Infrastructure at your Service.

Setup Oracle Infrastructure with Vagrant & Ansible

About me

Natascha Karfich
Consultant

+41 78 688 05 34
natascha.karfich@dbi-services.com

Who we are
dbi services

Experts At Your Service
- Over 50 specialists in IT infrastructure
- Certified, experienced, passionate

Based In Switzerland
- 100% self-financed Swiss company
- Over CHF 8.4 mio. turnover

Leading In Infrastructure Services
- More than 150 customers in CH, D, & F
- Over 50 SLAs dbi FlexService contracted

Certified Management System SQS ISO/IEC 20000-1

Best Workplace in Switzerland 2017
Small Companies 20-49 employees
Rank 7

GREAT PLACE TO WORK® Best Companies to Work for 2017 Switzerland

dbi services is hiring (career@dbi-services.com)

Agenda

1. Our Example

- vagrant up - that's all you have to do
- What you'll get
- What you need to prepare once
- Start Demo

2. What is Vagrant

- Vagrantfile – configure Vagrant

3. What is Ansible

- Ansible Playbook, Roles, Adhoc Commands

4. Dive into Demo

Our Example
vagrant up - that's all you have to do

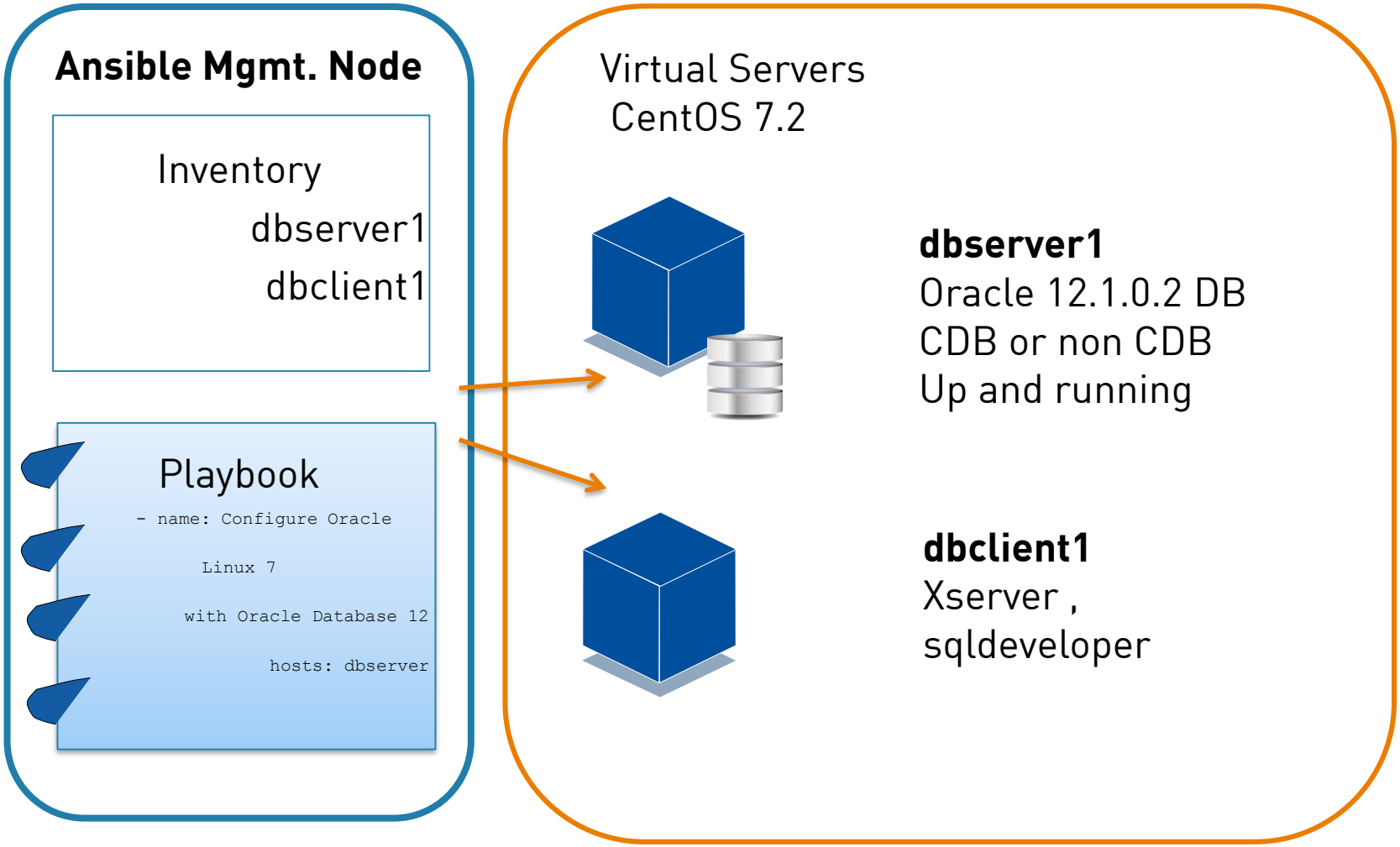
```
==> dbserver1: Configuring and enabling network interfaces...
==> dbserver1: Mounting shared folders...
    dbserver1: /vagrant => /home/nka/save_ansible/oracledb-ansible-master
==> dbserver1: Updating /etc/hosts file on active guest machines...
==> dbserver1: Running provisioner: ansible...
    dbserver1: Running ansible-playbook...

 PLAY [Configure Oracle Linux 7 with Oracle Database 12c] ***********************
        \   ^__^
         \  (oo)\_______
            (__)\       )\/\
                ||----w |
                ||     ||


 TASK [setup] *******************************************************************
        \   ^__^
         \  (oo)\_______
            (__)\       )\/\
                ||
```

- start using
- Vagrant and Ansible
- to get your Infrastructure up an running

Our Example
What you'll get



Our Example
What you need to prepare once

Linux host with

- Oracle VM VirtualBox installed
- Vagrant installed
- Ansible installed
- Network connection

Your Binaries

- Oracle binaries
- dbi Management Kit (DMK)

Download Example and try yourself

https://github.com/nkadbi/oracle-db-12c-vagrant-ansible

(slightly different example to install 2 DB'servers without dbi DMK Toolkit)

Our Example
Start Demo

start it now because it takes ~ 30 min

```
vagrant up
```

- Setup of two CentOS 7.2 Servers
- Dbserver1:
  Configure Server for Oracle Installation ; create Oracle DB
- Dbclient1
  Install sqldeveloper on second server

```
vagrant status

# Wipe out everything:
vagrant destroy
```

What is Vagrant ?

Vagrant

- Open-source Tool
- layer on top of some virtualization solution
- automates reproducible creation of VMs
- supports provisioning using scripts, Ansible , Puppet or Chef

Install Vagrant, (and plugins)
edit Vagrantfile -> choose your Virtual Box
-> ready to start

If you want to know more
https://www.vagrantup.com/docs/getting-started/
https://en.wikipedia.org/wiki/Vagrant_(software)
Find existing boxes
https://atlas.hashicorp.com/boxes/search

What is Ansible ?

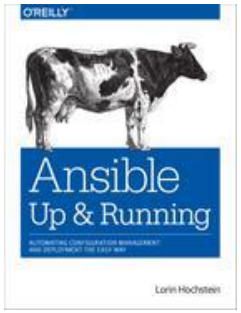
Ansible

https://www.ansible.com/how-ansible-works

Ansible is a radically simple IT automation engine

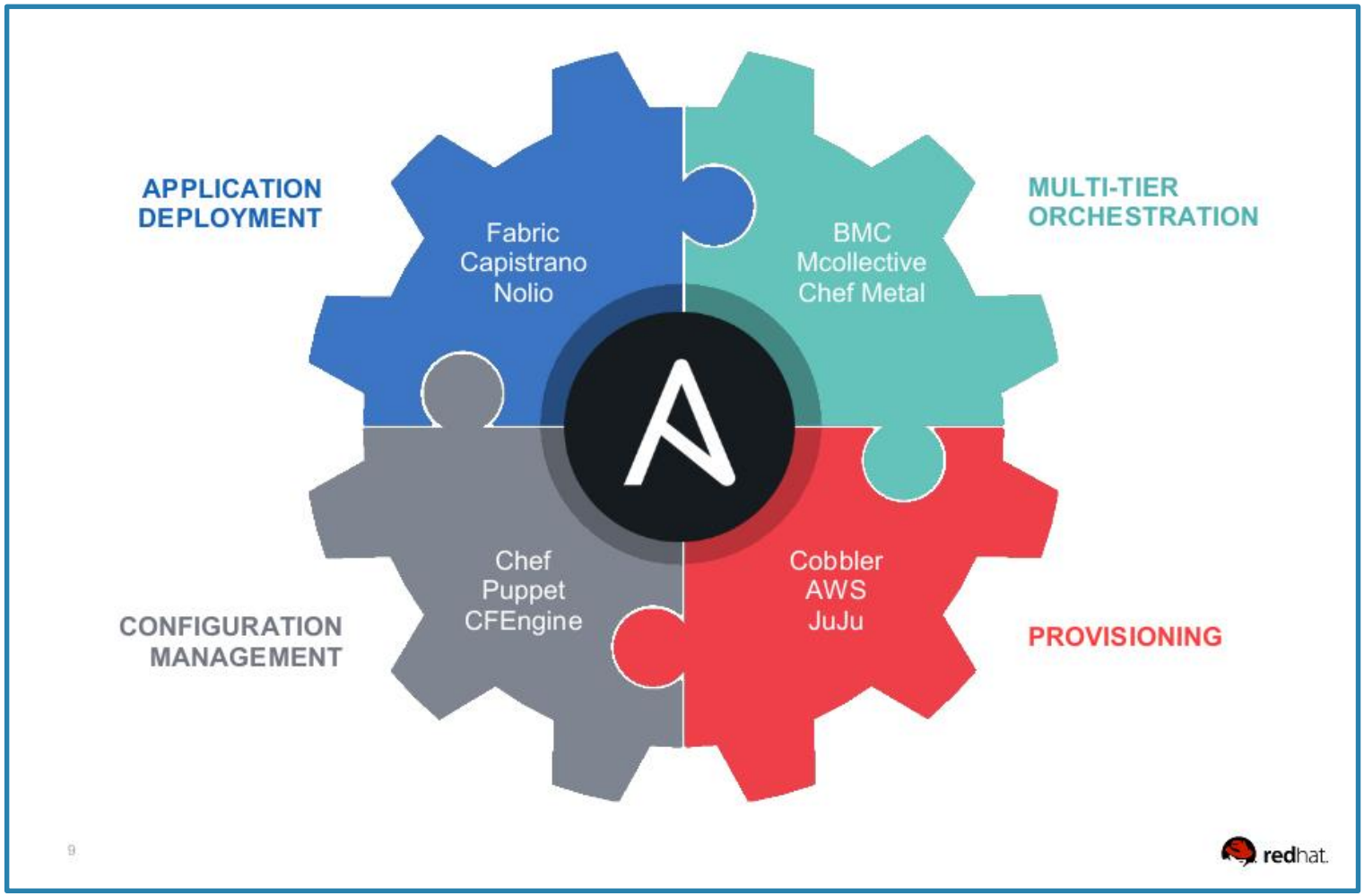
- Designed for multi-tier deployments since day one
- uses SSH, with no agents or software installed on target systems.

- Further Reading
- Ansible: Up and Running, Lorin Hochstein
- ISBN: 978-1-4919-1532-5 ; Ebook: 978-1-4919-1529-5

