Lab: Installing Ansible AWX

Introduction:

AWX is a modern web UI and API to manage your organization's Ansible Playbook, Inventories, Vault, and Credentials.

It is the Open-Source upstream project of the Ansible Automation Controller (formerly Ansible Tower).

Objectives:

- Adding kustomization tool
- Creating an awx instance
- Creating pv and accessing the AWX UI
- Open the AWX UI
- Creating an organization.
- Creating a sample automation.

Note: Login to eoc-controller as admin user with password as linux

- 1. Adding kustomization tool.
- **1.1** Let's create a playbook **kustom.yml** to add kustomization tool and installing awx operator.

```
1 ---
2 - hosts: "controller"
3  become: yes
4  tasks:
```

1.2 Installing the **kustomization** tool.

```
5 - name: install kustomization tool
6 shell: |
7 wget https://github.com/kubernetes-sigs/kustomize/releases/download/kusto
mize%2Fv5.2.1/kustomize_v5.2.1_linux_amd64.tar.gz
8 tar xvz -f kustomize_v5.2.1_linux_amd64.tar.gz
9 mv kustomize /bin
```

1.3 Creating and applying the **kustomization.yml** file.

```
- name: creating yaml file
11
          shell: |
12
            cat > kustomization.yml << EOF
13
            apiVersion: kustomize.config.k8s.io/v1beta1
14
            kind: Kustomization
15
            resources:
16

    github.com/ansible/awx-operator/config/default?ref=2.7.2

17
            images:
               - name: quay.io/ansible/awx-operator
18
19
                 newTag: 2.7.2
20
            namespace: awx
21
22
          name: applying the file
23
          shell: kubectl apply -k
```

1.4 Verify the syntax of the yaml by executing below command.

```
# ansible-playbook -i kube-infra kustom.yml --syntax-check
```

Output:

```
[admin@eoc-controller ~]$ ansible-playbook -i kube-infra kustom.yml --syntax-check
playbook: kustom.yml
```

1.5 Let's run the playbook by executing below command.

```
# ansible-playbook -i kube-infra kustom.yml
```

Output:

- 2. Creating an awx instance.
- **2.1** Let's create an ansible playbook **awx.yml** which creates an awx instance.

```
1 ---
2 - hosts: "controller"
3 become: yes
4 tasks:
```

2.2 Let's add the awx.yml and configure the kustom.yml file and apply it.

```
tasks:
 5

    name: install kustomization tool

 6
          shell: |
 7
            cat > awx-demo.yml <<EOF
 8
 g
            apiVersion: awx.ansible.com/v1beta1
10
            kind: AWX
11
            metadata:
12
              name: awx-demo
13
            spec:
14
               service_type: nodeport
            FOF
15
16
        - name: creating yaml file
          shell: |
17
18
            cat > kustomization.yml << EOF
19
            apiVersion: kustomize.config.k8s.io/v1beta1
            kind: Kustomization
20
21
            resources:
22
               - github.com/ansible/awx-operator/config/default?ref=2.7.2
23
                awx-demo.yml
24
            images:
25
               - name: quay.io/ansible/awx-operator
                newTag: 2.7.2
26
            namespace: awx
27
28
            EOF
29
        - name: applying the file
          shell: kubectl apply -k
30
```

2.3 Let's verify the syntax of the file awx.yml.

```
# ansible-playbook -i kube-infra awx.yml --syntax-check
```

Output:

```
[admin@eoc-controller ~] $ ansible-playbook -i kube-infra awx.yml --syntax-check
playbook: awx.yml
```

2.4 Let's run the play book by executing below command.

```
# ansible-playbook -i kube-infra awx.yml
```

Output:

```
min@eoc-controller - $ ansible-playbook -i kube-infra awx.yml
k: [eoc-controller]
[eoc-controller]
failed=0
controller
     : ok=4
       changed=3
          unreachable=0
                 skipped=0
                   rescued=0
red=0
```

2.5 Check for the created resources using the **ad-hoc** commands.

```
# ansible controller -i kube-infra -m command -a 'kubectl
get all -n awx'
```

Output:

```
controller | CHANGED | rc=0 >>
                                                          READY
                                                                            RESTARTS
                                                         0/1 2/2
 od/awx-demo-postgres-13-0
 od/awx-operator-controller-manager-76b545976d-c5889
                                                                  Running
                                                             TYPE
                                                                         CLUSTER-IP
                                                                                           EXTERNAL-II
 ervice/awx-demo-postgres-13
                                                             ClusterIP
                                                                                           <none>
   5432/TCP
 ervice/awx-operator-controller-manager-metrics-service
                                                             ClusterIP
                                                                         10.101.132.141
                                                                                           <none>
   8443/TCP
                                                             UP-TO-DATE
                                                                          AVAILABLE
deployment.apps/awx-operator-controller-manager
                                                    1/1
                                                                                       27m
                                                                                             AGE
27m
                                                                DESIRED
                                                                          CURRENT
                                                                                     READY
replicaset.apps/awx-operator-controller-manager-76b545976d
                                          READY
                                                  AGE
statefulset.apps/awx-demo-postgres-13
                                          0/1
```

2.6 Let's describe the pod and check.

```
# ansible controller -i kube-infra -m command -a 'kubectl
describe pod/awx-demo-postgres-13-0 -n awx'
```

Output:

```
Events:

Type Reason Age From Message

Warning FailedScheduling 5mlls default-scheduler 0/3 nodes are available: pod has unbound immediate PersistentVolumeClaims, preemption: 0/3 nodes are available: 3 Preemption is not helpful for scheduling.
```

- 3. Creating pv and accessing the AWX UI.
- **3.1** Let's create an ansible-playbook **demo-pv.yml** for creating a PV the requested storage by the pvc created by the instance is 8Gi

```
1 ---
2 - hosts: "controller"
3 become: yes
4 tasks:
```

3.2 Creating and configuring a pv storage.

```
- name: installing nfs-utils
 5
 6
          dnf:
 7
            name: nfs-utils
            state: present
 8
 9
        - name: enabling nfs-server service
10
          service:
11
            name: nfs-server
12
            state: started
13
            enabled: true
14
        - name: Create directory
15
          file:
16
            path: /srv/nfs/kubedata
17
            state: directory
18
            mode: '0755'
19
        - name: configure directory
20
          shell: |
21
            cat > /etc/exports <<EOF
22
            /srv/nfs/kubedata
                                  *(rw,sync,no root squash,insecure)
23
            EOF
24
        - name: exporting the variables
25
          shell: exportfs -avr
26
        - name: creating the pv.yml file
27
          shell: |
28
            cat> pv.yml <<EOF
29
            apiVersion: v1
30
            kind: PersistentVolume
31
            metadata:
32
              name: pv-static-nfs
33
            spec:
34
              capacity:
35
                storage: 50Gi
36
              accessModes:
37
                - ReadWriteOnce
38
              persistentVolumeReclaimPolicy: Recycle
39
              nfs:
40
                path: /srv/nfs/kubedata
41
                 server: 192.168.100.150
42
            EOF
43
        name: apply the pv
44
          shell: kubectl apply -f pv.yml
```

3.3 Let's verify the syntax of the playbook.

```
# ansible-playbook -i kube-infra demo-pv.yml --syntax-check
```

Output:

```
[admin@eoc-controller ~]$ ansible-playbook -i kube-infra demo-pv.yml --syntax-check playbook: demo-pv.yml
```

3.4 Let's run the playbook to create a **pv** by executing below command.

```
# ansible-playbook -i kube-infra demo-pv.yml
```

Output:

```
-controller - $ ansible-playbook -i kube-infra demo-pv.yml
k: [eoc-controlier]
changed: [eoc-controller]
changed: [eoc-controller]
changed: [eoc-controller]
changed: [eoc-controller]
changed: [eoc-controller]
: ok=6 changed=5
oc-controller
             unreachable=0
                  failed=0
                     skipped=0
ignored=0
```

3.5 Let's check the status of the **pv** by executing below command.

```
# ansible controller -i kube-infra -m command -a 'kubectl
get pv -n awx'
```

Output:

```
in@eoc-controller ~|$ansible controller -i kube-infra -m command -a 'kubectl get
pv -n awx'
eoc-controller | CHANGED | rc=0 >>
                           ACCESS MODES
                                           RECLAIM POLICY
                CAPACITY
                                                             STATUS
                                                                      CLAIM
                        STORAGECLASS
                                        REASON
                                                AGE
pv-static-nfs
                50Gi
                           RWO
                                           Recycle
                                                             Bound
                                                                      awx/postgres-13-a
wx-demo-postgres-13-0
                                                 70s
```

Note: The pv has already been bound by our pvc.

3.6 Let's check for our resources which had been in pending state.

```
# ansible controller -i kube-infra -m command -a 'kubectl
get all -n awx'
```

Output:

```
injecc-controller - fansible controller -i kube-infra -m command -a 'kubectl get all -m awx
    controller | CHANGED | rc=0
 od/awx-demo-postgres-13-0
od/awx-demo-task-848d56c7f-q7cts
od/awx-demo-web-dcd858cb7-7fm27
  d/awx-operator-controller-manager-76b545976d-c5889
                                                                                                                    EXTERNAL-IP
                                                                                                                                       PORT(S)
ervice/awx-demo-postgres-13
ervice/awx-demo-service
ervice/awx-operator-controller-manager-metrics-service
                                                                                                                                       5432/TCP
80:31951/TCP
                                                                                              10.106.173.60
                                                                             ClusterIP
                                                                                                                                        8443/TCF
                                                                                              AVAILABLE
                                                                             UF-TO-DATE
 eployment.apps/awx-demo-task
eployment.apps/awx-demo-web
       ment.apps/awx-operator-controller-manager
                                                                                 DESTRED
                                                                                              CURRENT
 oplicaset.apps/awx-demo-task-848d56c7f
eplicaset.apps/awx-demo-web-dcd858cb7
  plicaset.apps/awx-operator-controller-manager-76b545976d
statefulset.apps/awx-demo-postgres-13
```

Note: Wait for atleast 3 min to get the pods up and running. **Reboot All Servers Once after this.**

3.7 Get the initial password of the AWX UI.

```
# ssh root@eoc-controller kubectl get secret -n awx awx-
demo-admin-password -o jsonpath="{.data.password}" | base64
--decode; echo
```

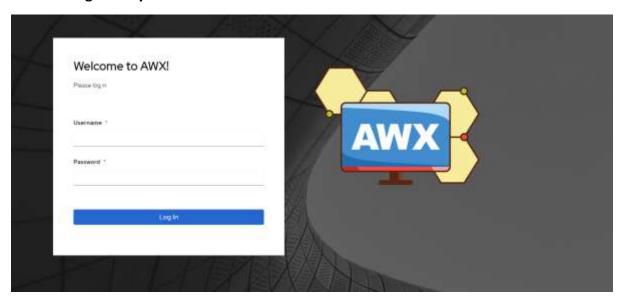
Output:

Note: When prompted enter the password as linux.

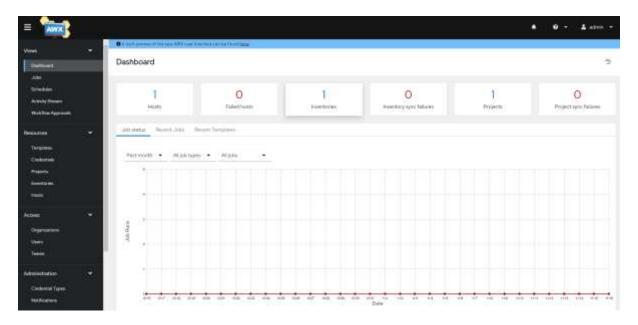
4. Open the AWX UI

4.1 In the UI using the URL http://192.168.100.150:Nodeport

Note: Change with your NodePort

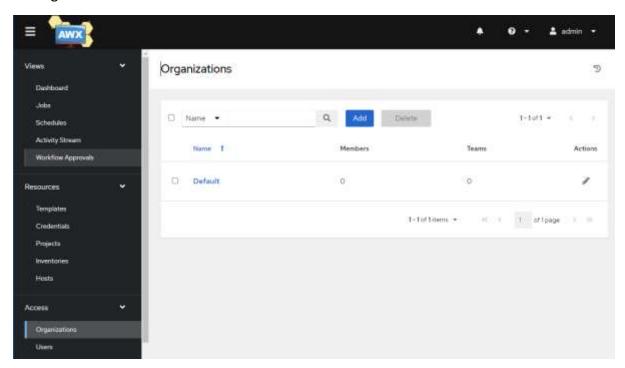


Note: Use the username as **admin** and **password** which you get from the **above step**.

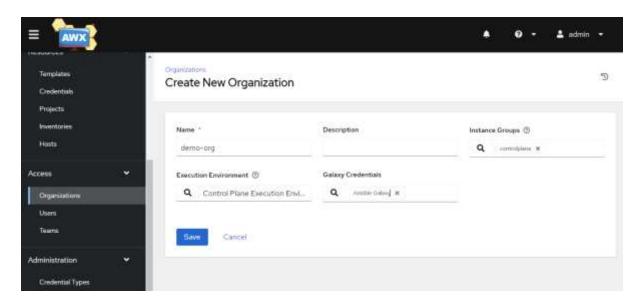


5. Creating an organization.

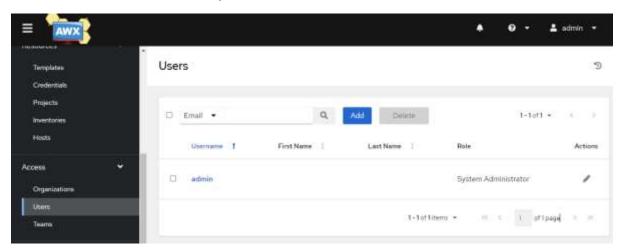
5.1 Select the organizations option on the left pane of the AWX and click on add new organization.



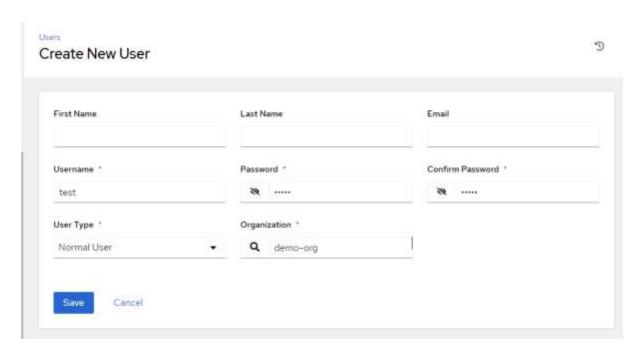
5.2 Add the required details and click on save.



- **5.3** Add a user to the organization so that the user can manage the org.
- Click on the users in the left pane and select add users.

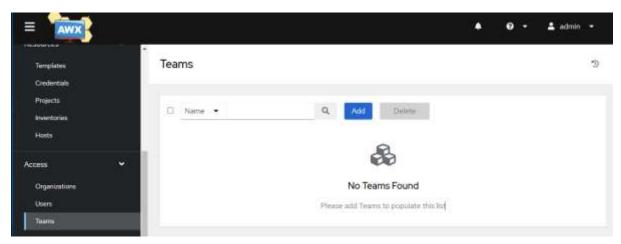


• Fill in the required details and click on the save button select the organization which we had created earlier in this exercise.

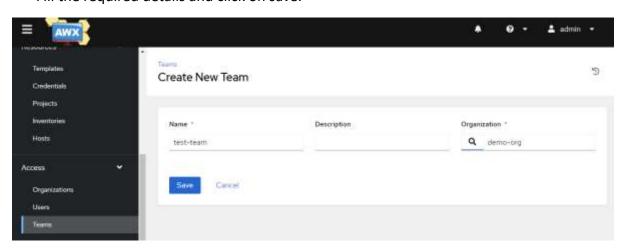


5.4 Let's add a team for our org.

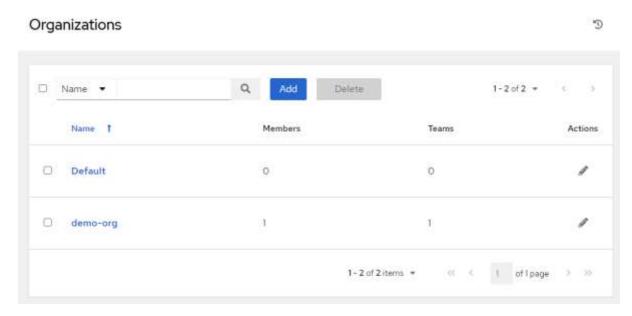
• Select the team's option in the Access section of the left pane and click on add.



• Fill the required details and click on save.



5.5 View your organization it has a new member and a team.

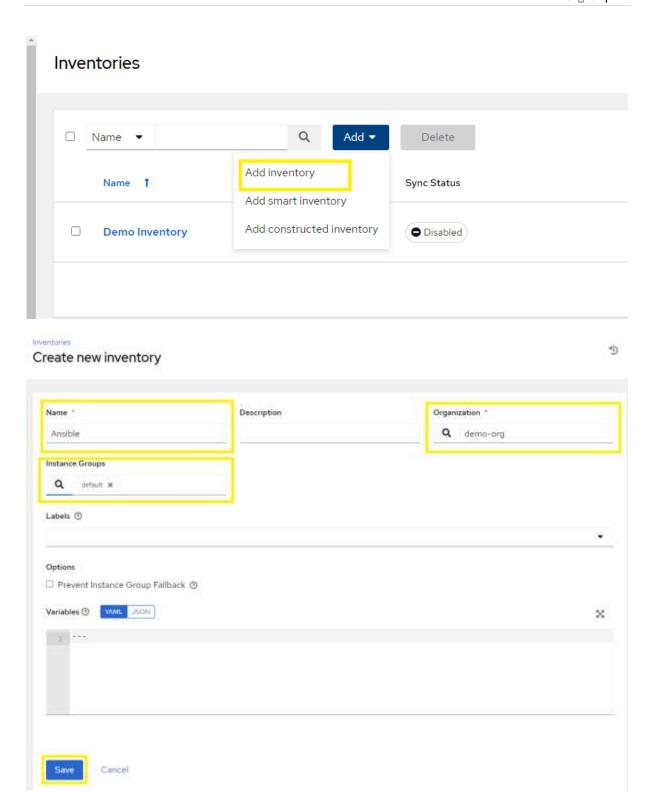


6. Creating a sample automation.

6.1 Let us add a New Inventory, Create A Host and Credential in Ansible Tower

- To create a new inventory or Smart Inventory follow the below steps:
- Click the Inventories icon from the left navigation bar.
- Click the add button +, and select the type of inventory to create.

Output: Views Inventories Dashboard Jobs Add ▼ Delete Name * Schedules Activity Stream Name 1 Sync Status Workflow Approvals Disabled Demo Inventory Resources Templates Credentials Projects Inventories

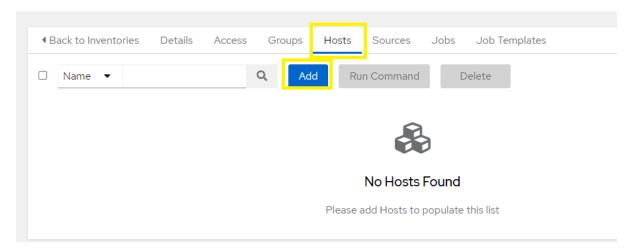


6.2 Creating a host.

- After creating a new inventory, you can proceed with configuring a new host. To create a host, follow the below steps:
- Go the Inventories tab and choose the inventory to which you want to add hosts.
- Select the Hosts tab and click on create a new host button ADD.

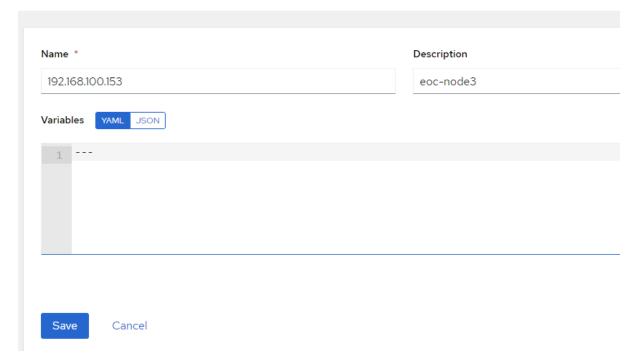
Inventories > web-hosts

Hosts

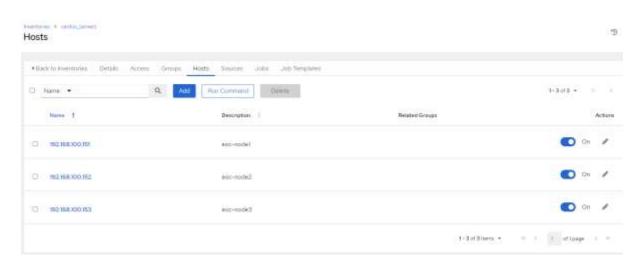


Inventories > centos_servers > Hosts > 192.168.100.153

Edit details

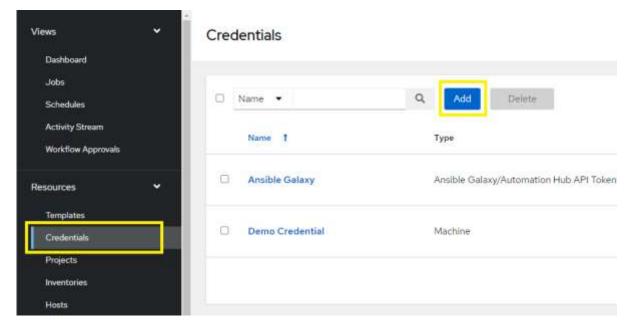


Note: Similarly add the other hosts also.



6.3 Let's create credentials.

- Credentials authenticate to launch Ansible playbooks, which can include passwords and SSH keys, against inventory hosts.
- From the left navigation bar, click the Credentials icon:
- Specify the type of credential you want to create. The credential type could be Amazon
 Web Services, Microsoft Azure Resource Manager, Machine, ... In this example we will
 select machine Credential type:



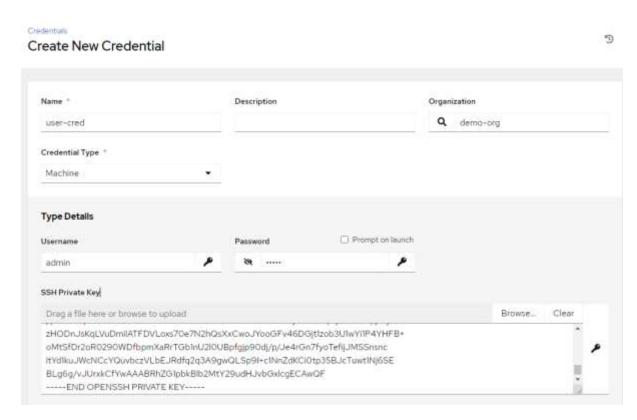
Get the ssh key file to login into all hosts.

Output:

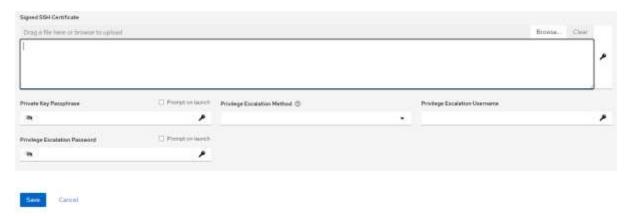
[admin@eoc-controller ~]\$ cat .ssh/id_rsa
----BEGIN OPENSSH PRIVATE KEY----

----END OPENSSH PRIVATE KEY----

b3BlbnNzaC1rZXktdjEAAAAABG5vbmUAAAAEbm9uZQAAAAAAAAAAABAAABlwAAAAdzc2qtcn Nhaaaaaweaaqaaayea0x9x11X15Ti42kj1hsGmZdBUx8bc2zqSbqRnjccDtMKo2RqdLaFr kyupSVe0RKdGt7KeznLm3119/gQv5nuKdFyJrfTqIZJzxARj7TqMWN1+7FPxaaqFXWDa6g z4FmweiKX4Hzx9UGlWhHJM1oFeKlNnvCBV9At4I5Ue24bAeLKuiHwZ1bKugYCoyr8QxpQP eW4nOcBzouRGfRfUIX4tLomnFZ7izTu8gCXcMV5GMYcxNzuMzG8IFZBh7KfJVdchXYD60q h0V5E3loY6FhMvq9luwZ0eJ5p3xN8VQRkw1B+S7glmEyoZOSniWZNQkxLytTeY+lyRQ3t3 DLX/CVAnrCy4o7djtvK71SALxwm9QFkzk6urD+ergdyeRKtX4QxQCQ4idHWIRwVALPTOqB Ng78oyYnJFV8gtA065y+q9F7s1BKKBDbbLwKmfO1WEb5aYnwwG/Rtw0XD31YPJONAWtQ1H ERB7z8/UB210Ho+01ULGwDf0S56L1wFpn/9ILFttAAAFkI8LbiePC24nAAAAB3NzaC1yc2 EAAAGBANMfcZSFyOU4uNpI9YbBpmXQVMfG3Ns6km6kZ43HA7TCqNkYHSwBa5MrqUlXtESn Rreyns5y5t5SPf4EL+Z7inRcia306iGSc8QEY+06jFjdfuxT8WmqhV1g2uoM+BZsHoil+B 88fVBpVoRyTNaBXipTZ7wgVfQLeCOVHtuGwHiyroh8GdWyroGAqMq/EMaUD31uJznAc6Lk Rn0X1CF+LS6JpxWe4s07vIA13DFeRjGHMTc7jMxvCBWQYeynyVXXIV2A+tKodFeRN5aG0h YTL6vZbsGTniead8TfFUEZMNQfku4JZhMqGTkp4lmTUJMS8rU3mPpckUN7dwy1/wlQJ6ws uKO3Y7byu5UgC8cJvUBZM5Orqw/nq4HcnkSrV+EMUAkOInR1iEcFQCz0zqgTYO/KMmJyRV fILQNOucvqvRe7NQSigQ22y8CpnztVhG+WmJ8MBv0bcNFw99WDyTjQFrUNRxEQe8/P1Adp dB6PtJVCxsA3zkuei9cBaZ//SCxbbQAAAAMBAAEAAAGAMt6dsGq36DtNlxMDTe/1Fw0mkG hjKNOpGs20Qd4VD4Xjx0NfLA4/jFt10701K2Ge0X5Rc28OH71zQHRj0kYsKzNs3SRpEaPH DxD7vtpfnL3p6imjvpEex0wiE0kCsexlQwmyilw52Zk4Bnu/9eN/+/TSxuqHq2DkFrbEk6 KZV7u+ABbe5rXCBGQqx4dYFHDydZDMFMdBVZtpPJT0QQm0+0ShpLz+6vKczcfRkXektCRe AG/x0gRiz0dVwP8ArRVDfZpBkSHfdhdGg+QyGghIVENj+JIS0VYc2vRG79dHPI0Ui7dH4T qSxalGddXkw+hVaYNhcMhEj+mEKe5Sv9yKxwW5NyOa+gtygxzbyFKI52/18h87NL8nll+T 54k+IpPWYHFd+gS1T07ubN+2R+A1BJvxLFuN7ia+bMixSA2th1qtSHz2Eraqgv+SKlgnxb +atTiu4EB1WySNgs5KJXBhioVxE3YdNufT8SOkGlyB013LryYtAr/DQaNrygEJMythAAAA vQCH4CixEFZQX1tsKOM/nD4tGa2PZ2yXXbZBYQyqgD2Z2zatwFGRbUH0+gTS8Exzx6m7ki +wGS+XXAGZFmLt3rR9beblmsKsXHCbeDmoM6mFisSCupVAnu39o2duvFU5av+Saa1QQTLe Ism1HJTm7mLai7M9uKvXjqnWIV+ZntoNZ3WGOTIcb5u5gjkzt3QSSRwGhhhSaVWjj4nZyU cJScpQmeNT6+fJUBovvpjnCs0Hp7Lzz0jiylvPKMPQHIwPt3UAAADBAPZhgvcVtIKaG2JF foIOxt+PIlt8FsRKWxsUwTx8E48N1nh8k6MKbO85vl0ucjN9fDwCgUXhANsSgKlei0vZWL nNWEXV/PinZKwjsvFoJghcTh57ESmx4LmScPx0UvIJxzNz0rW0FYyySLq2GIMEQjiC5k/J XLDLqMmZpT/teGK6X1pKt7orqEKmbxr/vvUyUv5ykPd3o8oQzIT47ysgBG8G2MTk31939P XLVNzsHmmYVqSh6iWUV0sceO9aRTke5QAAAMEA212KUQ2C7MS21EitNfuV1Q+waO17LICI jSyngbdol6nAmLMzqvs2dTkCr2YK2HDiRJqDn8TNowOnZabpQZXTzRf1seaeehnJjPY0Vs C2r6pS1lPwABQIp3VP1/6j3EknWTbMAIhtG/KU8l1EpyJlwkVOf/KeeNY3CFtY2eM05mnT 8bxOdm96S6QiwMLwhZqnsfS3KXZhwxO0M3IMbYXv9G58B81gmdQWoIf5D7qzmNNjVXKUUr T628ZfxCJK8XnpAAAAFGFkbWluQGVvYy1jb250cm9sbGVyAQIDBAUG



Note: copy all the content of the ssh id and paste it in the ssh private key section.



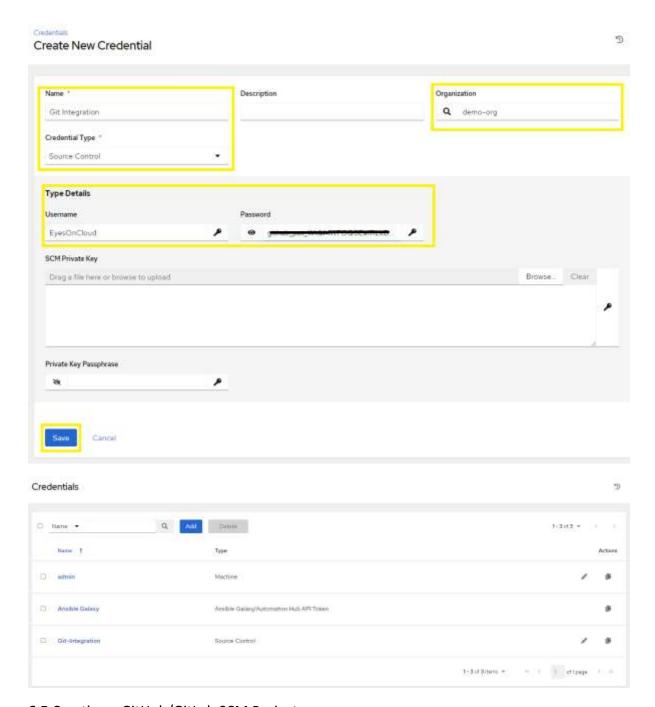
Note: Select save option

6.4 Let's Create a Credential for SCM (source content manager)

Step1: Creating a personal access token to create click the below link

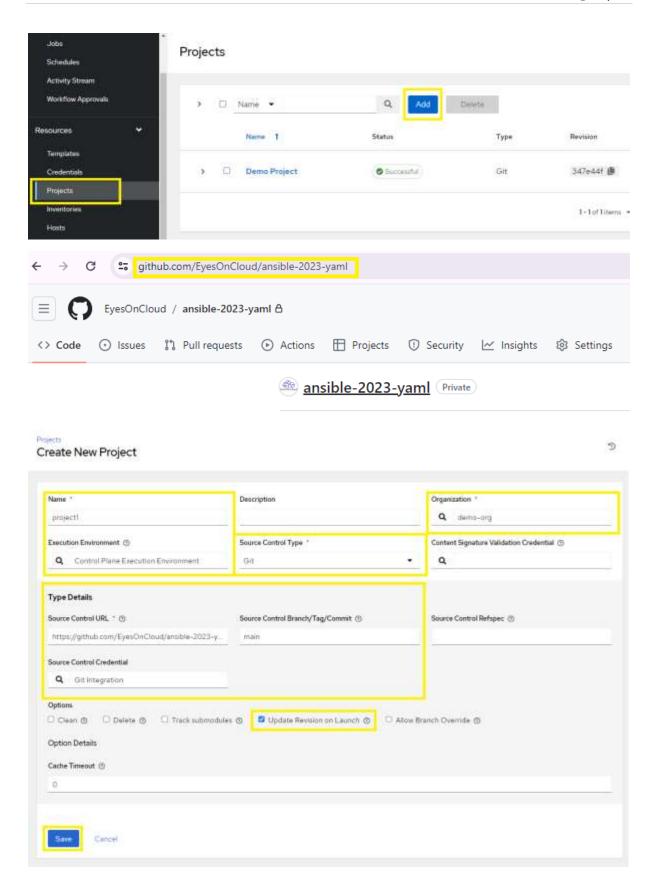
https://docs.github.com/en/authentication/keeping-your-account-and-data-secure/creating-a-personal-access-token

Let's add git hub credentials to integrate git.



6.5 Creating a GitHub/GitLab SCM Project

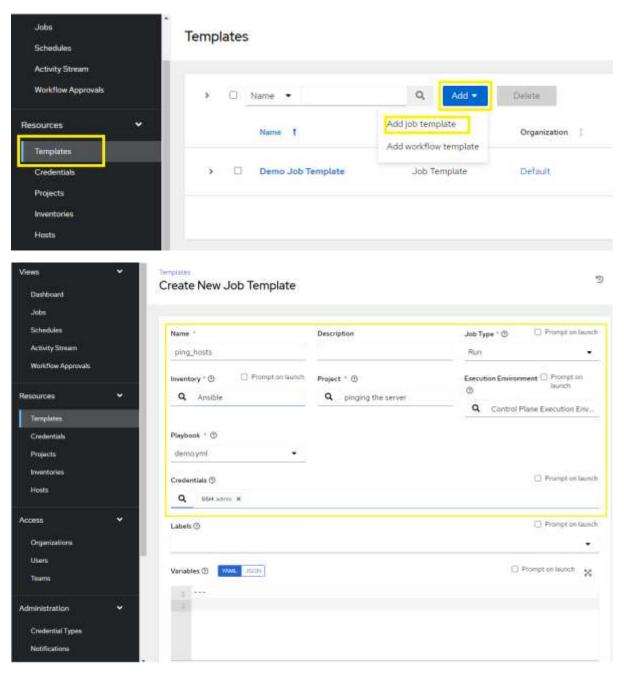
- Click the projects icon from the left navigation bar.
- Click the add button + to create a new project.
- Fill in all the necessary details such as Name, Description and Organization of Project.
 After that, select Git from the SCM type.

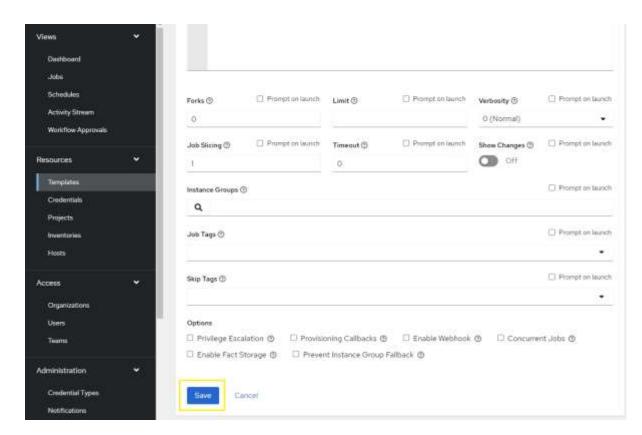


6.6 Create a new template.

- Go to templates page and select add.
- Enter the appropriate details into the following fields:

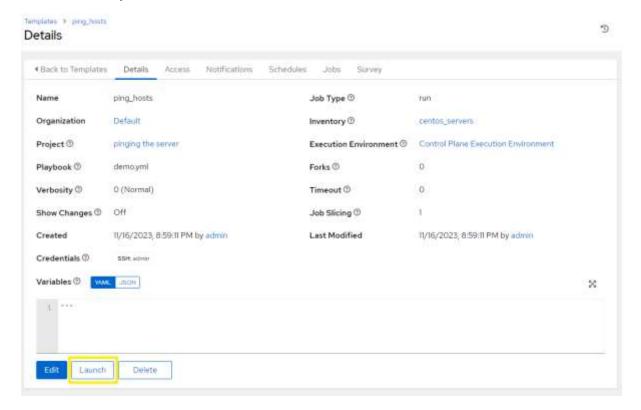
- o Name: Enter a name for the job.
- Description: Enter an arbitrary description as appropriate (optional).
- Job Type: Could be Run or Check
- Inventory: Choose the inventory to be used with this job template from the inventories list.
- Project: Choose the project to be used with this job template from the projects list.
- o Playbook: Choose the playbook to be launched with this job template from the available playbooks. This menu is automatically populated with the names of the playbooks found in the project base path for the selected project.
- Credential: Click the search button to open a separate window. Choose the credential from the available options to be used with this job template.





Note: save the details.

6.7 Launch the job.



6.8 Let's check the output.

