

Infrastructure as Code

Application Server Management using Chef

crowdscrisber

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Extend reach. Increase views.
Grow subscribers



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Why IaC?

- Configuring Application Servers is
 - Redundant

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 - Changes over time
- 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

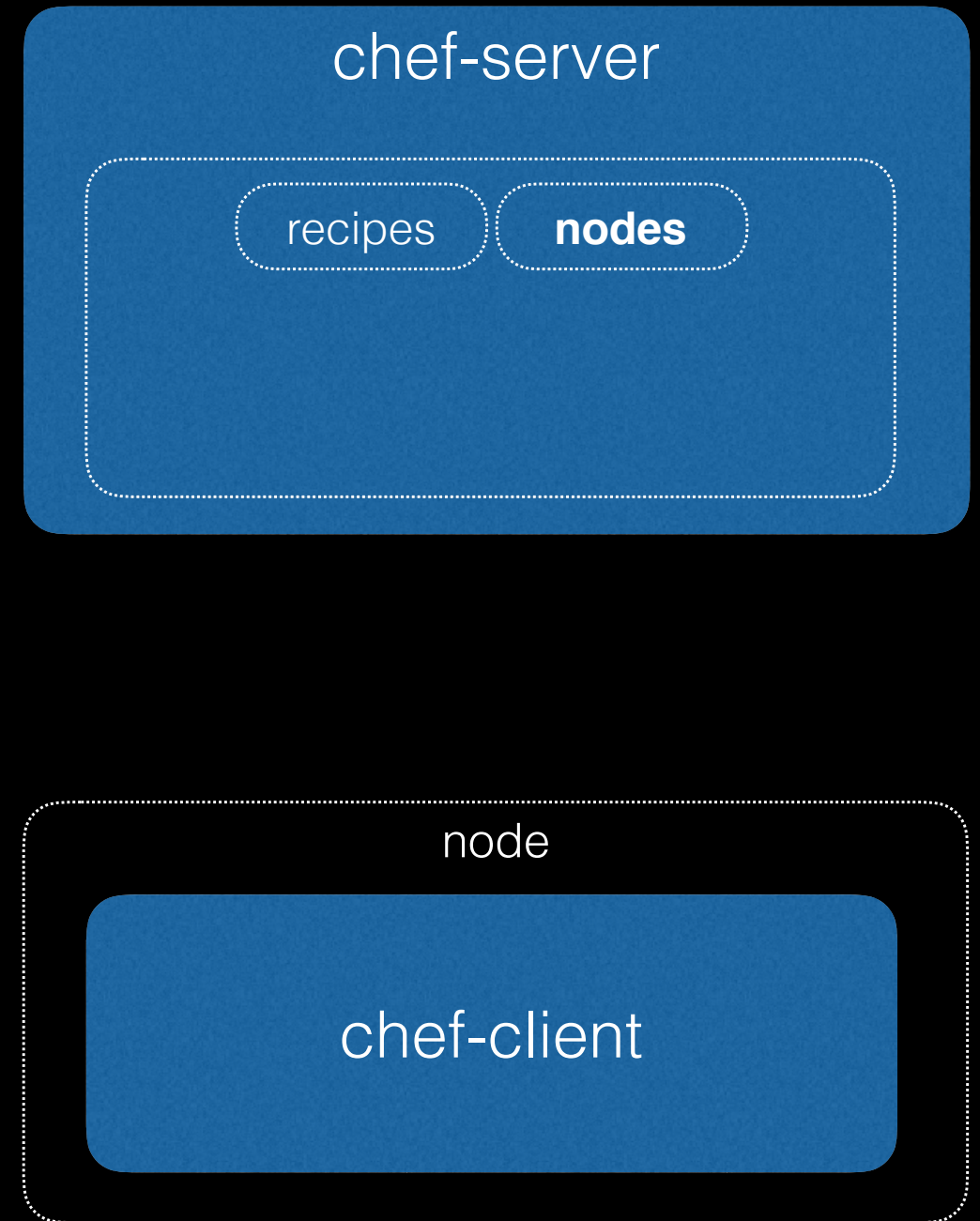
Chef

- Platform consisting of
 - Server
 - Client
 - Recipes



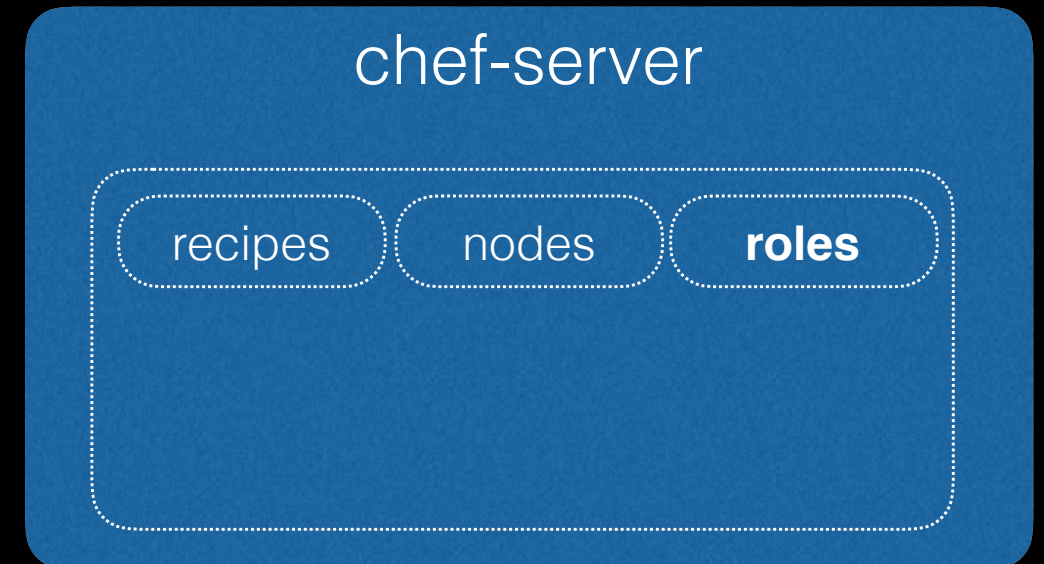
Chef

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



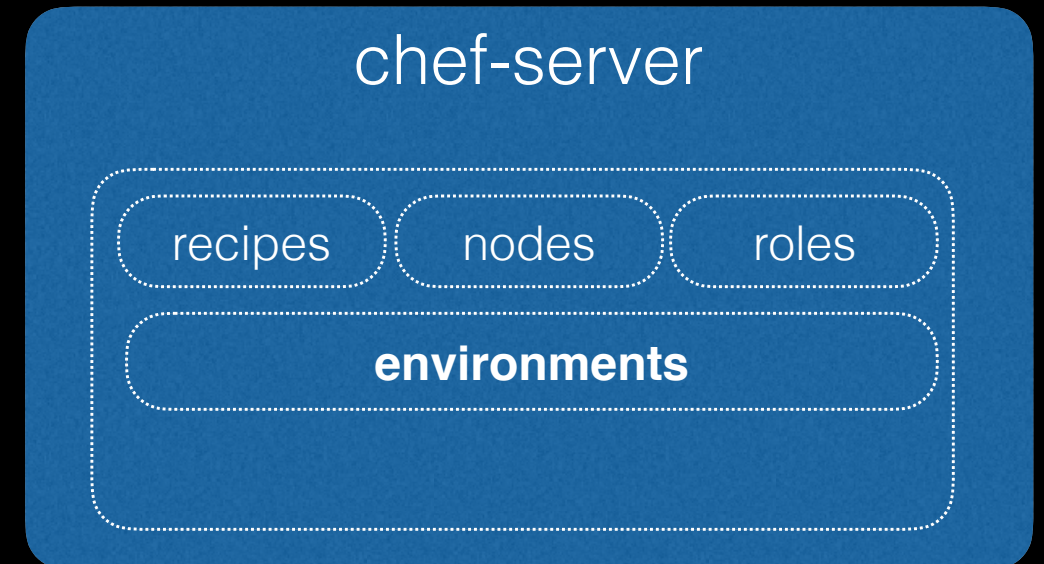
Chef

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



