

Использование Puppet для быстрого развертывания серверов



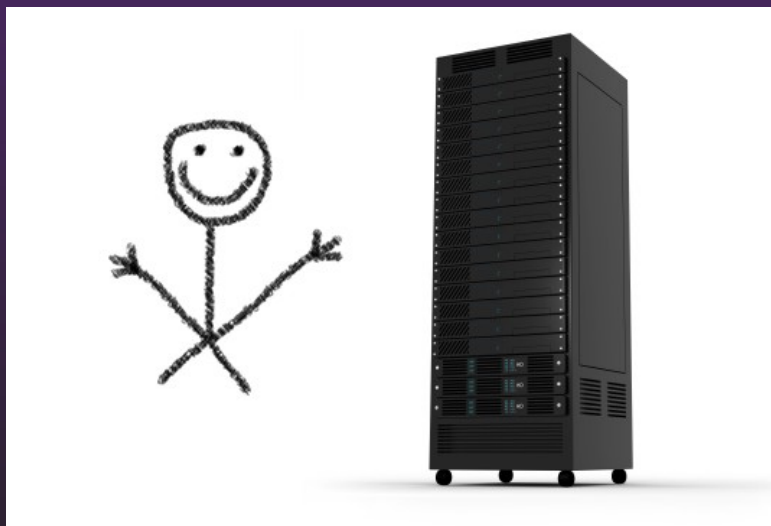
BIT.GAMES,
Цаль-Цалко Иван



Ручная настройка сервера

Необходимо:

- 1) устанавливать вручную все необходимые программы, сервисы, утилиты.
- 2) помнить порядок установки и возможные «подводные камни».
- 3) «тюнить» конфиги.



Один сервер настроить можно...

«Хьюстон у нас проблемы» :)

А когда серверов **много**?



- 1) многократно увеличивается время настройки.
- 2) повышается риск допустить ошибки.
- 3) понижается карма :(.

Puppet ?

Что такое Puppet?



Twitter
Yelp
eBay
Zynga
JP Morgan Chase
Bank of America
Google
Disney
Citrix
Oracle
Viacom ...

Режимы использования

a) однократный (onetime)

puppet_server (master)



puppet_client (agent)

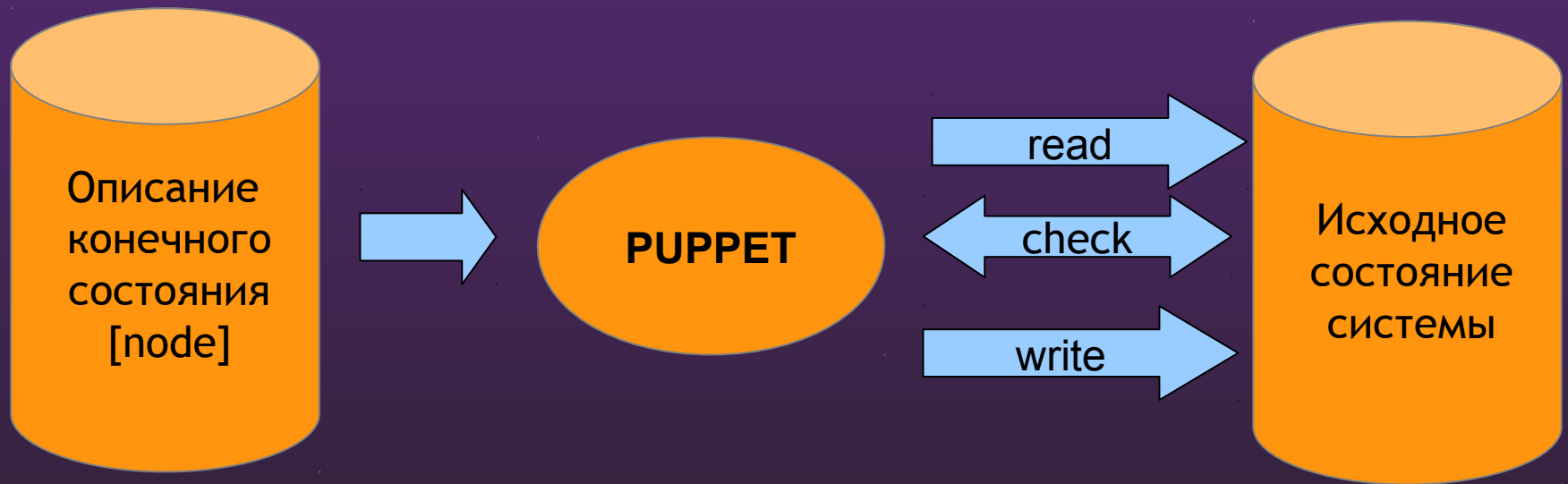
b) сервис (daemon)

