Linux Cluster in Theorie und Praxis

Konfigurationsmanagement Chef - Eine praktische Einführung

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Was ist Konfigurationsmanagement?

- Konfigurationsmanagement
- Beispiele: Chef, Puppet, Salt, Ansible, CFEngine

Was ist Chef/Puppet?

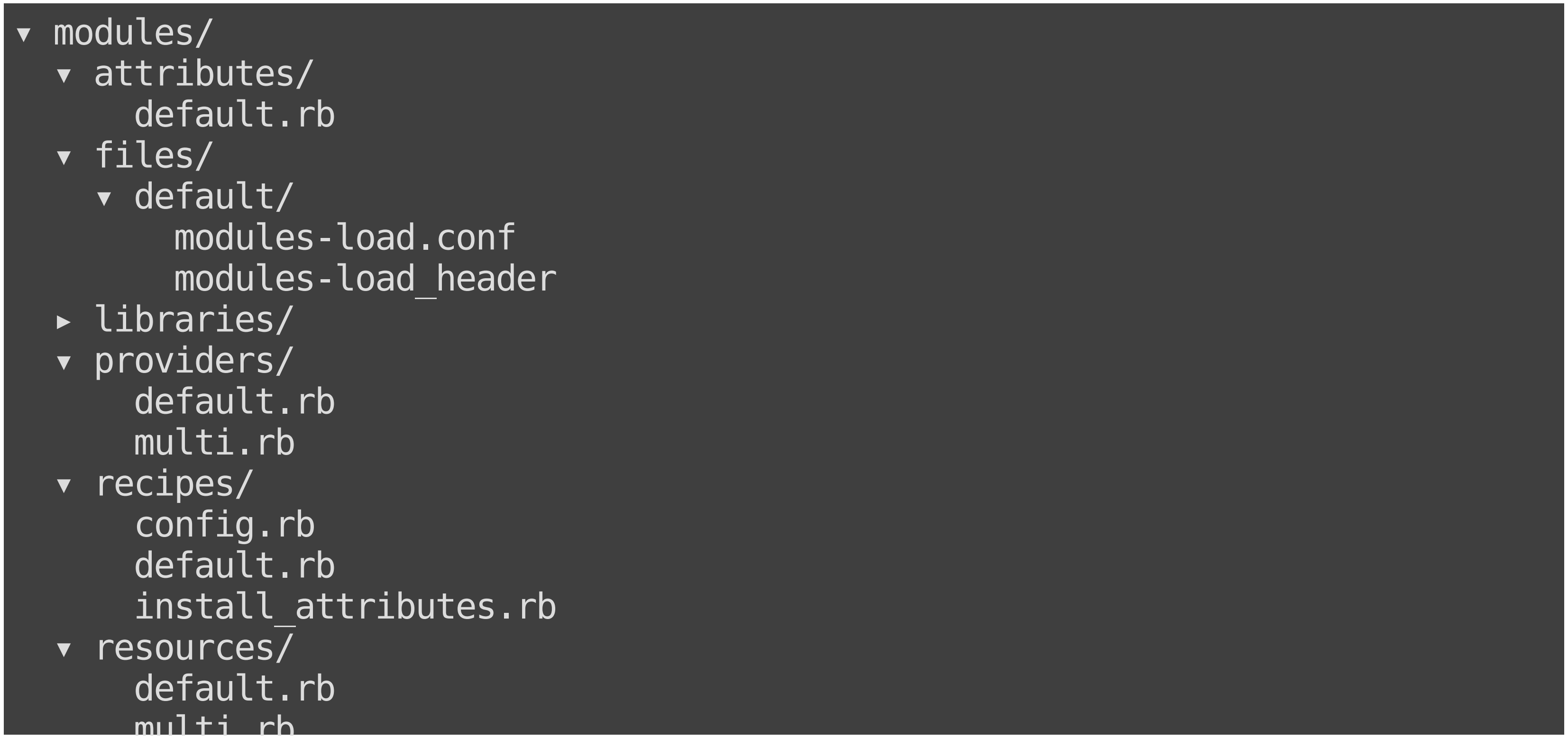
Kriterium	Chef	Puppet
Programmiersprache	Ruby	Ruby
Konfigurationsprache	Ruby	eigene DSL (Ruby)
Paradigma	Prozedural	Model-Driven
Community	11,270 Repositories auf Github[1]	13.020 Repositories auf Github[2]
kommerzieller Support	✓	✓

Einführung in Chef

Chef-Einführung: Grundbegriffe

- Node, z.B.: node100.tu-dresden.de
- Role, z.B.: headnode, ldap
- Cookbook, z.B. slurm
- Recipe, slurm::slurmctld oder slurm::slurmd
- Resource, z.B.: package["slurm"], template["/etc/slurm.conf"], service["slurmctld"]

Chef-Einführung: Aufbau eines Cookbook



```
▾ modules/
  ▾ attributes/
      default.rb
  ▾ files/
    ▾ default/
        modules-load.conf
        modules-load_header
  ▸ libraries/
  ▾ providers/
      default.rb
      multi.rb
  ▾ recipes/
      config.rb
      default.rb
      install_attributes.rb
  ▾ resources/
      default.rb
      multi.rb
```

Chef-Einführung: Code-Beispiel

```
# attributes/default.rb
default.ntp.server = "de.pool.ntp.org"
default.ntp.subnets = ["::1", "127.0.0.1"]
```

```
# recipes/default.rb
package 'ntp'

template "/etc/ntp.conf" do
  owner "root"
  group "root"
  source "ntp.conf.erb"
  notifies :restart, "service[ntp]"
end

service "ntp" do
  action [:enable, :start]
end
```

Chef-Einführung: Code-Beispiel

```
# recipes/default.rb
package 'ntp'

template "/etc/ntp.conf" do
  owner "root"
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  source "ntp.conf.erb"
  notifies :restart, "service[ntp]"
end

service "ntp" do
  action [:enable, :start]
end
```
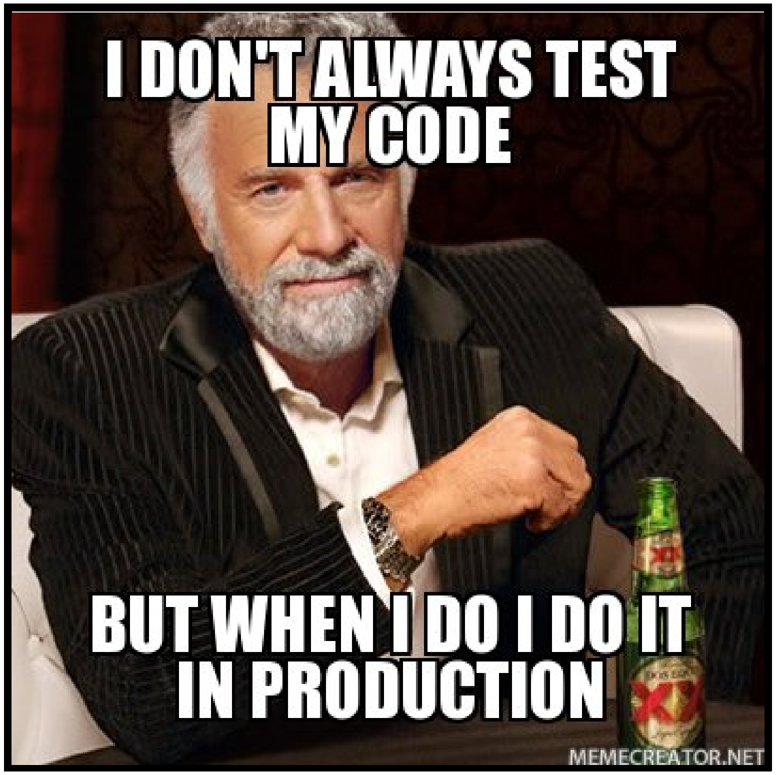

```
# templates/default/ntp.conf.erb
# Crontab for <%= @node.name %> managed by Chef. Changes will be overwritten.
server <%= @node.ntp.server %>

restrict default noquery nopeer
<% @node.ntp.subnets.each do |net| -%>
  restrict <%= net %>
<% end -%>

driftfile /var/lib/ntp/ntp.drift
```

Tests


I DON'T ALWAYS TEST
MY CODE
BUT WHEN I DO I DO IT
IN PRODUCTION
MEMECREATOR.NET

Tests: Chef Spec

```ruby
# spec/cookbooks/ntp_spec.rb
require_relative '../spec_helper'

describe 'ntp::default' do
  let(:chef_run) do
    ChefSpec::Runner.new do |node|
      subnets = ["::1", "127.0.0.1",
        "172.28.128.0 mask 255.255.255.0 nomodify notrap nopeer"]
      node.set["ntp"]["subnets"] = subnets
    end.converge(described_recipe)
  end

  it "should setup ntp" do
    chef_run.should install_package("ntp")
    chef_run.should render_file("/etc/ntp.conf").with_content("172.28.128.0")
  end
end
```

Tests: Minitest Chef Handler

```
# ntp/files/default/test/default_test.rb
require 'minitest/spec'

describe_recipe 'ntp::default' do
  it "starts the ntp daemon" do
    assert_sh("service ntp status")
  end
  it "should sync the time" do
    assert_sh("ntpq -p")
  end
end
```

Demo