How to Jenkins-Ansible integration.

Ansible configurations:-

Agenda: Create a ansible role for deploying the artifacts from nexus to destination.

1. first we need to install the ansible in the linux machine i.e ubuntu/centos, for package mangement may vary based on flavours of linux. Ansible is not supporting for windows.

```
On ubuntu
$ sudo apt update
$ sudo apt install software-properties-common
$ sudo apt-add-repository --yes --update ppa:ansible/ansible
$ sudo apt install ansible
On Fedora:
$ sudo dnf install ansible
On RHEL and CentOS:
$ sudo yum install ansible
```

2. Check the version.

```
root@ip-address:/home/ubuntu# ansible --version
ansible 2.8.6
  config file = /etc/ansible/ansible.cfg
  configured module search path = [u'/root/.ansible/plugins/modules',
u'/usr/share/ansible/plugins/modules']
  ansible python module location =
/usr/lib/python2.7/dist-packages/ansible
  executable location = /usr/bin/ansible
  python version = 2.7.12 (default, Oct  8 2019, 14:14:10) [GCC 5.4.0
20160609]
```

3.Please install the supported python libraries for Ansible, i.e lxml etc.

4. Ansible related folders.

```
$ whereis ansible
ansible: /usr/bin/ansible ---> bin folder
/etc/ansible   ----> ansible home deafult directory
/usr/share/man/man1/ansible.1.gz ---> check the sub commands.
```

5.Go to ansible home directory.

```
ansible.cfg  ---> configuration related to ansible configurations like
below
#inventory      = /etc/ansible/hosts
#library        = /usr/share/my_modules/
#module_utils   = /usr/share/my_module_utils/
#remote_tmp     = ~/.ansible/tmp
#local_tmp      = ~/.ansible/tmp
#plugin_filters_cfg = /etc/ansible/plugin_filters.yml
#forks          = 5
#poll_interval  = 15
#sudo_user      = root
#ask_sudo_pass = True
#ask_pass      = True
#transport      = smart
#remote_port    = 22
#module_lang    = C
#module_set_locale = False
------------------------------------------------------------------------
------------
hosts        ---> you can store the hosts here.
roles        ----> defaults role can install here.
```

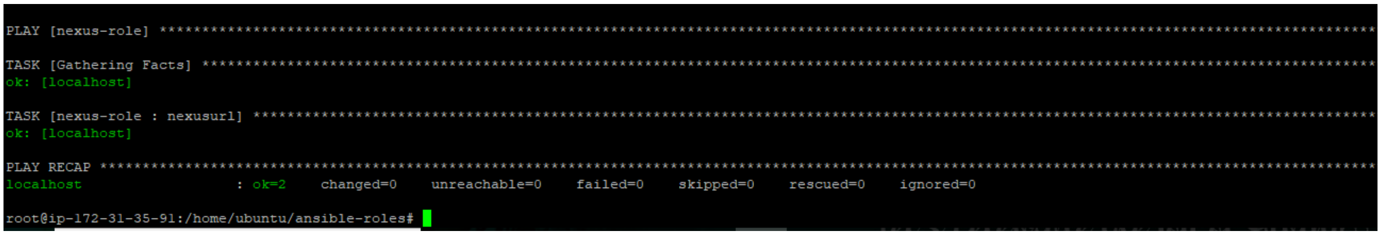
6. Create a file with naming playbook.yml and structure is below.

```
---
  - hosts: localhost  ---> hosts which you mentioned in inventoryfile
    name: nexus-role
    gather_facts: true
    roles:
      - nexus-role
    vars:
      versioning: latest
```

7. Create a role and struture is below.

```
$ ansible-galaxy init nexus-role.
$ tree
.
 defaults
    main.yml
 files
 handlers
    main.yml
 meta
    main.yml
 README.md
 tasks
    main.yml
 templates
 tests
    inventory
    test.yml
 vars
     main.yml
this yml files are defaults file for placing the tasks, vars, templates,
handlers.
```

8. Try to run the playbook with mapping role.



```
PLAY [nexus-role] ************************************************************************************************************************

TASK [Gathering Facts] *******************************************************************************************************************
ok: [localhost]

TASK [nexus-role : nexusurl] *************************************************************************************************************
ok: [localhost]

PLAY RECAP *******************************************************************************************************************************
localhost                  : ok=2    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

root@ip-172-31-35-91:/home/ubuntu/ansible-roles#
```

9. I'm trying to deploy the nexus artifacts from nexus server to destination.

```
task main.yml:- we are using WAR files in the TOMCAT destination
---
-
  maven_artifact:
    artifact_id: consumerBanking
    dest: $(TOMCAT_HOME)/webapps/    ----> mentions tomcat home
directory& hit the tomcat url localhost:8080/consumerbanking
    group_id: com.companyname.bank
    password: {{ servicetoken }}
    repository_url: "http://localhost/repository/novartis-maven"
    username: admin
    version: {{ versioning}}
  name: nexusurl

var main.yml:-
---
servicetoken: XXXXXXXXXXXXXXXX
```

```
task main.yml:- we are using JAR files in the Application destination
---
-
  maven_artifact:
    artifact_id: consumerBanking
    dest: $(Application path) ---> specify the path of destination to
deploy
    group_id: com.companyname.bank
    password: {{ servicetoken }}
    repository_url: "http://localhost/repository/novartis-maven"
    username: admin
    version: {{ versioning}}
  name: nexusurl
- name: deploying
  shell: java -jar consumerBanking-latest.jar    ---> specify the
location and name of jar file

var main.yml:-
---
servicetoken: XXXXXXXXXXXXXXXX
```

