Puppet @ PIC

Bruno Rodríguez

Legacy: from puppet 2 to puppet 5

- We have used Puppet at PIC for a long time.
  - this is the second presentation PIC makes about puppet...
  - ... The first one was in 2010, so quite a lot of things have changed
- From puppet 2 to 3 we made only minor code changes
  - Mainly started to use git (gitolite) instead of SVN
  - Still using local scripts/hooks (r10k didn't fit in our old code)
- Puppet 4 involved a total redesign that **took a lot of time**
  - thinking a hiera schema was difficult because of the already working code
  - puppet users also manage other (critical) services
    - migrating puppet code was a secondary task
  - puppet is considered "a configuration tool"
    - reluctance to use Puppet forge modules: sensation of losing control

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The actual picture

- Two servers, puppet 4 and puppet 5
  - The code is mirrored between both, it's 100% compatible
  - Physical servers, 32 GB RAM, 2x1Gbps (active/passive)
  - ~720 clients: WNs, UIs, dcache, voms, squids... Mostly everything but oVirt hypervisors
- Environments managed with r10k and g10k
  - Puppetfile has local modules, puppet forge modules and some forks of them (in github)
  - g10k is way faster because of go instead of ruby and module caching
- Local repositories managed with gitolite
  - Lightweight, simple, relatively easy to configure
  - Allows user/permission management, local hooks, mirroring
  - can be interfaced via httpd server (with openldap integration)

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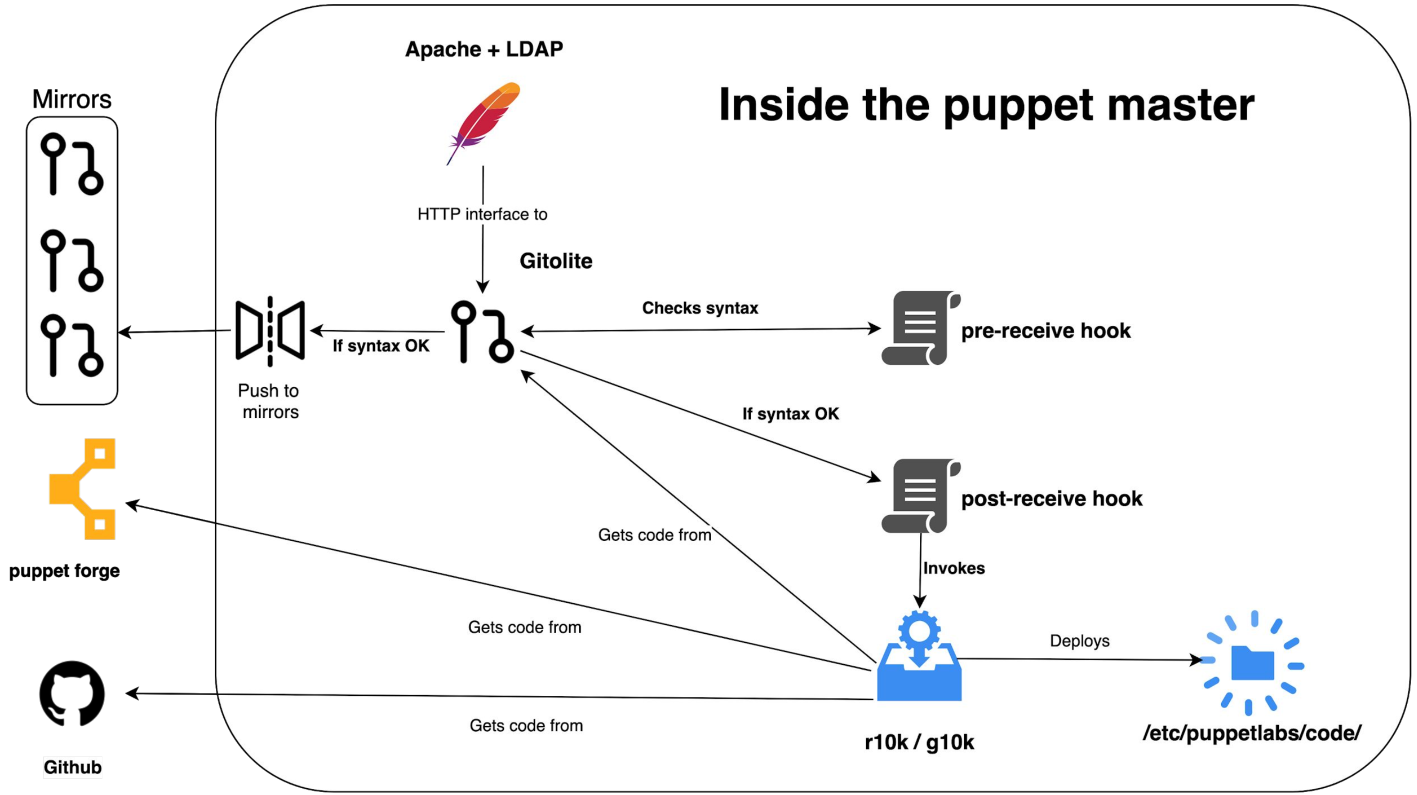
Puppet code deployment



