

МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ
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Отчет по лабораторной работе №3

Дисциплина: «Развертывание и жизненный цикл программного обеспечения»

Тема: «**Building a CI/CD Pipeline.Ansible**»

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Задание

Шаги:

1. Setup artifact manager tool, e.g. Nexus OSS, JFrox Artifactory free tier
2. Setup Ansible instance
3. Setup Jenkins “Publish over SSH” plugin to send JAR to Ansible server
4. (+0.5pts) Set Ansible playbook to create Docker image based on JAR and push image to DockerHub
5. (+0.5pts) Setup Jenkins-Nexus integration to send JAR to Nexus server. Modify Ansible playbook to create Docker image based on JAR grabbed from Nexus, modify playbook to send final Docker image to Nexus.
6. Add screenshot of JAR pushed to Nexus/Artifactory (if you made step 5) or Docker image pushed to DockerHub

Ход работы

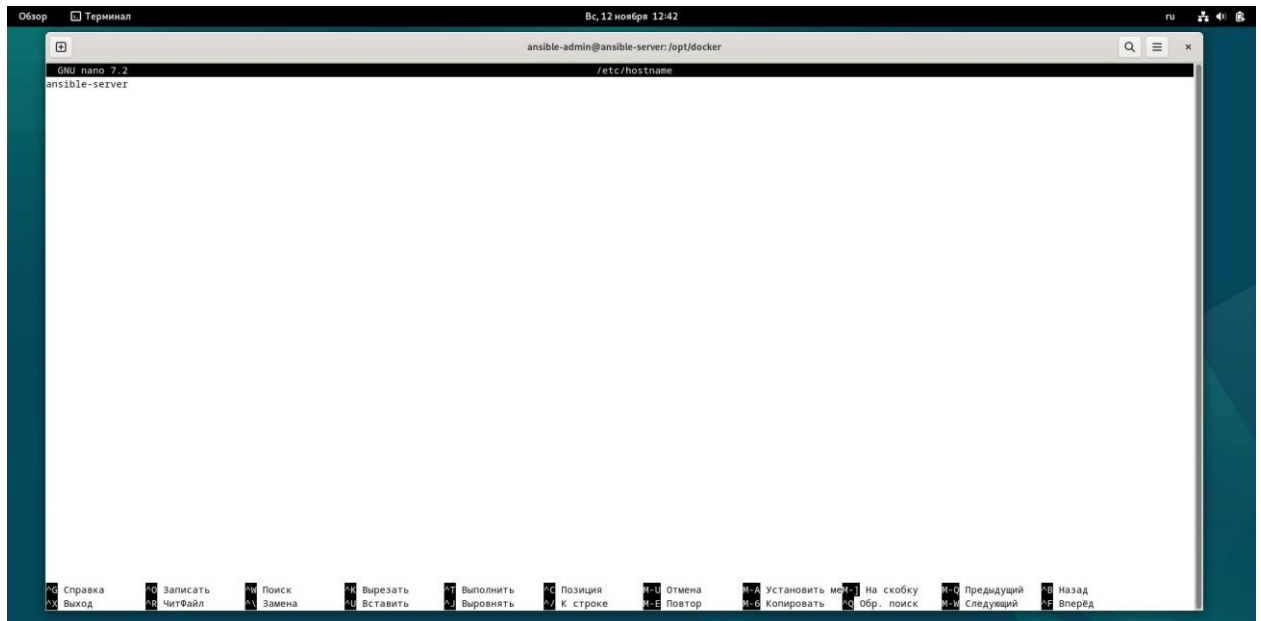
Install nexus:



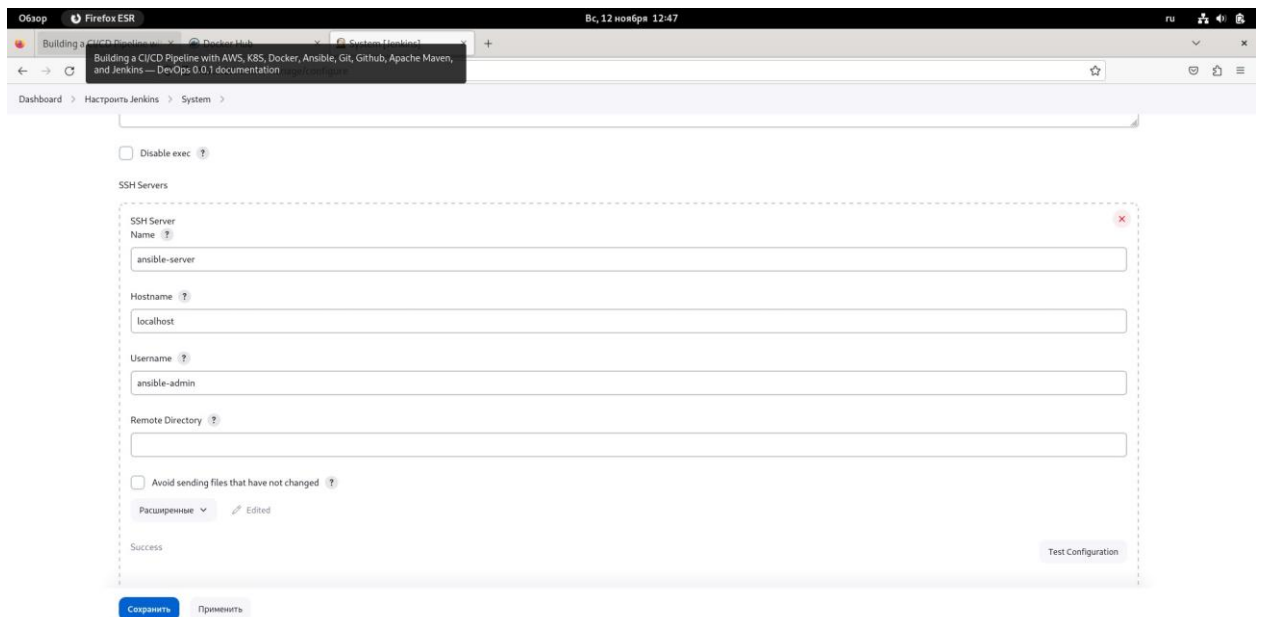
```
ansible-admin@ansible-server:~$ sudo systemctl status nexus
[sudo] пароль для ansible-admin:
Попытка еще раз.
[sudo] пароль для ansible-admin:
* nexus.service - nexus service
   Loaded: loaded (/etc/systemd/system/nexus.service; enabled; preset: enabled)
   Active: active (running) since Sun 2023-11-19 21:29:31 +04; 9min ago
     Process: 633 ExecStart=/opt/nexus/bin/nexus start (code=exited, status=0/SUCCESS)
    Main PID: 894 (java)
      Tasks: 75 (limit: 3461)
    Memory: 1.0G
       CPU: 2min 55.875s
    CGroup: /system.slice/nexus.service
            └─094 /usr/lib/jvm/java-1.8.0-openjdk-amd64/bin/java -server -Din

ноя 19 21:29:30 ansible-server systemd[1]: Starting nexus.service - nexus servi
ноя 19 21:29:31 ansible-server nexus[633]: Starting nexus
ноя 19 21:29:31 ansible-server systemd[1]: Started nexus.service - nexus servi
lines 1-14/14 (END)
```

Change the hostname of “AnsibleServer”:

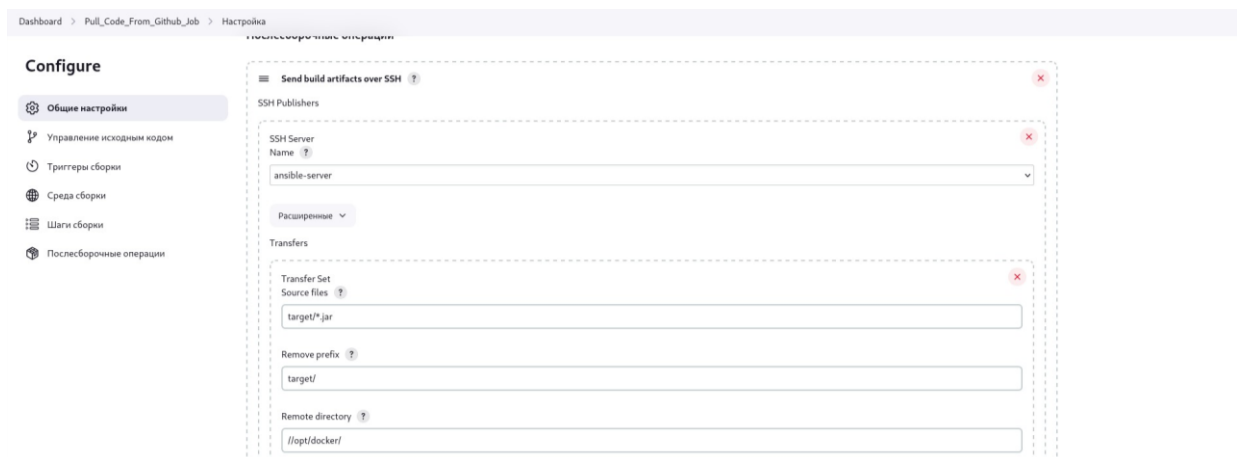


Configure user privileges by editing the sudoers file:



```
ansible-admin@ansible-server:/opt$ ls -la
итого 9144
drwxr-xr-x 6 root root 4096 ноя 9 21:49 .
drwxr-xr-x 19 root root 4096 ноя 9 13:41 ..
drwxr-xr-x 6 root root 4096 ноя 9 13:37 apache-maven-3.9.4
-rw-r--r-- 1 root root 9336368 апр 3 11:56 apache-maven-3.9.4-bin.tar.gz
drwxr-xr-x 4 root root 4096 ноя 9 21:49 containerd
drwxr-xr-x 2 ansible-admin ansible-admin 4096 ноя 12 12:30 docker
drwxr-xr-x 8 root root 4096 окт 15 22:23 VBoxGuestAdditions-7.0.10
ansible-admin@ansible-server:/opt$
```

Integrate “Publish over SSH“ Github plugin into the pipeline:



Test “Publish over SSH“ Github plugin integrated into the pipeline:

```
ansible-admin@ansible-server:/opt$ cd docker
ansible-admin@ansible-server:/opt/docker$ ls -la
итого 16956
drwxr-xr-x 2 ansible-admin ansible-admin 4096 ноя 12 12:30 .
drwxr-xr-x 6 root root 4096 ноя 9 21:49 ..
-rw-r--r-- 1 ansible-admin ansible-admin 167 ноя 12 01:20 Dockerfile
-rw-r--r-- 1 ansible-admin ansible-admin 17345654 ноя 12 12:38 hello-0.0.1-SNAPSHOT.jar
```

Configure Ansible hosts:

The first screenshot shows a terminal window with the following commands and output:

```
ansible-admin@ansible-server:~$ sudo nano /etc/hosts
[sudo] пароль для ansible-admin:
ansible-admin@ansible-server:~$ cd /opt/docker
ansible-admin@ansible-server:/opt/docker$ sudo ifconfig
docker0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
    inet 172.17.0.1 netmask 255.255.0.0 broadcast 172.17.255.255
    ether 02:42:5c:e0:82:b8 txqueuelen 0 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.0.118 netmask 255.255.255.0 broadcast 192.168.0.255
    inet6 fe80::a00:27ff:fed1:e205 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:d1:e2:05 txqueuelen 1000 (Ethernet)
    RX packets 7398 bytes 6339495 (6.0 MiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 4574 bytes 563101 (549.9 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 55 bytes 5891 (5.7 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 55 bytes 5891 (5.7 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

The second screenshot shows the same terminal window with the nano editor open, editing the file `/etc/ansible/hosts`. The content of the file is:

```
[ansible]
192.168.0.118
```

The bottom of the terminal window shows a menu with various keyboard shortcuts for editing the file.

Configure Passwordless SSH authentication to localhost for Ansible and reate a new Ansible playbook for Docker tasks:
inside the file, type in the following stuff

```
---
- hosts: ansible
  user: ansible-admin

  tasks:
    # - name: docker login
    #   command: docker login
    - name: create docker image
      command: docker build -t hello:latest .
      args:
        chdir: /opt/docker

    - name: create tag to push image onto dockerhub
      command: docker tag hello:latest hawon2013/hello:latest

    - name: push docker image onto dockerhub
      command: docker push hawon2013/hello:latest
```

Test the Ansible playbook with Docker tasks:

```
ansible-admin@ansible-server:/opt/docker$ sudo -u ansible-admin ansible-playbook /opt/docker/hello-app.yml
PLAY [ansible] *****
TASK [Gathering Facts] *****
ok: [192.168.0.118]