10. Now our task is done, next we can integrate with Jenkins and implement the same.

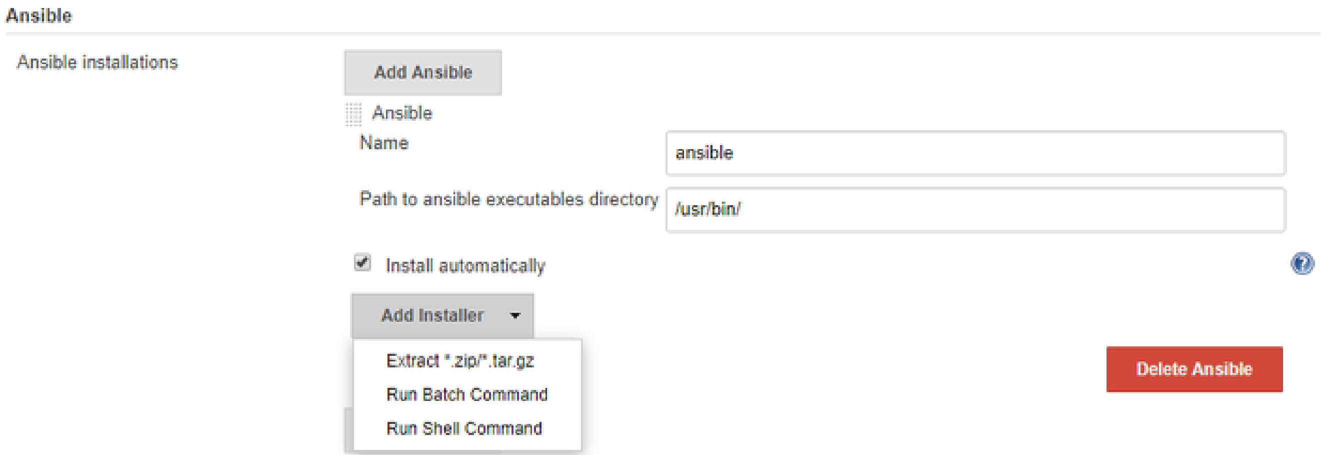
Jenkins configurations:-

Jenkins-Ansible(Master node) configuration,

Note: Ansible should install in master node. Ansible-playbook will run in master node.

1. start the Jenkins server and install the Ansible plugin.

