Ansible_Devops_Tool

작성날짜	2022-02-21
참고	인프런/처음부터 설치하며 배우는 앤서블
링크	https://bit.ly/359AUtP

- **기존방식**

CODE > BUILD > TEST > RELEASE > OPERATE

- **DEVOPS 방식**

code > build > test > release > deploy > operate > monitor > plan

- **많이 사용하는 툴들**

git/jira > gradle > JUnit > Jenkins > Ansible > Nagios

Configuration Management Tools 비교표

왜 Ansible을 배우나요??

구성 관리 툴	특징	agent 설치
Puppet	가장 먼저 2005년에 출시되서 복잡도가 높고, 사용하기 어려움,	필요
Chef	Puppet과 4년 차이나지만, 복잡도가 높음	필요
Salt	Salt도 위에 툴보다 2년 뒤에나왔지만 크게 발전하지 못함	필요
Ansible	1. 관리받는 대상에 agent가 필요 없어서 기술적으로 복잡도도 낮다. 2. 관리할 때 Yaml을 사용하는데 Json과 비슷해서 쉽고 간편함 3. Puppet와 Chef는 오래전에 출시했고, 바꾸기가 쉽지않을 정도로 복잡도가 높다. 그리고 Ansible은 배우기 쉽다. (Source RightScale 2017 State of the Cloud Report 기반)	불필요

Ansible 설치

```
OS : CENTOS 7

구성

Ansible-Server 192.168.111.134  - Master
Ansible-node  192.168.111.135 - Test node1
Ansible-node  192.168.111.136 - Test node2



설치
yum repolist
레파지토리 조회

ansible 설치패키지를 셋팅할 수 있는공간설정이 필요함
epel을 우선적으로 설치해야함
yum install epel-release -y

yum -y install ansible



셋팅
vi /etc/ansible/hosts에 관리할 서버 아이피 입력
vi /etc/resolve.conf에 DNS 서버 IP 등록



설치 후 테스트
ansible all -m ping -k
```

Ansible이 참조하는 파일은 어떤것이 있나요?

```
1. Ansible의 환경 설정 파일
/etc/ansible/ansible.cfg

2. Ansible이 접속하는 호스트들
/etc/ansible/hosts
```

Ansible의 옵션값이란?

```
-i : (--inventory-file) 적용될 호스트들에 대한 파일
-m : (--module-name) 모듈을 선택할 수 있도록
-k : (--ask-pass) 패스워드를 물어보도록 설정
-K : (--ask-become-pass) 권리자로 권한 상승
--list-hosts : 적용되는 호스트들을 확인


예시 커맨드
ansible all -i test -m ping -k (테스트 파일에 있는 호스트를 읽어서 파이썬 라이브러리인 ping을 실행)
ansible nginx  -m ping -k (/etc/ansible/hosts에 있는 [nginx] 그룹을 읽어서 파이썬 라이브러리인 ping을 실행)
ansible nginx  -m ping --list-hosts (ansible 적용될 호스트들 출력해줌)
```

어떻게 Ansible을 활용할 수 있나요?

1. uptime 확인하기

- ansible all -m shell -a "uptime" -k

```
192.168.111.136 | CHANGED | rc=0 >>
 21:06:01 up 30 min,  3 users,  load average: 0.00, 0.01, 0.05

192.168.111.135 | CHANGED | rc=0 >>
 21:06:01 up 30 min,  3 users,  load average: 0.00, 0.01, 0.05
```

2. 디스크 용량 확인하기

- ansible all -m shell -a "df -h" -k

```
Filesystem               Size  Used Avail Use% Mounted on
devtmpfs                 1.9G     0  1.9G   0% /dev
tmpfs                    1.9G     0  1.9G   0% /dev/shm
tmpfs                    1.9G   12M  1.9G   1% /run
tmpfs                    1.9G     0  1.9G   0% /sys/fs/cgroup
/dev/mapper/centos-root   46G  1.4G   44G   3% /
/dev/sda1               1014M  150M  864M  15% /boot
tmpfs                    378M     0  378M   0% /run/user/0
192.168.111.135 | CHANGED | rc=0 >>
Filesystem               Size  Used Avail Use% Mounted on
devtmpfs                 1.9G     0  1.9G   0% /dev
tmpfs                    1.9G     0  1.9G   0% /dev/shm
tmpfs                    1.9G   12M  1.9G   1% /run
tmpfs                    1.9G     0  1.9G   0% /sys/fs/cgroup
/dev/mapper/centos-root   46G  1.4G   44G   3% /
/dev/sda1               1014M  151M  864M  15% /boot
tmpfs                    378M     0  378M   0% /run/user/0
```

