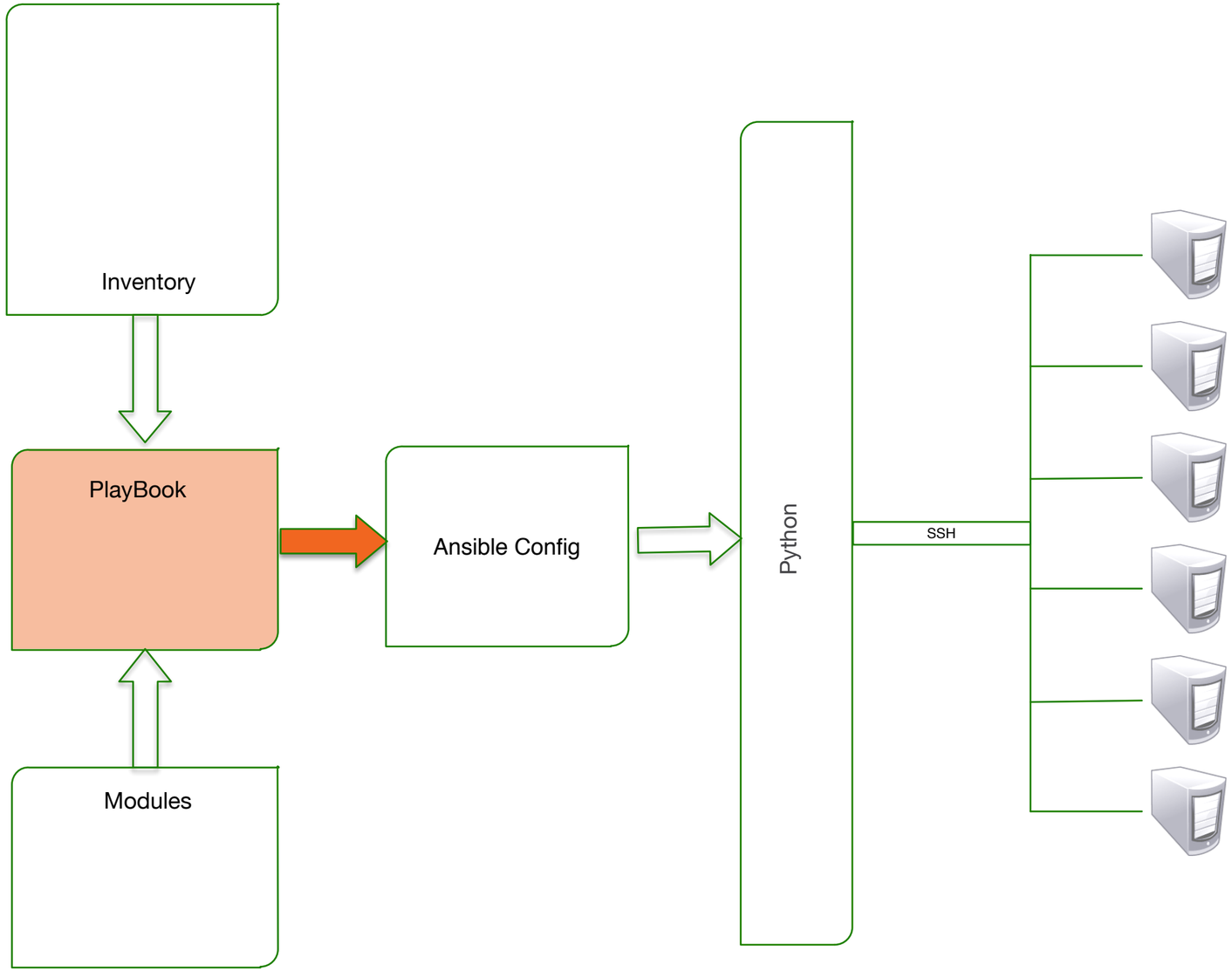
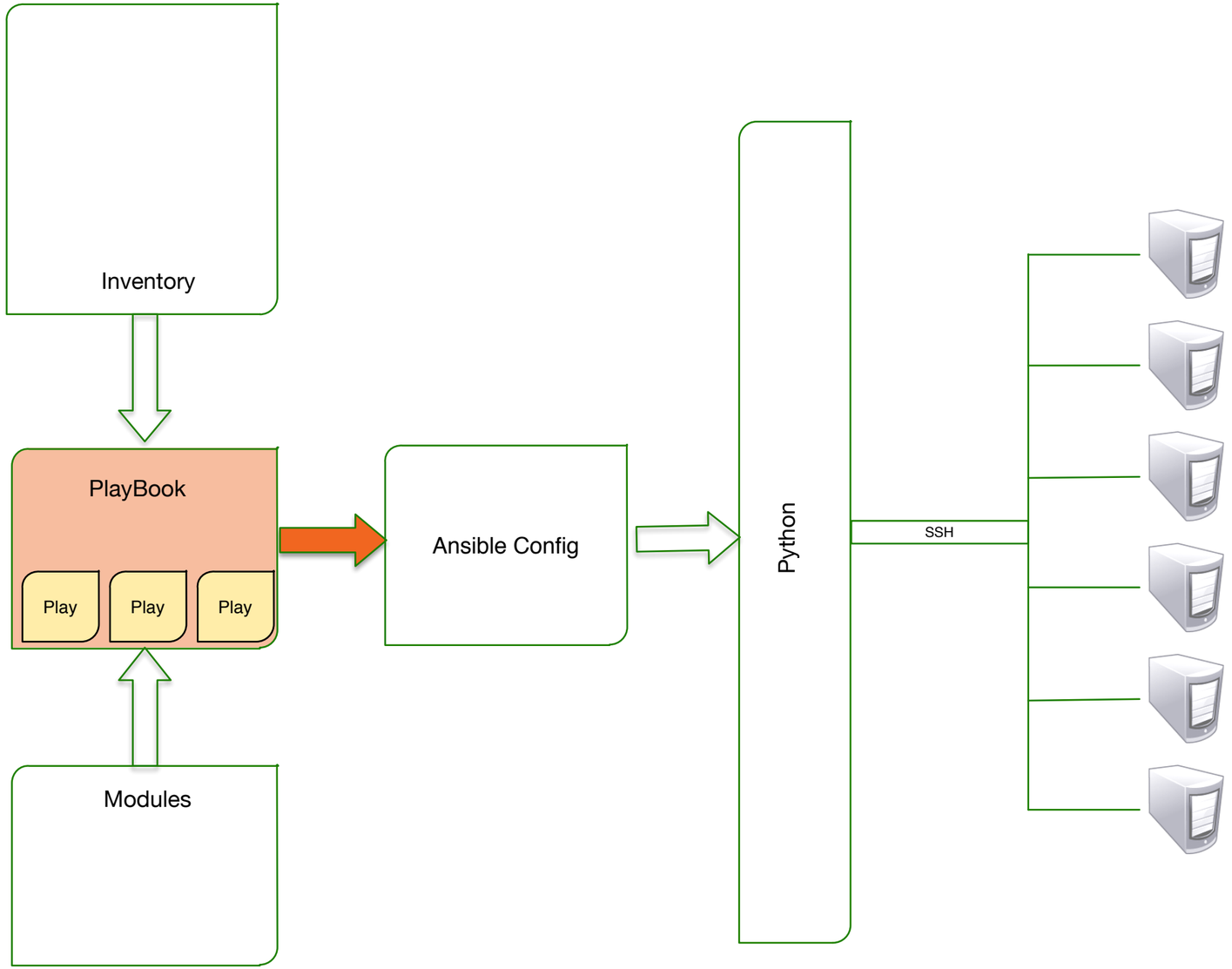
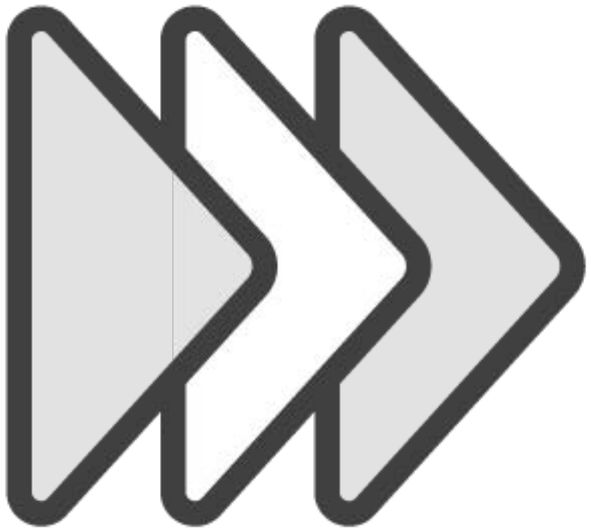
Plays and Playbooks

Aaron Paxson

http://myteneo.net | @Neelixx | +Aaron Paxson


Inventory
PlayBook
Modules
Ansible Config
Python
SSH


Inventory
PlayBook
Play
Play
Play
Modules
Ansible Config
Python
SSH



Plays map hosts to tasks

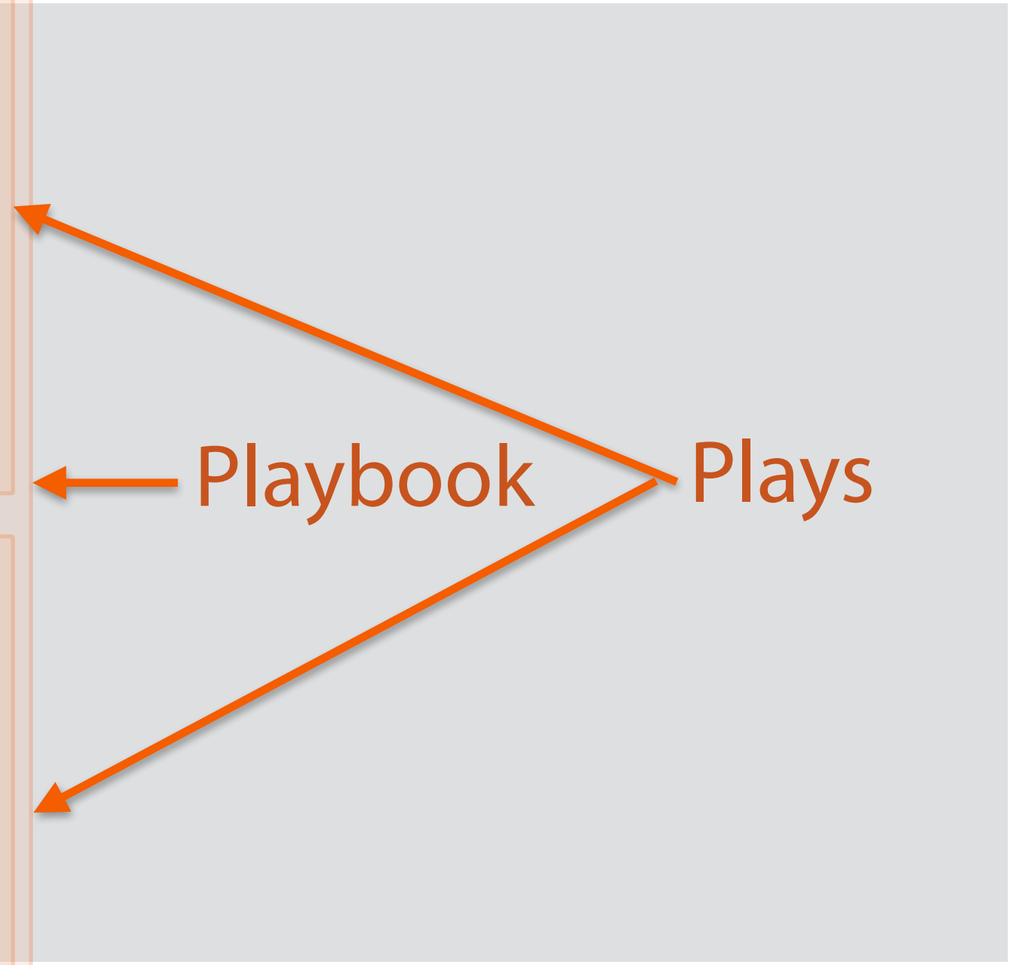
A play can have multiple tasks

A playbook can have multiple plays

Playbook Breakdown

```
---
- hosts: webservers
  remote_user: root
  tasks:
  - name: Install Apache
    yum: name=httpd state=present
  - name: Start Apache
    service: name=httpd state=started
```

```
- hosts: dbservers
  remote_user: root
  tasks:
  - name: Install MySQL
    yum: name=mysql-server state=present
  - name: Start MySQL
    service: name=mysqld state=started
```



YAML Whitespace

```
---
- hosts: webservers
  remote_user: root
  tasks:
  - name: Install Apache
    yum: name=httpd state=present
  - name: Start Apache
    service: name=httpd state=started

- hosts: dbservers
  remote_user: root
  tasks:
  - name: Install MySQL
    yum: name=mysql-server state=present
  - name: Start MySQL
    service: name=mysqld state=started
```

Whitespace is crucial!

Play Breakdown

```
---
- hosts: webservers
  remote_user: root
  tasks:
  - name: Install Apache
    yum: name=httpd state=present
  - name: Start Apache
    service: name=httpd state=started
```

Play Breakdown

```
---
- hosts: webservers
  remote_user: root
  tasks:
    - name: Install Apache
      yum: name=httpd state=present
    - name: Start Apache
      service: name=httpd state=started
```

Global Play Declaration

Play Declarations

```
- hosts: webservers
  vars:
    git_repo: https://github.com/repo.git
    http_port: 8080
    db_name: wordpress
  sudo: yes
  sudo_user: wordpress_user
  gather_facts: no
```

Play Declarations

```
- hosts: webservers
  vars:
    git_repo: https://github.com/repo.git
    http_port: 8080
    db_name: wordpress
  sudo: yes
  sudo_user: wordpress_user
  gather_facts: no
```

Declare Variables per Play

Play Declarations

```
- hosts: webservers
  vars:
    git_repo: https://github.com/repo.git
    http_port: 8080
    db_name: wordpress
  sudo: yes
  sudo_user: wordpress_user
  gather_facts: no
```

Declare user to run tasks

Play Declarations

```
- hosts: webservers
  vars:
    git_repo: https://github.com/repo.git
    http_port: 8080
    db_name: wordpress
  sudo: yes
  sudo_user: wordpress_user
  gather_facts: no
```

Don’t gather facts on hosts

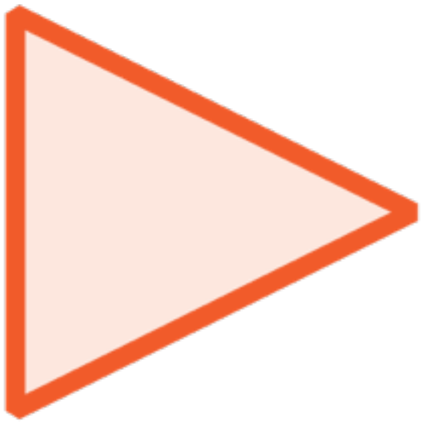
Tasks are executed in order - top down

Tasks use modules

Tasks

```
tasks:
  - name: Name this task for readability
    module: parameters=go_here

  - name: Deploy Apache Configuration File
    copy: src=/ansible/files/conf/httpd.conf
          dest=/etc/httpd/conf/
```



Execution of playbooks:

```
$ ansible-playbook playbook.yml
```

If a host fails a task, that host is removed from the rest of the playbook execution

Retrying Failed Host Executions

```
PLAY RECAP *********************************************************************
        to retry, use: --limit @/home/vagrant/ping.retry

db1                        : ok=0    changed=0    unreachable=1    failed=0
web1                       : ok=2    changed=0    unreachable=0    failed=0
```

Demo: Our First Playbook

Write a playbook

Add play to install web server

Add play to install db server

Add play to start services

Fail a play

Retry a failed play

Including Files

Include Files to Extend Playbook

```
tasks:
  - include: wordpress.yml
    vars:
      sitename: My Awesome Site
  - include: loadbalancer.yml
  - include_vars: variables.yml
```

- Breaks up long playbooks
- Use to add external variable files
- Reuse other playbooks

Register Task Output

Grab output of task for another task

```
tasks:
   - shell: /usr/bin/whoami
     register: username
   - file: path=/home/myfile.txt
           owner={{ username }}
```

- Useful to use tasks to feed data into other tasks
- Useful to create custom error trapping

Debug Module

Add debug to tasks

```
tasks:
  - debug: msg="This host is
{{ inventory_hostname }} during
execution"


  - shell: /usr/bin/whoami
    register: username
  - debug: var=username
```

- Useful to send output to screen during execution
- Helps find problems

Prompting for Input

Prompt user during execution

```
- hosts: web1


  vars_prompt:
   - name: "sitename"
     prompt: "What is new site name?"


  tasks:
   - debug: msg="The name is {{ sitename }}"
```

- Creates Dynamic Playbooks

Playbook Handlers

- Tasks with asynchronous execution
- Only runs tasks when notified
- Tasks only notify when state=changed
- Does not run until all playbook tasks have executed
- Most common for restarting services to load changes (if changes are made)

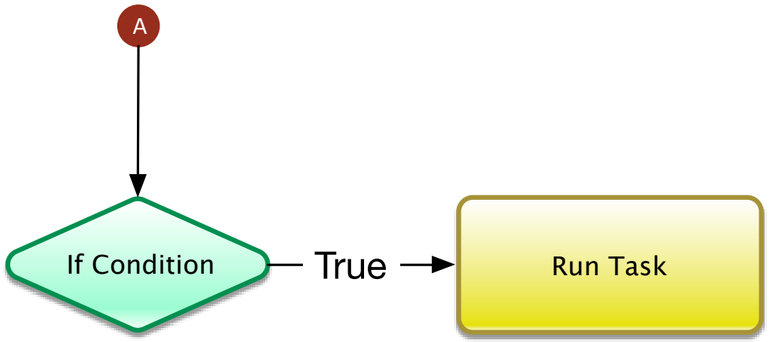
Handlers

Notify handlers from your tasks

```
tasks:
   - copy: src=files/httpd.conf
           dest=/etc/httpd/conf/
     notify:
        - Apache Restart
 handlers:
   - name: Apache Restart
     service: name=httpd state=restarted
```

- Copies config file to host
- If state=change on “COPY”, tell “Apache Restart”
- Run “Service” module.

Conditional Execution



Use the clause “when” to choose if task should run.

Conditional Clause

Choose when to execute tasks

```
tasks:
   - yum: name=httpd state=present
     when: ansible_os_family == “RedHat”

   - apt: name=apache2 state=present
     when: ansible_os_family == “Debian”
```

- Uses YUM if OS is RedHat
- Uses APT if OS is Debian

Conditional Clause Based on Output

Choose when to execute tasks

```
tasks:
  - command: ls /path/doesnt/exist
    register: result
    ignore_errors: yes

  - debug: msg="Failure!"
    when: result|failed
```

- Track whether previous task ran
- Searches JSON result for status
- Status Options:
  - success
  - failed
  - skipped

Templates

Uses Jinja2 Engine

Insert variables into static files

Creates and copies dynamic files

Deploy custom configurations

Template Module

Modify Template and Copy

```
tasks:
   - template:
       src=templates/httpd.j2
       dest=/etc/httpd/conf/httpd.conf
       owner=httpd
```

- Takes a file with pre-defined variable names
- Inserts variable values in file
- Copies file to destination

httpd.j2

```
......

<VirtualHost *:80>
  ServerAdmin {{ server_admin }}
  DocumentRoot {{ site_root }}
  ServerName {{ inventory_hostname }}
</VirtualHost>

......
```

Demo: Playbook Controls

Add install decisions based on OS

Create template for Apache Config

Deploy configuration

Restart service if needed