2. Configure the Ansible as below pic.



Ansible

Ansible installations

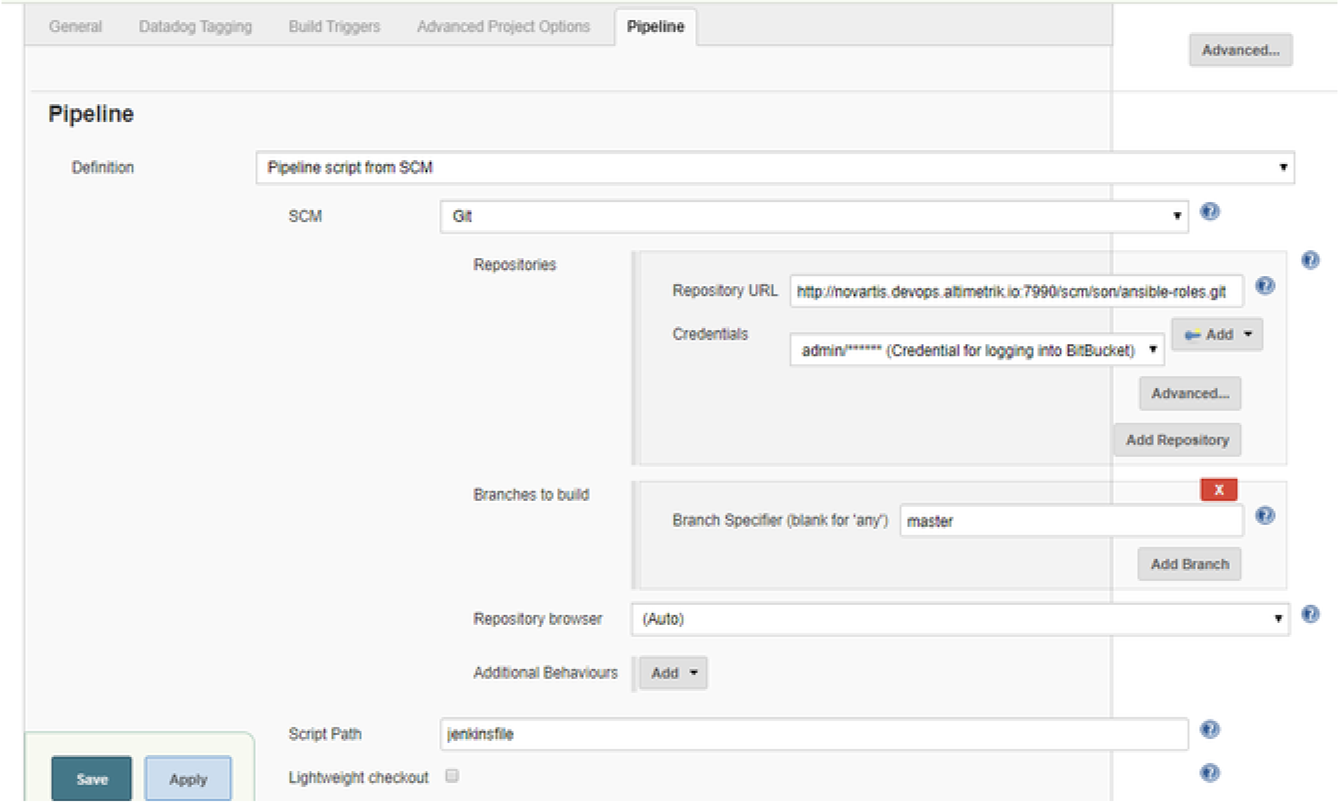
Ansible

Name: ansible

Path to ansible executables directory: /usr/bin/

☑ Install automatically

3. Create a pipeline job and add the declarative pipeline , add repository, map the jenkinfile.



Pipeline

Definition: Pipeline script from SCM

SCM: Git

Repositories

Repository URL: http://novartis.devops.altimetrik.io:7990/scm/son/ansible-roles.git

Credentials: admin/****** (Credential for logging into BitBucket)

Branches to build

Branch Specifier (blank for 'any'): master

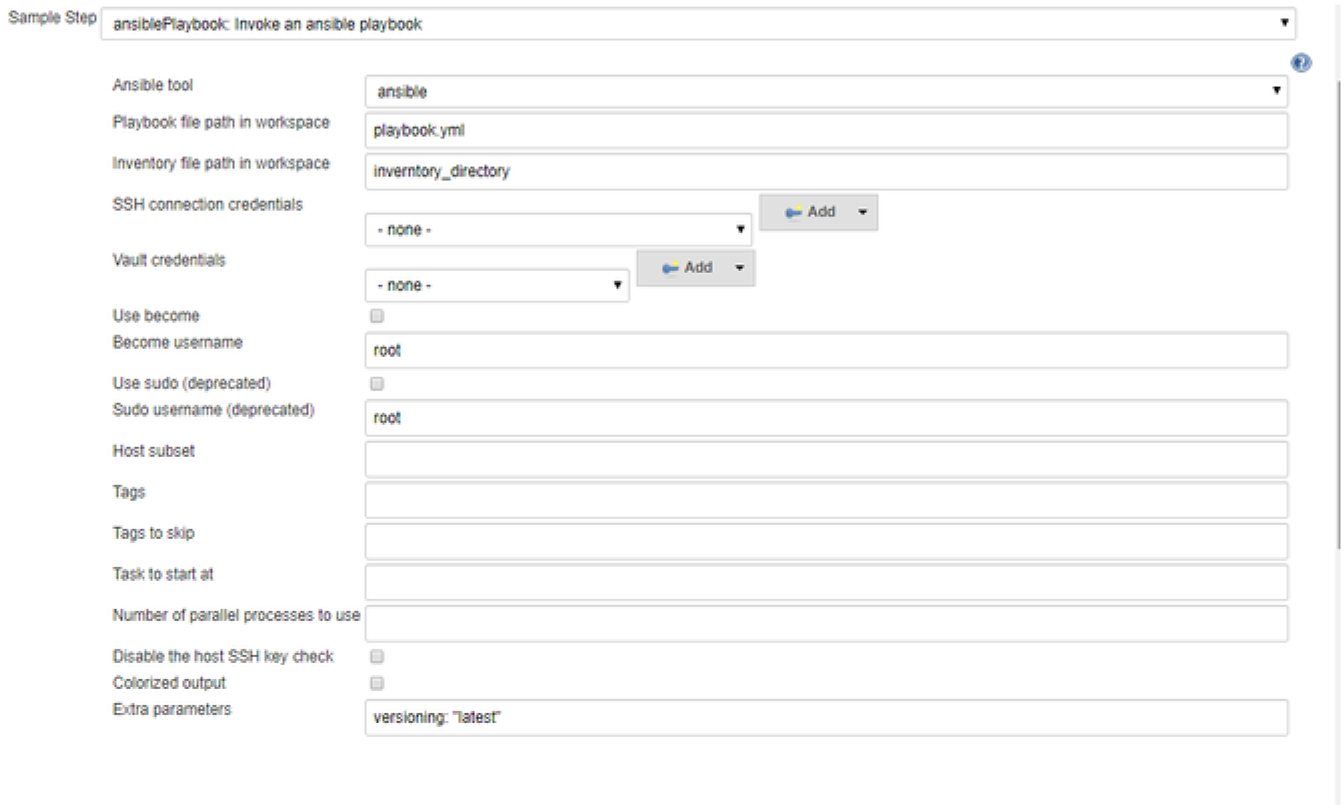
Repository browser: (Auto)