3. 메모리 상태 확인하기

- ansible all -m shell -a "free -h" -k

```
192.168.111.135 | CHANGED | rc=0 >>
              total        used        free      shared  buff/cache   available
Mem:           3.7G        290M        3.1G         11M        283M        3.2G
Swap:          3.9G          0B        3.9G
192.168.111.136 | CHANGED | rc=0 >>
              total        used        free      shared  buff/cache   available
Mem:           3.7G        291M        3.1G         11M        283M        3.2G
Swap:          3.9G          0B        3.9G
```

4. 새로운 유저 만들기

- ansible all -m user -a "name=bloter password=1234" -k

```
[WARNING]: The input password appears not to have been hashed. The 'password'
argument must be encrypted for
this module to work properly.
192.168.111.135 | CHANGED => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python"
    },
    "changed": true,
    "comment": "",
    "create_home": true,
    "group": 1000,
    "home": "/home/bloter",
    "name": "bloter",
    "password": "NOT_LOGGING_PASSWORD",
    "shell": "/bin/bash",
    "state": "present",
    "system": false,
    "uid": 1000
}

192.168.111.136 | CHANGED => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python"
    },
    "changed": true,
    "comment": "",
    "create_home": true,
    "group": 1000,
    "home": "/home/bloter",
    "name": "bloter",
    "password": "NOT_LOGGING_PASSWORD",
    "shell": "/bin/bash",
    "state": "present",
    "system": false,
    "uid": 1000
}
```

5. 파일 전송하기

- ansible nginx -m copy-a "src=./bloter.file dest=/tmp/" -k

```
192.168.111.135 | CHANGED => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python"
    },
    "changed": true,
    "checksum": "da39a3ee5e6b4b0d3255bfef95601890afd80709",
    "dest": "/tmp/bloter.file",
    "gid": 0,
    "group": "root",
    "md5sum": "d41d8cd98f00b204e9800998ecf8427e",
    "mode": "0644",
    "owner": "root",
    "secontext": "unconfined_u:object_r:admin_home_t:s0",
    "size": 0,
    "src": "/root/.ansible/tmp/ansible-tmp-1645446027.5-2217-
242509752499124/source",
    "state": "file",
    "uid": 0
}



192.168.111.136 | CHANGED => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python"
    },
    "changed": true,
    "checksum": "da39a3ee5e6b4b0d3255bfef95601890afd80709",
    "dest": "/tmp/bloter.file",
    "gid": 0,
    "group": "root",
    "md5sum": "d41d8cd98f00b204e9800998ecf8427e",
    "mode": "0644",
    "owner": "root",
    "secontext": "unconfined_u:object_r:admin_home_t:s0",
    "size": 0,
    "src": "/root/.ansible/tmp/ansible-tmp-1645446027.84-2219-
58720463184656/source",
    "state": "file",
    "uid": 0
}
```

