

Infrastructure as Code

Application Server Management using Chef



Extend reach. Increase views.
Grow subscribers



Craig

Co-Founder

craig@crowdscriber.com

@craiger



Sean

Co-Founder

sean@crowdscriber.com

Why IaC?

- Configuring Application Servers is
 - Redundant

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- Documentation

Why IaC?

- Configuring Application Servers is
 - Redundant
 - Time consuming
 - Error prone
- Application Server Configuration
 - Changes over time
- Documentation
 - Goes stale

Chef


- Platform consisting of



chef-server

Chef

- Platform consisting of
 - Server



chef-server

Chef

chef-server

- Platform consisting of
 - Server
 - Client

chef-client

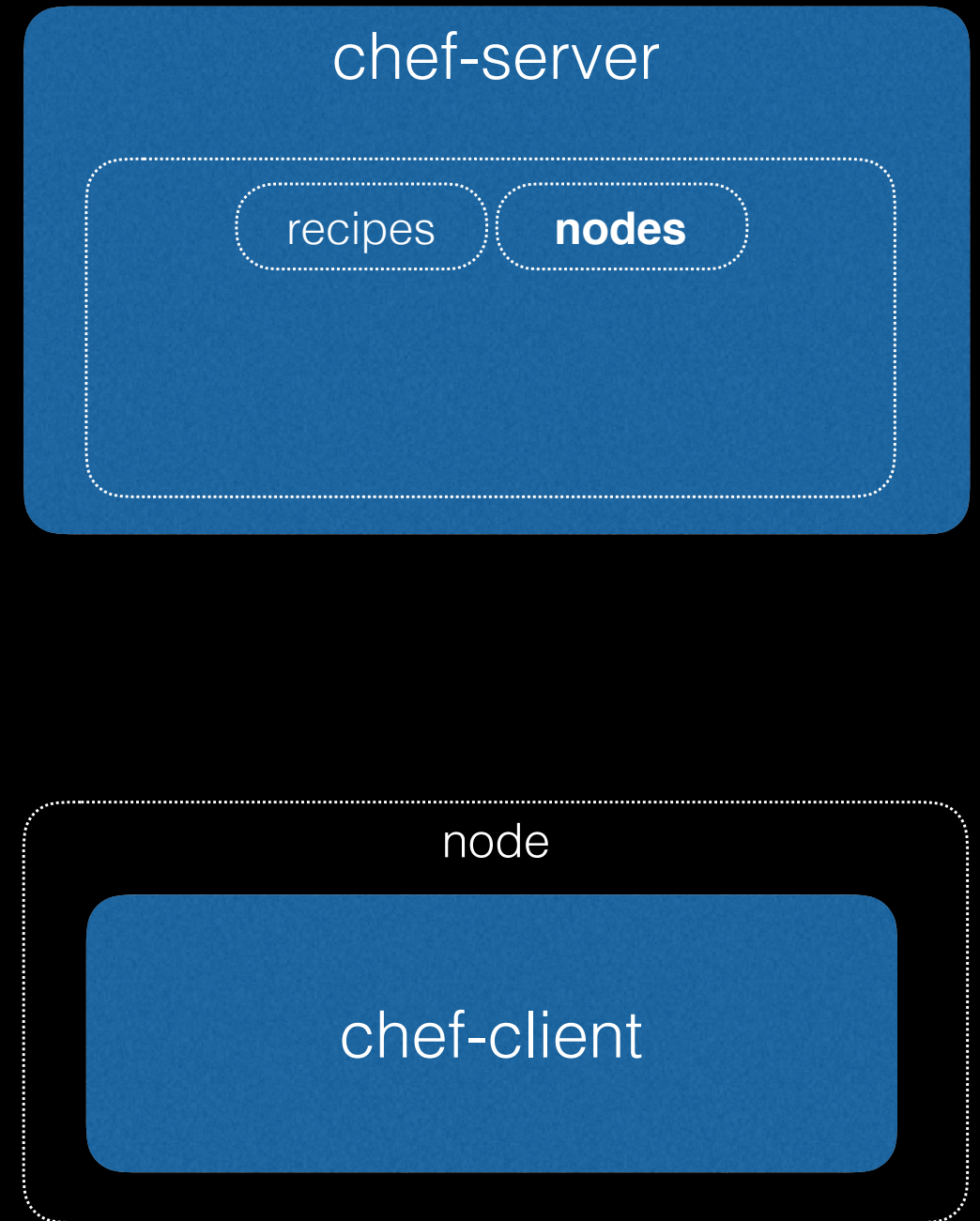
Chef

- Platform consisting of
 - Server
 - Client
 - Recipes



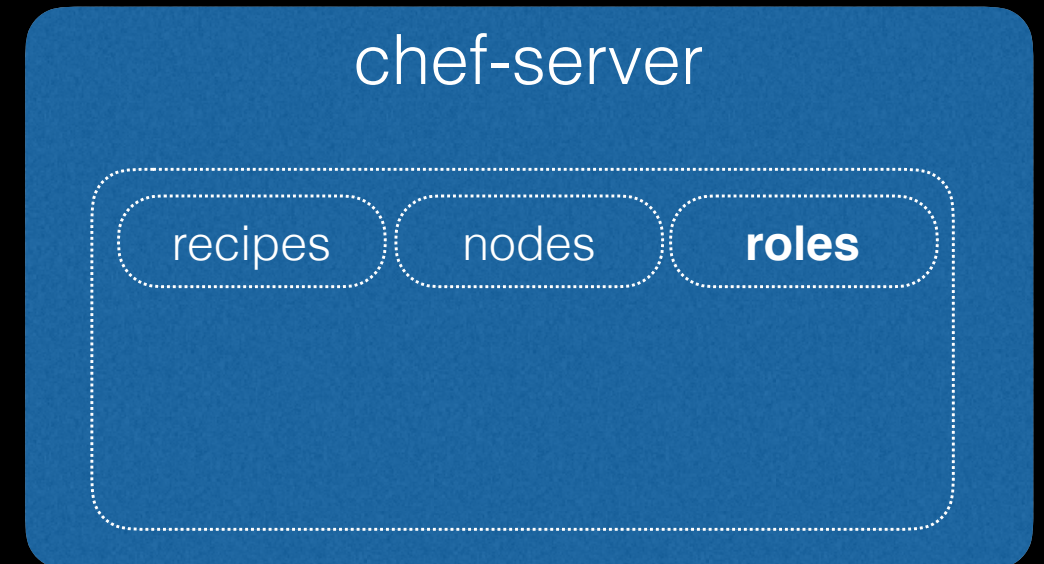
Chef

- Platform consisting of
 - Server
 - Client
 - Recipes
 - Nodes



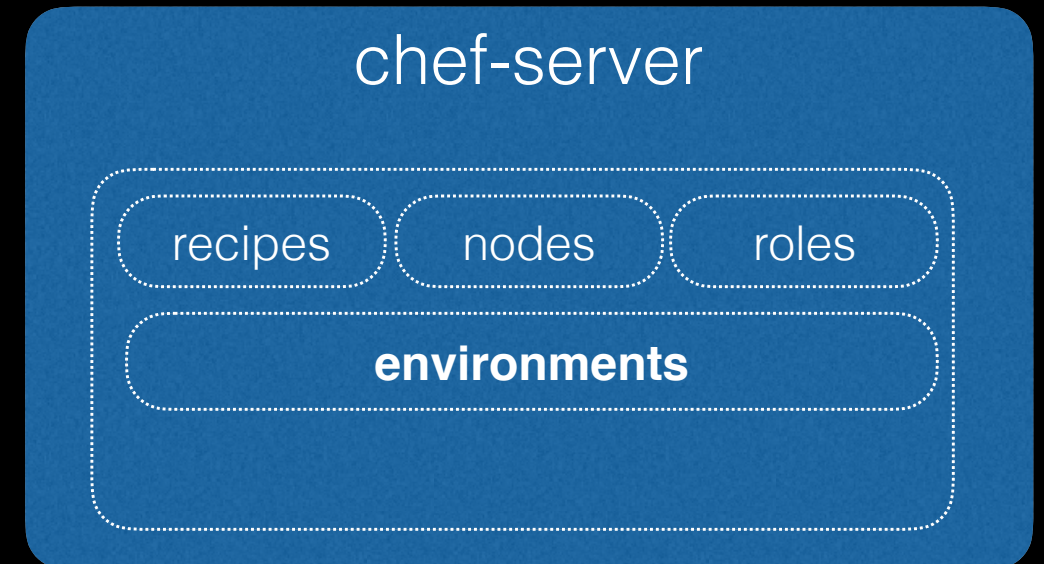
Chef

- Platform consisting of
 - Server
 - Client
 - Recipes
 - Nodes
 - Roles



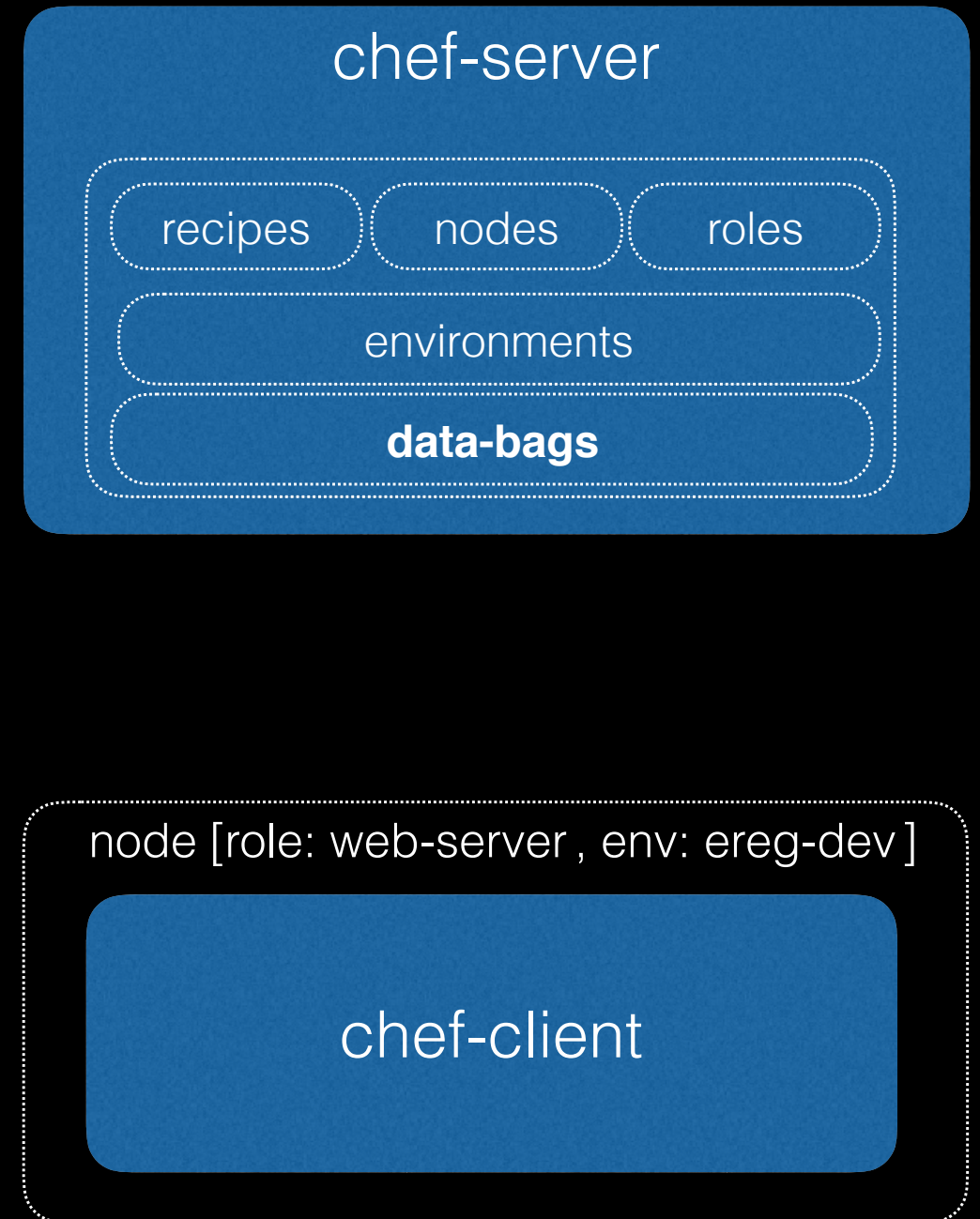
Chef

- Platform consisting of
 - Server
 - Client
 - Recipes
 - Nodes
 - Roles
 - Environments



Chef

- Platform consisting of
 - Server
 - Client
 - Recipes
 - Nodes
 - Roles
 - Environments
 - Data Bags



Node Definition

- Identified by FQDN
- node-specific attributes/overrides
- run-list - recipes/roles
- environment

Node

nodes/lukdev01.internal.corp.json

```
{
  "name": "lukdev01.internal.corp",
  "chef_environment": "myapp-dev",
  "normal": {
    "app": {
      "version": "1.0-SNAPSHOT"
    }
  },
  "run_list": [
    "role[tomcat-server]",
    "role[tomcat-ereg]"
  ]
}
```

chef-server

recipes

nodes

roles

environments

data-bags

Role

- Defines a set of **recipes** to run on a node along with their supporting **attributes**
- e.g. role: tomcat-server

Role

roles/tomcat-server.json

```
{
  "name": "tomcat-server",
  "description": "Apache Tomcat Server",
  "default_attributes": {
    "java_se": {
      "java_home": "C:\\jdk\\jdk1.8.0",
      "win_jre_home": "C:\\jdk\\jdk1.8.0\\jre",
      "win_addlocal": "ToolsFeature",
      "tomcat_home": "C:\\apache-tomcat..."
    }
  },
  "run_list": [
    "recipe[chocolatey::default]",
    "recipe[tpmb::tomcat]"
  ]
}
```

chef-server

recipes

nodes

roles

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data-bags

Environment

- Primarily used to provide a set of specialized **attributes** specific to an environment
- Can also be used for pinning **cookbook** versions

Environment

environments/myapp-dev.json

```
{
  "name": "myapp-dev",
  "description": "Our Application in Dev",
  "cookbook_versions": {
  },
  "override_attributes": {
    "app": {
      "env": "dev",
      "version": "1.0-SNAPSHOT",
      "certs": {
        "store_pwd" : "changeit",
        "ssl": {
          "passphrase": "123456789",
          "key_url" : "http://../lukedv01.key.pem",
          "cert_url" : "http://../lukedv01.cert.pem"
        }
      },
      "files" : {
        "tpr-ws": {
          "descr": ".NET Webservice certificates",
          "store": "myapp.truststore",
          "url" : "http://../dotnet-ws.cer"
        }
      },
      :
      :
    }
  }
```

chef-server

recipes

nodes

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data-bags

Data Bags

- Attributes used across Nodes/Environments/Roles
- Can be encrypted (shared key)
 - **Chef Vault** a better solution

Data Bag

data_bags/tprmb-servers/artifactory.json

```
{  
  "id" : "artifactory",  
  "url": "http://artifactory.internal.corp/repo",  
  "snapshots": "libs-snapshot-local",  
  "releases" : "libs-release-local",  
  "releases-ext": "libs-release-ext",  
  "bin"      : "app-bin-repo"  
}
```

chef-server

recipes

nodes

roles

environments

data-bags

Recipes

- Orchestrates **resources**

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- Stored in **cookbooks**

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Recipes

- Orchestrates **resources**
- Stored in **cookbooks**
- Idempotent (**should be**)
- References attributes from:
 - roles, environment, cookbooks, data bags

Resources

- Code that manages a *resource*

Resources

- Code that manages a *resource*
- A *resource* is a
 - file
 - package
 - service
 - user
 - etc...

ChefDK

<https://downloads.chef.io/chefdk>

ChefDK

<https://downloads.chef.io/chefdk>

- Berkshelf

ChefDK

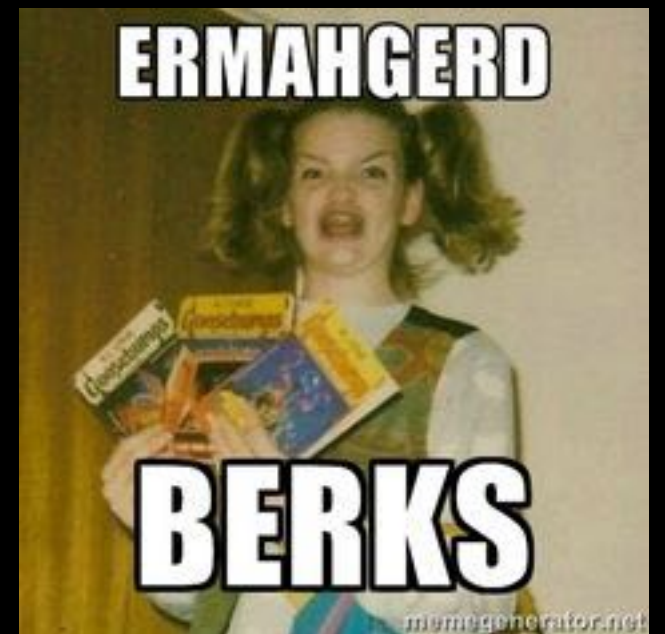
<https://downloads.chef.io/chefdk>

- Berkshelf
- Test Kitchen

ChefDK

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- Berkshelf
- Test Kitchen
- knife



Chef Supermarket

supermarket.chef.io

The screenshot shows a web browser window with the address bar displaying `https://supermarket.chef.io/cookbooks?utf8=✓&q=nginx&platforms%5B%5D=`. The page features a navigation bar with the Chef Supermarket logo, links for COOKBOOKS, TOOLS & PLUGINS, and MORE INFO, and buttons for CREATE ACCOUNT and SIGN IN. A search bar contains the text 'nginx' and a 'GO' button. Below the search bar, a dropdown menu shows 'Cookbooks' and 'Advanced Options'. The main content area displays '33 Cookbooks' with an RSS feed icon. A 'Sort by' dropdown is set to 'Most Followed'. The first result is for the 'nginx' cookbook, version 7.0.0, updated on September 19, 2017. The description states 'Installs and configures nginx' and shows a code snippet: `cookbook 'nginx', '~> 7.0.0'`. The supported platforms are listed as Ubuntu, Debian, CentOS, Fedora, RHEL, SUSE, OpenSUSE, Oracle Linux, CentOS Stream, Rocky Linux, AlmaLinux, and Fedora Silverblue. The cookbook has 698 followers and a 'Follow' button.

Cookbooks - Chef Supermarket

Secure | `https://supermarket.chef.io/cookbooks?utf8=✓&q=nginx&platforms%5B%5D=`

Cengage to-read

CHEF SUPERMARKET COOKBOOKS TOOLS & PLUGINS MORE INFO CREATE ACCOUNT SIGN IN

Cookbooks

Advanced Options

33 Cookbooks RSS Sort by

nginx 7.0.0 Updated September 19, 2017

Installs and configures nginx

```
cookbook 'nginx', '~> 7.0.0'
```

SUPPORTED PLATFORMS

698 FOLLOWERS

Example

Install the ***Apache Tomcat*** application server on Windows using recipes & resources demonstrating ***knife***, ***berks*** and ***chef-client***

Example

recipes, resources, knife



Chef Server



Chef Client



ChefDK



slack.prdcdeliver.com



[@craiger](https://twitter.com/craiger)



[http://github.com/
ctataryn/deliver2017](http://github.com/ctataryn/deliver2017)