Additional Behaviours

Script Path: jenkinsfile

Lightweight checkout □

4. For declarative synatx, add the ansible playbook step and generate the syntax, add in jenkinsfile.

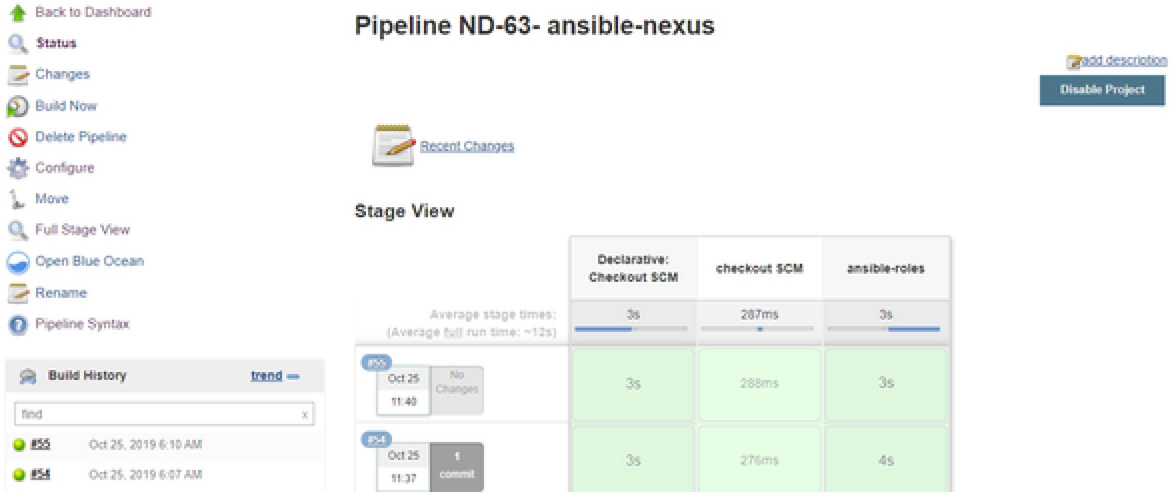


Sample Step: ansiblePlaybook: Invoke an ansible playbook

Ansible tool	ansible
Playbook file path in workspace	playbook.yml
Inventory file path in workspace	inverntory_directory
SSH connection credentials	- none -
Vault credentials	- none -
Use become	□
Become username	root
Use sudo (deprecated)	□
Sudo username (deprecated)	root
Host subset	
Tags	
Tags to skip	
Task to start at	
Number of parallel processes to use	
Disable the host SSH key check	□
Colorized output	□
Extra parameters	versioning: "latest"

Declarative pipeline for the Ansible-playbook, please find the code in below code string.

6. Build the pipeline job and see the output, check the logs by going to corresponding logs.



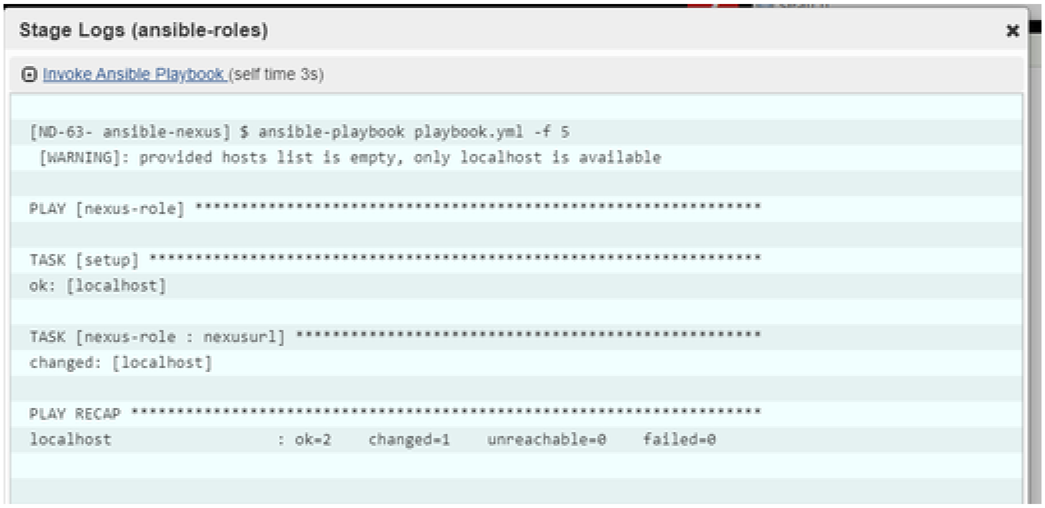
Pipeline ND-63- ansible-nexus

Build History — trend

#55	Oct 25, 2019 6:10 AM
#54	Oct 25, 2019 6:07 AM

Stage View

	Declarative: Checkout SCM	checkout SCM	ansible-roles
Average stage times: (Average full run time: ~12s)	3s	287ms	3s
#55 Oct 25 11:40 — No Changes	3s	288ms	3s
#54 Oct 25 11:37 — 1 commit	3s	276ms	4s