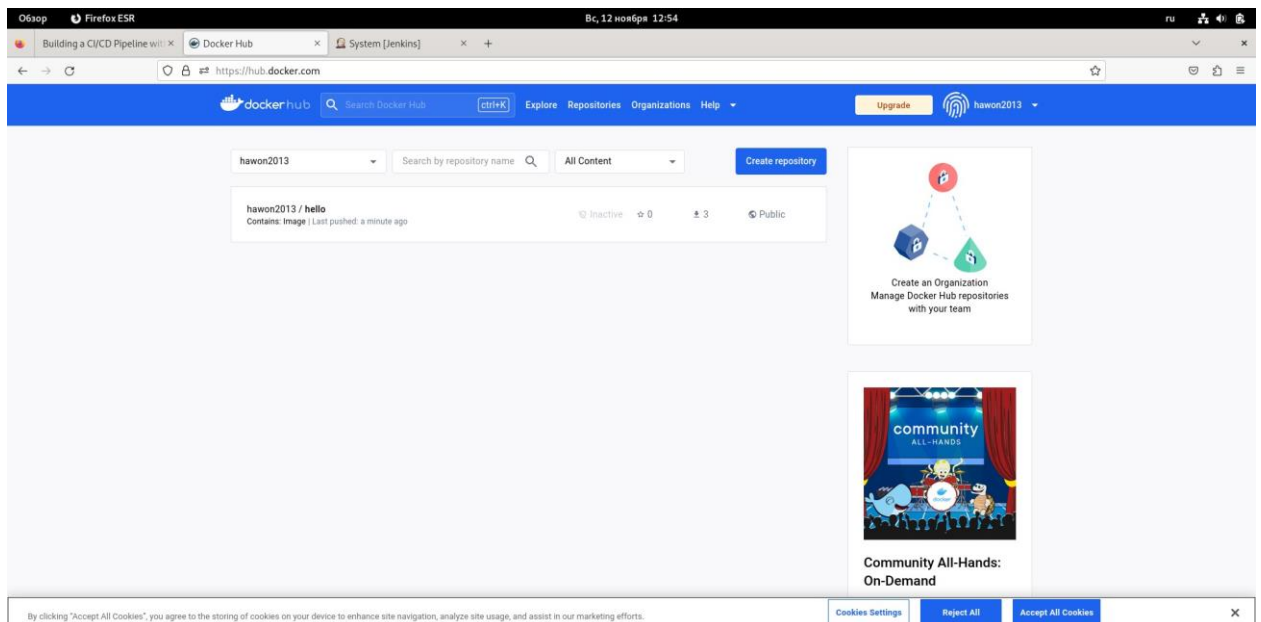
TASK [create docker image] *****
changed: [192.168.0.118]

TASK [create tag to push image onto dockerhub] *****
changed: [192.168.0.118]

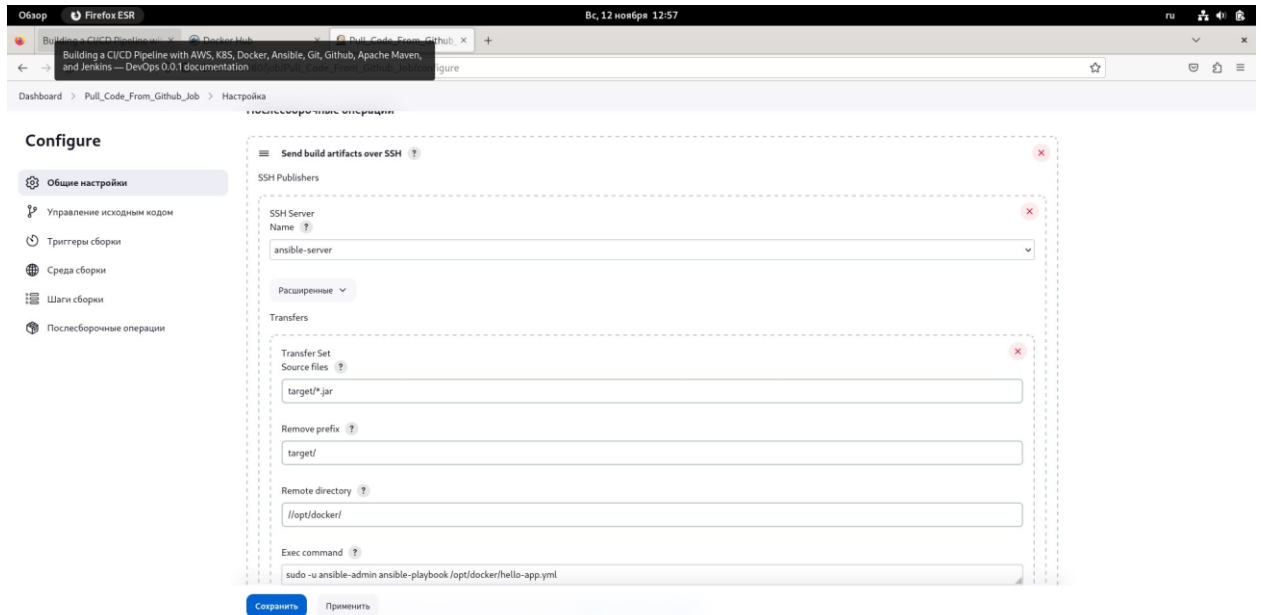
TASK [push docker image onto dockerhub] *****
changed: [192.168.0.118]

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

ansible-admin@ansible-server:/opt/docker$
```



Integrate Ansible Docker tasks into the pipeline:



Test “Ansible playbook with Docker tasks“ integrated into the pipeline:

