& VMWare*

Supportable :)

So what your next step?

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Start small, and KISS!

- **“A journey of a 1000 miles...”** **A.N. Other Smart Perso**
- **Just start!**
- **Download the training VM**
- **Do the tutorials**
- **Use the Forge for inspiration!**
- **Use Google Groups – puppet-users@googlegroups.com to start**
- **...then puppet-dev@ when confidence starts to grow**
- **Use the supporting toolsets**
- **Use –noop! Derisk n smile**
- ***Padding on the right shoulder might also be useful...***

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“We're not proggies... we're sys admins!”

Plenty of options available to the sysadmins who does not retool...

or

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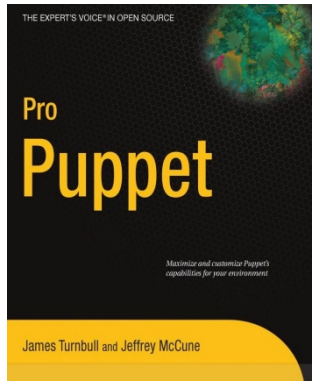
References

Learn Puppet in small chunks...



http://info.puppetlabs.com/download-pdfs.html

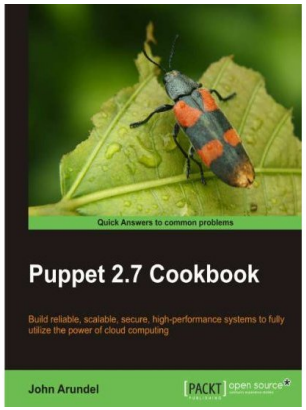
http://forge.puppetlabs.com/

http://docs.puppetlabs.com/guides/tools.html

puppet-rspec - Easy intro http://puppetlabs.com/blog/the-next-generation-of-puppet-module-testing/

http://theforeman.org/, http://www.vagrantup.com/

http://cloudsmith.github.com/geppetto



Puppet for sysadmins...