Stage Logs (ansible-roles)
Invoke Ansible Playbook (self time 3s)

```
[ND-63- ansible-nexus] $ ansible-playbook playbook.yml -f 5
 [WARNING]: provided hosts list is empty, only localhost is available

PLAY [nexus-role] **************************************************************

TASK [setup] *******************************************************************
ok: [localhost]

TASK [nexus-role : nexusurl] ***************************************************
changed: [localhost]

PLAY RECAP *********************************************************************
localhost                  : ok=2    changed=1    unreachable=0    failed=0
```

7. The output of the build stage can be observe in the job dashboard.

Jenkins-Ansible(Docker slave node) configuration,

Note: Ansible should install in Docker node. Ansible-playbook will run in container node, JDK is mandatory in order to run the slaves in any nodes.

For more details, please reference the this document - How To - Elastic Ephemeral Build Jenkins Slaves.

- **Note:** if you are using public docker image just mentions name, else you can create customized Dockerfile, please test it and push to registry, right-now i'm using customized docker file in my local, find below code.

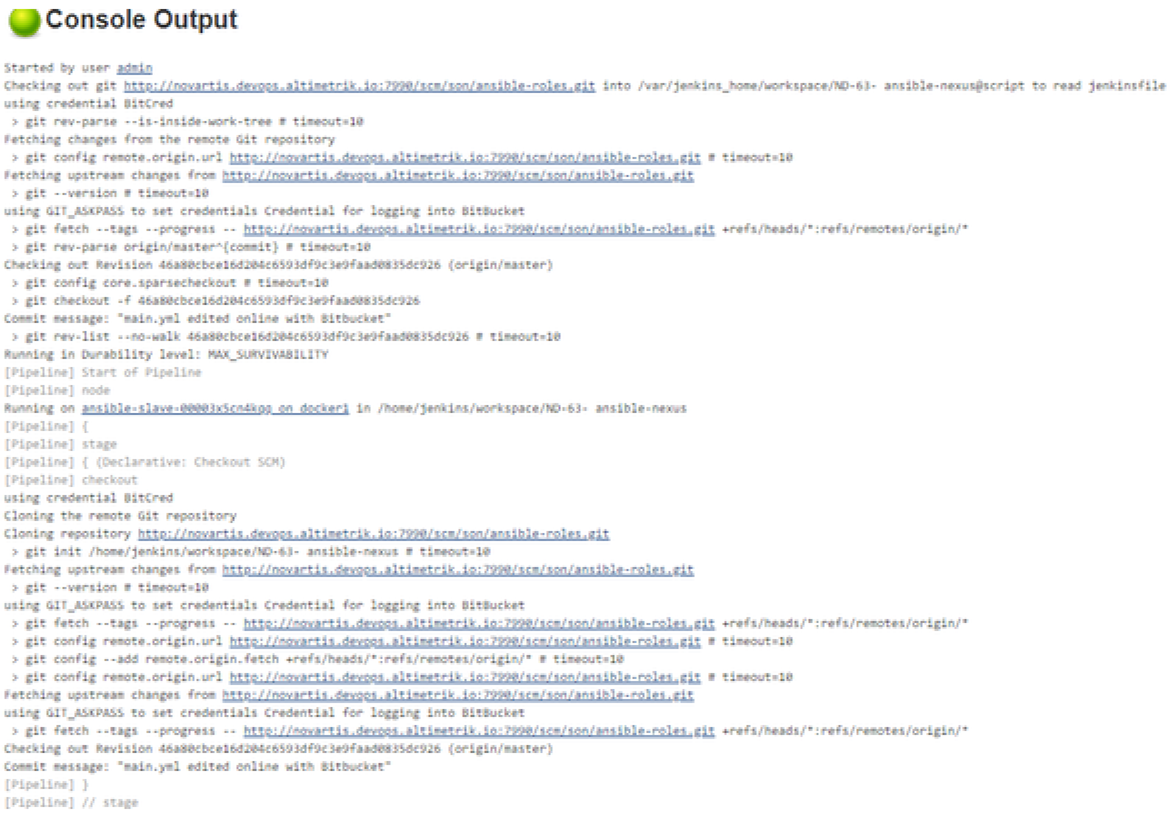
```
FROM jenkinsci/slave:3.35-3
USER root
RUN apt-get update && \
   apt-get install --no-install-recommends -y \
   software-properties-common \
   ansible \
   && rm -rf /tmp/downloaded_packages/ /tmp/*.rds \
   && rm -rf /var/lib/apt/lists/* \
   && apt-get install -y python-lxml

USER jenkins
```

Jenkins-job execution:

- Create a pipeline job and map the repository and jenkinsfile as i show above.
- Write the Jenkins file as below, mention the node label.

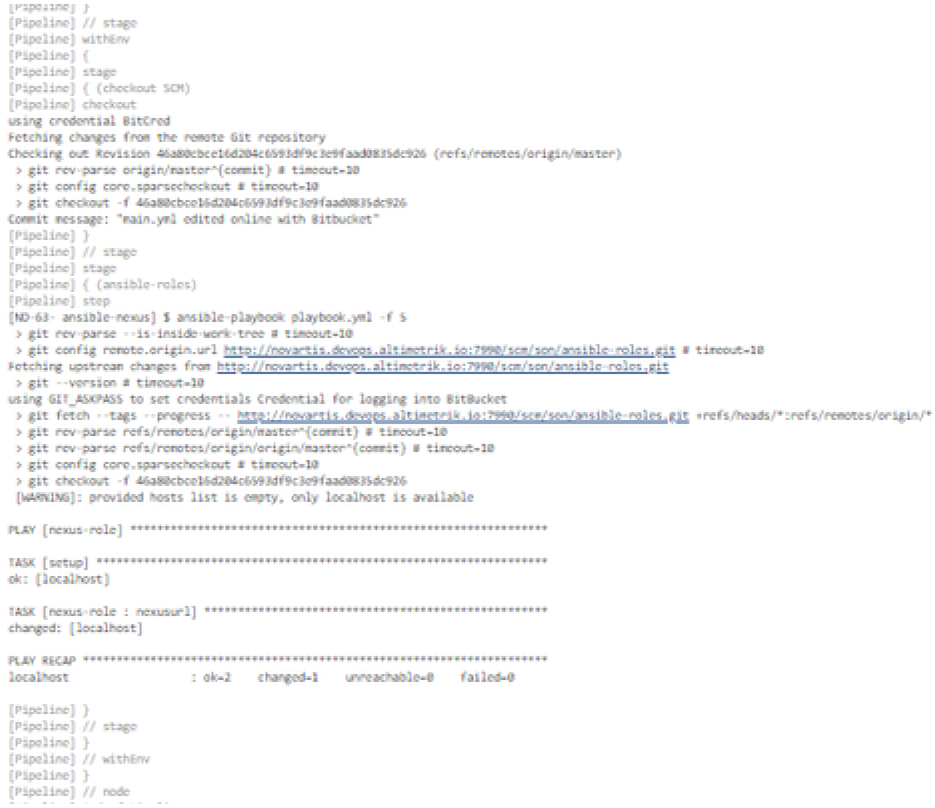
```
pipeline {
 agent { label 'ansible-slave' }  ------> docker slave which i
mentioned in docker node template.
 stages {
  stage("checkout SCM") {
   steps {
    checkout changelog: false, scm: [$class: 'GitSCM', branches:
[[name: '*/master']], doGenerateSubmoduleConfigurations: false,
extensions: [], submoduleCfg: [], userRemoteConfigs:
[[credentialsId: 'BitCred', url:
'http://novartis.devops.altimetrik.io:7990/scm/son/ansible-roles.gi
t']]]
   }
  }
  stage("ansible-roles") {
   steps {
   step([$class: 'AnsiblePlaybookBuilder', additionalParameters:
'', ansibleName: 'ansibles', becomeUser: '', credentialsId: '',
forks: 5, inventory: [$class: 'InventoryDoNotSpecify'], limit: '',
playbook: 'playbook.yml', skippedTags: '', startAtTask: '',
sudoUser: '', tags: '', vaultCredentialsId: ''])
            //step {
             //sh 'ansible-playbook playbook.yml'
            //}
   }
  }
 }
}
```

see the outputs in the build section, console output.

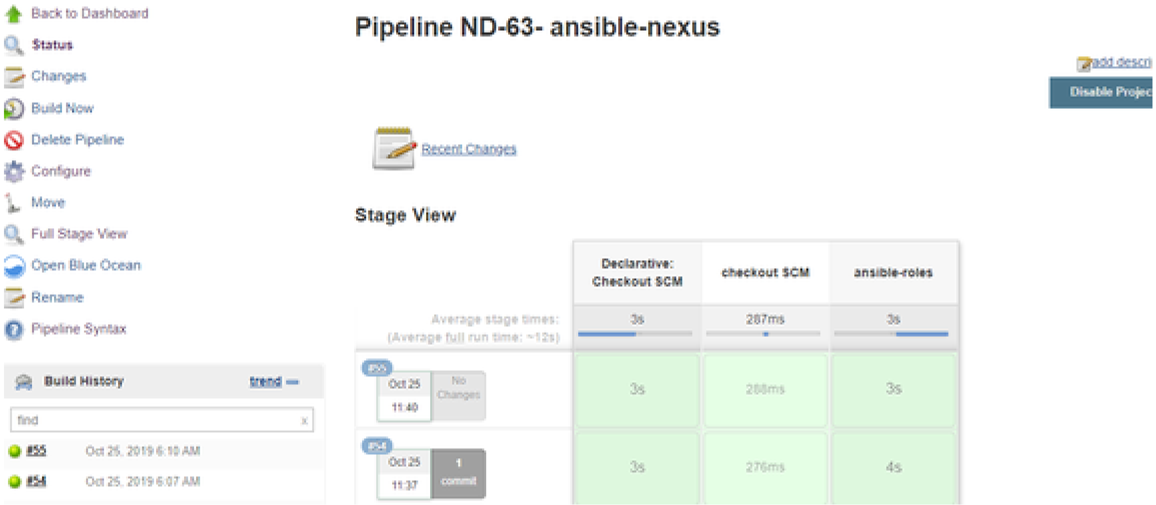


Console Output

```
Started by user admin
Checking out git http://novartis.devops.altimetrik.io:7990/scm/son/ansible-roles.git into /var/jenkins_home/workspace/ND-63- ansible-nexus@script to read jenkinsfile
using credential BitCred
 > git rev-parse --is-inside-work-tree # timeout=10
Fetching changes from the remote Git repository
 > git config remote.origin.url http://novartis.devops.altimetrik.io:7990/scm/son/ansible-roles.git # timeout=10
Fetching upstream changes from http://novartis.devops.altimetrik.io:7990/scm/son/ansible-roles.git
 > git --version # timeout=10
using GIT_ASKPASS to set credentials Credential for logging into BitBucket
 > git fetch --tags --progress -- http://novartis.devops.altimetrik.io:7990/scm/son/ansible-roles.git +refs/heads/*:refs/remotes/origin/*
 > git rev-parse origin/master^{commit} # timeout=10
Checking out Revision 46a80cbce16d204c6593df9c3e9faad0835dc926 (origin/master)
 > git config core.sparsecheckout # timeout=10
 > git checkout -f 46a80cbce16d204c6593df9c3e9faad0835dc926
Commit message: "main.yml edited online with Bitbucket"
 > git rev-list --no-walk 46a80cbce16d204c6593df9c3e9faad0835dc926 # timeout=10
Running in Durability level: MAX_SURVIVABILITY
[Pipeline] Start of Pipeline
[Pipeline] node
Running on ansible-slave-00003x5cn4kqg on docker1 in /home/jenkins/workspace/ND-63- ansible-nexus
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Declarative: Checkout SCM)
[Pipeline] checkout
using credential BitCred
Cloning the remote Git repository
Cloning repository http://novartis.devops.altimetrik.io:7990/scm/son/ansible-roles.git
 > git init /home/jenkins/workspace/ND-63- ansible-nexus # timeout=10
Fetching upstream changes from http://novartis.devops.altimetrik.io:7990/scm/son/ansible-roles.git
 > git --version # timeout=10
using GIT_ASKPASS to set credentials Credential for logging into BitBucket
 > git fetch --tags --progress -- http://novartis.devops.altimetrik.io:7990/scm/son/ansible-roles.git +refs/heads/*:refs/remotes/origin/*
 > git config remote.origin.url http://novartis.devops.altimetrik.io:7990/scm/son/ansible-roles.git # timeout=10
 > git config --add remote.origin.fetch +refs/heads/*:refs/remotes/origin/* # timeout=10
 > git config remote.origin.url http://novartis.devops.altimetrik.io:7990/scm/son/ansible-roles.git # timeout=10
Fetching upstream changes from http://novartis.devops.altimetrik.io:7990/scm/son/ansible-roles.git
using GIT_ASKPASS to set credentials Credential for logging into BitBucket
 > git fetch --tags --progress -- http://novartis.devops.altimetrik.io:7990/scm/son/ansible-roles.git +refs/heads/*:refs/remotes/origin/*
Checking out Revision 46a80cbce16d204c6593df9c3e9faad0835dc926 (origin/master)
Commit message: "main.yml edited online with Bitbucket"
[Pipeline] }
[Pipeline] // stage
```



```
[Pipeline] }
[Pipeline] // stage
[Pipeline] withEnv
[Pipeline] {
[Pipeline] stage
[Pipeline] { (checkout SCM)
[Pipeline] checkout
using credential BitCred
Fetching changes from the remote Git repository
Checking out Revision 46a80cbce16d204c6593df9c3e9faad0835dc926 (refs/remotes/origin/master)
 > git rev-parse origin/master^{commit} # timeout=10
 > git config core.sparsecheckout # timeout=10
 > git checkout -f 46a80cbce16d204c6593df9c3e9faad0835dc926
Commit message: "main.yml edited online with Bitbucket"
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (ansible-roles)
[Pipeline] step
[ND-63- ansible-nexus] $ ansible-playbook playbook.yml -f 5
 > git rev-parse --is-inside-work-tree # timeout=10
 > git config remote.origin.url http://novartis.devops.altimetrik.io:7990/scm/son/ansible-roles.git # timeout=10
Fetching upstream changes from http://novartis.devops.altimetrik.io:7990/scm/son/ansible-roles.git
 > git --version # timeout=10
using GIT_ASKPASS to set credentials Credential for logging into BitBucket
 > git fetch --tags --progress -- http://novartis.devops.altimetrik.io:7990/scm/son/ansible-roles.git +refs/heads/*:refs/remotes/origin/*
 > git rev-parse refs/remotes/origin/master^{commit} # timeout=10
 > git rev-parse refs/remotes/origin/origin/master^{commit} # timeout=10
 > git config core.sparsecheckout # timeout=10
 > git checkout -f 46a80cbce16d204c6593df9c3e9faad0835dc926
 [WARNING]: provided hosts list is empty, only localhost is available

PLAY [nexus-role] ***************************************************************

TASK [setup] ********************************************************************
ok: [localhost]

TASK [nexus-role : nexusurl] ****************************************************
changed: [localhost]

PLAY RECAP **********************************************************************
localhost                  : ok=2    changed=1    unreachable=0    failed=0

[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
```



