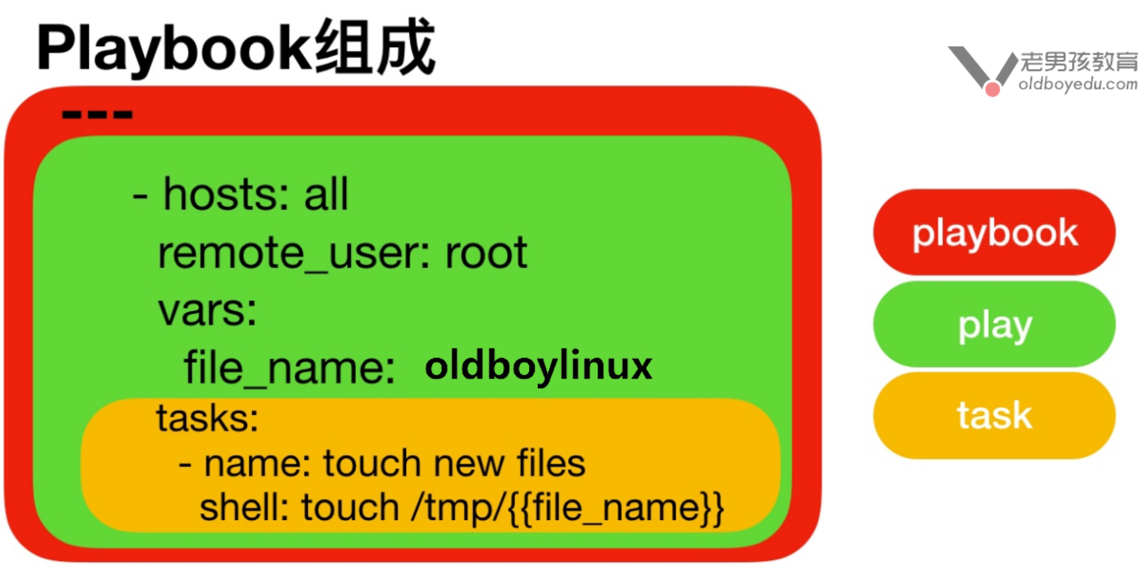
03.Ansible Playbook

1.Ansible Playbook基本概述

1.什么是playbook，playbook翻译过来就是“剧本”，那playbook组成如下
playbook: 定义一个文本文件,以yml为后缀结尾(翻译: 我有一个剧本)
yaml格式
play: 定义的是主机的角色（翻译: 找哪个大腕明星）
task: 定义的是具体执行的任务（翻译: 大腕每一集拍什么）

总结: playbook是由一个或多个play组成，一个play可以包含多个task任务。
可以理解为: 使用不同的模块来共同完成一件事情。



```
---
- hosts: all
  remote_user: root
  vars:
    file_name:  oldboylinux
  tasks:
    - name: touch new files
      shell: touch /tmp/{{file_name}}
```

2.Ansible playbook与AD-Hoc的关系

1) playbook是对AD-Hoc的一种编排方式。
2) playbook可以持久运行(重复)，而Ad-Hoc只能临时运行。
3) playbook适合复杂的任务，而Ad-Hoc适合做快速简单的任务(检查,查询)。
4) playbook能控制任务执行的先后顺序。

3.Ansible Playbook书写格式

playbook是由yaml语法书写，结构清晰，可读性强，所以必须掌握yml基础语法

语法	描述
缩进	YAML使用固定的缩进风格表示层级结构,每个缩进由**两个空格**组成, 不能使用tabs
冒号	以冒号结尾的除外，其他所有**冒号后面**所有必须有空格。
短横线	表示列表项，使用一个短横杠加一个空格。多个项使用同样的缩进级别作为同一列表。

