Testing screen shots

Pipeline configuration can be done by:

1- Config file groovy

```groovy
// repo/jenkins/JenkinsVarFile.groovy
def Configration_variables = [
    HOST_SUBSET_ONPREM : 'on_prems' , // Define the host subset in ansible inventory
    HOST_SUBSET_AWS : 'aws_ec2' ,// Define the host subset in ansible inventory
    CREDENTIALS_AWS_ACCOUNT : 'aws-credentials', // AWS credentials ID
    CREDENTIALS_AWS_SSH : 'aws_ec2_ssh_key' ,// AWS credentials ID
    CREDENTIALS_ONPREM_SERVER : 'jenkins-remote-credentials', // Jenkins remote credentials ID
    CREDENTIALS_KUBECONFIG : 'kubeconfig-secret' ,// Kubeconfig secret ID
    CREDENTIALS_DOCKERHUB : 'dockerhub', // Docker Hub credentials ID
    CREDENTIALS_SLACK : 'slack' ,// Slack credentials ID
    DOCKER_REGISTRY : 'your-docker-registry', // e.g., Docker Hub
    IMAGE_NAME : "nouraldeen152/networkapp",
    // IMAGE_TAG : "${params.CUSTOM_BUILD_NUMBER}" ,// Use custom build number or default to BUILD_NUMBER
    REMOTE_USER : 'jenkins-remote',
    REMOTE_HOST : '192.168.1.150',
    REMOTE_DIR : "/home/jenkins-remote/",
    KUBECONFIG : "${WORKSPACE}/.kube/config",
    AWS_SSH_KEY : "${WORKSPACE}/.ssh/ssh_key.pem",
    SLACK_CHANNEL : "#team-project" // Slack channel to send notifications

]
def Pipeline_Flags = [
    PIPELINE_ACTION: 'build & deploy', // Empty to fall back to params or default ['build & deploy', 'build only', 'deploy only']
    IMAGE_TAG: '0',     // Use custom build number
    SKIP_TESTS: true, // Skip tests if true
    DEPLOY_K8S: false, // Deploy to Kubernetes if true
    DEPLOY_AWS: false, // Deploy to AWS if true
    DEPLOY_ONPREM: false, // Deploy to on-premises if true
]
```

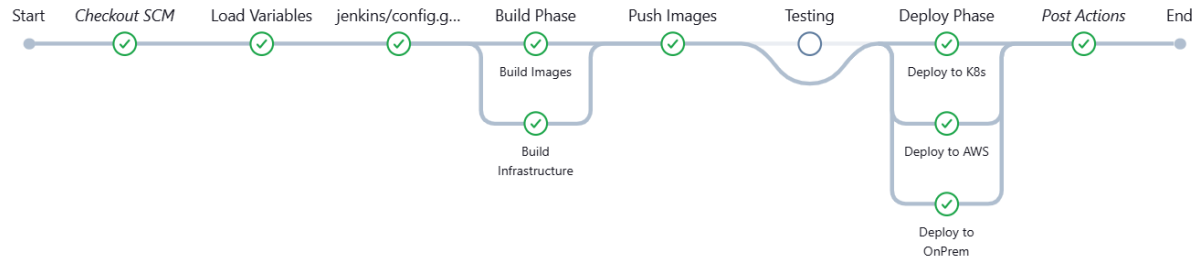Can easily control pipeline build or deploy ,choose specific target and set custom image tag using:

2- From GUI ,GUI will override configuration file

Pipeline diagram

Start   *Checkout SCM*   Load Variables   jenkins/config.g...   Build Phase   Push Images   Testing   Deploy Phase   *Post Actions*   End