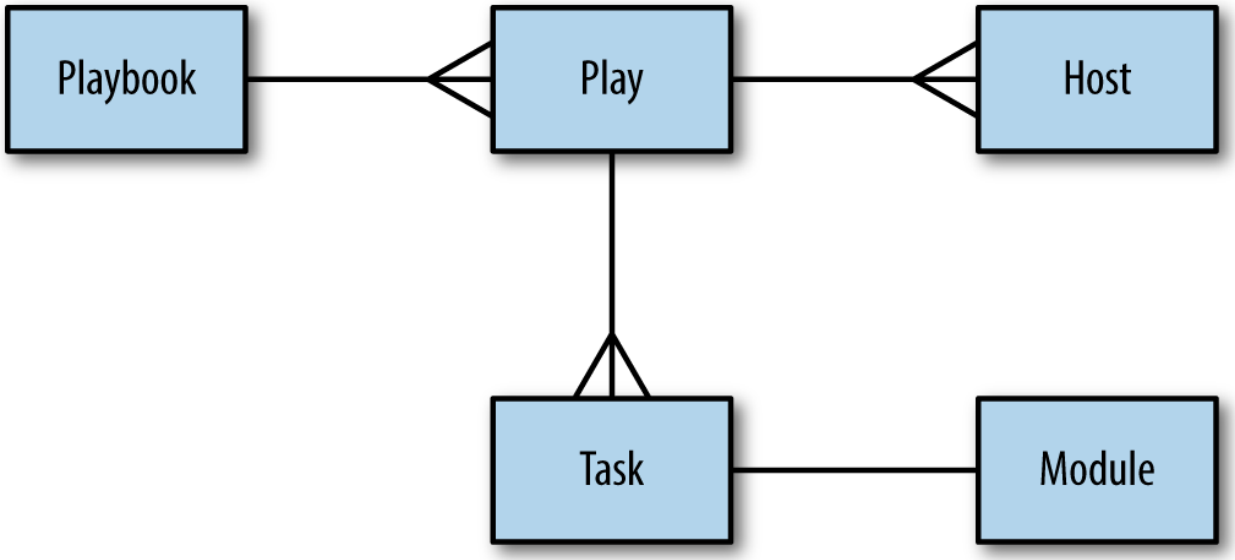


- Find Ansible code
- on Ansible Galaxy https://galaxy.ansible.com/
- and GitHub https://github.com/ansible
  - Main repo, Core modules, Extra modules

What is Ansible ?
Complete Automation



What is Ansible
Ansible Orchestration



Ansible: Up and Running, Lorin Hochstein

Dive into Demo

View log

Vagrant configuration
Ansible Configuration
- Hostfile, groups
- Look at playbook

Check what we have got

Discussion, Ideas, Questions

Configure Vagrant
Vagrantfile

- Choose BOX
- Configure ssh connect to servers
  if you keep using the default insecure (!) key -> set to false.

```
config.ssh.insert_key = false
```

- Use plugin vagrant-hostmanager
  manages the hosts file on guest machines
  https://github.com/devopsgroup-io/vagrant-hostmanager

```
config.hostmanager.enabled = true
```

- Configure your VMs (IP, Storage ...)
- Provisioning

https://blog.dbi-services.com/part2-vagrant-up-get-your-oracle-infrastructure-up-an-running/

Ansible playbook

Playbooks are expressed in YAML format

```
$ cat oracle-db.yml
- name: Configure Oracle Linux 7 with Oracle Database 12c
  hosts: dbserver
  become: True
  vars_files:
- secrets.yml
roles:
    - role: disk_layout
    - role: linux_oracle
    - role: oracle_sw_install
      become_user: '{{ oracle_user }}'
    - role: dbi_dmk
      become_user: '{{ oracle_user }}'
    - role: oracle_db_create
      become_user: '{{ oracle_user }}'
```

Ansible playbook

looks like documented steps but also runs them :

```
$ ansible-playbook oracle-db.yml --list-tasks
playbook: oracle-db.yml

  play #1 (dbserver): Configure Oracle Linux 7 with Oracle Database
12c      TAGS: []
    tasks:
      linux-oracle : Install required packages  TAGS: []
      linux-oracle : Change kernel parameters   TAGS: []
      linux-oracle : Create groups      TAGS: []
      linux-oracle : Create user        TAGS: []
      linux-oracle : Create Oracle Base directory       TAGS: []
      oracle_sw_install : Copy and unzip Oracle Software files
      oracle_sw_install : Install Oracle Software       TAGS: []
      oracle_db_create : create database via dbca       TAGS: []
...
```

Ansible Commands

```
#Gather Facts:
ansible localhost -m setup

#Ansible adhoc commands
ansible -m ping all
ansible all -m command --args "uptime"
ansible dbserver1 -a "systemctl status dbora.service"
ansible dbserver1 -a "sudo systemctl stop dbora.service"
ansible dbclient -m copy -a "src=hello dest=/tmp"
ansible dbclient -a "cat /tmp/hello"


# Ansible playbook
ansible-playbook oracle-db.yml --list-hosts
ansible-playbook oracle-db.yml  --list-tasks

# Documentation of modules
ansible-doc service

# use Ansible galaxy
ansible-galaxy init newrole
```

Conclusion
Pro & contra

- Using Vagrant and Ansible you can easily automate the setup of your whole development infrastructure
- there are already very good Ansible Playbooks also for Oracle DBs
  - https://github.com/cvezalis/oracledb-ansible (12c DB on Linux 7.1)
  - https://github.com/racattack/racattack-ansible-oracle
- Use Ansible to gather facts, control services, change configuration, document your environment

- There is still a lot of work left if you want to fully automate the setup of your productive environment
- Depending on your needs there may be other possibilities which will better fit to your situation

Any questions? Please ask

Natascha Karfich
Consultant
+41 78 688 05 34
natascha.karfich@dbi-services.com

ORACLE
Certified Professional
Oracle Database 12*c*
Administrator

We look forward to working with you!