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libral

a systems management API for Linux

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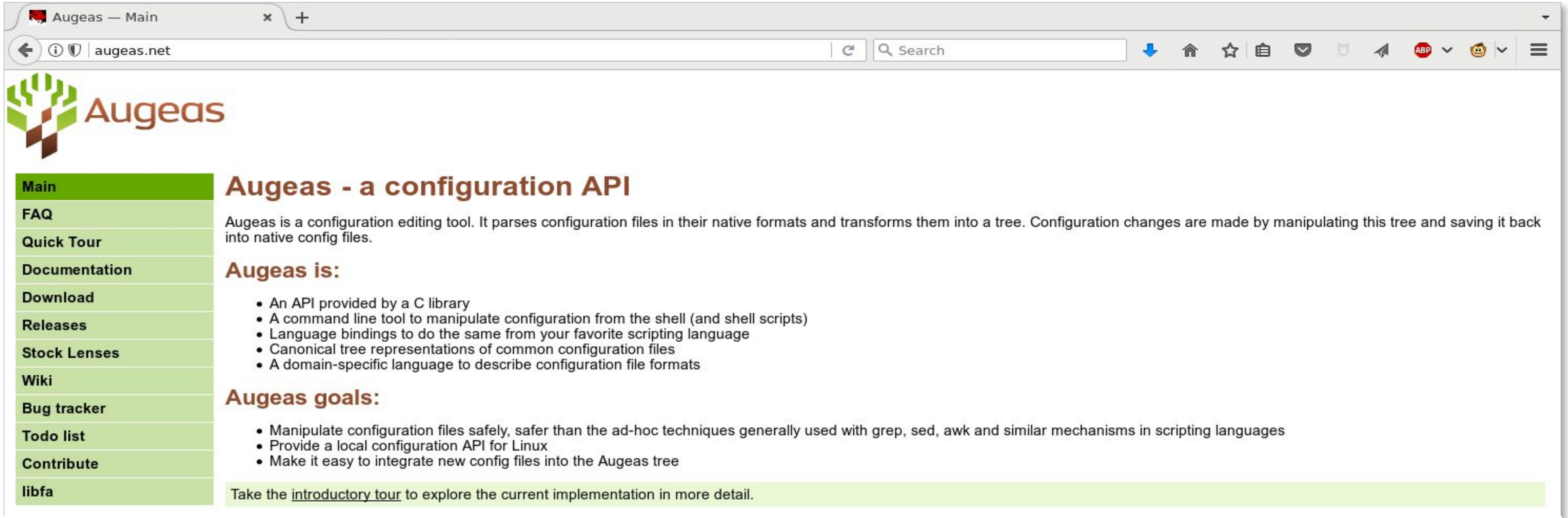
to better software.



Augeas - a configuration API

Augeas is a configuration editing tool. It parses configuration files in their native formats and transforms them into a tree. Configuration changes are made by manipulating this tree and saving it back into native config files.

Augeas is:

- An API provided by a C library
- A command line tool to manipulate configuration from the shell (and shell scripts)
- Language bindings to do the same from your favorite scripting language
- Canonical tree representations of common configuration files
- A domain-specific language to describe configuration file formats

Augeas goals:

- Manipulate configuration files safely, safer than the ad-hoc techniques generally used with grep, sed, awk and similar mechanisms in scripting languages
- Provide a local configuration API for Linux
- Make it easy to integrate new config files into the Augeas tree

Take the introductory tour to explore the current implementation in more detail.

http://augeas.net/

The trouble with management

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```
$ usermod -s /sbin/nologin app
$ usermod -s /sbin/nologin app
usermod: user 'app' does not exist
```

```
$ usermod -s /sbin/nologin app
usermod: user 'app' does not exist

$ grep -q app /etc/passwd && \
  usermod -s /sbin/nologin app || \
  useradd -u 72 -g 72 -s /sbin/nologin \
    -M -r -d / app
```

Need to do this for every sort of resource

(user, group, package, service, firewall rule, …)

What if all you need is some insight ?

Insight is its own use case

- regular audits
- verify that what you built is what you meant
- inspect running containers
- ask adhoc questions of your infrastructure