Build Images

Build Infrastructure

Deploy to K8s

Deploy to AWS

Deploy to OnPrem
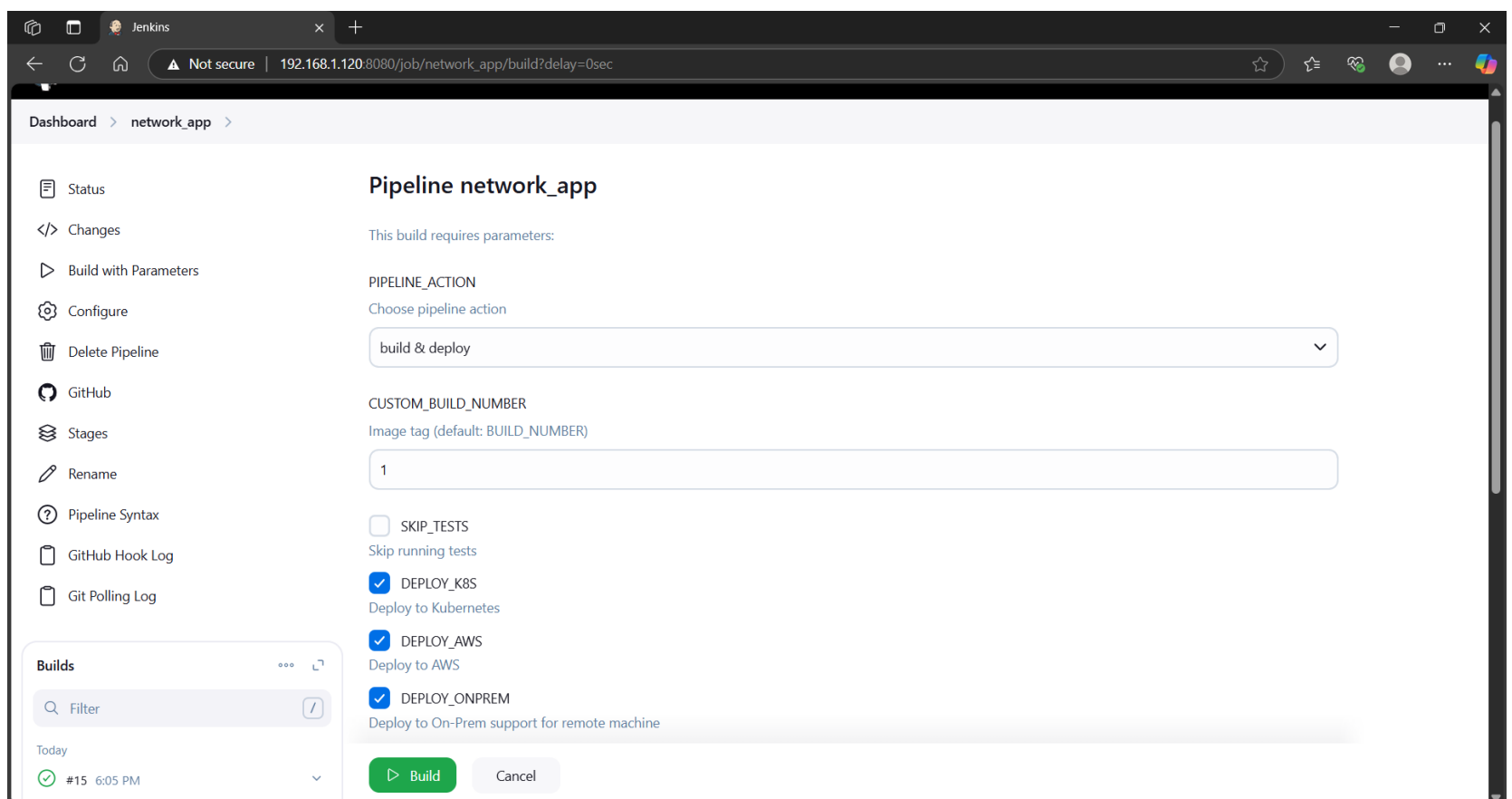
Build images:

```
[Pipeline] dir
[Build Images] Running in /var/jenkins_home/jobs/network_app/workspace/src
[Pipeline] {
[Pipeline] sh
[Build Images] + docker build -t nouraldeen152/networkapp:1 .
[Pipeline] // stage
[Pipeline] }
[Build Images] #0 building with "default" instance using docker driver
```

```
push images in my public regitry
[Pipeline] withCredentials
Masking supported pattern matches of $USER or $PASS
[Pipeline] {
[Pipeline] sh
Warning: A secret was passed to "sh" using Groovy String interpolation, which is insecure.
         Affected argument(s) used the following variable(s): [USER]
         See https://jenkins.io/redirect/groovy-string-interpolation for details.
+ docker push ****/networkapp:1
The push refers to repository [docker.io/****/networkapp]
```