1. 下面我们一起来编写一个playbook文件，playbook起步
host: 对哪些主机进行操作
remote_user: 我要使用什么用户执行
tasks: 具体执行什么任务

```
---
- hosts: all
  tasks:
    - name: yum安装软件
    yum:  xxxxxxxxx
    - name: 服务启动
    systemd: xxxxxx


#人生中第1个剧本 查询所有主机的主机名
# ansible ad-hoc
ansible all  -m command  -a  'hostname'  -i hosts

# ansible playbook





[root@m01 /server/playbook]# cat 01_hostname.yml
---
- hosts: all
  tasks:
    - name: show hostname
      command: hostname
[root@m01 /server/playbook]# ansible-playbook
01_hostname.yml  -i hosts

PLAY [all]
**********************************************************
***********

TASK [Gathering Facts]
*********************************************************
ok: [172.16.1.51]
ok: [172.16.1.5]
```

```
ok: [172.16.1.6]
ok: [172.16.1.41]
ok: [172.16.1.31]
ok: [172.16.1.7]
ok: [172.16.1.8]
ok: [172.16.1.9]
ok: [172.16.1.10]

TASK [show hostname]
**********************************************
changed: [172.16.1.51]
changed: [172.16.1.41]
changed: [172.16.1.6]
changed: [172.16.1.31]
changed: [172.16.1.5]
changed: [172.16.1.8]
changed: [172.16.1.7]
changed: [172.16.1.10]
changed: [172.16.1.9]

PLAY RECAP
**********************************************************
**********************************************************
*******
172.16.1.10                : ok=2    changed=1
 unreachable=0    failed=0    skipped=0    rescued=0
 ignored=0
172.16.1.31                : ok=2    changed=1
 unreachable=0    failed=0    skipped=0    rescued=0
 ignored=0
172.16.1.41                : ok=2    changed=1
 unreachable=0    failed=0    skipped=0    rescued=0
 ignored=0
172.16.1.5                 : ok=2    changed=1
 unreachable=0    failed=0    skipped=0    rescued=0
 ignored=0
172.16.1.51                : ok=2    changed=1
 unreachable=0    failed=0    skipped=0    rescued=0
 ignored=0
```

```
172.16.1.6                 : ok=2    changed=1
 unreachable=0    failed=0    skipped=0    rescued=0
 ignored=0
172.16.1.7                 : ok=2    changed=1
 unreachable=0    failed=0    skipped=0    rescued=0
 ignored=0
172.16.1.8                 : ok=2    changed=1
 unreachable=0    failed=0    skipped=0    rescued=0
 ignored=0
172.16.1.9                 : ok=2    changed=1
 unreachable=0    failed=0    skipped=0    rescued=0
 ignored=0
```

2.执行playbook，注意观察执行返回的状态颜色:
红色：表示有task执行失败，通常都会提示错误信息。
黄色：表示远程主机按照编排的任务执行且进行了改变。
绿色：表示该主机已经是描述后的状态，无需在次运行。

4.Ansible Playbook练习实验

案例一、使用ansible安装并配置nfs服务

```
#1.梳理流程 步骤
每一步使用模块

# db01  172.16.1.51

#在backup服务器上安装nfs
ansible 172.16.1.41 -i hosts    -m yum  -a 'name=nfs-utils
state=present'

##配置
cat  /etc/exports
/data-lidao/   172.16.1.0/24(rw,all_squash)  #默认压缩为
nfsnobody用户
```

```
ansible 172.16.1.41  -i hosts   -m  copy   -a
'content="/data-lidao/   172.16.1.0/24(rw,all_squash)"
dest=/etc/exports backup=yes'

#创建目录 修改所有者
[root@m01 ~]# ansible  172.16.1.41  -m file  -a
'path=/data-lidao/  owner=nfsnobody  group=nfsnobody
state=directory ' -i hosts

#启动服务并开机自启动
ansible  172.16.1.41 -i hosts   -m service  -a
'name=rpcbind  state=started  enabled=yes'
ansible  172.16.1.41 -i hosts   -m service  -a 'name=nfs
state=started  enabled=yes'

#backup上面进行挂载(本地测试)
ansible  172.16.1.41 -i hosts   -m mount  -a
'src=172.16.1.41:/data-lidao/  path=/mnt/  fstype=nfs
state=mounted'

#web服务器进行挂载
挂载到web服务器的 /code/upload/img
[root@m01 ~]# ansible web -i hosts  -m mount    -a
'src=172.16.1.41:/data-lidao    path=/code/upload/img
fstype=nfs  state=mounted'




#

```

- 1. 书写playbook

```
[root@m01 /server/playbook]# cat 02_nfs.yml
---
- hosts: 172.16.1.51
  tasks:
    - name: install nfs
      yum:  name=rpcbind,nfs-utils state=installed
    - name: nfs configure file
```

```
      copy: src=./exports.j2  dest=/etc/exports
 backup=yes
    - name: mkdir  share dir
      file:  path=/data-lidao996   state=directory
owner=nfsnobody  group=nfsnobody
    - name: start rpcbind
      systemd:  name=rpcbind  state=started  enabled=yes
    - name: start nfs
      systemd:  name=nfs  state=started  enabled=yes
    - name: mount local
      mount: src=172.16.1.51:/data-lidao996    path=/mnt
 fstype=nfs   state=mounted
```

- 2. 根据playbook准备你的环境

```
[root@m01 /server/playbook]# echo   '/data-lidao996
172.16.1.0/24(rw,all_squash)'  >./exports.j2
[root@m01 /server/playbook]# cat ./exports.j2
/data-lidao996 172.16.1.0/24(rw,all_squash)
```

- 3. 检查语法并执行

```
[root@m01 /server/playbook]# ansible-playbook  -i hosts
02_nfs.yml  -C
```

- 4. 在其他机器上面进行挂载web服务器 进行挂载

```
[root@m01 /server/playbook]# cat 02_nfs.yml
---
- hosts: 172.16.1.51
  tasks:
    - name: install nfs
      yum:  name=rpcbind,nfs-utils state=installed
    - name: nfs configure file
      copy: src=./exports.j2  dest=/etc/exports
 backup=yes
    - name: mkdir  share dir
      file:  path=/data-lidao996   state=directory
owner=nfsnobody  group=nfsnobody
    - name: start rpcbind
      systemd:  name=rpcbind  state=started  enabled=yes
    - name: start nfs
      systemd:  name=nfs  state=started  enabled=yes
    - name: mount local
      mount: src=172.16.1.51:/data-lidao996    path=/mnt
 fstype=nfs   state=mounted
- hosts: web
  tasks:
    - name: web server mount  nfs
      mount: src=172.16.1.51:/data-lidao996
 path=/code/upload/dbserver  fstype=nfs   state=mounted
```

1) 编写安装配置nfs服务的playbook文件

```
[root@m01 ~]# cd /etc/ansible/playbook/
[root@m01 playbook]# cat nfs.yml
---
- hosts: web
  tasks:
    - name: Install NFS Server
      yum: name=nfs-utils state=latest

    - name: Configure NFS Server
      copy: src=./exports.j2 dest=/etc/exports

    - name: Create Data Directory
      file: path=/data state=directory owner=nfsnobody
group=nfsnobody recurse=yes

    - name: Start NFS Server
      service: name=nfs state=started enabled=yes
```

2) 准备playbook依赖的exports.j2文件

```
[root@m01 playbook]# echo "/data 172.16.1.0/24(rw,sync)" >
exports.j2
```

3) 检查playbook语法

```
[root@m01 playbook]# ansible-playbook nfs.yml --syntax-
check

playbook: nfs.yml
```

4) 执行playbook
5) 客户端执行命令测试

```
[root@m01 playbook]# showmount -e 172.16.1.8
Export list for 172.16.1.8:
/data 172.16.1.0/24
[root@m01 playbook]# showmount -e 172.16.1.7
Export list for 172.16.1.7:
/data 172.16.1.0/24
```

案例二、使用ansible安装并配置nginx服务

---

1. nginx

```
1.安装nginx服务
#yum_repository
ansible 172.16.1.31  -i hosts   -m  yum_repository  -a
 'name=nginx  description="nginx repo"
baseurl=http://nginx.org/packages/centos/7/x86_64/
enabled=yes gpgcheck=no state=present'
#yum
[root@m01 ~]# ansible 172.16.1.31  -i hosts   -m  yum  -a
'name=nginx state=installed'

2.编写简单网页测试内容
ansible 172.16.1.31  -i hosts   -m  copy -a
'content="backup.oldoby.com"
dest=/usr/share/nginx/html/index.html '

3.启动服务不加入开机自启       #systemd/service
[root@m01 ~]# ansible 172.16.1.31  -i hosts   -m  systemd
-a 'name=nginx  state=started enabled=yes'

4.放行对应的端口                #iptables
[root@m01 ~]# ansible 172.16.1.31  -i hosts   -m  iptables
-a 'table=filter action=append chain=INPUT protocol=tcp
destination_port=80   jump=ACCEPT'




#playbook 剧本

[root@m01 /server/playbook]# cat 03_nginx.yml
```

```
---
- hosts: 172.16.1.9
  tasks:
  - name: Add Nginx Yum Repo
    yum_repository:
      name: nginx
      description: nginx repo
      baseurl:
http://nginx.org/packages/centos/$releasever/$basearch/
      enabled: yes
      gpgcheck: yes
      gpgkey: https://nginx.org/keys/nginx_signing.key
  - name: Install Nginx
    yum:
      name:  nginx
      state: installed
  - name: Index FIle
    copy:
      content: "This is ansible website
ansible.oldboy.com"
      dest:  /usr/share/nginx/html/index.html
  - name: Copy Nginx.d/conf File
    copy:
      src: ./www.conf
      dest: /etc/nginx/conf.d/default.conf
      backup: yes
  - name: Start Nginx
    systemd:
      name: nginx
      state: started
      enabled: yes




[root@m01 /server/playbook]# cat www.conf
server {
  listen 80;
  server_name ansible.oldboy.com;
  location  / {
    root /usr/share/nginx/html;
    index index.html;
  }
}
```

---

2. 目前问题: 希望nginx配置如果发生变化,才重启nginx

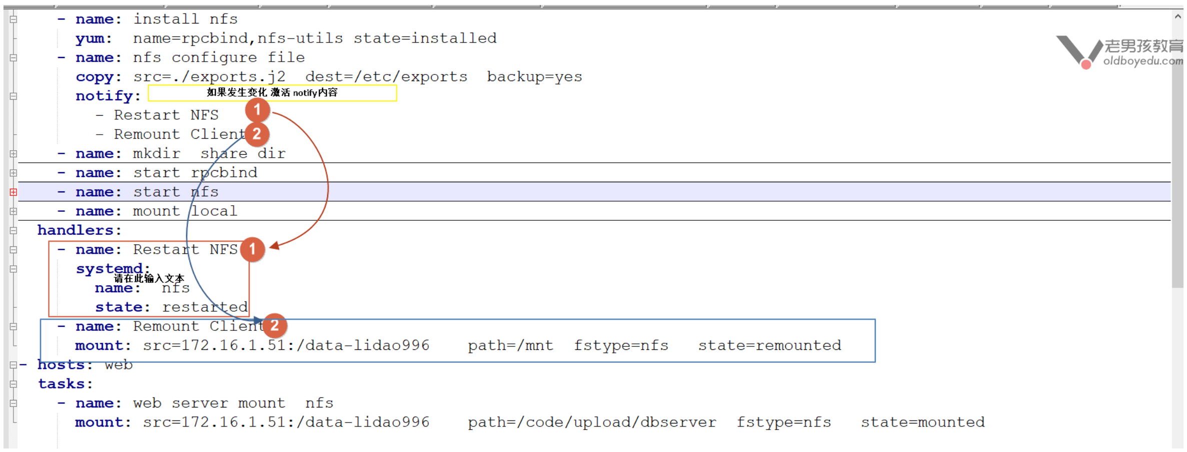
```
notify  监控状态的变化(模块),如果变化 根据你指定的命令 去执行指令

handlers 实施具体的东西

[root@m01 /server/playbook]# cat 03_nginx.yml
---
- hosts: 172.16.1.9
  tasks:
  - name: Add Nginx Yum Repo
    yum_repository:
      name: nginx
      description: nginx repo
      baseurl:
http://nginx.org/packages/centos/$releasever/$basearch/
      enabled: yes
      gpgcheck: yes
      gpgkey: https://nginx.org/keys/nginx_signing.key
  - name: Install Nginx
    yum:
      name:  nginx
      state: installed
  - name: Index FIle
    copy:
      content: "This is ansible website
ansible.oldboy.com"
      dest:  /usr/share/nginx/html/index.html
  - name: Copy Nginx.d/conf File
    copy:
      src: ./www.conf
      dest: /etc/nginx/conf.d/default.conf
      backup: yes
    notify: Restart Nginx
  - name: Start Nginx
```

```
    systemd:
      name: nginx
      state: started
      enabled: yes
  handlers:
    - name: Restart Nginx
      systemd:
        name: nginx
        state: restarted
```