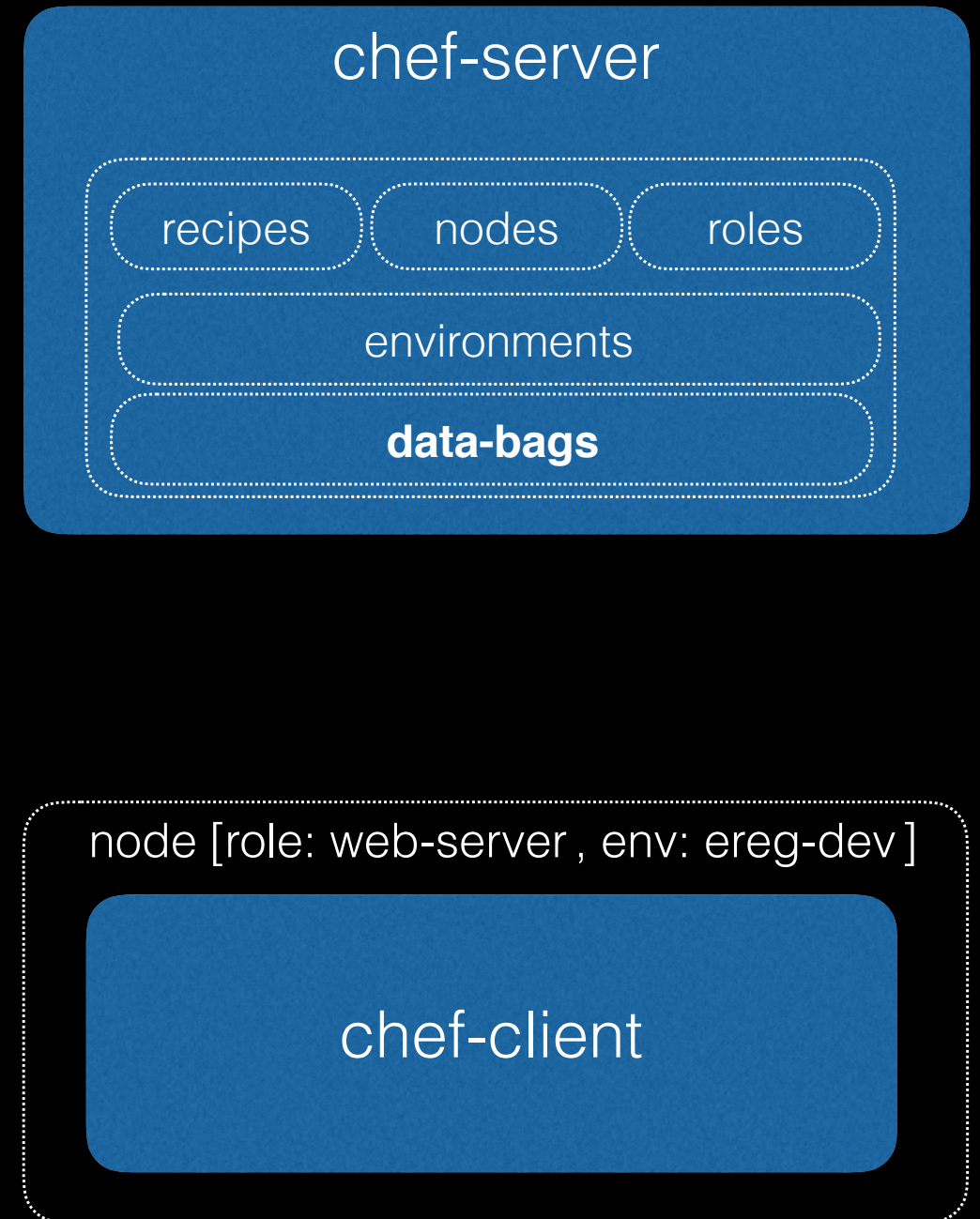
Chef

- 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

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environments

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

roles

environments

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**

Recipes

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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

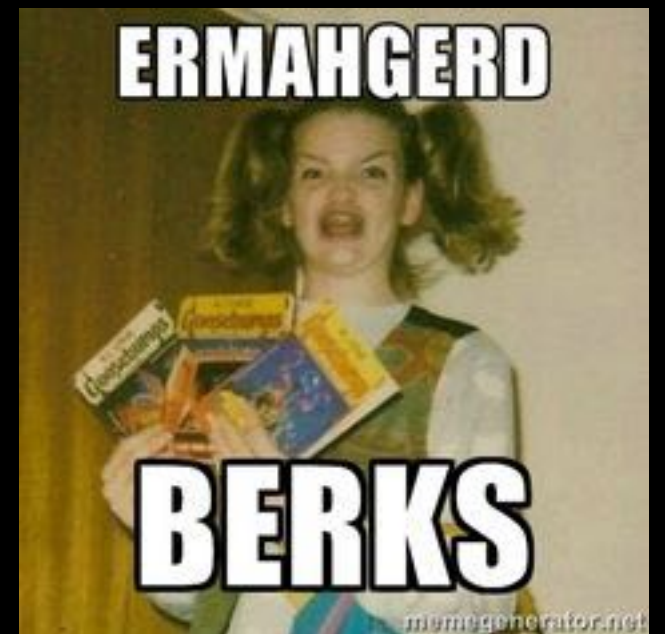
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- Berkshelf
- Test Kitchen
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Chef Supermarket

supermarket.chef.io

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supermarket.chef.io

The screenshot shows a web browser window with the URL `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, there are 33 cookbooks listed, sorted by '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 page also displays 'SUPPORTED PLATFORMS' with various icons and a 'Follow' button for the cookbook, which has 698 followers.

Cookbooks - Chef Supermarket x

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 ▾ **nginx** **GO**

Advanced Options ▾

33 Cookbooks RSS Sort by Most Followed Recently Updated

nginx 7.0.0 Updated September 19, 2017 chef

Installs and configures nginx

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

SUPPORTED PLATFORMS 698 FOLLOWERS **Follow**

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)