Build infrastructure for AWS with docker image in parallel:

```
[Pipeline] // script
[Build Infrastructure]
                 [0m[1mInitializing the backend...[0m
                 [Pipeline] }
                 [Pipeline] // stage
                 [Pipeline] }
                 Failed in branch Build Images
[Build Infrastructure] [0m[1mUpgrading modules...[0m
                 - compute in modules/compute
                 - network in modules/network
                 - security in modules/security

                 [0m[1mInitializing provider plugins...[0m
                 - Finding latest version of hashicorp/local...
                 - Finding latest version of hashicorp/aws...
                 - Using previously-installed hashicorp/local v2.5.2
                 - Using previously-installed hashicorp/aws v5.97.0
```

```
+ terraform apply -auto-approve

Terraform used the selected providers to generate the following execution
plan. Resource actions are indicated with the following symbols:
  + create

Terraform will perform the following actions:
```

```
Plan: 15 to add, 0 to change, 0 to destroy.

Changes to Outputs:
  + bastion_ip = (known after apply)
module.network.aws_vpc.main-vpc: Creating...
module.network.aws_vpc.main-vpc: Creation complete after 5s [id=vpc-092138780ddf5051c]
module.network.aws_route_table.private: Creating...
module.network.aws_subnet.private[1]: Creating...
module.network.aws_internet_gateway.igw: Creating...
module.network.aws_subnet.public[0]: Creating...
module.network.aws_subnet.private[0]: Creating...
module.network.aws_subnet.public[1]: Creating...
module.security.aws_security_group.this: Creating...
module.network.aws_subnet.private[0]: Creation complete after 1s [id=subnet-0a924d7e4073b4f00]
module.network.aws_route_table.private: Creation complete after 1s [id=rtb-069fdaed7562fdbd0]
module.network.aws_subnet.private[1]: Creation complete after 1s [id=subnet-0b32d40ee605c605d]
module.network.aws_route_table_association.private[0]: Creating...
module.network.aws_route_table_association.private[1]: Creating...
module.network.aws_internet_gateway.igw: Creation complete after 1s [id=igw-0b39d182d222290b7]
module.network.aws_route_table.public: Creating...
module.network.aws_route_table_association.private[0]: Creation complete after 1s [id=rtbassoc-0346562c2f5ea7ac9]
module.network.aws_route_table_association.private[1]: Creation complete after 1s [id=rtbassoc-0b9a2d339b27693c4]
module.network.aws_subnet.public[1]: Creation complete after 3s [id=subnet-0617e55259d354c21]
module.network.aws_subnet.public[0]: Creation complete after 3s [id=subnet-0c53f29cc4ee44ce1]
module.network.aws_route_table.public: Creation complete after 2s [id=rtb-03d3e2e34f353e170]
module.network.aws_route_table_association.public[0]: Creating...
module.network.aws_route_table_association.public[1]: Creating...
module.network.aws_route_table_association.public[1]: Creation complete after 1s [id=rtbassoc-01c2f82a1c3a4d404]
module.security.aws_security_group.this: Creation complete after 4s [id=sg-05220839984fdb040]
module.network.aws_route_table_association.public[0]: Creation complete after 1s [id=rtbassoc-03e2bb660d95d62a5]
module.compute.aws_instance.this[0]: Creating...
module.compute.aws_instance.this[0]: Still creating... [10s elapsed]
module.compute.aws_instance.this[0]: Creation complete after 14s [id=i-07ea7921772249001]
local_file.aws_inventory: Creating...
local_file.aws_inventory: Creation complete after 0s [id=4ddbdd32b17d603ef251e2cf784d886c8ad73c25]

Apply complete! Resources: 15 added, 0 changed, 0 destroyed.

Outputs:

bastion_ip = "54.164.22.140"
```