激活多个handlers



```
  - name: install nfs
    yum:  name=rpcbind,nfs-utils state=installed
  - name: nfs configure file
    copy: src=./exports.j2  dest=/etc/exports  backup=yes
    notify:
      - Restart NFS
      - Remount Client
  - name: mkdir  share dir
  - name: start rpcbind
  - name: start nfs
  - name: mount local
handlers:
  - name: Restart NFS
    systemd:
      name:  nfs
      state: restarted
  - name: Remount Client
    mount: src=172.16.1.51:/data-lidao996    path=/mnt  fstype=nfs   state=remounted
- hosts: web
  tasks:
  - name: web server mount  nfs
    mount: src=172.16.1.51:/data-lidao996    path=/code/upload/dbserver  fstype=nfs   state=mounted
```

```
RUNNING HANDLER [Restart NFS]
**********************************************************
*******************************************
changed: [172.16.1.51]

RUNNING HANDLER [Remount Client]
**********************************************************
****************************************
changed: [172.16.1.51]



[root@m01 /server/playbook]#  cat 02_nfs.yml
---
- hosts: 172.16.1.51
  tasks:
    - name: install nfs
```

```
      yum:  name=rpcbind,nfs-utils state=installed
    - name: nfs configure file
      copy: src=./exports.j2  dest=/etc/exports
backup=yes
      notify:
        - Restart NFS
        - Remount Client
    - name: mkdir  share dir
      file:  path=/data-lidao996   state=directory
owner=nfsnobody  group=nfsnobody
    - name: start rpcbind
      systemd:  name=rpcbind  state=started  enabled=yes
    - name: start nfs
      systemd:  name=nfs  state=started  enabled=yes
    - name: mount local
      mount: src=172.16.1.51:/data-lidao996    path=/mnt
fstype=nfs   state=mounted
  handlers:
    - name: Restart NFS
      systemd:
        name:  nfs
        state: restarted
    - name: Remount Client
      mount: src=172.16.1.51:/data-lidao996    path=/mnt
fstype=nfs   state=remounted
- hosts: web
  tasks:
    - name: web server mount  nfs
      mount: src=172.16.1.51:/data-lidao996
path=/code/upload/dbserver  fstype=nfs   state=mounted
```

案例二、使用ansible安装并配置httpd服务

1) 编写安装配置httpd服务的playbook文件

```
[root@m01 playbook]# cat web.yml
---
- hosts: web
  tasks:
    - name: Installed Httpd Server
      yum: name=httpd state=latest

    - name: Started Httpd Server
      service: name=httpd state=started enabled=yes

    - name: Started Firewalld Server
      service: name=firewalld state=started enabled=yes

    - name: Copy Httpd Web Page
      copy: content='This is Web Page'
dest=/var/www/html/index.html

    - name: Configure Firewalld Permit Http
      firewalld: service=http  immediate=yes permanent=yes
state=enabled
```

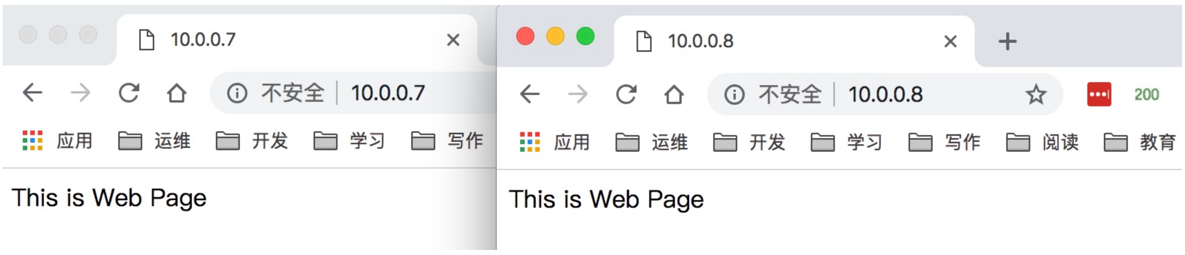
2) 检查playbook语法

```
[root@m01 playbook]# ansible-playbook web.yml --syntax-
check

playbook: web.yml
```

3) 执行playbook

4.访问服务器对应的web页面测试



This is Web Page

This is Web Page

案例三、ansible安装并配置httpd服务，根据不同的主机配置不同的网站。（多个play使用方式，但不是生产推荐(了解即可)，生产推荐使用循环方式）

1) 编写安装配置httpd服务的playbook文件

```
[root@m01 playbook]# cat web.yml
---
- hosts: web
  tasks:
    - name: Installed Httpd Server
      yum: name=httpd state=latest

    - name: Started Httpd Server
      service: name=httpd state=started enabled=yes

    - name: Started Firewalld Server
      service: name=firewalld state=started enabled=yes


    - name: Configure Firewalld Permit Http
      firewalld: service=http  immediate=yes permanent=yes
state=enabled

- hosts: 172.16.1.7 #单独针对7
  tasks:
    - name: Configure  Httpd Web Page
      copy: content='This is Web-7 Page'
dest=/var/www/html/index.html

- hosts: 172.16.1.8 #单独针对7
  tasks:
    - name: Configure  Httpd Web Page
```

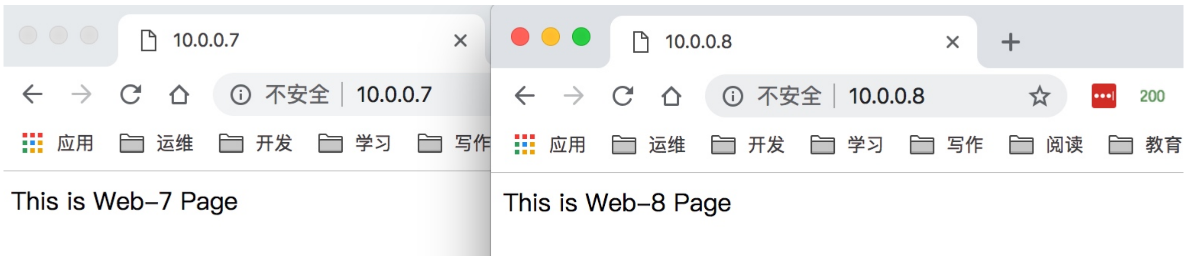
```
       copy: content='This is Web-8 Page'
dest=/var/www/html/index.html
```

2) 检查playbook语法

```
[root@m01 playbook]# ansible-playbook web.yml --syntax-check

playbook: web.yml
```

3) 执行playbook
4.访问服务器对应的web页面测试



This is Web–7 Page

This is Web–8 Page

##

5.Ansible Playbook案例实践-LNMP 环境

使用AnsiblePlaybook方式构建LAMP架构，具体操作步骤如下:
1.使用yum安装 httpd、php、php-mysql、mariadb、firewalld等
2.启动httpd、firewalld、mariadb等服务
3.添加防火墙规则，放行http的流量，并永久生效
4.使用get_url下载`www.oldboylinux.cn/indes.html`文件

1) 将被管理主机进行分组,分组名称定义为web

```
[root@m01 ~]# cat /etc/ansible/hosts
[web]
172.16.1.7
172.16.1.8
```

2) 编写对应的playbook文件

```
[root@m01 ~]# cd /etc/ansible/playbook/
[root@m01 playbook]# cat lamp.yml
---
- hosts: web
```

```
  tasks:
    - name: Installed LAMP Server
      yum: name=httpd,php,php-mysql,mariadb state=latest

    - name: Started Httpd Server
      service: name=httpd state=started enable=yes

    - name: Started Firewalld Server
      service: name=httpd state=started enable=yes

    - name: Get Url Index.php File
      get_url: url=http://www.oldboylinu.cn/index.php
dest=/var/www/html/index.php

    - name: Configure Firewalld Permit Http
      firewalld: service=http  immediate=yes permanent=yes
state=enable
```

3) 检查playbook要执行的主机是否正确

```
[root@m01 playbook]# ansible-playbook lamp.yml --list-host
-i /etc/ansible/hosts

playbook: lamp.yml

  play #1 (web): web    TAGS: []
    pattern: [u'web']
    hosts (2):
      172.16.1.7
      172.16.1.8
```

4) 检查playbook语法是否有错误，并不会帮我们检查抒写的逻辑错误

```
[root@m01 playbook]# ansible-playbook --syntax-check
lamp.yml

playbook: lamp.yml
```

5) 运行Playbook，如果是生产环境记得使用-C参数模拟执行
6) 打开浏览器检查