Configuration Management: Chef & Puppet

Internet-scale Distributed Systems Seminar Report

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ABSTRACT

A good report has an abstract!

KEYWORDS

Configuration Management, DevOps

1 INTRODUCTION

1.1 Why configuration management

- Deploy many applications on many machines (a.k.a. nodes)
- Update an application on all nodes simultaneously
- Simplify rollbacks
- Keep environments consistent among multiple entities (i.e. dev/testing/production)
- Keep records of all changes of the infrastructure

2 SYSTEM ARCHITECTURE

- Push config vs. Pull config

High-level overview.

2.1 Configuration Management

This is a citation [**?**].

2.1.1 *Insight A.* A subsubsection

2.1.2 *Insight B.* Another subsubsection.

2.2 Chef

Found on https://docs.chef.io/chef_overview.html

- Components
  - Chef DK (Chef Development Kit)
    - Computers running Chef DK are called Workstations
    - Creation of cookbooks
    - Test of cookbooks with Test Kitchen
      - Describe Test Kitchen here
    - Components of workstations
      - Knife
        - Interface between local chef-repo and Chef server
      - The chef-repo
        - Cookbook storage
        - "The chef-repo should be synchronized with a version control system (such as git), and then managed as if it were source code" https://docs.chef.io/workstation.html#configure-ruby-environment
      - knife.rb
        - File to specify configuration details for knife
  - Chef Server
    - Hub for configuration data (cookbooks)
    - Pull configuration: Nodes pull cookbooks from server
  - Node
    - Client software must be installed on each node
  - Chef Supermarket
    - Sharing and management of community cookbooks
- Cookbooks contain
  - attributes
  - cookbook_file
  - libraries: Ruby code can be included in a cookbook
  - metadata: Stored in *metadata.rb*. Helps the server deploy the cookbooks to the nodes correctly
  - recipes
    - Authored in Ruby
    - Collection of ressources
    - Must define everything that is needed to configure the node
  - ressources
    - Describes the desired state for a configuration item
    - Describes the steps to achieve the desired state
    - Contains ressource type
    - Grouped into recipes
  - templates
    - Used to dynamically generate static text files
    - May contain Ruby
    - Intended to manage configuration files
  - tests

2.3 Puppet

- Uses a master-slave architecture
- Uses pull config
- Ressource management:
  - Manifests describe the node configuration
  - Groups of ressources can be organized into classes ⇒ i.e. config for entire application can be grouped
  - Modules combine manifests and data to improve code organization
- Server node connection via SSL works as follows:

(1) Node sends normalized data to the Puppet master
(2) Server uses this data to compile a catalog, that specifies how the node should be configured
(3) The node reports back the successful config to the master (Visible on the Puppet Dashboard)

2.4 Evaluation

Actual hard work happens here - many thoughts!

3 CONCLUSIONS

Brilliant results!