Deploying to targets in parallel:

```
                          [Pipeline] echo
         [Deploy to K8s] Preparing Kubernetes environment
                          [Pipeline] withCredentials
                          [Pipeline] echo
         [Deploy to K8s] Masking supported pattern matches of $KUBECONFIG_BASE64
         [Deploy to AWS] Preparing AWS environment
                          [Pipeline] ansiblePlaybook
                          [Pipeline] echo
      [Deploy to OnPrem] Preparing OnPrem environment
                          [Pipeline] ansiblePlaybook
                          [Pipeline] {
         [Deploy to AWS] [workspace] $ ansible-playbook ansible/site.yml -i ansible/inventory/ -l aws_ec2 --private-key
                          /var/jenkins_home/jobs/network_app/workspace/ssh12010419520470180033.key -u management -e ******** -e ********
      [Deploy to OnPrem] [workspace] $ ansible-playbook ansible/site.yml -i ansible/inventory/ -l on_prems --private-key
                          /var/jenkins_home/jobs/network_app/workspace/ssh13679410754587290886.key -u jenkins-remote -e ******** -e ********
                          [Pipeline] sh
         [Deploy to K8s] Warning: A secret was passed to "sh" using Groovy String interpolation, which is insecure.
                          Affected argument(s) used the following variable(s): [KUBECONFIG_BASE64]
                          See https://jenkins.io/redirect/groovy-string-interpolation for details.
```