6. 서비스 설치

- ansible nginx -m copy -a "src=./bloter.file dest=/tmp/" -k

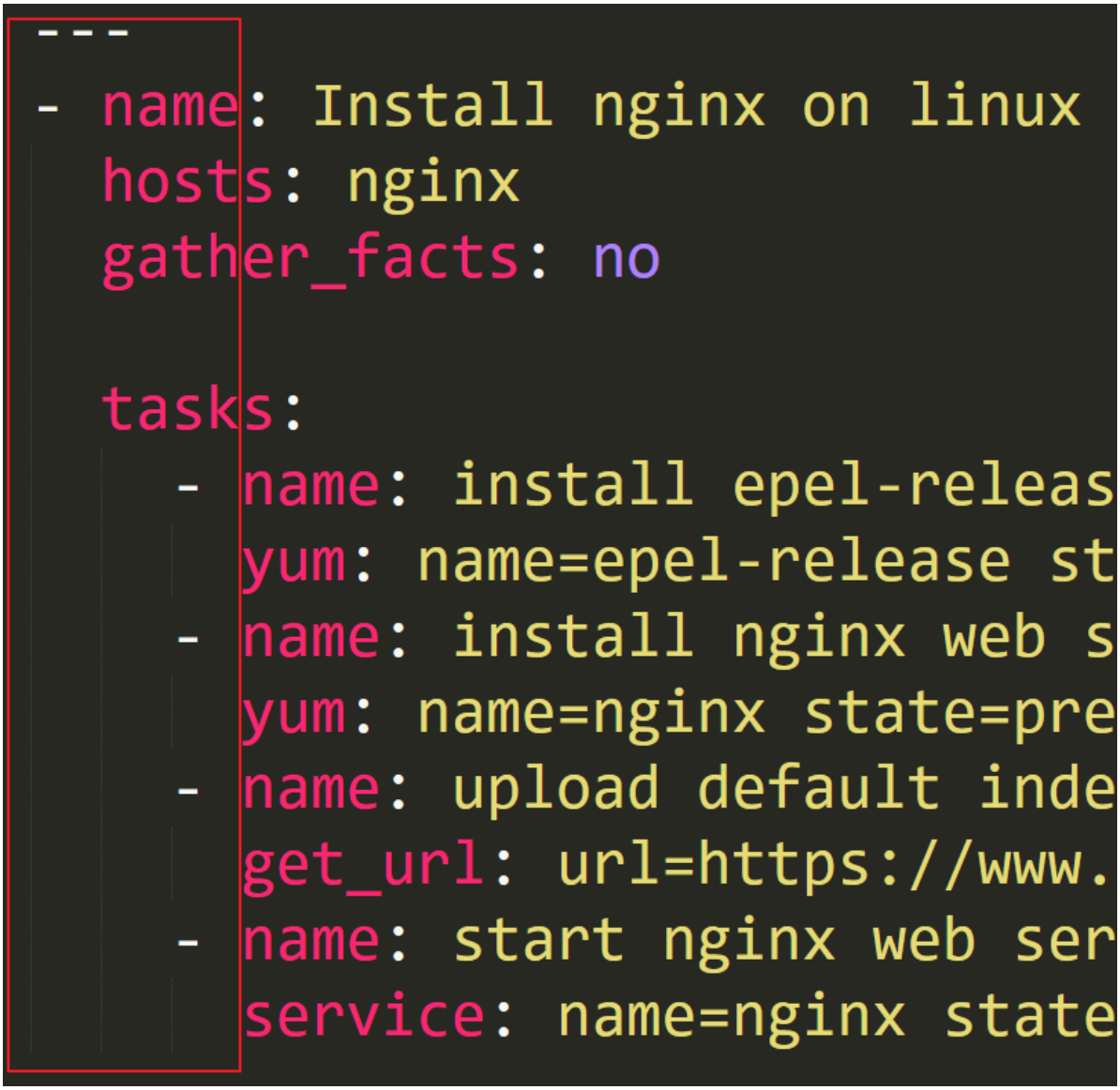
```
SSH password:


192.168.111.136 | CHANGED => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python"
    },
    "changed": true,
    "changes": {
        "installed": [
            "httpd"
        ]
    },
    "msg": "",
    "rc": 0,
    "results": [
```

```
        "Loaded plugins: fastestmirror\nLoading mirror speeds from cached
hostfile\n * base: mirror.kakao.com\n * extras: mirror.kakao.com\n * updates:
mirror.kakao.com\nResolving Dependencies\n--> Running transaction check\n--->
Package httpd.x86_64 0:2.4.6-97.el7.centos.4 will be installed\n--> Processing
Dependency: httpd-tools = 2.4.6-97.el7.centos.4 for package: httpd-2.4.6-
97.el7.centos.4.x86_64\n--> Processing Dependency: /etc/mime.types for package:
httpd-2.4.6-97.el7.centos.4.x86_64\n--> Processing Dependency: libaprutil-
1.so.0()(64bit) for package: httpd-2.4.6-97.el7.centos.4.x86_64\n--> Processing
Dependency: libapr-1.so.0()(64bit) for package: httpd-2.4.6-
97.el7.centos.4.x86_64\n--> Running transaction check\n---> Package apr.x86_64
0:1.4.8-7.el7 will be installed\n---> Package apr-util.x86_64 0:1.5.2-6.el7 will
be installed\n---> Package httpd-tools.x86_64 0:2.4.6-97.el7.centos.4 will be
installed\n---> Package mailcap.noarch 0:2.1.41-2.el7 will be installed\n-->
Finished Dependency Resolution\n\nDependencies
Resolved\n\n================================================================================
===========\n Package           Arch         Version
Repository
Size\n================================================================================
=====\nInstalling:\n httpd             x86_64       2.4.6-97.el7.centos.4
updates       2.7 M\nInstalling for dependencies:\n apr               x86_64
  1.4.8-7.el7                 base          104 k\n apr-util          x86_64
  1.5.2-6.el7                 base           92 k\n httpd-tools       x86_64
  2.4.6-97.el7.centos.4       updates        94 k\n mailcap           noarch
  2.1.41-2.el7                base           31 k\n\nTransaction
Summary\n================================================================================
========\nInstall  1 Package (+4 Dependent packages)\n\nTotal download size: 3.0
M\nInstalled size: 10 M\nDownloading packages:\n--------------------------------
-----------------------------------------------\nTotal
                  1.9 MB/s | 3.0 MB  00:01     \nRunning transaction
check\nRunning transaction test\nTransaction test succeeded\nRunning
transaction\n  Installing : apr-1.4.8-7.el7.x86_64
        1/5 \n  Installing : apr-util-1.5.2-6.el7.x86_64
         2/5 \n  Installing : httpd-tools-2.4.6-97.el7.centos.4.x86_64
          3/5 \n  Installing : mailcap-2.1.41-2.el7.noarch
           4/5 \n  Installing : httpd-2.4.6-97.el7.centos.4.x86_64
            5/5 \n  Verifying  : httpd-tools-2.4.6-97.el7.centos.4.x86_64
            1/5 \n  Verifying  : apr-1.4.8-7.el7.x86_64
            2/5 \n  Verifying  : mailcap-2.1.41-2.el7.noarch
             3/5 \n  Verifying  : httpd-2.4.6-97.el7.centos.4.x86_64
              4/5 \n  Verifying  : apr-util-1.5.2-6.el7.x86_64
               5/5 \n\nInstalled:\n  httpd.x86_64 0:2.4.6-97.el7.centos.4
                                \n\nDependency Installed:\n  apr.x86_64 0:1.4.8-
7.el7                      apr-util.x86_64 0:1.5.2-6.el7   \n  httpd-tools.x86_64
0:2.4.6-97.el7.centos.4    mailcap.noarch 0:2.1.41-2.el7   \n\nComplete!\n"
    ]
}
192.168.111.135 | CHANGED => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python"
    },
    "changed": true,
    "changes": {
        "installed": [
            "httpd"
        ]
    },
    "msg": "",
    "rc": 0,
```

```
    "results": [
        "Loaded plugins: fastestmirror\nLoading mirror speeds from cached
hostfile\n * base: mirror.kakao.com\n * extras: mirror.kakao.com\n * updates:
mirror.kakao.com\nResolving Dependencies\n--> Running transaction check\n--->
Package httpd.x86_64 0:2.4.6-97.el7.centos.4 will be installed\n--> Processing
Dependency: httpd-tools = 2.4.6-97.el7.centos.4 for package: httpd-2.4.6-
97.el7.centos.4.x86_64\n--> Processing Dependency: /etc/mime.types for package:
httpd-2.4.6-97.el7.centos.4.x86_64\n--> Processing Dependency: libaprutil-
1.so.0()(64bit) for package: httpd-2.4.6-97.el7.centos.4.x86_64\n--> Processing
Dependency: libapr-1.so.0()(64bit) for package: httpd-2.4.6-
97.el7.centos.4.x86_64\n--> Running transaction check\n---> Package apr.x86_64
0:1.4.8-7.el7 will be installed\n---> Package apr-util.x86_64 0:1.5.2-6.el7 will
be installed\n---> Package httpd-tools.x86_64 0:2.4.6-97.el7.centos.4 will be
installed\n---> Package mailcap.noarch 0:2.1.41-2.el7 will be installed\n-->
Finished Dependency Resolution\n\nDependencies
Resolved\n\n================================================================================
===========\n Package           Arch         Version
Repository
Size\n================================================================================
=====\nInstalling:\n httpd             x86_64       2.4.6-97.el7.centos.4
updates       2.7 M\nInstalling for dependencies:\n apr               x86_64
  1.4.8-7.el7                 base          104 k\n apr-util          x86_64
  1.5.2-6.el7                 base           92 k\n httpd-tools       x86_64
  2.4.6-97.el7.centos.4       updates        94 k\n mailcap           noarch
  2.1.41-2.el7                base           31 k\n\nTransaction
Summary\n================================================================================
========\nInstall  1 Package (+4 Dependent packages)\n\nTotal download size: 3.0
M\nInstalled size: 10 M\nDownloading packages:\n--------------------------------
-----------------------------------------\nTotal
                  1.9 MB/s | 3.0 MB  00:01     \nRunning transaction
check\nRunning transaction test\nTransaction test succeeded\nRunning
transaction\n  Installing : apr-1.4.8-7.el7.x86_64
        1/5 \n  Installing : apr-util-1.5.2-6.el7.x86_64
         2/5 \n  Installing : httpd-tools-2.4.6-97.el7.centos.4.x86_64
          3/5 \n  Installing : mailcap-2.1.41-2.el7.noarch
           4/5 \n  Installing : httpd-2.4.6-97.el7.centos.4.x86_64
            5/5 \n  Verifying  : httpd-tools-2.4.6-97.el7.centos.4.x86_64
            1/5 \n  Verifying  : apr-1.4.8-7.el7.x86_64
            2/5 \n  Verifying  : mailcap-2.1.41-2.el7.noarch
             3/5 \n  Verifying  : httpd-2.4.6-97.el7.centos.4.x86_64
              4/5 \n  Verifying  : apr-util-1.5.2-6.el7.x86_64
               5/5 \n\nInstalled:\n  httpd.x86_64 0:2.4.6-97.el7.centos.4
                                \n\nDependency Installed:\n  apr.x86_64 0:1.4.8-
7.el7                     apr-util.x86_64 0:1.5.2-6.el7   \n  httpd-tools.x86_64
0:2.4.6-97.el7.centos.4    mailcap.noarch 0:2.1.41-2.el7   \n\nComplete!\n"
    ]
}
```

Ansible playbook 작성 팁

- yaml 파일 작성시 **tab**이 아닌 **space**를 사용해야함
- 아래 그림과 같이 정확하게 같은 간격으로 문자를 배열해야함 , 조금이라도 오차가있으면 에러발생



Ansible Playbook

- 플레이북(PLAY BOOK)
- 각본,작전,계획이라는 뜻
- 멱등성의 성질을 가지고 있음 : 연산을 여러 번 적용하더라도 결과가 달라지지 않는 성질

사용예시 : **대량의 서버에 웹서비스를 설치 및 기동해야 할 때 사용하면 간편하며, 휴먼에러를 최소화 할 수 있음**

아래 내용을 Play Book에 넣고 한번에 실행하면 모든게 적용되도록 할 수 있음

1. nginx 설치
2. 파일 전송
3. 서비스 재시작

Ansible Playbook bloter.yml 테스트

```
[root@k8s-master ~]# cat bloter.yml
---
- name: Ansible_vim
  hosts: localhost

  tasks:
    - name: Add ansible hosts
      blockinfile:
          path: /etc/ansible/hosts
          block:  |
             [bloter]
             192.168.111.134

#################################################################################
################################
[root@k8s-master ~]#ansible-playbook bloter.yml #플레이북 생성 커맨드



#################################################################################
################################
cat /etc/ansible/hosts
#아래 내용이 생기되 반복 커맨드에 대해서는 무시하고, 변경된 사항만 기록됨
# BEGIN ANSIBLE MANAGED BLOCK
[bloter]
192.168.111.134
# END ANSIBLE MANAGED BLOCK


#################################################################################
################################
```

Ansible Playbook을 이용한 nginx 설치

```
vi nginx.yml
[root@k8s-master ~]# cat nginx.yml
---
- hosts: nginx
  remote_user: root
  tasks:
    - name: install epel-release
      yum: name=epel-release state=latest
    - name: install nginx web server
      yum: name=nginx state=present
    - name: start nginx web server
      service: name=nginx state=started

################################################################################
################################

[root@k8s-master ~]# ansible-playbook nginx.yml  -k (플레이북 생성)


PLAY [nginx]
********************************************************************************
****************

TASK [Gathering Facts]
********************************************************************************
******
ok: [192.168.111.135]
ok: [192.168.111.136]

TASK [install epel-release]
********************************************************************************
*
changed: [192.168.111.135]
changed: [192.168.111.136]

TASK [install nginx web server]
********************************************************************************
changed: [192.168.111.135]
changed: [192.168.111.136]

TASK [start nginx web server]
********************************************************************************
changed: [192.168.111.135]
changed: [192.168.111.136]

PLAY RECAP
********************************************************************************
******************
192.168.111.135            : ok=4    changed=3    unreachable=0    failed=0
skipped=0    rescued=0    ignored=0
```

```
192.168.111.136            : ok=4    changed=3    unreachable=0    failed=0
skipped=0    rescued=0    ignored=0
```

Ansible을 이용한 방화벽 정지

```
[root@k8s-master ~]# ansible nginx -m shell -a "systemctl stop firewalld" -k
SSH password:
192.168.111.136 | CHANGED | rc=0 >>

192.168.111.135 | CHANGED | rc=0 >>
```

Ansible Playbook index.html파일 변경해서 작성

```
[root@k8s-master ~]# cat nginx.yml
---
- hosts: nginx  #/etc/ansible/hosts에서 [nginx]
  remote_user: root  #꼭 루트로 할 필요는 없음
  tasks:
    - name: install epel-release  # nginx는 기본 패키지에 포함되지 않아서 epel 설치필요함
      yum: name=epel-release state=latest
    - name: install nginx web server
      yum: name=nginx state=present
    - name: Upload default index.html for web server
      copy: src=index.html dest=/usr/share/nginx/html/ mode=0644  #보안을 위해서 0644로 설정
    - name: start nginx web server
      service: name=nginx state=started
```

Ansible Playbook 변경한 index.html을 관리 대상노드에 적용하기

```
[root@k8s-master ~]# ansible-playbook nginx.yml -k
 SSH password:

 PLAY [nginx]
*********************************************************************************
****************

 TASK [Gathering Facts]
*********************************************************************************
******
 ok: [192.168.111.135]
 ok: [192.168.111.136]

 TASK [install epel-release]
*********************************************************************************
*
 changed: [192.168.111.136]
 changed: [192.168.111.135]

 TASK [install nginx web server]
*********************************************************************************
 ok: [192.168.111.135]
 ok: [192.168.111.136]

 TASK [Upload default index.html for web server]
*********************************************************************
 changed: [192.168.111.135]
 changed: [192.168.111.136]

 TASK [start nginx web server]
*********************************************************************************
 ok: [192.168.111.135]
 ok: [192.168.111.136]

 PLAY RECAP
*********************************************************************************
******************
 192.168.111.135            : ok=5    changed=2    unreachable=0    failed=0
skipped=0    rescued=0    ignored=0
 192.168.111.136            : ok=5    changed=2    unreachable=0    failed=0
skipped=0    rescued=0    ignored=0
```

vim-plug 설치 후 ansible-vim 설치

```
#vimrc 설치
vi ~/.vimrc

call plug#begin()
Plug 'pearofducks/ansible-vim'
call plug#end()
######################
#툴설치

yum install vim-enhanced

yum install git
```

Ansible Playbook 에러를 더 잘보이게 하는 설정

```
/etc/ansible/ansible.cfg

#stdout_callback = skippy  주석
stdout_callback = debug #debug 변경 적용
```