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My (our) puppet philosophy

This points helped keeping (part of) my sanity while dealing with puppet code

- Create custom facts that can be applied to your hierarchy
  - A few Ruby lines can solve a problem requiring lots of puppet code
- If possible, use external code (approved by puppet)
  - Better and more scalable than the "simple code I want to do just for this"
- Declare as much as possible parameters via hiera
  - YAML is easier to read and puppet code errors lead to bigger problems
  - We have "wrapper" classes to call `create_resources` defines from external modules
- KISS (keep it simple!)
  - Sometimes a new cool feature only adds unneeded complexity

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A point about security

In our approach, sensitive data is only as safe as the access to the git repo where we keep our yaml files

We use eyaml with the GPG backend to encrypt our values. Using GPG was a legacy decision that works OK for us

- GPG is well known and defaultly available for most distros
- No need to install either ruby and the ruby gem on your workstation
- That means "your workmates stations" too
  - I won't blame anyone that does not want to install ruby + gems just to encrypt values

Wrappers

A small example of a wrapping class (vcsrepo gets a remote repository)

```
class wrapper::vcsrepo (
   Hash $vcsrepos = {},
) {
     create_resources('vcsrepo', $vcsrepos)
}
```

This would be called in hiera like

```
classes:
  # ...
  - wrapper::vcsrepo

wrapper::vcsrepo::vcsrepos:
  '/path/where/I/want/the/repo':
     source: 'ssh://username@example.com/repo.git'
     user: 'mrajoy' # uses mrajoy's $HOME/.ssh setup
```

Hiera schema: pic_common fact

This ruby code will set the fact `pic_common['service']` for a `kafka server`

```
require 'facter'
require 'socket'

hostname = Socket::gethostname

Facter.add(:pic_common) do
setcode do
  case
     when match=hostname.match(/^kafka(\d+)\.pic\.es$/)
          pic_common['service'] = 'kafka'
          pic_common['num_server'] = match.captures[0]
          pic_common['collectd']['cluster'] = 'Kafka'
          ....
  end
  pic_common
end
end
```

Service name

01 for kafka01.pic.es, 02 for kafka02.pic.es, etc.
Useful to define server id in zookeeper

Other service information (monitoring, collectd, etc)

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Hiera schema: hiera.yaml

We use the previous fact in the /etc/puppetlabs/puppet/hiera.yaml

```
version: 5
defaults:
      datadir: "/etc/puppetlabs/code/environments/%{environment}/hieradata"
      lookup_key: eyaml_lookup_key
      options:
        gpg_gnupghome: '/etc/puppetlabs/puppet/gpg_keys'
        encrypt_method: 'gpg'

:hierarchy:
   - name: "Per node data"
       path: "nodes/%{::trusted.certname}.yaml"
   - name: "Per service"
       path: "services/%{::pic_common.service}/defaults.yaml"
   # ...
   - name: "Last resort values"
       path: "common.yaml"
```

eyaml GPG config

Configuration per node name

Service default configuration

Default common configuration

Possible EGI improvements

As we said, we have been using Puppet for a long time now but I'm afraid that YAIM is still our "elephant in the room"

- What are YAIM future plans?
- We are not solving the problem in a very different way than 10 years ago
- I only found a puppet-emi module (thank you, Alessandro) made around 7 years ago