```
$ grep app /etc/passwd | \
    cut -d ':' -f 7
/sbin/nologin
```

```
$ grep app /etc/passwd | \
    cut -d ':' -f 7
/bin/bash
/sbin/nologin
/sbin/nologin
```

Adhoc scripting full of pitfalls

Is "learn this big config management system" the best we can do ?

Anatomy of a configuration management system

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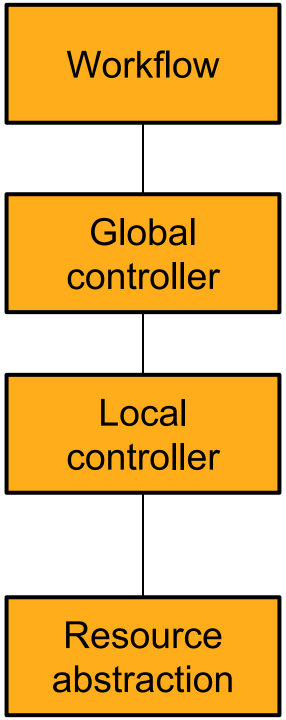
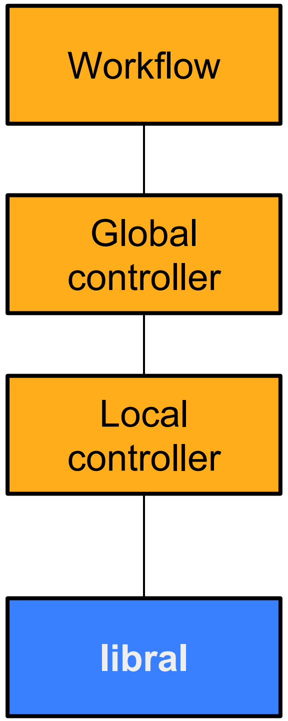
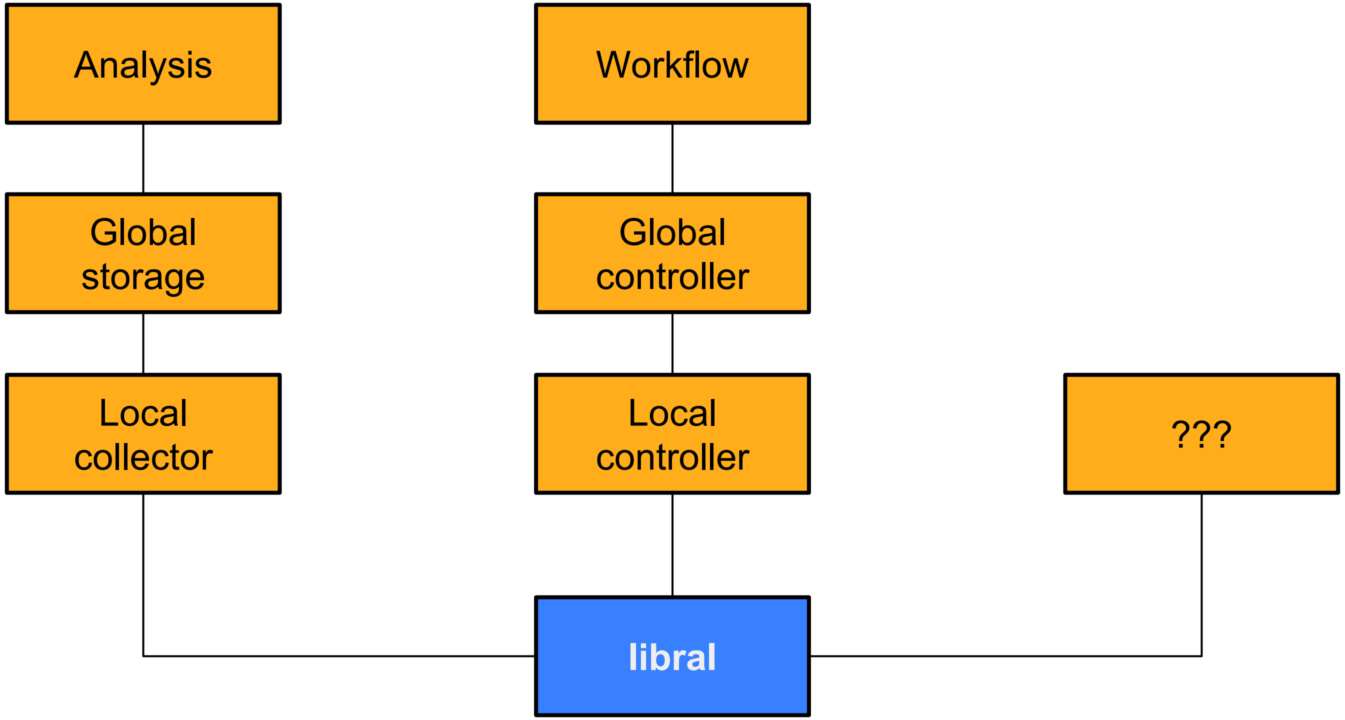

Workflow
Global controller
Local controller
Resource abstraction


Workflow
Global controller
Local controller
libral


Analysis
Workflow
Global storage
Global controller
Local collector
Local controller
???
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What makes a good management API ?

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Desired state

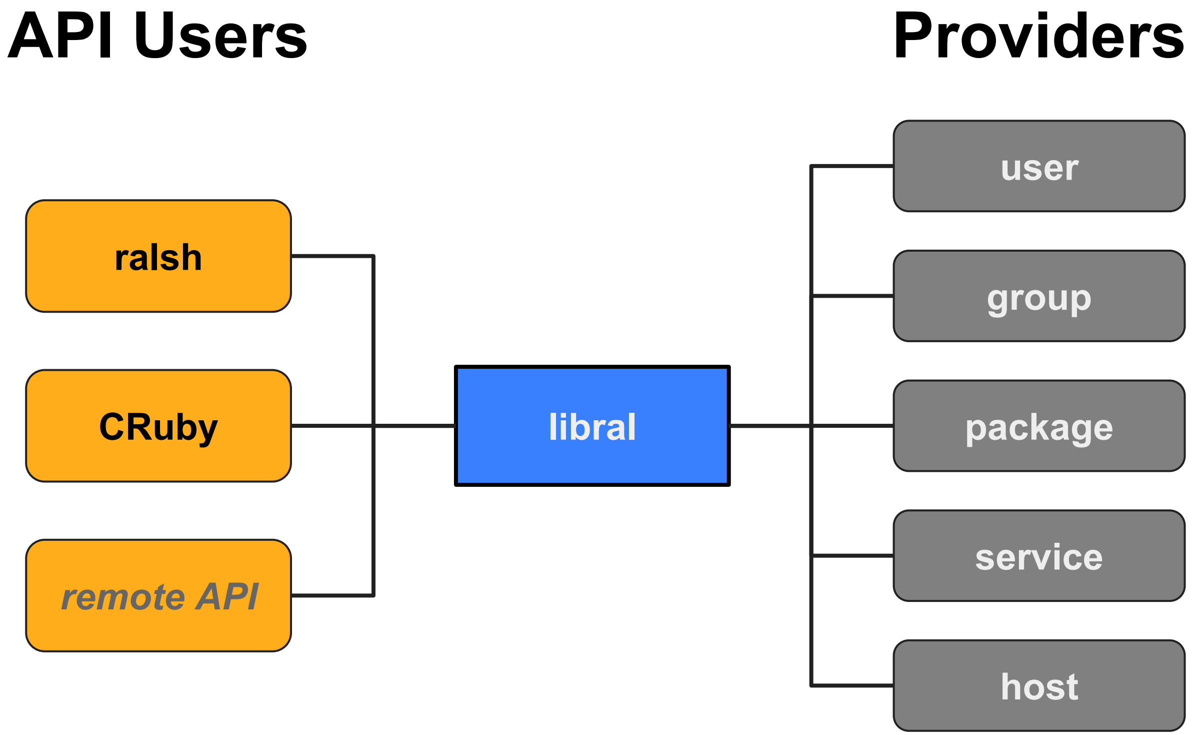
(idempotency)

Bidirectional

(change & insight)

Light-weight abstractions

Simple to extend


API Users
Providers
ralsh
CRuby
remote API
libral
user
group
package
service
host

But what about … ?

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What about CIM ?

What about OpenLMI ?

What about `$cm_system` ?

Demo

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Writing providers

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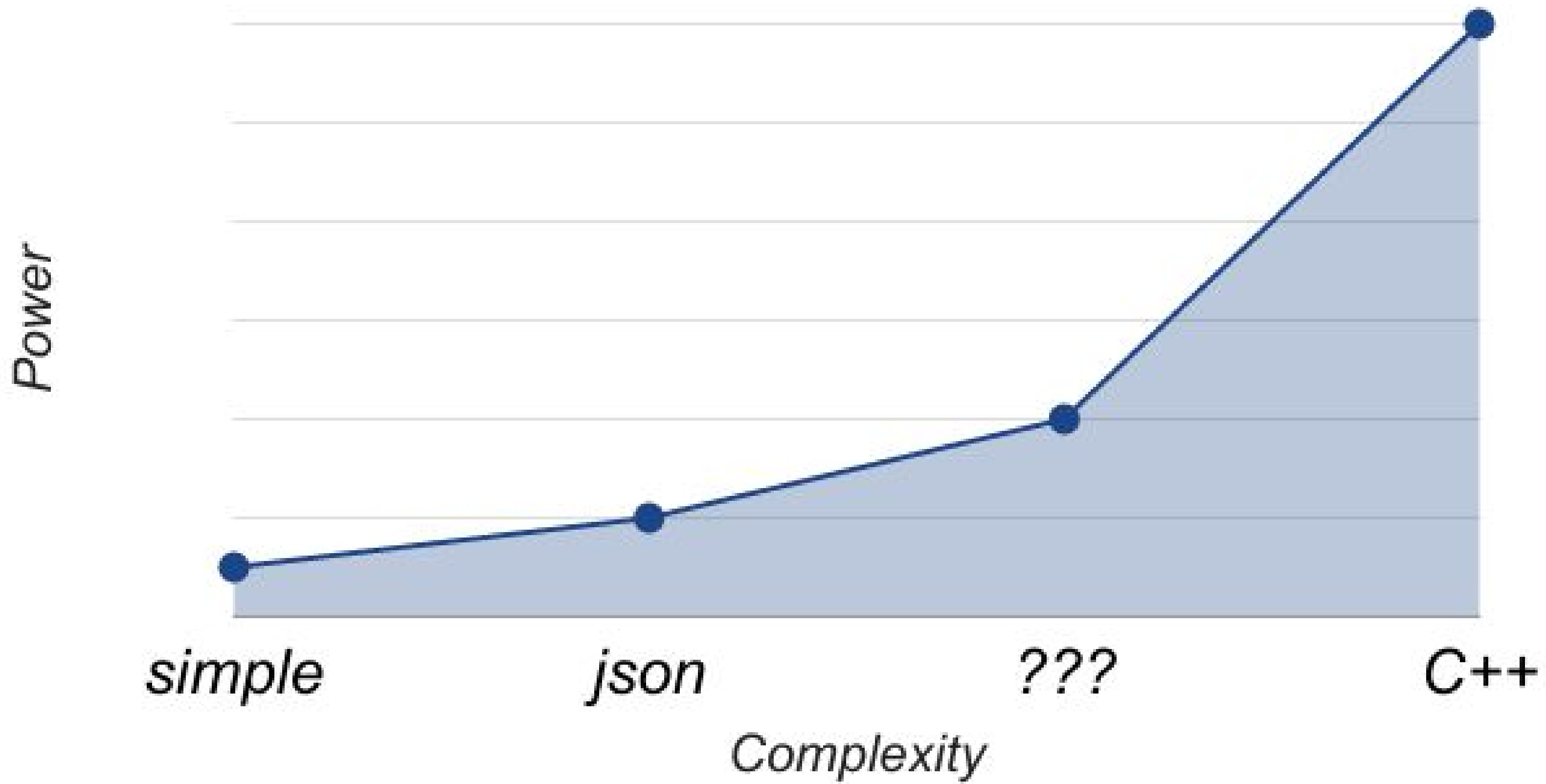
1. Pick scripting language and calling convention
2. Write standalone script
    a. Start with listing resources
    b. Get update working
3. Try out/integrate with ralsh

API complexity vs power



Choosing a language

- Use what you are familiar with
- Keep it simple
    - bash
    - whatever can be expected to be there
    - mRuby

High-level API

```
provider.get(names) → list[resource]

provider.set(is, should) → list[change]
```

```
# 'Simple' calling convention

$ systemd.prov ral_action=describe
  ↳ some yaml

$ systemd.prov ral_action=list
  ↳ all resources

$ systemd.prov ral_action=find name=<name>
  ↳ one resource
```

```
# 'Simple' calling convention

$ systemd.prov ral_action=update \
    attr1=value1                 \
    attr2=value2
  ↳ changes performed
```

```yaml
---
provider:
  type: service
  invoke: simple
  actions: [list,find,update]
  suitable: ${suitable}
  attributes:
    name:
      type: string
    ensure:
      type: enum[running, stopped]
    enable:
      type: enum[true, false, mask]
```

```yaml
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provider:
  type: service
  invoke: simple
  actions: [list,find,update]
  suitable: ${suitable}
  attributes:
    name:
      type: string
    ensure:
      type: enum[running, stopped]
    enable:
      type: enum[true, false, mask]
```

```
# systemd provider: 'list' all known services
list() {
    echo '# simple'
    join -j 1 -o 1.1,1.2,2.3 \
        <(systemctl list-unit-files ...) \
        <(systemctl list-units --type service ...) \
   | while read svc enable ensure
    do
        echo "name: $svc"
        echo "ensure: $ensure"
        echo "enable: $enable"
    done
}
```

```
# systemd provider: 'list' all known services
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        echo "ensure: $ensure"
        echo "enable: $enable"
    done
}
```

What now ?

Firm up interfaces/calling conventions

More providers

Distribution

Desired-state bidirectional API

join the fun

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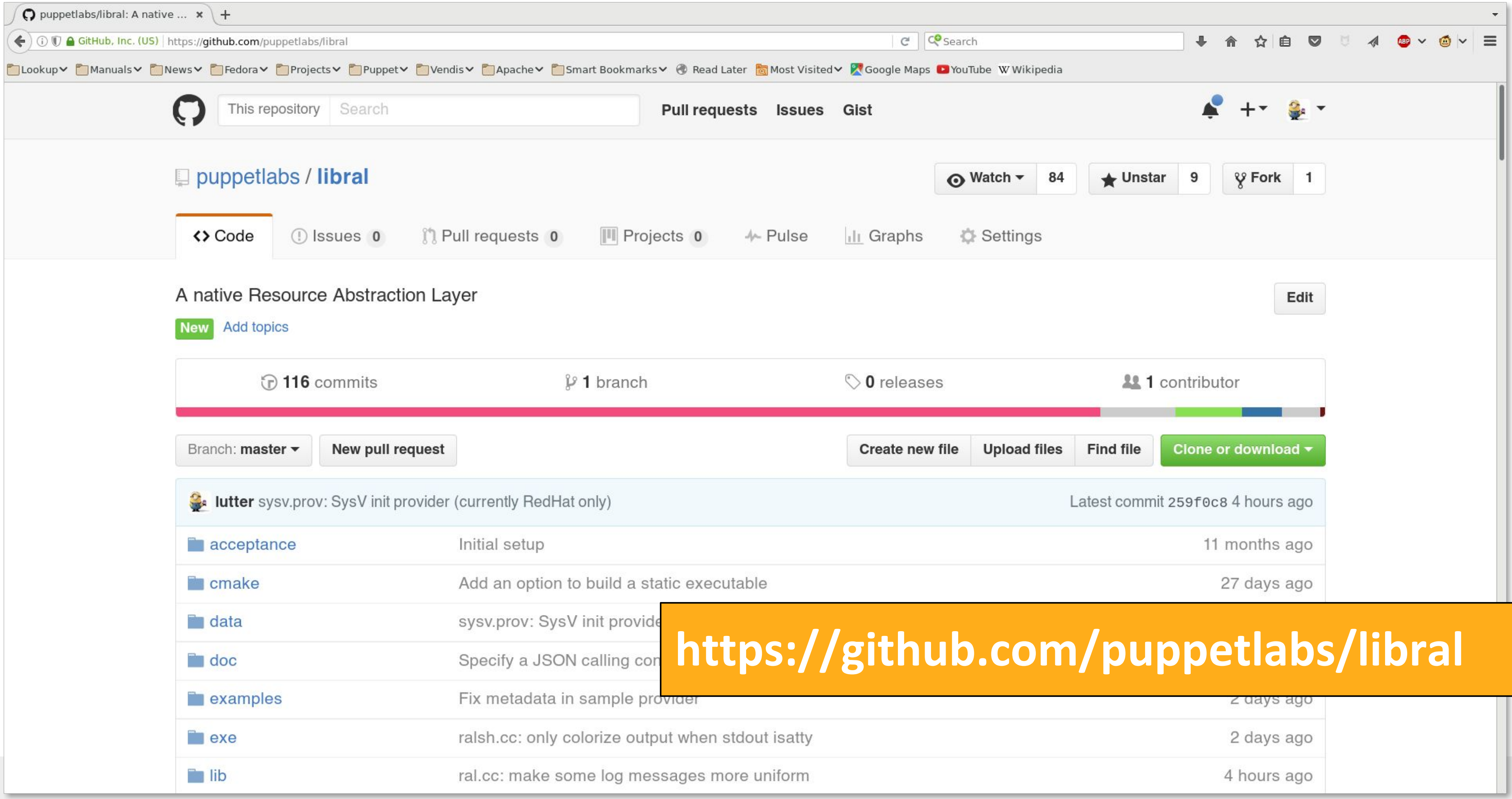

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A native Resource Abstraction Layer

116 commits · 1 branch · 0 releases · 1 contributor

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lutter sysv.prov: SysV init provider (currently RedHat only) — Latest commit 259f0c8 4 hours ago

acceptance	Initial setup	11 months ago
cmake	Add an option to build a static executable	27 days ago
data	sysv.prov: SysV init provide	
doc	Specify a JSON calling con	
examples	Fix metadata in sample provider	2 days ago
exe	ralsh.cc: only colorize output when stdout isatty	2 days ago
lib	ral.cc: make some log messages more uniform	4 hours ago

https://github.com/puppetlabs/libral

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