Pipeline ND-63- ansible-nexus

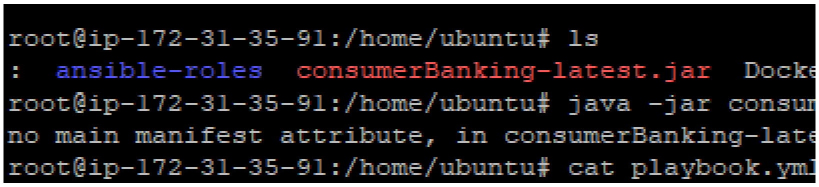
Stage View

	Declarative: Checkout SCM	checkout SCM	ansible-roles
Average stage times: (Average full run time: ~12s)	3s	287ms	3s
#55 Oct 25 11:40 No Changes	3s	288ms	3s
#54 Oct 25 11:37 1 commit	3s	276ms	4s

Build History trend

#55	Oct 25, 2019 6:10 AM
#54	Oct 25, 2019 6:07 AM

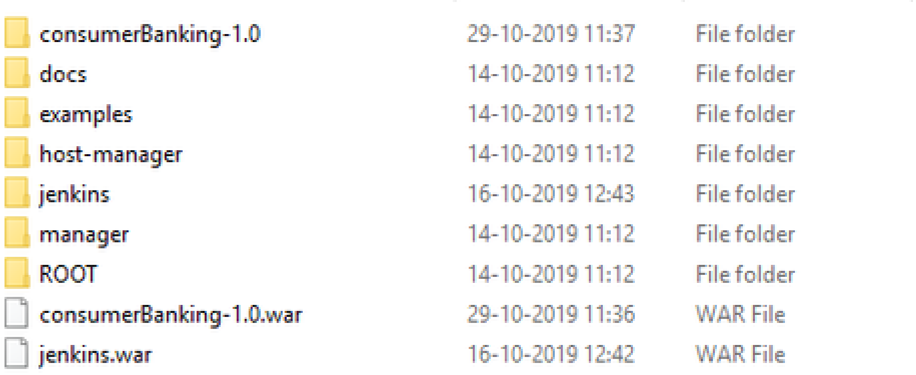
check the destination server for deployment to conform.



```
root@ip-172-31-35-91:/home/ubuntu# ls
:  ansible-roles  consumerBanking-latest.jar  Docke
root@ip-172-31-35-91:/home/ubuntu# java -jar consum
no main manifest attribute, in consumerBanking-late
root@ip-172-31-35-91:/home/ubuntu# cat playbook.yml
```

Deployment to App server(Tomcat):-

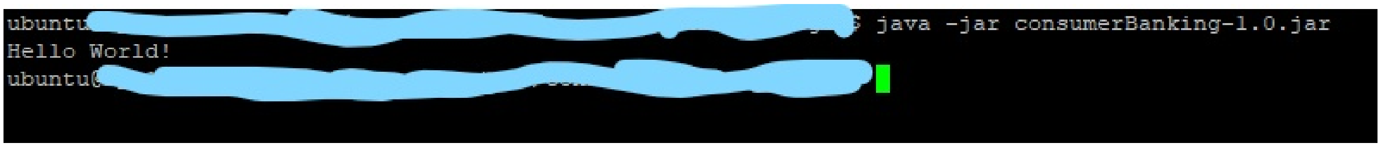
- In the ansible-playbook, you need to write the exact destination of deployment, in our case we are deploying in Apache Tomcat, deployment path is $TOMCAT_HOME/WEB_APPS. So we need to specify the destination path in dest.



consumerBanking-1.0	29-10-2019 11:37	File folder
docs	14-10-2019 11:12	File folder
examples	14-10-2019 11:12	File folder
host-manager	14-10-2019 11:12	File folder
jenkins	16-10-2019 12:43	File folder
manager	14-10-2019 11:12	File folder
ROOT	14-10-2019 11:12	File folder
consumerBanking-1.0.war	29-10-2019 11:36	WAR File
jenkins.war	16-10-2019 12:42	WAR File

- After deployment is done, please restart the tomcat server and access the service by hitting the url of application like www.localhost:8080/consumerbanking-1.0.
- Configure the tomcat server based on your requirement.
- if you the develop the JAR application, you can start below in the specified port.

```
java -jar consumerBanking-latest.jar --http:localhost:6070
```



```
ubuntu[redacted] java -jar consumerBanking-1.0.jar
Hello World!
ubuntu@[redacted]
```

thats all !! done.