puppet_server (master)



puppet_client (agent)

Принцип работы Puppet



Описание Puppet

Resource - структурная единица Puppet.

Типы основных ресурсов:

- user account
- file / directory
- package
- service
- cron
- notify
- exec
- etc ...



«КОМПОНЕНТЫ OS»

The diagram consists of an orange oval on the right containing the text «КОМПОНЕНТЫ OS». Ten orange arrows point from this oval to a list of resource types on the left: user account, file / directory, package, service, cron, notify, exec, and etc ...

Примеры описания ресурсов

```
user { "game":  
  home      => '/home/game',  
  shell     => '/bin/sh',  
  uid       => '0',  
  ensure    => 'present',  
  password  => '*',  
  gid       => '0',  
  comment   => 'User'  
}
```

```
exec { "exec_crontab":  
  command    => "crontab /tmp/crontab.tmp",  
  refreshonly => true,  
}
```

```
package { "nginx":  
  ensure     => present  
}
```

```
file { "/etc/php.ini":  
  ensure  => present,  
  content => template("php/php.ini.erb"),  
  require => [ Class["php::install"] ],  
}
```

```
service { "php-fpm":  
  ensure     => running,  
  require    => [ Class["php::install"] ],  
  hasstatus  => true,  
  hasrestart => true,  
  enable     => true,  
}
```

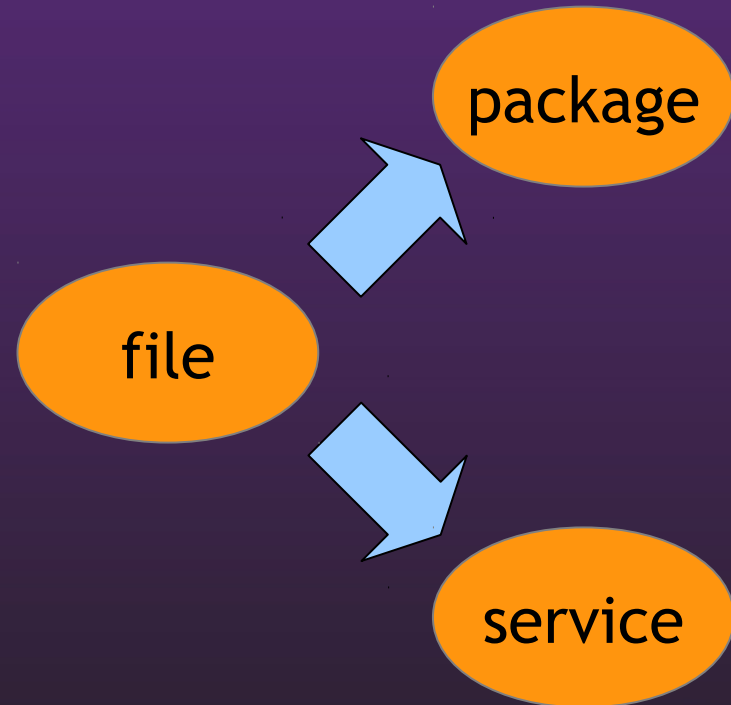
Metaparameters:

alias, audit, before, check, loglevel, noop, notify, require, schedule, stage, subscribe, tag.