Deploy to k8s with helm:

```
[Deploy to K8s] + kubectl get nodes --kubeconfig=/var/jenkins_home/jobs/network_app/workspace/.kube/config
                NAME                     STATUS     ROLES          AGE      VERSION
                master-01.linux.nour.local   Ready      control-plane  100d     v1.32.1
                worker-01.linux.nour.local   NotReady   <none>         100d     v1.32.1
                + helm upgrade --install my-app ./helm/networkapp --set app.container.tag=0 --set app.container.image=nouraldeen152/networkapp --kubeconfig
                /var/jenkins_home/jobs/network_app/workspace/.kube/config --atomic
                Release "my-app" has been upgraded. Happy Helming!
                NAME: my-app
                LAST DEPLOYED: Thu May  8 21:40:05 2025
                NAMESPACE: default
                STATUS: deployed
                REVISION: 14
                TEST SUITE: None
```
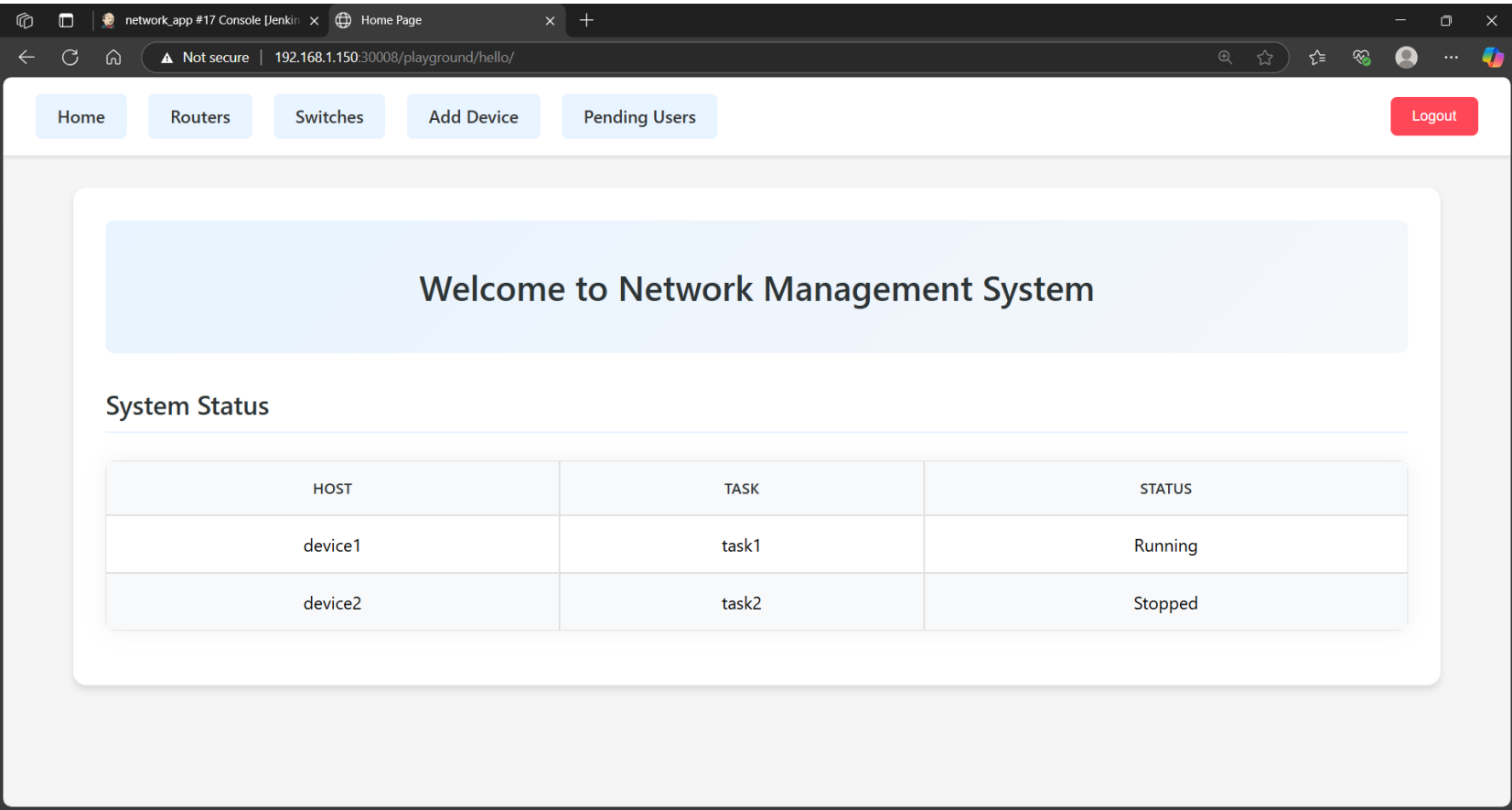
Deploy to AWS ec2 with ansible:

```
