Automate DBA Tasks With Ansible

Automation

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Pythian

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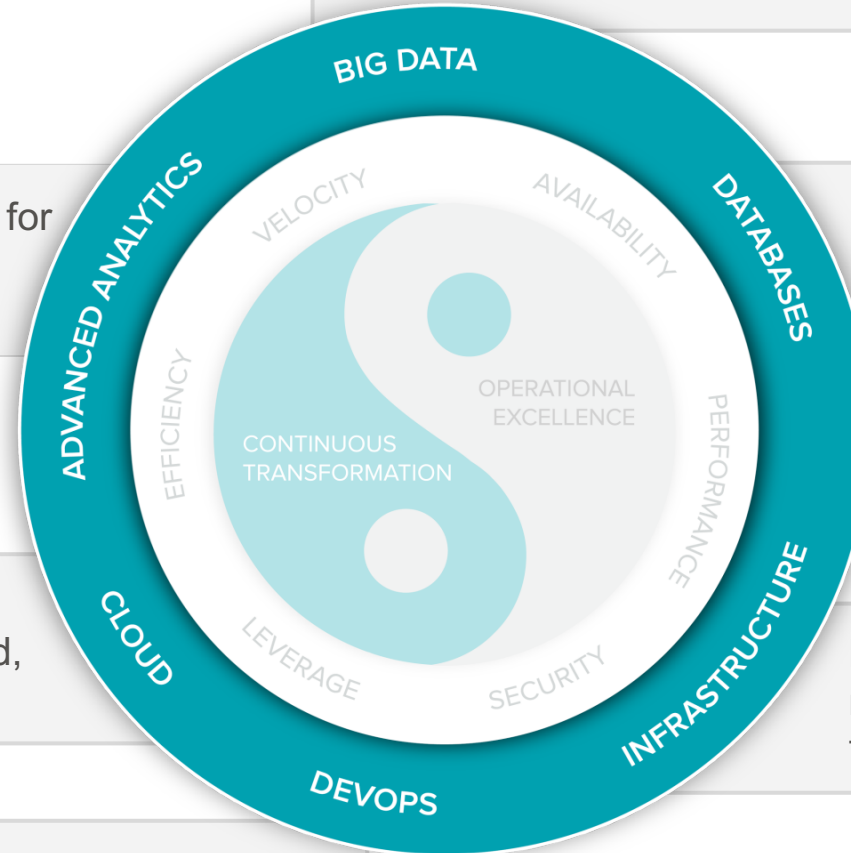**Big Data:** Harnessing the transformative power of data on a massive scale

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VELOCITY

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EFFICIENCY

OPERATIONAL EXCELLENCE

PERFORMANCE

CONTINUOUS TRANSFORMATION

LEVERAGE

SECURITY

AGENDA

Introduction to Ansible

Installation

Playbooks

Roles

Templates

Modules

Custom modules

first things first … why automation ?

some considerations

- Manage multiple servers (> 20-30)

- Multiple people are doing same thing differently

- Different configurations

- Forgotten steps/checks for long action plans

- Automation reduces human errors

etc…

Ansible introduction and installation

ansible engine

- Open - source automation engine

- Owned by RedHat
  - Available for Red Hat Enterprise Linux, CentOS, Debian, Ubuntu, OEL …
  - Windows support - only as a target machine

- Written in Python

- Agentless architecture

- Git repository: https://github.com/ansible/ansible
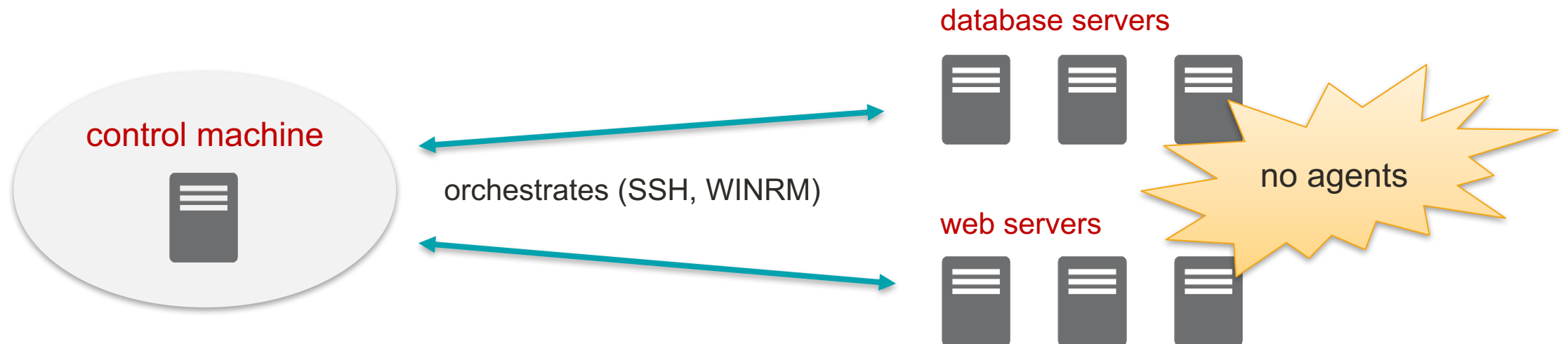
ansible consist of …

architecture

- Inventory configuration

- Modules

- Playbooks

- Roles

ansible architecture

architecture

- Two types of servers: controlling machines and nodes (targets)

- Targets are managed by a controlling machine over SSH, WINRM

database servers

control machine

orchestrates (SSH, WINRM)

web servers

no agents

ansible execution

- The modules are copied and executed on target machines
- Destination can be controlled with `local_tmp` in `ansible.cfg`

Execution steps:

1. Create local temporary directory: `$HOME/.ansible/tmp/ansible-tmp-`*xxx*`/ansiballz_cache`
2. Copy module
3. Execute module
4. Return result in JSON format
5. Clear (remove) `ansible-tmp-`*xxx*`/ansiballz_cache`

ansible installation

- RPMs for Enterprise Linux 6, 7 are available from yum via EPEL

http://fedoraproject.org/wiki/EPEL

- Add EPEL on OEL7, RHEL7 or CentOS

```
wget https://dl.fedoraproject.org/pub/epel/epel-release-latest-7.noarch.rpm

yum install epel-release-latest-7.noarch.rpm
```

- Install Ansible

```
yum install ansible
```

ansible installation

OSX

- Installation is done via pip

- Install Xcode

- Install pip and ansible

```
sudo easy_install pip

pip install ansible
```

- For more information see:

http://docs.ansible.com/ansible/intro_installation.html#latest-release-via-yum

ansible configuration files

- Ansible configuration file: `/etc/ansible/ansible.cfg`

- Define the hosts in a 'hosts' file, by default in `/etc/ansible/hosts`

  List all defined hosts: `ansible all --list-hosts`

```
...

db8.example.org

[webservers]
app1.example.org
app2.example.org

[dbservers]
db1.example.org ansible_host=... ansible_port=... ansible_ssh_private_key_file=... ansible_user=...
db2.example.org
```

ansible – windows support

- Control machine requires **pywinrm**, a Python module for the Windows Remote Management (WinRM)

Option	Local Accounts	Active Directory Accounts	Credential Delegation
Basic	Yes	No	No
Certificate	Yes	No	No
Kerberos	**No**	**Yes**	**Yes**
NTLM	Yes	Yes	No
CredSSP	Yes	Yes	Yes

ansible – windows support

example configuration with kerberos

- Kerberos configuration file `/etc/krb5.conf`

```
...

[realms]
 WINGROUP.AD = {
  kdc = win-hrms-srv.WINGROUP.AD
  admin_server = win-hrms-srv.WINGROUP.AD
  default_domain = WINGROUP.AD
}

[domain_realm]
 .wingroup.ad = WINGROUP.AD
 wingroup.ad = WINGROUP.AD
```

ansible – windows support

## 'hosts' file

- Inventory/hosts

```
...

[windows]
win-hrms-srv.wingroup.ad

[windows:vars]
ansible_user = iarsov@WINGROUP.AD
ansible_password = ********
ansible_connection = winrm
ansible_port = 5986
ansible_winrm_server_cert_validation =ignore
```

Demo

Ansible installation

ad-hoc task execution

- The "ping" example

- Ad-hoc tasks are run with `ansible` command

- Ansible uses SSH authentication, you need to specify an user

target   module   user
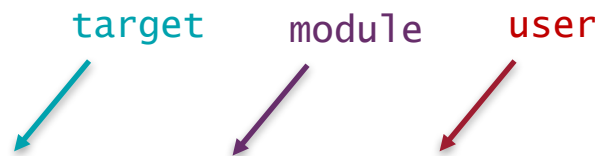
```
ansible vm12r1 -m ping -u root -k
SSH password:
vm12r1 | SUCCESS => {
    "changed": false,
    "ping": "pong"
}
```

Playbooks

YAML basic rules

YAML Ain't Markup Language

- Human readable data structure
- Less complex than JSON or XML
- YAML is case sensitive
- Does not allow tabs. You must use spaces.

YAML

```
db_list:
 - oracle_owner: oracle
   oracle_home: /u01/app...
   sid: orcl
 ...
```

XML

```
<db_list>
  <oracle_owner>oracle</oracle_owner>
  <oracle_home>/u01/app...</oracle_home>
  <sid>orcl</sid>
  ...
</db_list>
```

playbooks

- Organize the "play" tasks

- Playbook's language is YAML

- Each play contains set of tasks

- Tasks are executed one at a time in order against all matched targets

- Command `ansible-playbook`

Play example:

`playbook.yml`

```
- hosts: dbservers
  user: root
  tasks:
   - name: ping hostname
     ping:
   - name: create directory
     file: path=/home/ansible/poug2017 state=directory
```

playbooks

```
- hosts: dbservers

  user: root

  tasks:

   - name: ping hostname

     ping:


- hosts: webservers

  user: root

  tasks:

   - name: create directory

     file: path=/home/ansible/poug2017 state=directory
```

- Playbooks can contain multiple plays

- Split tasks performed per different host groups

variables

- Variables are used using the Jinja2 templating system

- You can also use variables in Templates

- Variables are referenced with double curly brackets: `{{ variable_name }}`

Variables file definition (`var_def.yml`)

```
hostname: ansible-demo

dir_path: /home/ansible/poug2017

user: root
```

Playbook file definition

```
- hosts: "{{ hostname }}"

  user: "{{ user }}"

  vars_files:

   - var_def.yml

  tasks:

  - name: create directory

    file: path={{ dir_path }} state=directory
```

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variables

- Variables can be defined within the playbook

```
- hosts: "{{ hostname }}"

  user: "{{ user }}"

  tasks:
   - name: create directory

     file: path={{ dir_path }} state=directory

  vars:
    - hostname: ansible-demo

      user: root

      dir_path: /home/ansible/poug2017
```

variables

- Variables can also be defined from command line

```
ansible-playbook demo2.yml -k --extra-vars="dir_path=/home/ansible/poug2017 user=root
hostname=ansible-demo"

SSH password:
PLAY [ansible-demo]
************************************************************************************

ok: [ansible-demo]


TASK [create directory]
************************************************************************************

ok: [ansible-demo]


PLAY RECAP
************************************************************************************

ansible-demo                    : ok=2    changed=0    unreachable=0    failed=0
```

ansible – windows support

- Playbook wintest.yml

```
---
 - name: Windows demo
   hosts: windows
   tasks:
    - name: Create directory "D:\ansible\poug2017"
      win_command: Powershell.exe "mkdir D:\ansible\poug2017"
```

ansible – windows support

playbook execution

```
ansible-playbook wintest.yml

PLAY [Windows demo] *******************************************************

TASK [Gathering Facts] ****************************************************
ok: [win-hrms-srv.wingroup.ad]

TASK [Create directory "D:\ansible\poug2017"] ****************************
changed: [win-hrms-srv.wingroup.ad]

PLAY RECAP ****************************************************************
win-hrms-srv.wingroup.ad   : ok=2    changed=1    unreachable=0    failed=0
```
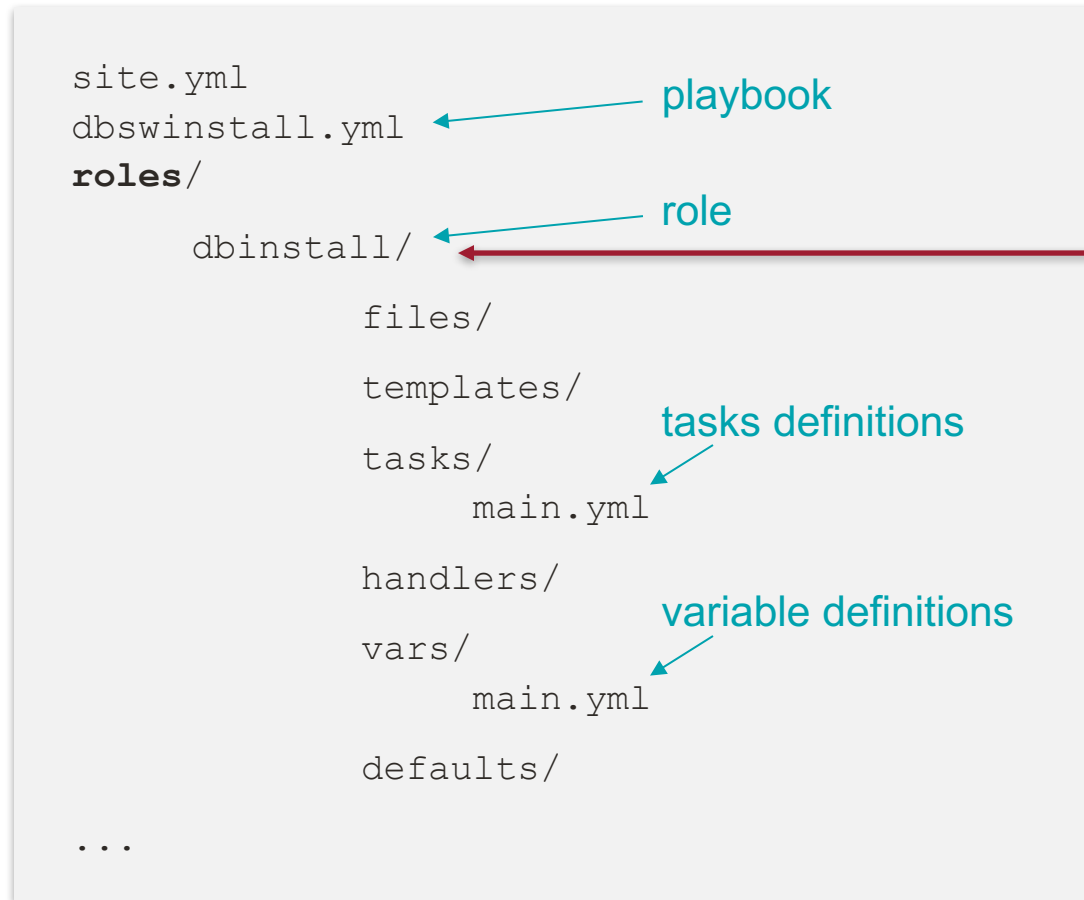
Roles and Templates

roles

how to organize the tasks?

- Represent "automation" within ansible

- You can define variables for all roles or per role

- Not complex at all. No hidden magic.

- Supports automatic load of *main.yml* file for tasks, handlers, variables, meta definitions and role "default" variables

project structure

dbservers role

```
site.yml
dbswinstall.yml          ← playbook
roles/

    dbinstall/           ← role

            files/

            templates/
                         tasks definitions
            tasks/
                    main.yml

            handlers/
                         variable definitions
            vars/
                    main.yml

            defaults/

...
```

`dbswinstall.yml` snippet:

```
---
    - hosts: chicago

      user: oracle

      roles:

          - hostconfig

          - dbinstall

          - dbmonitor
```
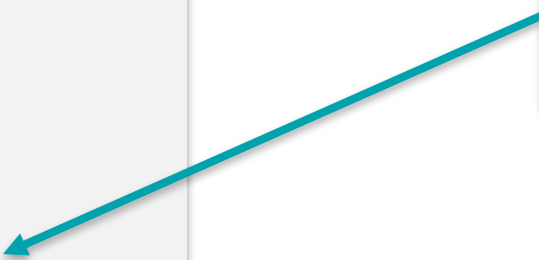
main.yml files are automatically loaded

role dependencies

- Role dependencies are defined in *meta/main.yml* file

- Allows you to reference other roles before running a role

```
...
dbswinstall.yml
roles/
        common/
        dbinstall/
                files/
                meta/
                        main.yml
                tasks/

                ...
```

```
---
    dependencies:
      - { role: common }
```

Templates

Introduction to ansible templating

- Sometimes pre-defined configuration files are needed for installation

- An example is the Oracle dbca configuration file

- Templating allows us to use ansible variables substation within templates

Templates

```
...

#----------------------------------------------------------------------

# Specify the hostname of the system as set during the install. It can be used

# to force the installation to use an alternative hostname rather than using the

# first hostname found on the system. (e.g., for systems with multiple hostnames

# and network interfaces)

#----------------------------------------------------------------------

ORACLE_HOSTNAME={{ ansible_hostname }}


#----------------------------------------------------------------------

# Specify the Unix group to be set for the inventory directory.

#----------------------------------------------------------------------

UNIX_GROUP_NAME={{ oracle_group }}

...
```

Templates

- Source template file is copied to target destination and variables are substituted

```
- name: create 11g installer response file
  template:
      src: db_11204.rsp.j2
      dest: /tmp/db_11204.rsp
      owner: "{{ oracle_user }}"
      group: "{{ oracle_group }}"
      mode: 0640
```

Demo

Example: Oracle 11.2.0.4 software installation

oracle database install

installation of oracle 11.2.0.4

```
oracle_base: "/oracle/app/oracle"

oracle_home: "/oracle/app/oracle/product/11.2.0.4/db1"

oracle_user: oracle

oracle_group: dba

swlib_path: "/oracle/install"

db_edition: EE

DBComponents: "oracle.rdbms.partitioning:11.2.0.4.0"
```

oracle database install

installation of oracle 11.2.0.4

```
- name: create oracle base directory

    file:

        path: "{{ oracle_base }}"

        state: directory

        owner: "{{ oracle_user }}"

        group: "{{ oracle_group }}"

        mode: 0775
```

oracle database install

installation of oracle 11.2.0.4

```
- name: create 11g installer response file

    template:

        src: db_11204.rsp.j2

        dest: /tmp/db_11204.rsp

        owner: "{{ oracle_user }}"

        group: "{{ oracle_group }}"

        mode: 0640
```

continued

installation of oracle 11.2.0.4

```
- name: install base software

    command: "{{ swlib_path }}/11204/installer/database/runInstaller -silent
-ignorePrereq -ignoreSysPrereqs -waitforcompletion -responseFile
/tmp/db_11204.rsp"

    register: install_db_software

    args:

      creates: "{{ oracle_home }}"

    failed_when: "'skipped' not in install_db_software.stdout and
'Successfully Setup Software.' not in install_db_software.stdout"
```

continued

installation of oracle 11.2.0.4

```
- name: run root-script orainstRoot.sh

    command: "{{ oracle_base }}/../oraInventory/orainstRoot.sh"

    when: "'skipped' not in install_db_software.stdout"

    become: true

    become_user: root

    become_method: sudo
```

continued

installation of oracle 11.2.0.4

```
- name: run root-script root.sh from ORACLE_HOME

    command: "{{ oracle_home }}/root.sh"

    when: "'skipped' not in install_db_software.stdout"

    become: true

    become_user: root

    become_method: sudo


- name: clean up installer response file

    file:

      path: /tmp/db_11204.rsp

      state: absent
```
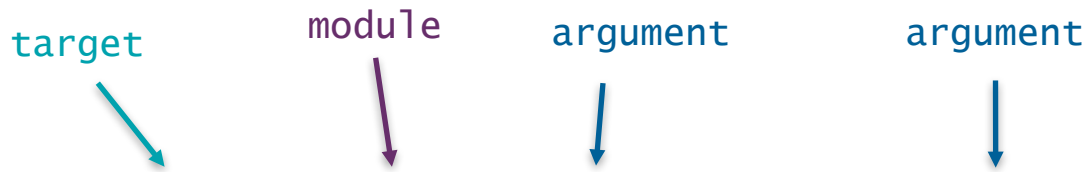
Modules

modules

- Library plugins , always are executed on target machine

- Ansible comes with large number of modules

- Each module supports specific number of arguments


```
ansible vm12r1 -m copy -a "src=/tmp/file.txt dest=/tmp/file.txt"
SSH password:
vm12r1 | SUCCESS => {
    "changed": true,
    "checksum": "da39a3ee5e6b4b0d3255bfef95601890afd80709",
    "dest": "/tmp/file.txt",
    "gid": 500,
    "group": "dba",
    ...
}
```

custom modules

developing modules

- First check if similar module already exist

  - http://docs.ansible.com/ansible/latest/list_of_all_modules.html

- GitHub (all module updates): https://github.com/ansible/ansible/labels/module

- Not enough documentation regarding development

- If you want additional checks on control machine use *action_plugins*

our first custom module

developing modules

- Test module

```
ansible ansible-demo --module-path=/home/ansible -m date

ansible-demo | SUCCESS => {
        "changed": false,
        "time": "2017-08-31 14:48:10.978621"
}
```

`date.py` code

```
#!/usr/bin/python

import datetime
import json

date = str(datetime.datetime.now())
print(json.dumps({
    "time" : date
}))
```

orapatch

custom module

- Can be used to apply PSU on 10g, 11g and 12c

In summary:

- You need to specify:
  - oracle home path, PSU or DBBP patch ID, whether to patch only the oracle home binaries, all databases or specific set of databases

- It will automatically:
  - stop OH services, apply PSU or DBBP according specified settings, start back the services as before the patching

orapatch

workflow
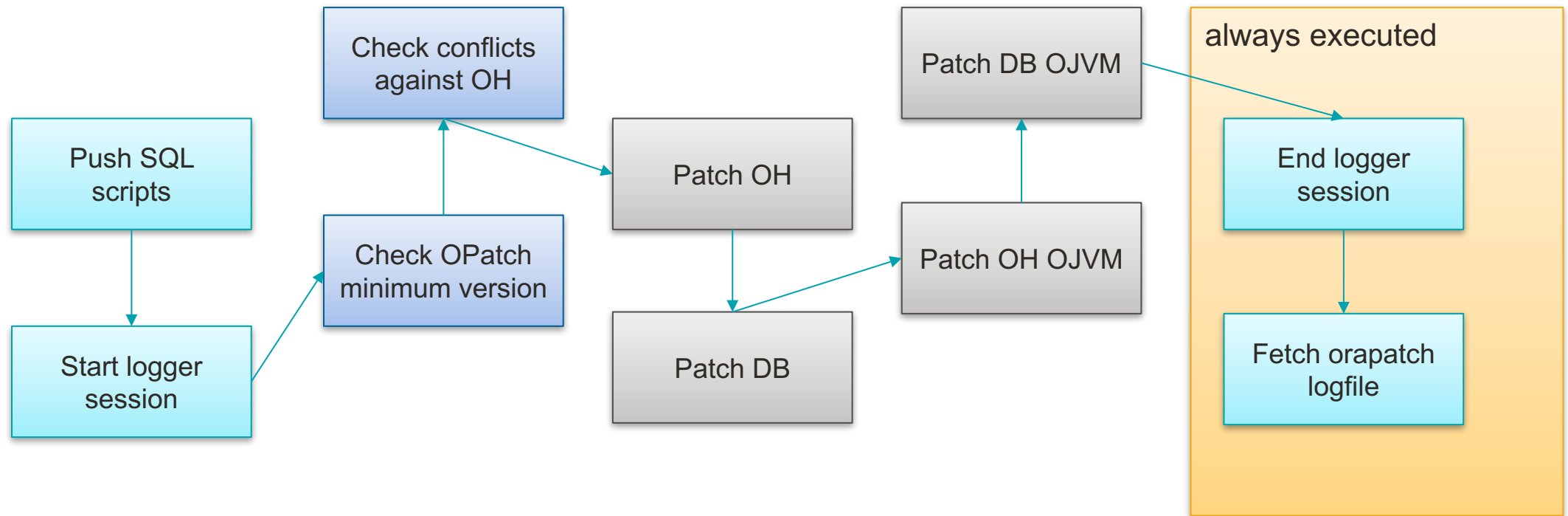
orapatch

vars/main.yml

```
db_list:

    - oracle_owner: oracle

      oracle_home_path: /oracle/app/oracle/product/12.2.0.1/db1        ← oracle home to patch

      patch_directory: "12.1.0.2/psu"    ← directory where patch binaries are located

      run_only_checks: False    ← run only prerequisite checks

      patch: True

      patch_id: 26129945

      patch_only_oh: True    ← patch only oracle specified oracle home

      patch_ojvm: False    ← apply OJVM PSU

      patch_db_all: False    ← patch all databases for specified OH

      patch_db_list:    ← patch specific databases

        - '{ "dbname": "orcl" }'
```

```
patch_dict:

    26129945:
        patch_proactive_bp_id: 26129945
        patch_gi_id:
        patch_db_id: 25983138
        patch_ocw_id: 26187629
        patch_ojvm_id:
        patch_acfs_id:
        patch_dbwlm_id:
        patch_dir: 26129945
        file: p26129945_121020_Linux-x86-64.zip
        only_oh: False
        desc: "DATABASE PROACTIVE BUNDLE PATCH 12.2.0.1.170620"

    26550339:
        patch_proactive_bp_id:
        patch_gi_id: 26610308
        ...
```

```yaml
- name: Patch oracle software

  serial: 1
  vars_prompt:

    - name: "root_password"

      prompt: "Enter root password (press enter to skip)"

      private: yes

    - name: "root_password_confirm"

      prompt: "Enter root password again (press enter to skip)"

      private: yes

  pre_tasks:

    - assert:

        that: root_password == root_password_confirm

        msg: "Root password missmatch."

  hosts: database

  user: oracle

  roles:

    - orapatch
```

```
[ansible@ansible-control oracle-ansible-pythian]$ ansible-playbook orapatch.yml -k -K
SSH password:
SUDO password[defaults to SSH password]:


Enter root password (press enter to skip):
Enter root password again (press enter to skip):

PLAY [Patch oracle software] ****************************************************************************

TASK [Gathering Facts] **********************************************************************************
ok: [rac-srv1]

TASK [assert] *******************************************************************************************
ok: [rac-srv1] => {
    "changed": false,
    "msg": "All assertions passed"
}

TASK [orapatch : [SYSTEM] Include vars] *****************************************************************
ok: [rac-srv1]

TASK [orapatch : [SYSTEM] Push sql scripts] ************************************************************
changed: [rac-srv1]

TASK [orapatch : [SYSTEM] Ensure 'orapatch' log file exists] ******************************************
changed: [rac-srv1]

TASK [orapatch : [SYSTEM] Start logger session] *******************************************************
 [WARNING]: Module did not set no_log for root_password

ok: [rac-srv1]
```

```
TASK [orapatch : Check OPatch minimum version] **********************************************
ok: [rac-srv1] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'oracle_owne
39, u'patch_db_all': False, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'oratab_file': None})
ok: [rac-srv1] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'oracle_owne
atch_id': 2655039, u'patch_db_all': True, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'oratab_fil

TASK [orapatch : Check conflicts against OH] **********************************************
ok: [rac-srv1] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'oracle_owne
39, u'patch_db_all': False, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'oratab_file': None})
ok: [rac-srv1] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'oracle_owne
atch_id': 2655039, u'patch_db_all': True, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'oratab_fil

TASK [orapatch : Patch OH] **********************************************
ok: [rac-srv1] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'oracle_owne
39, u'patch_db_all': False, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'oratab_file': None})
ok: [rac-srv1] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'oracle_owne
atch_id': 2655039, u'patch_db_all': True, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'oratab_fil
```

```
TASK [orapatch : Patch DB] *************************************************************************
ok: [rac-srv1] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'oracle_own
39, u'patch_db_all': False, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'oratab_file': None})
ok: [rac-srv1] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'oracle_own
atch_id': 26550339, u'patch_db_all': True, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'oratab_fi

TASK [orapatch : Patch OH OJVM] ********************************************************************
skipping: [rac-srv1] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'orac
26550339, u'patch_db_all': False, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'oratab_file': None
skipping: [rac-srv1] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'orac
e, u'patch_id': 26550339, u'patch_db_all': True, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'ora

TASK [orapatch : Patch DB OJVM] ********************************************************************
skipping: [rac-srv1] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'orac
26550339, u'patch_db_all': False, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'oratab_file': None
skipping: [rac-srv1] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'orac
e, u'patch_id': 26550339, u'patch_db_all': True, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'ora

TASK [orapatch : [SYSTEM] End logger session] ****************************************************
ok: [rac-srv1]

TASK [orapatch : [SYSTEM] Fetch orapatch logfile] **********************************************
changed: [rac-srv1]
```

```
PLAY [Patch oracle software] ********************************************************************

TASK [Gathering Facts] **************************************************************************
ok: [rac-srv2]

TASK [assert] ***********************************************************************************
ok: [rac-srv2] => {
    "changed": false,
    "msg": "All assertions passed"
}

TASK [orapatch : [SYSTEM] Include vars] *******************************************[SYSTEM]******
ok: [rac-srv2]

TASK [orapatch : [SYSTEM] Push sql scripts] ***************************************[SYSTEM]******
changed: [rac-srv2]

TASK [orapatch : [SYSTEM] Ensure 'orapatch' log file exists] *********************[SYSTEM]******
ok: [rac-srv2]

TASK [orapatch : [SYSTEM] Start logger session] **********************************[SYSTEM]******
ok: [rac-srv2]
```

```
TASK [orapatch : Check OPatch minimum version] ********************************************************
ok: [rac-srv2] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'oracle_own
39, u'patch_db_all': False, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'oratab_file': None})
ok: [rac-srv2] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'oracle_own
atch_id': 26550339, u'patch_db_all': True, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'oratab_fi

TASK [orapatch : Check conflicts against OH] **********************************************************
ok: [rac-srv2] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'oracle_own
39, u'patch_db_all': False, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'oratab_file': None})
ok: [rac-srv2] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'oracle_own
atch_id': 26550339, u'patch_db_all': True, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'oratab_fi

TASK [orapatch : Patch OH] *******************************************************************
ok: [rac-srv2] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'oracle_own
39, u'patch_db_all': False, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'oratab_file': None})
ok: [rac-srv2] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'oracle_own
atch_id': 26550339, u'patch_db_all': True, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'oratab_fi
```

```
TASK [orapatch : Patch DB] ******************************************************************
ok: [rac-srv2] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'oracle_own
39, u'patch_db_all': False, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'oratab_file': None})
ok: [rac-srv2] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'oracle_own
atch_id': 2655039, u'patch_db_all': True, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'oratab_fi

TASK [orapatch : Patch OH OJVM] *************************************************************
skipping: [rac-srv2] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'orac
26550339, u'patch_db_all': False, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'oratab_file': None
skipping: [rac-srv2] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'orac
e, u'patch_id': 26550339, u'patch_db_all': True, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'ora

TASK [orapatch : Patch DB OJVM] *************************************************************
skipping: [rac-srv2] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'orac
26550339, u'patch_db_all': False, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'oratab_file': None
skipping: [rac-srv2] => (item={u'patch_db_list': [u'{ "dbname": "" }'], u'patch_ojvm': False, u'run_only_checks': False, u'orac
e, u'patch_id': 26550339, u'patch_db_all': True, u'patch_only_oh': False, u'patch_directory': u'12.1.0.2/psu/August2017', u'ora

TASK [orapatch : [SYSTEM] End logger session] **********************************************
ok: [rac-srv2]

TASK [orapatch : [SYSTEM] Fetch orapatch logfile] *****************************************
changed: [rac-srv2]
```

ansible blog posts

- AUTOMATINC ORACLE RMAN BACKUP CONFIGURATION ON LINUX WITH ANSIBLE

https://www.pythian.com/blog/automating-oracle-rman-backup-configuration-linux-ansible

- CREATING ANSIBLE CUSTOM MODULE FOR AWR REPORT GENERATION

https://www.pythian.com/blog/creating-ansible-custom-module-for-awr-reports-generation

- SIMPLE STEPS TO PERFORM OPATCH MAINTENANCE WITH ANSIBLE

https://www.pythian.com/blog/opatch-maintenance-with-ansible

- ANSIBLE AND AWS AUTOMATION

https://www.pythian.com/blog/ansible-and-aws-automation

More at: https://www.pythian.com/blog/?s=ansible

Thank you.

Questions?