Main Pattern

Package / File / Service

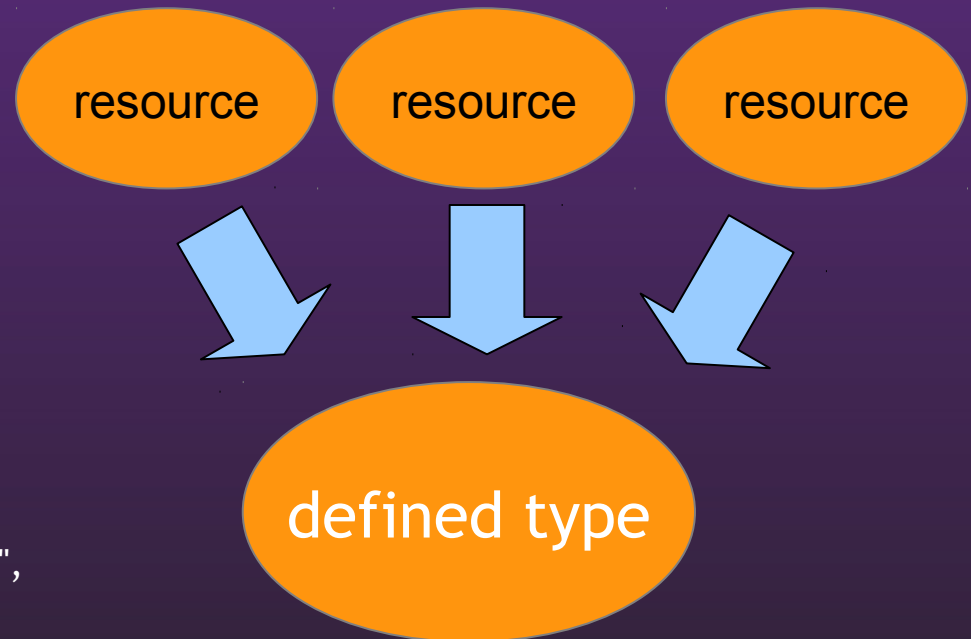
```
package { 'openssh-server':  
  ensure => present,  
  before => File['/etc/ssh/sshd_config'],  
}  
  
file { '/etc/ssh/sshd_config':  
  ensure => file,  
  mode   => 0600,  
  source => '/root/manifests/sshd_config',  
}  
  
service { 'sshd':  
  ensure   => running,  
  enable   => true,  
  hasrestart => true,  
  hasstatus => true,  
  subscribe => File['/etc/ssh/sshd_config'],  
}
```



Defined type

```
define crontab($content)
{
  file { ["/tmp/puppet-crontab.tmp":
    ensure => present,
    owner => 'root',
    group => 'root',
    mode => 0644,
    content => $content,
    notify => Exec["exec_crontab"],
  ]
  $file = ["/tmp/puppet-crontab.tmp"];

  exec { "exec_crontab":
    command => "crontab ${file} && rm ${file}",
    refreshonly => true,
  }
}
```



Abilities

Global params (from facter):

```
host {'self':  
  ensure => present,  
  name   => $::fqdn,  
  ip     => $::ipaddress,  
}
```

\$ facter --yaml

lsbdistdescription: Linux Mint 11 Katya
facterversion: 1.5.9
swapfree: 1.32 GB
id: vanushka
ipaddress_lo: 127.0.0.1
timezone: MSK
netmask_wlan0: 255.255.255.0
network_lo: 127.0.0.0
kernelmajversion: "2.6"
operatingsystem: Debian

memorysize: 998.39 MB
netmask: 255.255.255.0
virtual: physical
netmask_lo: 255.0.0.0
kernelversion: 2.6.38
puppetversion: 2.6.8
processorcount: "2"
architecture: amd64
memoryfree: 273.69 MB
hardwaremodel: x86_64

hostname: localhost
uptime: 6:44 hours
interfaces: "eth0,lo,wlan0"
swapsize: 1.52 GB
ipaddress: 192.168.0.3
uptime_seconds: 24251
is_virtual: "false"
kernelrelease: 2.6.38-8-generic
uptime_hours: 6



Abilities

Statement (if/else | switch/case):

```
if $is_virtual == 'true' {  
    notify ('virtual');  
}  
else {  
    notify ('virtual');  
}
```

```
case $hostname {  
    'jack','jill': { include hill}  
    'humpty','dumpty': { include wall }  
    default: { include generic }  
}
```

Array:

```
file { '/tmp/test1':  
    require => [File['exam1'], File['exam2']]  
}
```

Regular expressions:

```
case $ipaddress_eth0 {  
    /^127[\d.]+$/: {  
        notify { 'misconfig':  
            message => "Invalid IP address of $0",  
        }  
    }  
}
```

Selectors:

```
$apache = $operatingsystem ? {  
    centos                => 'httpd',  
    redhat                => 'httpd',  
    /(?(i)(ubuntu|debian)/ => "apache2-$1",  
    default              => undef,  
}
```

Abilities

Chaining (->):

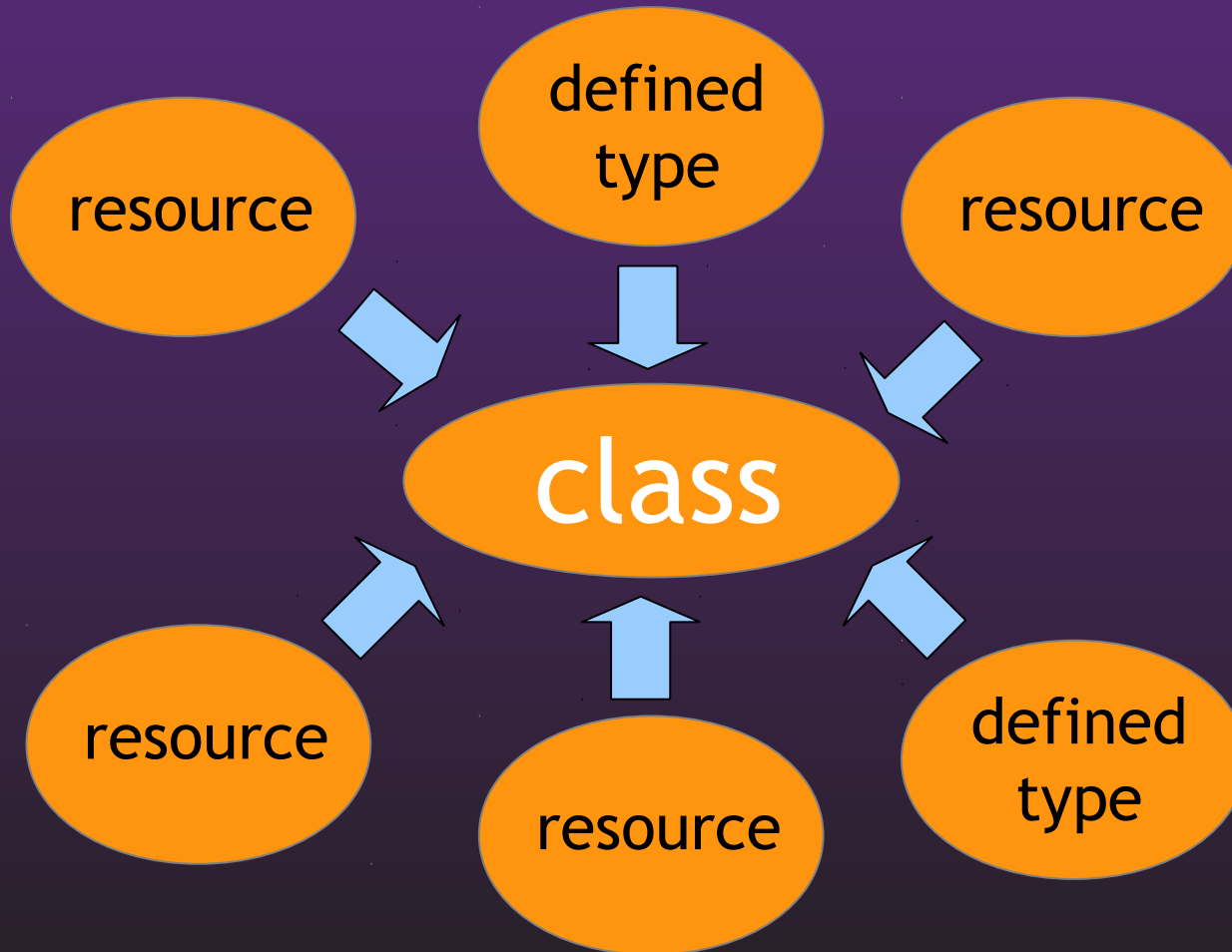
```
define example {  
  
  file {/etc/mysql/my.cnf}:  
    ensure => present,  
    owner  => 'mysql',  
    source => "puppet:///mysql/my.cnf",  
    ...  
}  
  
notify {'after':  
  message => 'config mysql has already been created.',  
}  
  
file {/etc/mysql}:  
  owner  => 'mysql',  
  ensure => directory,  
}  
  
File['/etc/mysql'] -> File['/etc/mysql/my.cnf'] -> Notify['after']  
}
```



GAMES

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Class



Examples of classes

Passing params, inherits, includes.

```
class class_1 ($value1, $value2 = "default") {  
  notify {"Value 1 is ${value1}.":}  
  notify {"Value 2 is ${value2}.":}  
}
```

```
class class_2 inherits class_1 {  
  include class_3;  
}
```

```
class class_3 {  
  define some_type($param1) {  
  }  
}
```


Abilities

Order into node (stage):

```
node prodhost {  
  stage {  
    "high_priority": ;  
    "low_priority": ;  
  }  
  class {  
    "php::install" : stage => "high_priority";  
    "nagios::install" : stage => "low_priority";  
  }  
  
  Stage["high_priority"] -> Stage["low_priority"]  
}
```

```
class php::install {  
  ...  
  package { "php53u":  
    ensure => installed,  
    require => Yumrepo["IUS"] }  
  ...  
}  
  
class nagios::install {  
  
  package { "nagios":  
    ensure => present  
  }  
  
  package { "nagios-nrpe":  
    ensure => present  
  }  
}
```

Templates

```
....  
$servers = [  
  "0.centos.pool.ntp.org",  
  "1.centos.pool.ntp.org",  
  "2.centos.pool.ntp.org",  
]  
  
file {'/etc/foo.conf':  
  ensure => file,  
  require => Package['foo'],  
  content=>  
  template ('foo/template.conf.erb'),  
}
```

some_module/templates/template.conf.erb:

```
# ...  
  
# Managed by Class['ntp']  
<% servers.each do |server| -%>  
  server <%= server %>  
<% end -%>
```

...



```
# Managed by Class['ntp']  
server 0.centos.pool.ntp.org  
server 1.centos.pool.ntp.org  
server 2.centos.pool.ntp.org
```

...

Structure of «project»

Manifests/

node_prod.pp
node_dev.pp

Modules/

{module}/
files/
lib/
manifests/
 init.pp
 {class}.pp
 {defined type}.pp
{namespace}/
 {class}.pp
 {class}.pp
templates/
tests/

...

Пример модуля php:

Modules/

php/
 manifests/
 init.pp
 install.pp
 config.pp
 fpm-service.pp
 templates/
 php.ini.erb

Примеры вызовов:

- php
- php::install
- php::config
- php::fpm-service



Порядок выполнения команд для «node»

1) запускаем puppet-master:

```
[master] $ puppet master --verbose --no-daemonize
```

2) запускаем puppet-client:

```
[client] $ puppet agent --server=prodhost --no-daemonize --verbose --onetime
```

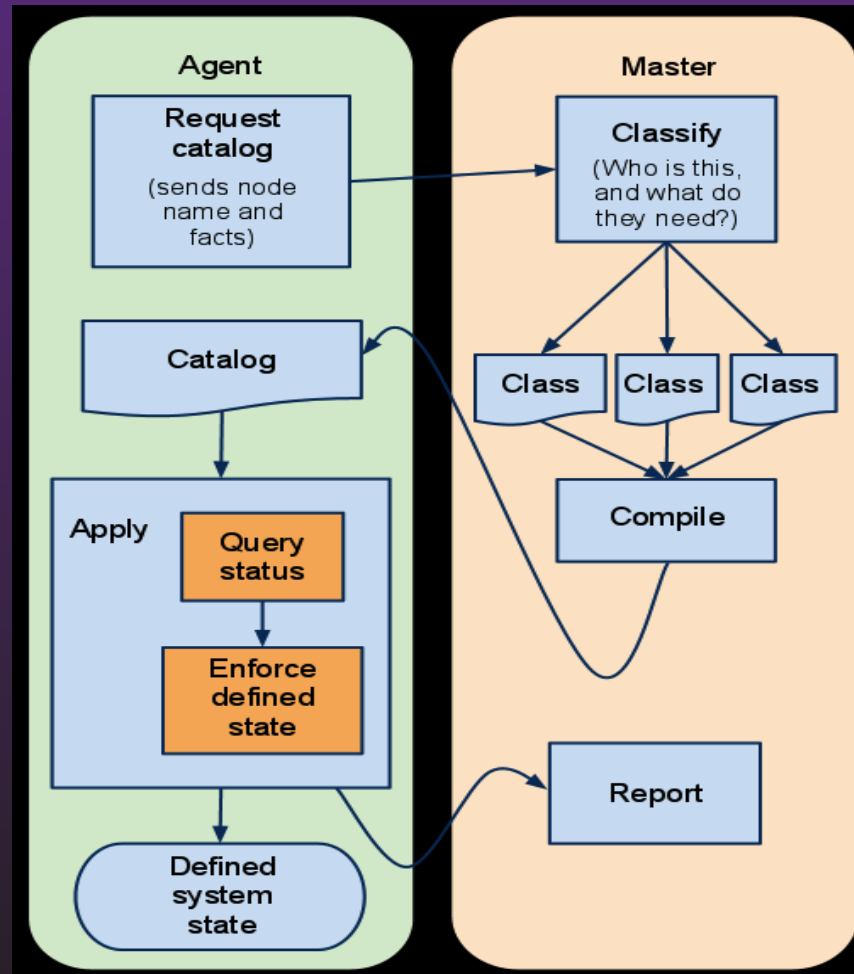
3) подписываем сертификат от клиента:

```
[master] $ puppet cert --sign --all
```

4) выполняем node:

```
[client] $ puppet agent --server=prodhost --no-daemonize --verbose --onetime
```

Client - Server



Example of node

```
node 'prodhost' {
  Exec { path => "/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin" }

  include base, sshd, ntp, sysctl, iptables, rsyslog, logrotate, build, ganglia, ruby-
    shadow, python, sudo, vim, nginx, redis, percona, percona::tools, php,
    php::fpm_service, supervisor, cron, nagios

  add_user { game:
    email   => "game@localhost",
    uid     => 5002,
    group   => "game",
    gid     => 5002,
    groups  => [],
    shell   => "/bin/bash",
    password => '$1$jPtoJiidvKJKFKfH0GxOfLwzvn/'
  }
  ...
}
```

```
php::add_config { "apc" :  
  content =>
```

```
,  
  
extension=apc.so  
apc.enabled=1  
apc.shm_size=128M  
apc.max_file_size=10M  
apc.ttl=7200  
apc.user_ttl=7200  
apc.slam_defense=0  
,  
}
```

```
php::build_ext{ "redis" :  
  version => "2.1.3",  
  url => "https://github.com/nicolasff/phpredis/tarball/2.1.3"  
}
```

```
php::add_config { "redis" :  
  content => 'extension=redis.so'  
}  
...
```


...

```
nginx::add_upstream { "phpbackend" :  
  content => 'server 127.0.0.1:9000;'  
}
```

...

```
ganglia::set_config_vars{ "config" :  
  cluster => "cas-fb",  
  host => "134.10.89.148"  
}
```

```
ganglia::install_gmetric_redis {"/etc/gmetric-redis.php" :}  
ganglia::install_gmetric_phpfpmp {"/etc/gmetric-phpfpmp.php" :}
```

```
crossdomain::write { "/home/game/crossdomain.xml": }
```

...



Puppet Enterprise

puppet enterprise console Nodes Groups Classes Reports File Search Inventory Search Compliance Live Management fred Help

Background Tasks

✓ All systems go

Nodes

4 Unresponsive

0 Failed

0 Pending

7 Changed

4 Unchanged

0 Unreported

15 All

Add node

Group

default 15

Add group

Class

pe_accounts 0

pe_compliance 0

pe_moolcollective 0

Add class

Nodes

Daily run status

Number and status of runs during the last 30 days:

Nodes

Export nodes as CSV

Node	Latest report	Resources				
		Total	Failed	Pending	Changed	Unchanged
Total		784	0	0	7	777
✓ kant	2012-03-22 17:51 UTC	91	0	0	1	90
✓ hobbes	2012-03-22 17:51 UTC	91	0	0	1	90
✓ locke	2012-03-22 17:50 UTC	91	0	0	1	90
✓ jmontana	2012-03-22 17:50 UTC	91	0	0	1	90
✓ syoung	2012-03-22 17:49 UTC	91	0	0	1	90
✓ trathman	2012-03-22 17:48 UTC	91	0	0	1	90
✓ riott	2012-03-22 17:48 UTC	91	0	0	1	90
✓ barn2	2012-03-22 17:47 UTC	91	0	0	0	91
✓ fjameson	2012-03-22 17:31 UTC	8	0	0	0	8
✓ derrida	2012-03-22 17:31 UTC	8	0	0	0	8
✓ dclarke	2012-03-22 17:31 UTC	8	0	0	0	8
✓ mcrabtree	2012-03-22 00:12 UTC	8	0	0	0	8
✓ jerryrice	2012-03-22 00:12 UTC	8	0	0	0	8
✓ parmenides	2012-03-22 00:11 UTC	8	0	0	0	8
✓ socrates	2012-03-22 00:10 UTC	8	0	0	0	8

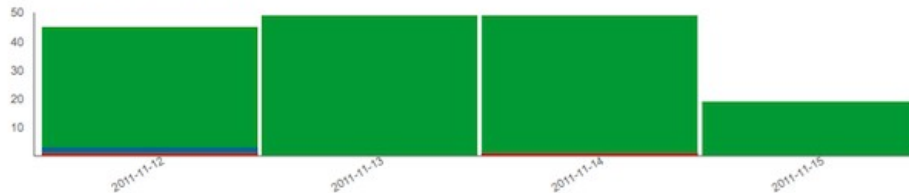
Per page: 20 100 all

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Puppet Enterprise

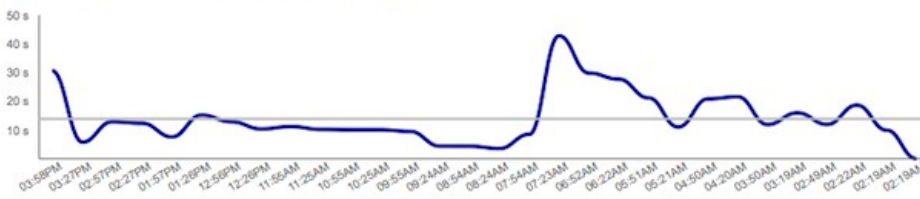
Daily run status

Number and status of runs during the last 30 days:



Run Time

The elapsed time in seconds for each of the last 30 Puppet runs:



Recent reports (162)

	Reported at ↓	Total	Failed	Changed	Unchanged	Pending	Skipped	Failed restarts	Config retrieval	Runtime
✓	2011-11-15 10:11 UTC	44	0	0	44	0	6	0	10.28 s	33.93 s
✓	2011-11-15 09:40 UTC	44	0	0	44	0	6	0	12.96 s	49.13 s
✓	2011-11-15 09:10 UTC	44	0	0	44	0	6	0	3.69 s	37.96 s
✓	2011-11-15 08:39 UTC	44	0	0	44	0	6	0	8.91 s	45.18 s
✓	2011-11-15 08:08 UTC	44	0	0	44	0	6	0	4.54 s	41.42 s
✓	2011-11-15 07:37 UTC	44	0	0	44	0	6	0	20.21 s	47.72 s
✓	2011-11-15 07:06 UTC	44	0	0	44	0	6	0	7.67 s	33.59 s
✓	2011-11-15 06:35 UTC	44	0	0	44	0	6	0	7.52 s	38.60 s
✓	2011-11-15 06:05 UTC	44	0	0	44	0	6	0	10.06 s	23.20 s
✓	2011-11-15 05:35 UTC	44	0	0	44	0	6	0	2.31 s	2.89 s

More »

Edit node group

Name

default

Parameters

Key	Value
key	value

Add parameter

Classes

pe_accounts x pe_compliance x pe_mcollective x core

core_permissions

Nodes

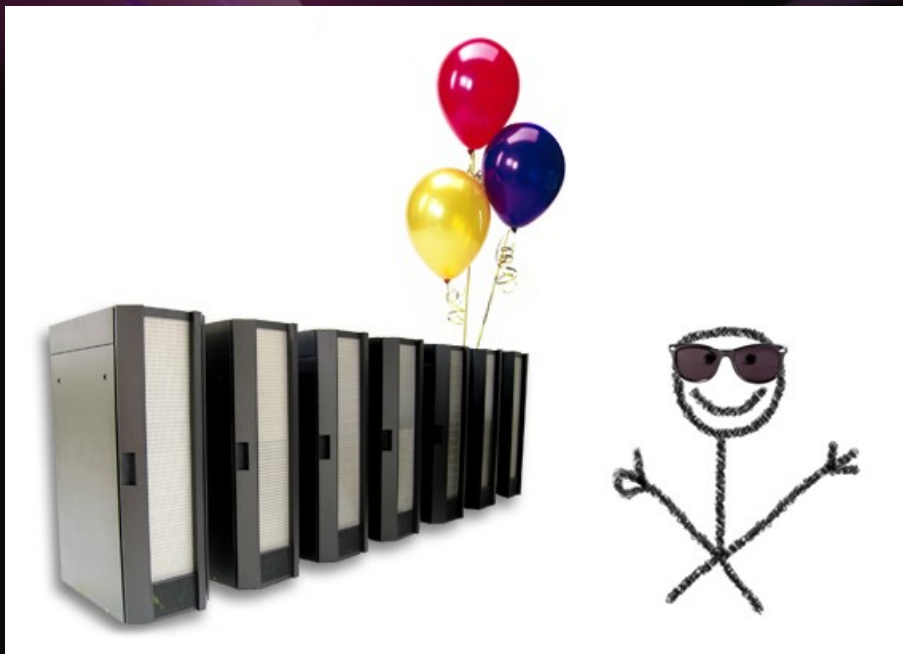
master.example.com x agent1.example.com x

Update or Cancel



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официальный сайт puppet: <http://puppetlabs.com/>



Puppet — это круто :),
попробуйте!



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