[Deploy to AWS] [WARNING]: Platform linux on host 54.164.22.140 is using the discovered Python
                interpreter at /usr/bin/python3.12, but future installation of another Python
                interpreter could change the meaning of that path. See
                https://docs.ansible.com/ansible-
                core/2.18/reference_appendices/interpreter_discovery.html for more information.
                ok: [54.164.22.140]


                TASK [docker_install : Add Docker GPG key (Debian/Ubuntu)] *********************
                changed: [54.164.22.140]
```
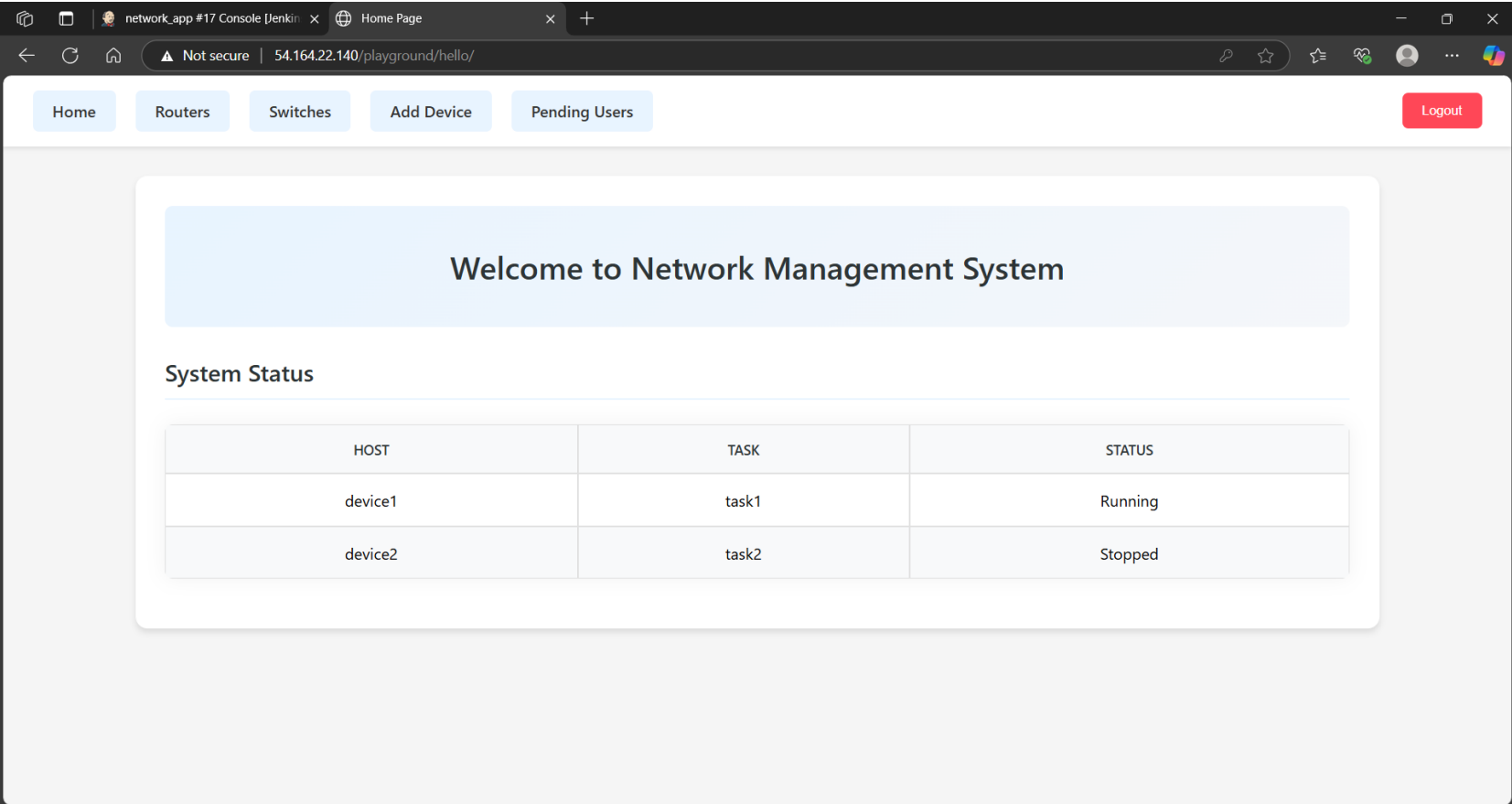
```
TASK [deploy_dockercommunity : Create staticfiles volume] *********************
changed: [54.164.22.140]


TASK [deploy_dockercommunity : Create shared network] *********************
changed: [54.164.22.140]


TASK [deploy_dockercommunity : Deploy web container] *********************
changed: [54.164.22.140]


TASK [deploy_dockercommunity : Deploy nginx container] *********************
changed: [54.164.22.140]
```

Deploy to remote server:

```
[Deploy to OnPrem] [workspace] $ ansible-playbook ansible/site.yml -i ansible/inventory/ -l on_prems --private-key
                   /var/jenkins_home/jobs/network_app/workspace/ssh11296530978856125415.key -u jenkins-remote -e ******** -e ********

                       TASK [docker_install : Add Docker repository (Debian/Ubuntu)] ******************
[Deploy to OnPrem] ok: [server_01]

                       TASK [docker_install : Ensure Docker service is started and enabled] ***********
                       ok: [server_01]

                       TASK [docker_install : Add user to docker group (optional)] ********************
                       ok: [server_01]
```
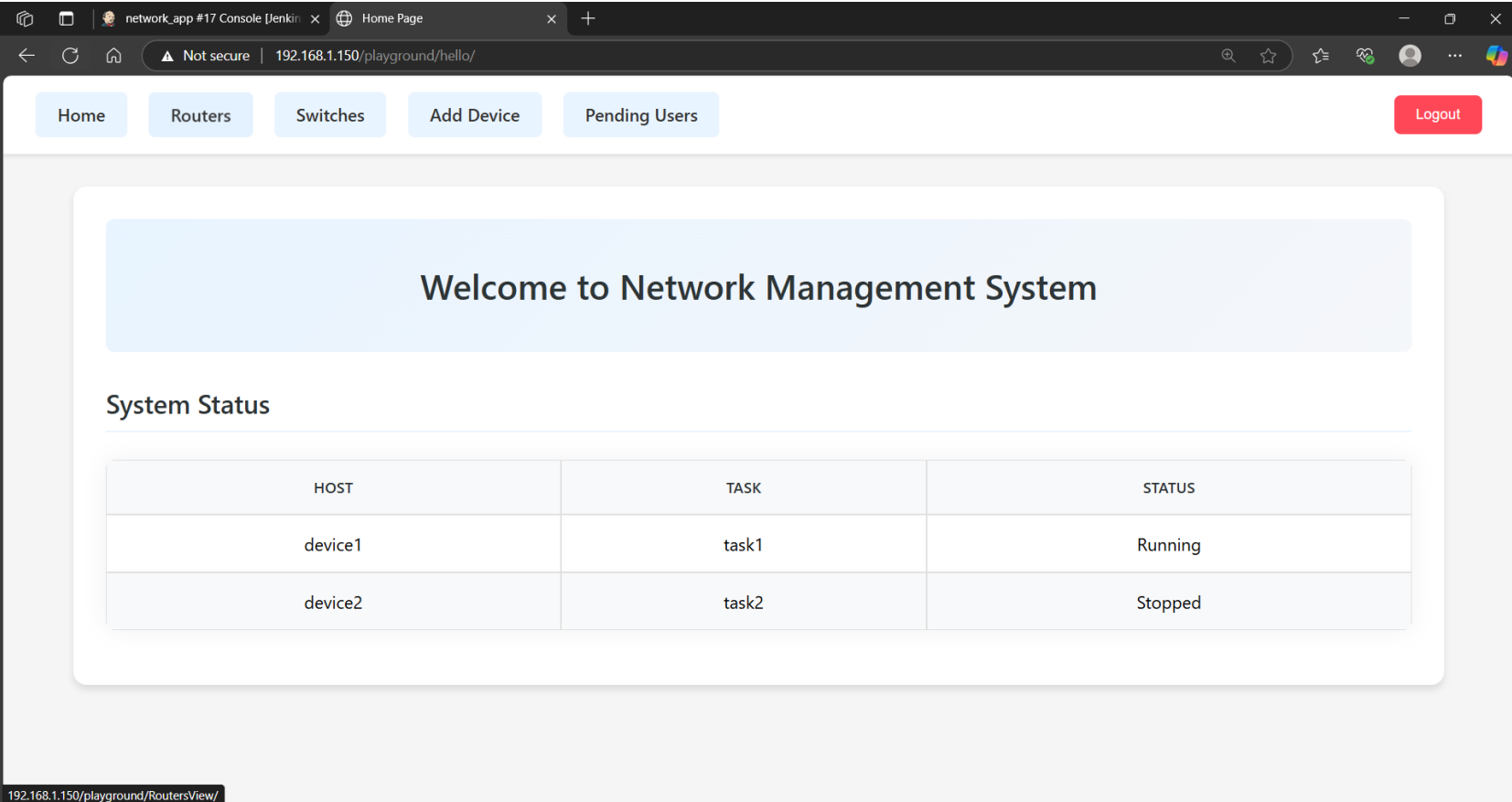
```
TASK [docker_compose : Run Docker Compose from home directory] ******************
skipping: [server_01]

TASK [deploy_dockercommunity : Get host's primary IP address] ******************
ok: [server_01]

TASK [deploy_dockercommunity : Create staticfiles volume] ***********************
ok: [server_01]

TASK [deploy_dockercommunity : Create shared network] **************************
ok: [server_01]
```
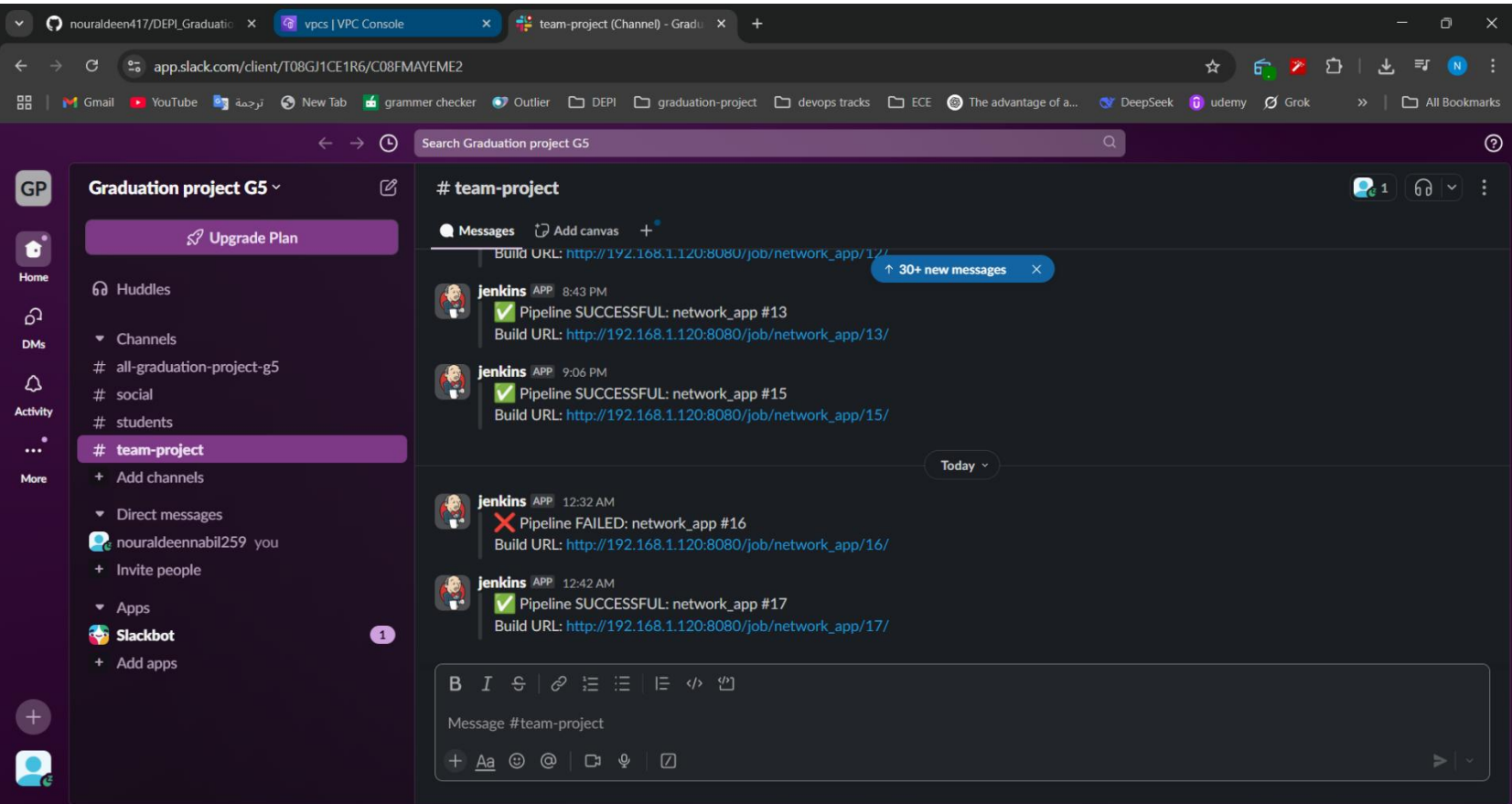
Final steps:

```
Cleaning up workspace...
[Pipeline] slackSend
Slack Send Pipeline step running, values are - baseUrl: <empty>, teamDomain: graduationprojectg5, channel: #team-project, color: <empty>,
botUser: false, tokenCredentialId: slack, notifyCommitters: false, iconEmoji: <empty>, username: <empty>, timestamp: <empty>
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

Validate slack notification:

Validate hook trigger: