DevOps Project Ansible Awx (EKS, AKS, GKE and Multicloud-Multicluster)

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या कुन्देन्दुतुषारहारधवला या शुभ्रवस्त्रावृता
या वीणावरदण्डमण्डितकरा या श्वेतपद्मासना।
या ब्रह्माच्युत शंकरप्रभृतिभिर्देवैः सदा वन्दिता
सा मां पातु सरस्वती भगवती निःशेषजाड्यापहा ॥

DevOps Project Ansible Awx (EKS, AKS, GKE and Multicloud-Multicluster)

AWX is the open-source, community-driven upstream project of the commercial Red Hat Ansible Automation Platform (AAP) priorly known as Ansible Tower. For installation of Ansible Awx in production environment it is suggestable to install on the top of Kubernetes (EKS, AKS or GKE) and use PostgreSQL (RDS, Azure Database for PostgreSQL Flexible Server or Cloud SQL).

Module-1: - DevOps Project Ansible Awx (EKS)

In this module I will explain about installation of Ansible Awx on the top of Private EKS Cluster and RDS (PostgreSQL) had been used as the database. To access the Ansible Awx using the URL I had used Kubernetes Gateway API (while installation of Kubernetes Gateway API, Wildcard SSL Certificate had been used). AWS Route53 Hosted Zone had been created using the Terraform Script present in the GitHub Repo https://github.com/singhritesh85/DevOps-Project-Ansible-Awx.git at the path **terraform-route53-hosted-zone**.

Commands as written below had been used to create infrastructure using Terraform.

terraform init -------> initializes a working directory containing configuration files and installs plugins for required providers.

terraform validate --------> verify that terraform configuration file is correct or not

terraform plan ---------> Check which resources are going to be created.

Then you can run the command **terraform apply -auto-approve** -----> Finally, Create the resources.

After running the Terraform Script update your domain provider with the generated Nameserver of the AWS Route53 Hosted Zone.

```
      + name                          = "singhritesh85.com"
      + name_servers                  = (known after apply)
      + primary_name_server           = (known after apply)
      + tags                          = {
          + "Environment" = "dev"
        }
      + tags_all                      = {
          + "Environment" = "dev"
        }
      + zone_id                       = (known after apply)
    }

Plan: 1 to add, 0 to change, 0 to destroy.

Changes to Outputs:
  + route53_hosted_zone_details = {
      + hosted_zone_id           = (known after apply)
      + hosted_zone_name_servers = (known after apply)
    }
module.route53_hosted_zone.aws_route53_zone.hosted_zone: Creating...
module.route53_hosted_zone.aws_route53_zone.hosted_zone: Still creating... [00m10s elapsed]
module.route53_hosted_zone.aws_route53_zone.hosted_zone: Still creating... [00m20s elapsed]
module.route53_hosted_zone.aws_route53_zone.hosted_zone: Still creating... [00m30s elapsed]
module.route53_hosted_zone.aws_route53_zone.hosted_zone: Creation complete after 32s [id=                    ]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.

Outputs:

route53_hosted_zone_details = {
  "hosted_zone_id" = "                    "
  "hosted_zone_name_servers" = tolist([
    "
    "
    ",
    "
  ])
}
```

Then Private EKS Cluster, a K8S-Management Node and RDS (PostgreSQL) had been created using the Terraform Script present in the GitHub Repo https://github.com/singhritesh85/DevOps-Project-Ansible-Awx.git at the path **terraform-private-eks-cluster-and-rds**.

Commands as written below had been used to create infrastructure using Terraform.

terraform init -------> initializes a working directory containing configuration files and installs plugins for required providers.

terraform validate --------> verify that terraform configuration file is correct or not

terraform plan ---------> Check which resources are going to be created.

Then you can run the command **terraform apply -auto-approve** -----> Finally, Create the resources.

```
module.eks_cluster.aws_ec2_tag.cluster_security_group: Creation complete after 1s [id=sg-0a[redacted],karpenter.sh/discovery]
module.eks_cluster.null_resource.kubectl (local-exec): Updated context arn:aws:eks:us-east-[redacted]:cluster/eks-demo-cluster-dev in /root/.kube/config
module.eks_cluster.null_resource.kubectl: Creation complete after 2s [id=[redacted]]
module.eks_cluster.aws_eks_addon.amazon_cloudwatch_observability: Still creating... [00m10s elapsed]
module.eks_cluster.aws_eks_addon.core_dns: Still creating... [00m10s elapsed]
module.eks_cluster.aws_eks_addon.metrics_server: Still creating... [00m10s elapsed]
module.eks_cluster.aws_eks_addon.csi_snapshot_controller: Still creating... [00m10s elapsed]
module.eks_cluster.aws_eks_addon.ebs_csi_driver: Still creating... [00m10s elapsed]
module.eks_cluster.aws_eks_addon.core_dns: Creation complete after 14s [id=eks-demo-cluster-dev:coredns]
module.eks_cluster.aws_eks_addon.amazon_cloudwatch_observability: Still creating... [00m20s elapsed]
module.eks_cluster.aws_eks_addon.metrics_server: Still creating... [00m20s elapsed]
module.eks_cluster.aws_eks_addon.csi_snapshot_controller: Still creating... [00m20s elapsed]
module.eks_cluster.aws_eks_addon.ebs_csi_driver: Still creating... [00m20s elapsed]
module.eks_cluster.aws_eks_addon.amazon_cloudwatch_observability: Still creating... [00m30s elapsed]
module.eks_cluster.aws_eks_addon.metrics_server: Still creating... [00m30s elapsed]
module.eks_cluster.aws_eks_addon.csi_snapshot_controller: Still creating... [00m30s elapsed]
module.eks_cluster.aws_eks_addon.ebs_csi_driver: Still creating... [00m30s elapsed]
module.eks_cluster.aws_eks_addon.ebs_csi_driver: Creation complete after 35s [id=eks-demo-cluster-dev:aws-ebs-csi-driver]
module.eks_cluster.aws_eks_addon.amazon_cloudwatch_observability: Still creating... [00m40s elapsed]
module.eks_cluster.aws_eks_addon.metrics_server: Still creating... [00m40s elapsed]
module.eks_cluster.aws_eks_addon.csi_snapshot_controller: Still creating... [00m40s elapsed]
module.eks_cluster.aws_eks_addon.metrics_server: Creation complete after 45s [id=eks-demo-cluster-dev:metrics-server]
module.eks_cluster.aws_eks_addon.csi_snapshot_controller: Creation complete after 45s [id=eks-demo-cluster-dev:snapshot-controller]
module.eks_cluster.aws_eks_addon.amazon_cloudwatch_observability: Creation complete after 46s [id=eks-demo-cluster-dev:amazon-cloudwatch-observability]

Apply complete! Resources: 80 added, 0 changed, 0 destroyed.

Outputs:

ec2_eks_and_karpenter_iam_role_rds_details = {
  "eks_cluster_endpoint" = "https://[redacted].us-east-2.eks.amazonaws.com"
  "eks_cluster_name" = "eks-demo-cluster-dev"
  "k8s_management_instance_id" = "i-[redacted]"
  "k8s_management_private_ip" = "10.10.4.195"
  "karpenter_node_spun_iam_role_arn" = "arn:aws:iam::[redacted]:role/karpenter-eks-noderole"
  "rds_dbinstance_address" = "dbinstance-1.[redacted].us-east-2.rds.amazonaws.com"
  "rds_dbinstance_endpoint" = "dbinstance-1.[redacted].us-east-2.rds.amazonaws.com:5432"
}
```

```
[k8s-management@k8s-management ~]$ kubectl get nodes
NAME                                        STATUS   ROLES    AGE   VERSION
ip-10-10-1-119.us-east-2.compute.internal   Ready    <none>   [redacted]m   v1.33.0-eks-[redacted]
ip-10-10-2-97.us-east-2.compute.internal    Ready    <none>   [redacted]m   v1.33.0-eks-[redacted]
ip-10-10-3-114.us-east-2.compute.internal   Ready    <none>   [redacted]m   v1.33.0-eks-[redacted]
```

To install karpenter I edited the configmap **aws-auth** in the namespace **kube-system** as shown in the screenshot present below.

```
[k8s-management@k8s-management ~]$ kubectl edit cm aws-auth -n kube-system
```

```
# Please edit the object below. Lines beginning with a '#' will be ignored,
# and an empty file will abort the edit. If an error occurs while saving this file will be
# reopened with the relevant failures.
#
apiVersion: v1
data:
  mapRoles: |
    - rolearn: arn:aws:iam::02[redacted]6:role/eks-nodegroup-role-dev
      groups:
      - system:bootstrappers
      - system:nodes
      username: system:node:{{EC2PrivateDNSName}}
    - rolearn: arn:aws:iam::02[redacted]6:role/karpenter-eks-noderole
      groups:
      - system:bootstrappers
      - system:nodes
      username: system:node:{{EC2PrivateDNSName}}
kind: ConfigMap
metadata:
  creationTimestamp: "2026-[redacted]"
  name: aws-auth
  namespace: kube-system
  resourceVersion: "[redacted]"
  uid: [redacted]
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
-- INSERT (paste) --
```

I installed the karpenter controller using helm as shown in the screenshot attached below.

helm upgrade --install karpenter oci://public.ecr.aws/karpenter/karpenter --version "1.6.5" --namespace "karpenter" --create-namespace --set "settings.clusterName=eks-demo-cluster-dev" --set "serviceAccount.annotations.eks\.amazonaws\.com/role-arn=arn:aws:iam::02XXXXXXXXX6:role/karpenter-controller-role" --set controller.resources.requests.cpu=1 --set controller.resources.requests.memory=1Gi --set controller.resources.limits.cpu=1 --set controller.resources.limits.memory=1Gi

```
[k8s-management@k8s-management ~]$ helm upgrade --install karpenter oci://public.ecr.aws/karpenter/karpenter --version "1.6.5" --namespace "karpenter" --creat
e-namespace --set "settings.clusterName=eks-demo-cluster-dev" --set "serviceAccount.annotations.eks\.amazonaws\.com/role-arn=arn:aws:iam::02        6:role/ka
rpenter-controller-role" --set controller.resources.requests.cpu=1 --set controller.resources.requests.memory=1Gi --set controller.resources.limits.cpu=1 --se
t controller.resources.limits.memory=1Gi
```

Then ran the kubernetes Manifests file **karpenter.yaml** present at the path **terraform-private-eks-cluster-and-rds** in the GitHub Repo https://github.com/singhritesh85/DevOps-Project-Ansible-Awx.git. For your reference **karpenter.yaml** I had also provided below.

```
[k8s-management@k8s-management ~]$ kubectl apply -f karpenter.yaml
nodepool.karpenter.sh/general-purpose created
ec2nodeclass.karpenter.k8s.aws/default created
```

```
[k8s-management@k8s-management ~]$ kubectl get all -n karpenter
NAME                                 READY   STATUS    RESTARTS   AGE
pod/karpenter-                       1/1     Running   0          10m
pod/karpenter-                       1/1     Running   0          10m

NAME                 TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)    AGE
service/karpenter    ClusterIP   172.20.100.104   <none>        8080/TCP   10m

NAME                         READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/karpenter    2/2     2            2           10m

NAME                                    DESIRED   CURRENT   READY   AGE
replicaset.apps/karpenter-              2         2         2       10m
```

cat karpenter.yaml

```
# This example NodePool will provision general purpose instances
---
apiVersion: karpenter.sh/v1
kind: NodePool
metadata:
  name: general-purpose
  annotations:
    kubernetes.io/description: "General purpose NodePool for generic workloads"
spec:
  template:
    spec:
      requirements:
        - key: kubernetes.io/arch
          operator: In
          values: ["amd64"]
        - key: kubernetes.io/os
          operator: In
          values: ["linux"]
        - key: karpenter.sh/capacity-type
          operator: In
          values: ["on-demand"]    #["spot"] ### You can select on-demand or spot instance depending on your requirement.
        - key: karpenter.k8s.aws/instance-category
          operator: In
          values: ["t"]   # Interested to launch t series instance          #["c", "m", "r"]
        - key: karpenter.k8s.aws/instance-generation
          operator: Gt
          values: ["1"]   # Instances launched will be greated than 1    ###["2"]   # Instances launched will be greated than 2
      nodeClassRef:
        group: karpenter.k8s.aws
```

```
      kind: EC2NodeClass
      name: default
---
apiVersion: karpenter.k8s.aws/v1
kind: EC2NodeClass
metadata:
  name: default
  annotations:
    kubernetes.io/description: "General purpose EC2NodeClass for running Amazon Linux 2023 nodes"
spec:
  role: "karpenter-eks-noderole" # replace with your karpenter noderole
  subnetSelectorTerms:
    - tags:
        karpenter.sh/discovery: "eks-demo-cluster-dev" # replace with your cluster name
  securityGroupSelectorTerms:
    - tags:
        karpenter.sh/discovery: "eks-demo-cluster-dev" # replace with your cluster name
  amiSelectorTerms:
    - alias: al2023@latest # Amazon Linux 2023
```

Installation of AWX using Helm

helm repo add awx-operator https://ansible-community.github.io/awx-operator-helm/

helm repo update

helm install ansible-awx-operator awx-operator/awx-operator -n awx --create-namespace

```
[k8s-management@k8s-management ~]$ helm repo add awx-operator https://ansible-community.github.io/awx-operator-helm/
"awx-operator" has been added to your repositories
[k8s-management@k8s-management ~]$ helm repo update
Hang tight while we grab the latest from your chart repositories...
...Successfully got an update from the "awx-operator" chart repository
Update Complete. ⎈Happy Helming!⎈
[k8s-management@k8s-management ~]$ helm install ansible-awx-operator awx-operator/awx-operator -n awx --create-namespace
```

```
[k8s-management@k8s-management ~]$ cat awx-postgres-secret.yaml
apiVersion: v1
kind: Secret
metadata:
  name: awx-postgres-configuration
  namespace: awx
stringData:
  host: "dbinstance-1.[redacted].us-east-2.rds.amazonaws.com"
  port: "5432"
  database: "dexter"
  username: "postgres"
  password: "I[redacted]W"
  sslmode: "prefer" # or 'require' if you enforce SSL on RDS
  type: "unmanaged"
type: Opaque
[k8s-management@k8s-management ~]$ kubectl apply -f awx-postgres-secret.yaml
secret/awx-postgres-configuration created
```

```
[k8s-management@k8s-management ~]$ kubectl get secrets -n awx|grep -i "awx-postgres-configuration"
awx-postgres-configuration                Opaque              7      48s
```

```
[k8s-management@k8s-management ~]$ cat ansible-awx.yaml
apiVersion: awx.ansible.com/v1beta1
kind: AWX
metadata:
  name: ansible-awx
  namespace: awx
spec:
  postgres_configuration_secret: awx-postgres-configuration
  service_type: ClusterIP
  admin_user: admin
[k8s-management@k8s-management ~]$ kubectl apply -f ansible-awx.yaml
awx.awx.ansible.com/ansible-awx created
```

```
[k8s-management@k8s-management ~]$ kubectl get all -n awx
NAME                                                  READY   STATUS      RESTARTS   AGE
pod/ansible-awx-migration-24.6.1-[redacted]           0/1     Completed   0          6m25s
pod/ansible-awx-task-[redacted]                       4/4     Running     0          8m
pod/ansible-awx-web-[redacted]                        3/3     Running     0          8m2s
pod/awx-operator-controller-manager-[redacted]        2/2     Running     0          17m

NAME                                                  TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)    AGE
service/ansible-awx-service                           ClusterIP   172.20.78.211    <none>        80/TCP     8m7s
service/awx-operator-controller-manager-metrics-service   ClusterIP   172.20.195.101   <none>        8443/TCP   17m

NAME                                                  READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/ansible-awx-task                      1/1     1            1           8m
deployment.apps/ansible-awx-web                       1/1     1            1           8m2s
deployment.apps/awx-operator-controller-manager       1/1     1            1           17m

NAME                                                  DESIRED   CURRENT   READY   AGE
replicaset.apps/ansible-awx-task-[redacted]           1         1         1       8m
replicaset.apps/ansible-awx-web-[redacted]            1         1         1       8m2s
replicaset.apps/awx-operator-controller-manager-[redacted]   1         1         1       17m

NAME                                  STATUS     COMPLETIONS   DURATION   AGE
job.batch/ansible-awx-migration-24.6.1   Complete   1/1           4m51s      6m26s
```

```
cat awx-postgres-secret.yaml
apiVersion: v1
kind: Secret
metadata:
  name: awx-postgres-configuration
  namespace: awx
stringData:
  host: "dbinstance-1.XXXXXXXXXXXX.us-east-2.rds.amazonaws.com"
  port: "5432"
  database: "dexter"
  username: "postgres"
  password: "XXXXXXXXXXXXXXXX"
  sslmode: "prefer" # or 'require' if you enforce SSL on RDS
  type: "unmanaged"
type: Opaque
```

```
cat ansible-awx.yaml
apiVersion: awx.ansible.com/v1beta1
kind: AWX
metadata:
  name: ansible-awx
  namespace: awx
spec:
  postgres_configuration_secret: awx-postgres-configuration
  service_type: ClusterIP
  admin_user: admin
```

Then I created the Gateway API and did the entry of created LoadBalancer Service DNS to create the Record-Set of A-Type with Alias as shown in the screenshot attached below.

```
[k8s-management@k8s-management ~]$ ls
STAR_singhritesh85_com.crt  ansible-awx.yaml  awx-postgres-secret.yaml  karpenter.yaml  mykey.key
[k8s-management@k8s-management ~]$ kubectl -n awx create secret tls tls-awx-ingress --cert=STAR_singhritesh85_com.crt --key=mykey.key
secret/tls-awx-ingress created
[k8s-management@k8s-management ~]$ kubectl get secrets -n awx|grep "tls-awx-ingress"
tls-awx-ingress                       kubernetes.io/tls    2      25s
```

Installation of Gateway API as explained below.

kubectl apply -f https://github.com/kubernetes-sigs/gateway-api/releases/download/v1.4.0/standard-install.yaml

helm upgrade --install ngf oci://ghcr.io/nginx/charts/nginx-gateway-fabric --create-namespace -n nginx-gateway

```
[k8s-management@k8s-management ~]$ kubectl apply -f https://github.com/kubernetes-sigs/gateway-api/releases/download/v1.4.0/standard-install.yaml
customresourcedefinition.apiextensions.k8s.io/backendtlspolicies.gateway.networking.k8s.io created
customresourcedefinition.apiextensions.k8s.io/gatewayclasses.gateway.networking.k8s.io created
customresourcedefinition.apiextensions.k8s.io/gateways.gateway.networking.k8s.io created
customresourcedefinition.apiextensions.k8s.io/grpcroutes.gateway.networking.k8s.io created
customresourcedefinition.apiextensions.k8s.io/httproutes.gateway.networking.k8s.io created
customresourcedefinition.apiextensions.k8s.io/referencegrants.gateway.networking.k8s.io created
[k8s-management@k8s-management ~]$ helm upgrade --install ngf oci://ghcr.io/nginx/charts/nginx-gateway-fabric --create-namespace -n nginx-gateway
Release "ngf" does not exist. Installing it now.
Pulled: ghcr.io/nginx/charts/nginx-gateway-fabric:2.3.0
Digest: sha256:[redacted]
NAME: ngf
LAST DEPLOYED: [redacted] 2026
NAMESPACE: nginx-gateway
STATUS: deployed
REVISION: 1
TEST SUITE: None
```

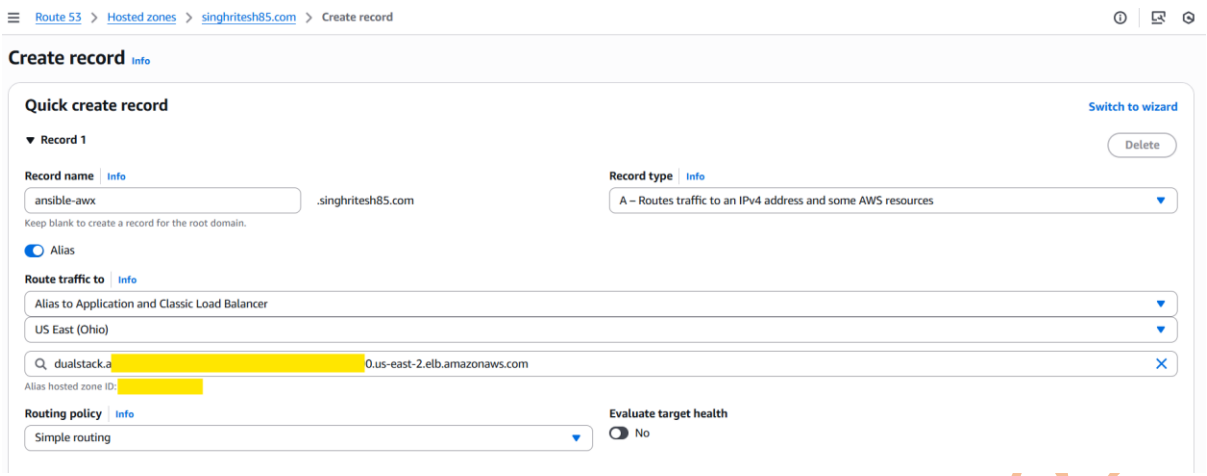
```
[k8s-management@k8s-management ~]$ kubectl get all -n nginx-gateway
NAME                                          READY   STATUS    RESTARTS   AGE
pod/ngf-nginx-gateway-fabric-[redacted]       1/1     Running   0          68s

NAME                                  TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)   AGE
service/ngf-nginx-gateway-fabric      ClusterIP   172.20.214.211   <none>        443/TCP   68s

NAME                                     READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/ngf-nginx-gateway-fabric 1/1     1            1           68s

NAME                                                DESIRED   CURRENT   READY   AGE
replicaset.apps/ngf-nginx-gateway-fabric-[redacted] 1         1         1       68s
```

```
[k8s-management@k8s-management ~]$ kubectl apply -f gateway-api.yaml
gateway.gateway.networking.k8s.io/awx-gateway created
httproute.gateway.networking.k8s.io/awx-http-to-https-redirect created
httproute.gateway.networking.k8s.io/awx-route-https created
[k8s-management@k8s-management ~]$ kubectl get all -n awx
```

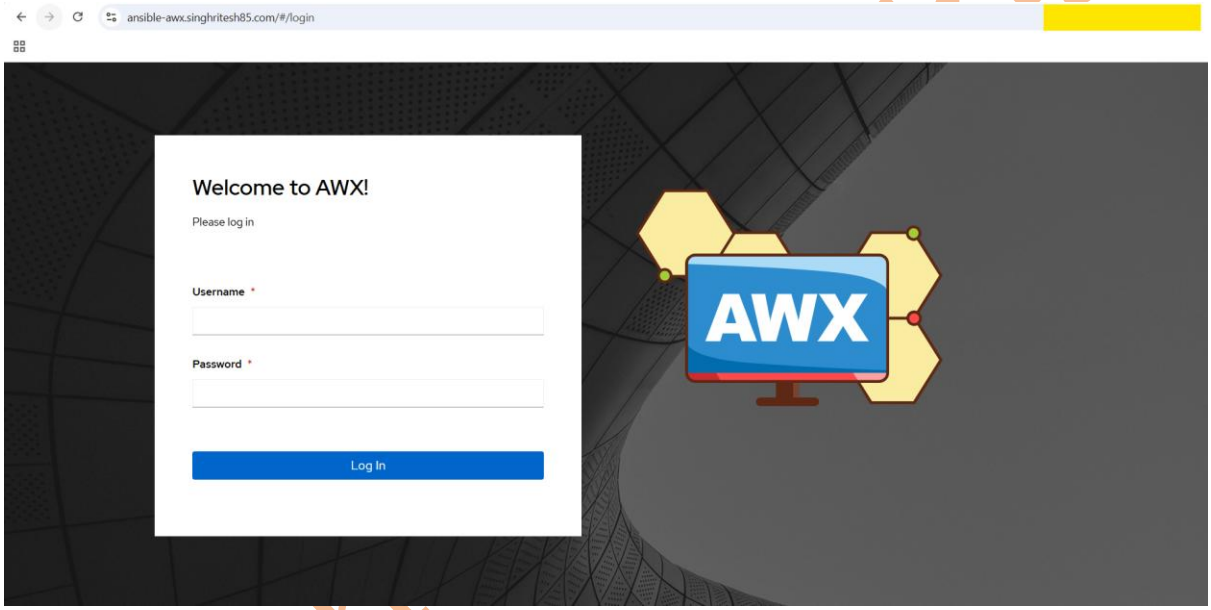
```
[k8s-management@k8s-management ~]$ kubectl get all -n awx
NAME                                              READY   STATUS      RESTARTS   AGE
pod/ansible-awx-migration-24.6.1-[redacted]       0/1     Completed   0          27m
pod/ansible-awx-task-[redacted]                   4/4     Running     0          28m
pod/ansible-awx-web-[redacted]                    3/3     Running     0          28m
pod/awx-gateway-nginx-[redacted]                  1/1     Running     0          19s
pod/awx-operator-controller-manager-[redacted]    2/2     Running     0          38m

NAME                                                  TYPE           CLUSTER-IP       EXTERNAL-IP
     PORT(S)                      AGE
service/ansible-awx-service                           ClusterIP      172.20.78.211    <none>
     80/TCP                       29m
service/awx-gateway-nginx                             LoadBalancer   172.20.124.82    a[redacted]3.us-east-2.elb.amazonaws.c
om   80:32453/TCP,443:32200/TCP   20s
service/awx-operator-controller-manager-metrics-service   ClusterIP   172.20.195.101   <none>
     8443/TCP                     38m

NAME                                          READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/ansible-awx-task              1/1     1            1           28m
deployment.apps/ansible-awx-web               1/1     1            1           28m
deployment.apps/awx-gateway-nginx             1/1     1            1           20s
deployment.apps/awx-operator-controller-manager   1/1     1            1           38m

NAME                                                DESIRED   CURRENT   READY   AGE
replicaset.apps/ansible-awx-task-[redacted]         1         1         1       28m
replicaset.apps/ansible-awx-web-[redacted]          1         1         1       28m
replicaset.apps/awx-gateway-nginx-[redacted]        1         1         1       20s
replicaset.apps/awx-operator-controller-manager-[redacted]   1   1   1   38m

NAME                                  STATUS     COMPLETIONS   DURATION   AGE
job.batch/ansible-awx-migration-24.6.1   Complete   1/1           4m51s      27m
```

```
cat gateway-api.yaml
apiVersion: gateway.networking.k8s.io/v1beta1
kind: Gateway
metadata:
  name: awx-gateway
  namespace: awx
spec:
  gatewayClassName: nginx # e.g., "nginx"
  listeners:
  - name: http
    protocol: HTTP
    port: 80
    hostname: "ansible-awx.singhritesh85.com"
  - name: https
    protocol: HTTPS
    port: 443
    hostname: "ansible-awx.singhritesh85.com"
    tls:
      mode: Terminate
      certificateRefs:
      - kind: Secret
        name: tls-awx-ingress
---
apiVersion: gateway.networking.k8s.io/v1
kind: HTTPRoute
metadata:
  name: awx-http-to-https-redirect
  namespace: awx
spec:
  parentRefs:
  - name: awx-gateway
```

```
    namespace: awx
    sectionName: http
  rules:
  - filters:
    - type: RequestRedirect
      requestRedirect:
        scheme: https
        statusCode: 301 # Use 301 for permanent redirect
---
apiVersion: gateway.networking.k8s.io/v1beta1
kind: HTTPRoute
metadata:
  name: awx-route-https
  namespace: awx
spec:
  parentRefs:
  - name: awx-gateway
    namespace: awx
    sectionName: https
  hostnames:
  - "ansible-awx.singhritesh85.com"
  rules:
  - backendRefs:
    - name: ansible-awx-service # Name of the Service created by the Helm chart
      port: 80
```



Finally, I was able to access Ansible Awx using the URL as shown in the screenshot attached below.



Now, I will reset the Ansible-Awx **admin** user **password** using the procedure as explained below.

kubectl get pods -n awx

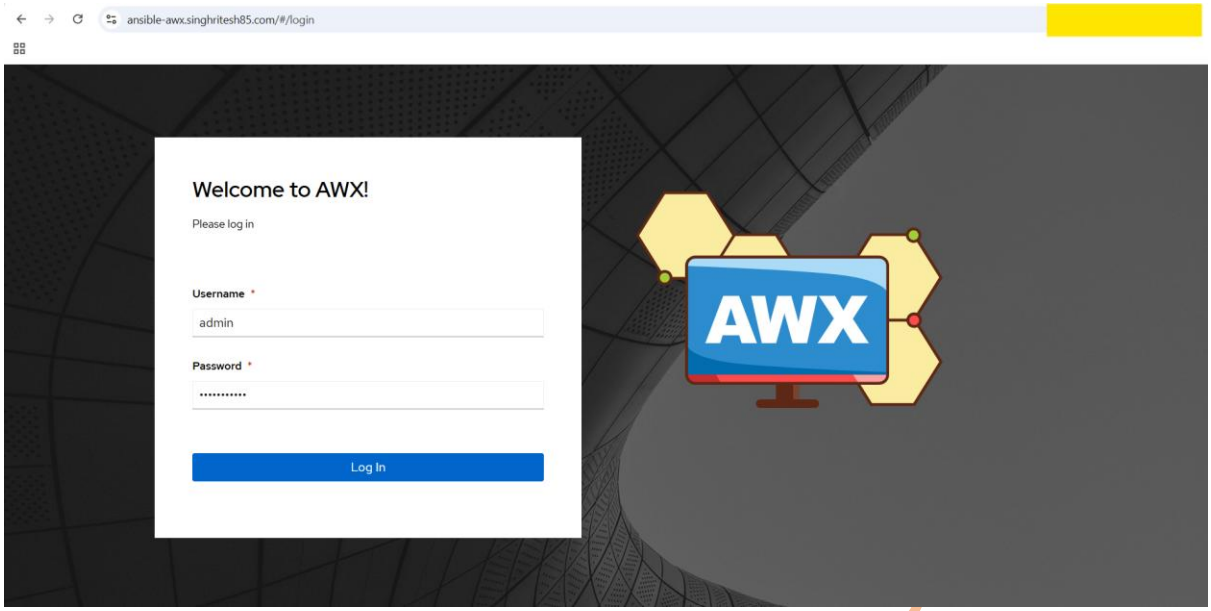
Log-into the ansible-awx-web Pod as shown below

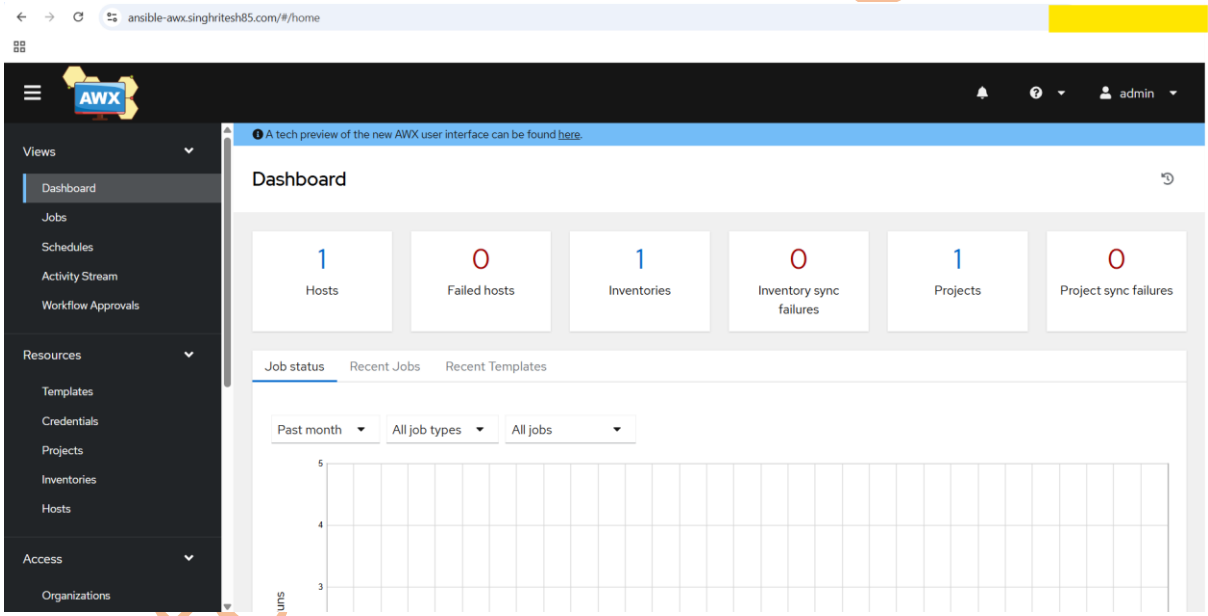
kubectl exec -it <ansible-awx-web pod> -n awx -- bash

awx-manage update_password --username=admin --password=<provide-your-password-here>

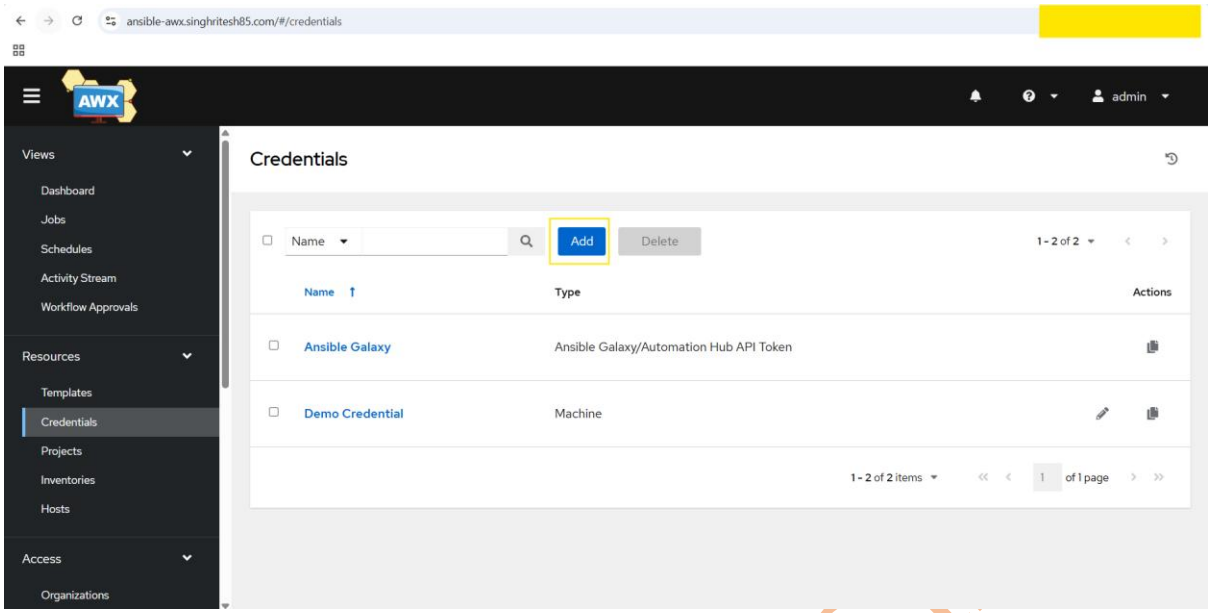
```
[k8s-management@k8s-management ~]$ kubectl get pods -n awx
NAME                                               READY   STATUS      RESTARTS   AGE
ansible-awx-migration-24.6.1-                      0/1     Completed   0          99m
ansible-awx-task-                                  4/4     Running     0          100m
ansible-awx-web-                                   3/3     Running     0          100m
awx-gateway-nginx-                                 1/1     Running     0          72m
awx-operator-controller-manager-                   2/2     Running     0          110m
[k8s-management@k8s-management ~]$ kubectl exec -it ansible-awx-web-                -n awx -- bash
bash-5.1$ awx-manage update_password --username=admin --password=
Password updated
```

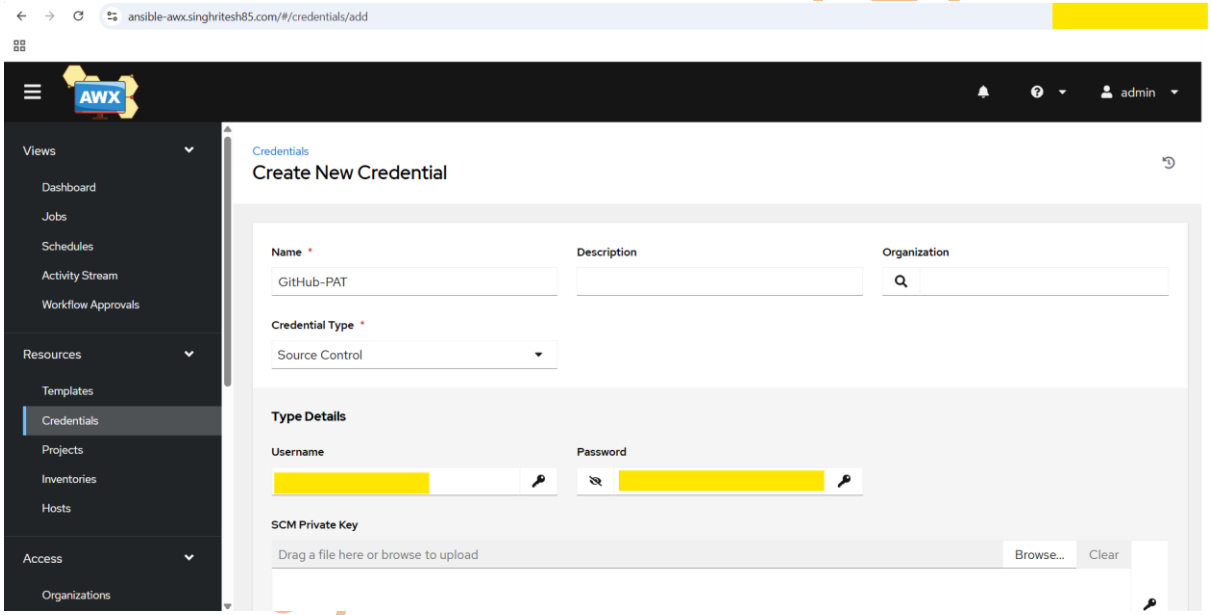
Then, I logged-into the Ansible-Awx using the updated password as shown below.

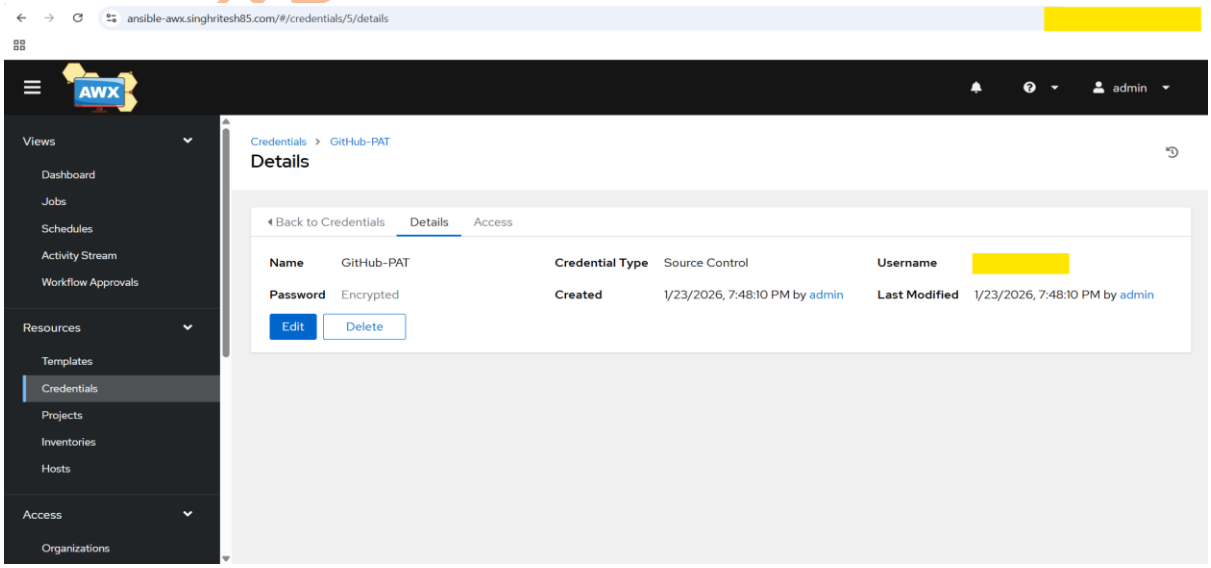


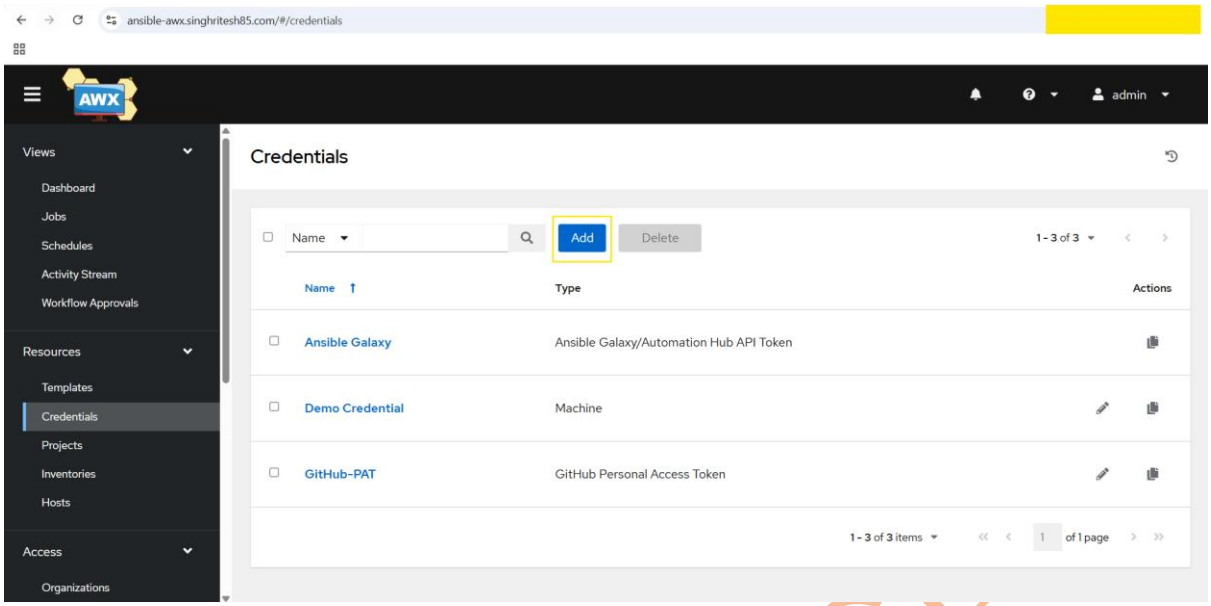


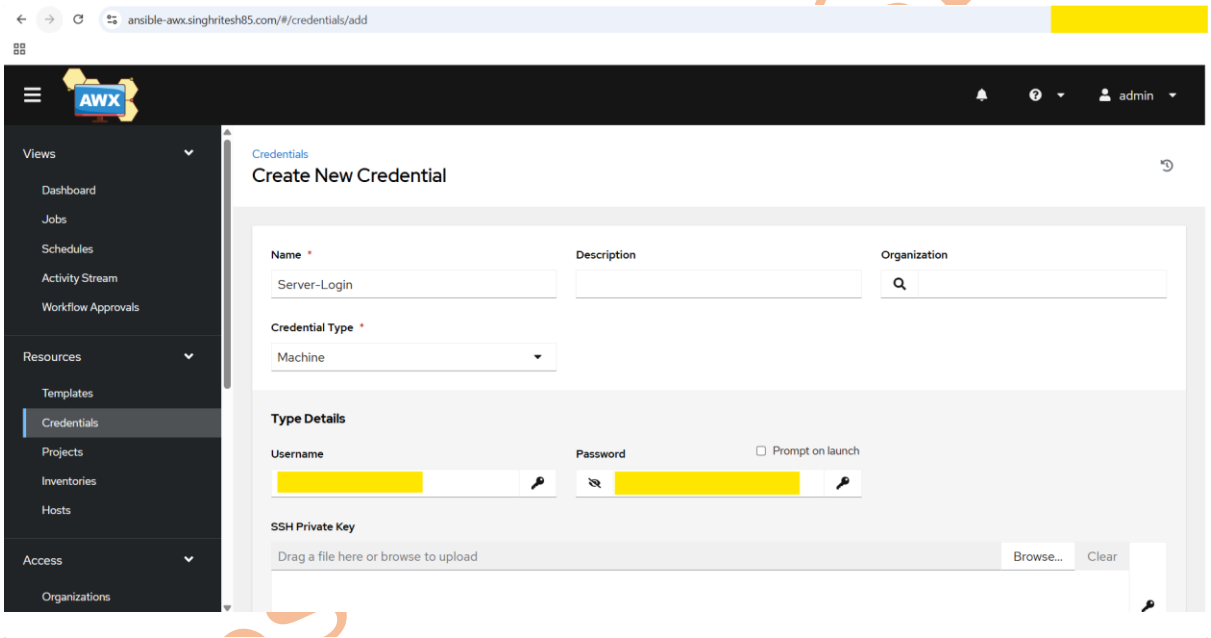
Now, I will run the Ansible Playbook using Ansible-Awx and will try to know the uptime of a server which comes under the group dexter. First, create the Credentials to access GitHub Repo and Loin-into the Server, inventory and host group and then add the hosts. Then create the project and finally, template as explained below.

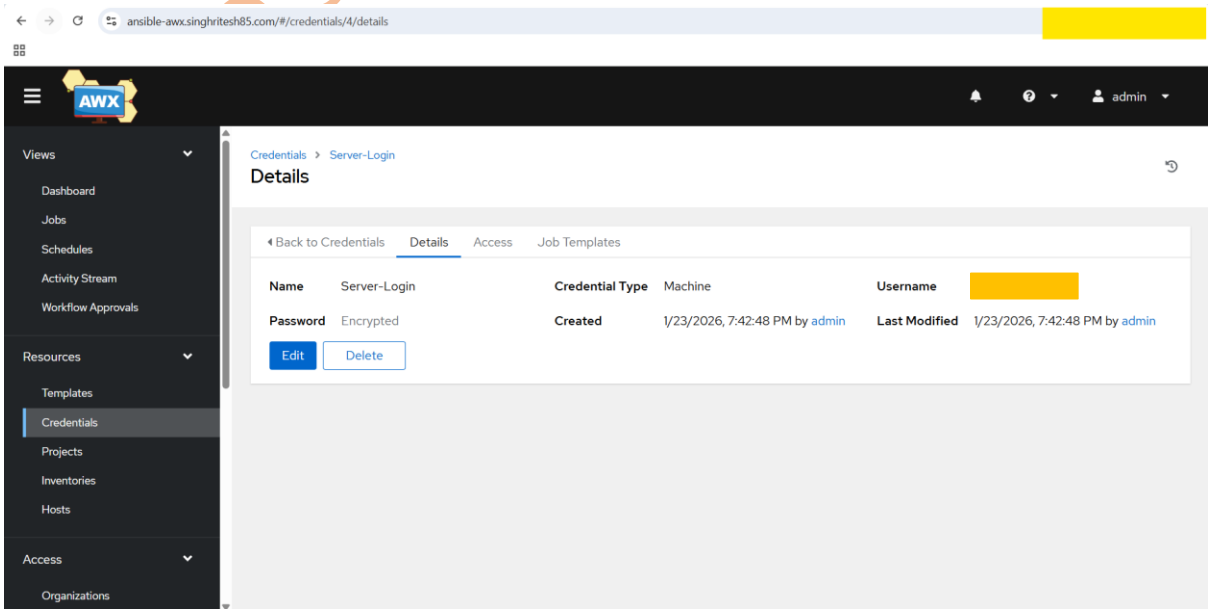

ansible-awx.singhritesh85.com/#/credentials
AWX
admin
Views
Dashboard
Jobs
Schedules
Activity Stream
Workflow Approvals
Resources
Templates
Credentials
Projects
Inventories
Hosts
Access
Organizations
Credentials
Name
Add
Delete
1 - 2 of 2
Name
Type
Actions
Ansible Galaxy
Ansible Galaxy/Automation Hub API Token
Demo Credential
Machine
1 - 2 of 2 items
1
of 1 page

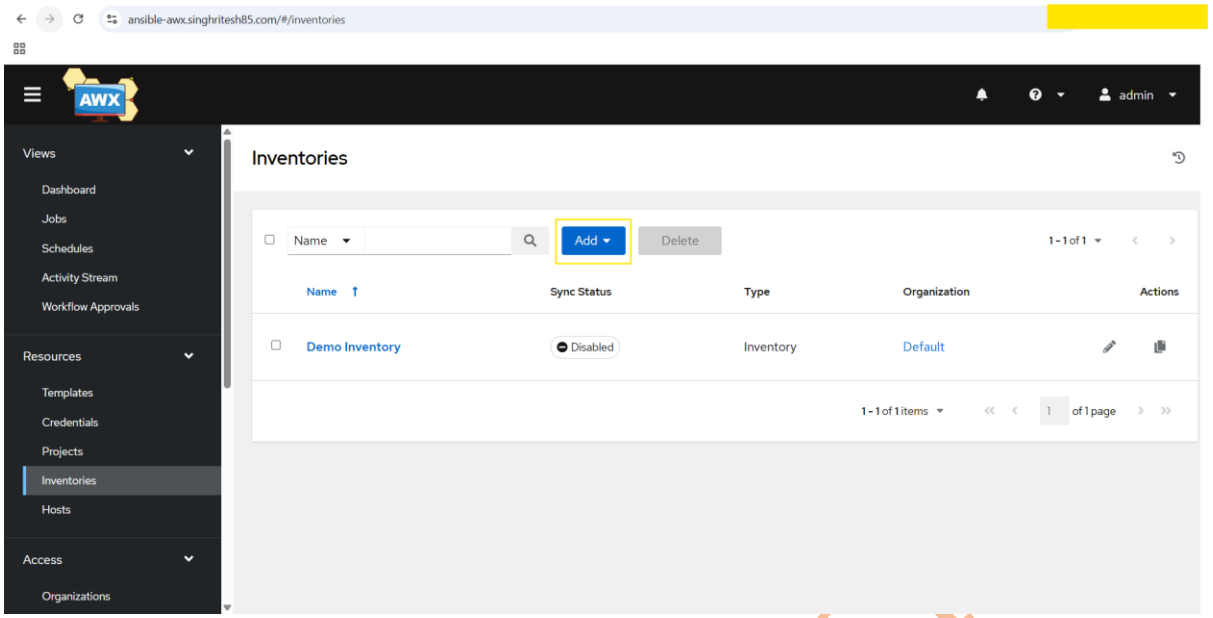

ansible-awx.singhritesh85.com/#/credentials/add
AWX
admin
Views
Dashboard
Jobs
Schedules
Activity Stream
Workflow Approvals
Resources
Templates
Credentials
Projects
Inventories
Hosts
Access
Organizations
Credentials
Create New Credential
Name *
GitHub-PAT
Description
Organization
Credential Type *
Source Control
Type Details
Username
Password
SCM Private Key
Drag a file here or browse to upload
Browse...
Clear

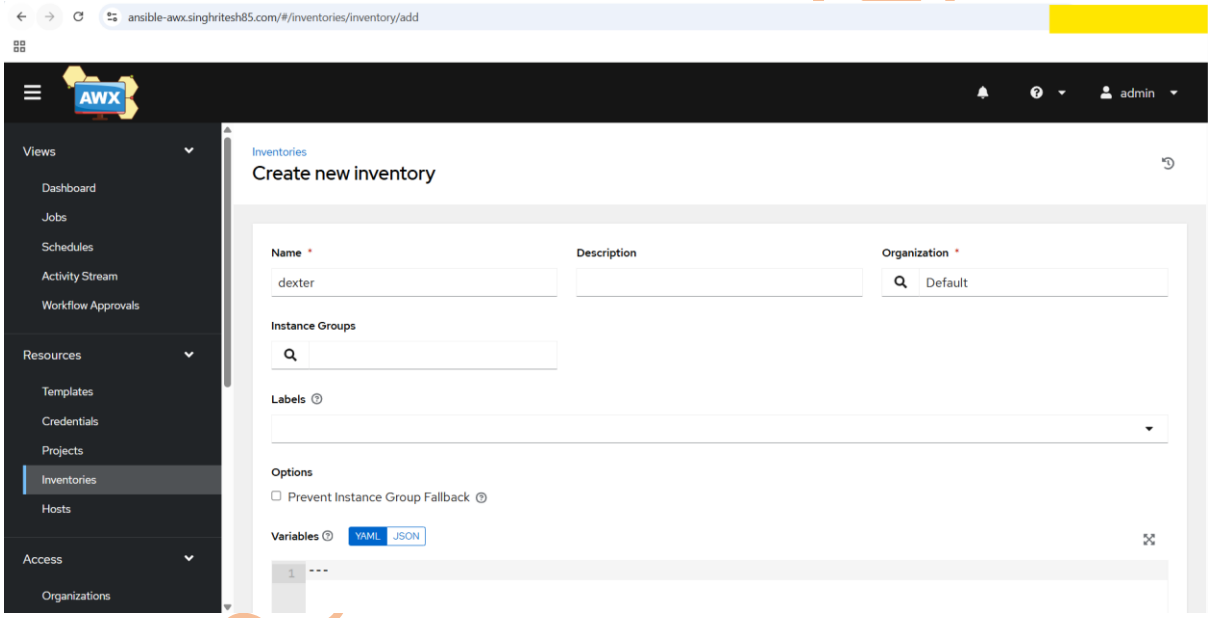

ansible-awx.singhritesh85.com/#/credentials/5/details
AWX
admin
Views
Dashboard
Jobs
Schedules
Activity Stream
Workflow Approvals
Resources
Templates
Credentials
Projects
Inventories
Hosts
Access
Organizations
Credentials > GitHub-PAT
Details
Back to Credentials
Details
Access
Name
GitHub-PAT
Credential Type
Source Control
Username
Password
Encrypted
Created
1/23/2026, 7:48:10 PM by admin
Last Modified
1/23/2026, 7:48:10 PM by admin
Edit
Delete

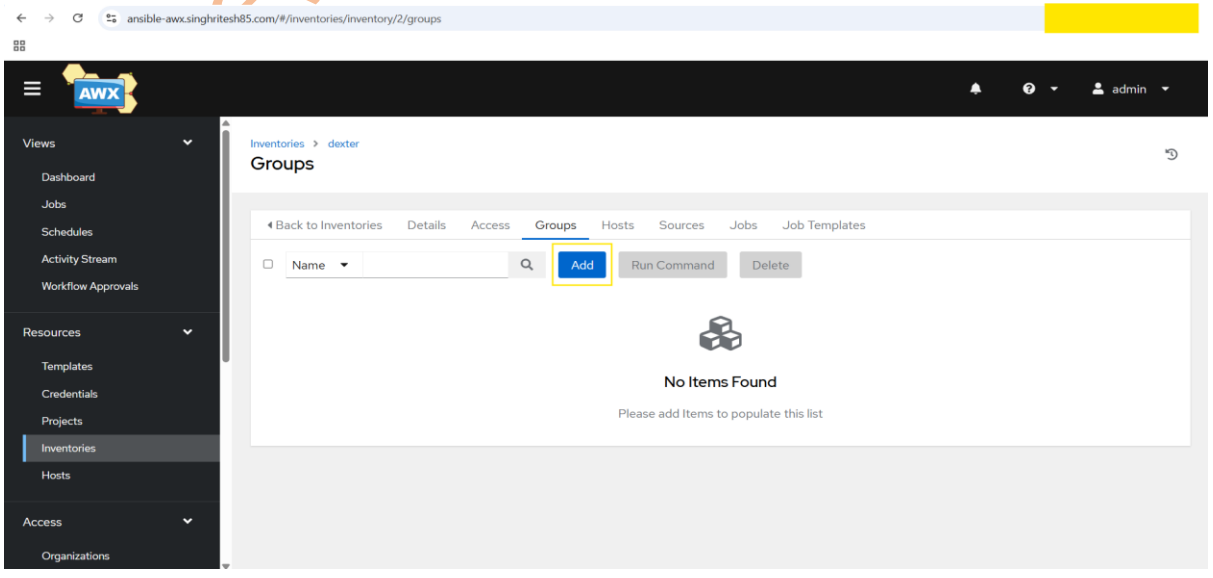

ansible-awx.singhritesh85.com/#/credentials
AWX
admin
Views
Dashboard
Jobs
Schedules
Activity Stream
Workflow Approvals
Resources
Templates
Credentials
Projects
Inventories
Hosts
Access
Organizations
Credentials
Name
Add
Delete
1 - 3 of 3
Name
Type
Actions
Ansible Galaxy
Ansible Galaxy/Automation Hub API Token
Demo Credential
Machine
GitHub-PAT
GitHub Personal Access Token
1 - 3 of 3 items
1
of 1 page

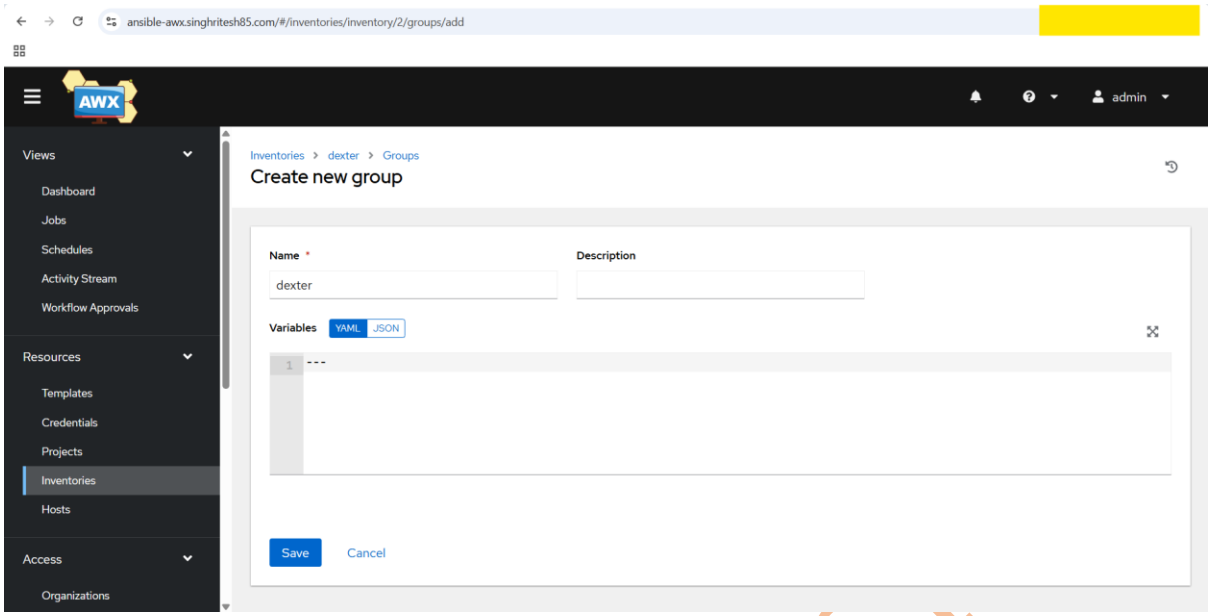

ansible-awx.singhritesh85.com/#/credentials/add
AWX
admin
Views
Dashboard
Jobs
Schedules
Activity Stream
Workflow Approvals
Resources
Templates
Credentials
Projects
Inventories
Hosts
Access
Organizations
Credentials
Create New Credential
Name *
Server-Login
Description
Organization
Credential Type *
Machine
Type Details
Username
Password
Prompt on launch
SSH Private Key
Drag a file here or browse to upload
Browse...
Clear


ansible-awx.singhritesh85.com/#/credentials/4/details
AWX
admin
Views
Dashboard
Jobs
Schedules
Activity Stream
Workflow Approvals
Resources
Templates
Credentials
Projects
Inventories
Hosts
Access
Organizations
Credentials > Server-Login
Details
Back to Credentials
Details
Access
Job Templates
Name
Server-Login
Credential Type
Machine
Username
Password
Encrypted
Created
1/23/2026, 7:42:48 PM by admin
Last Modified
1/23/2026, 7:42:48 PM by admin
Edit
Delete

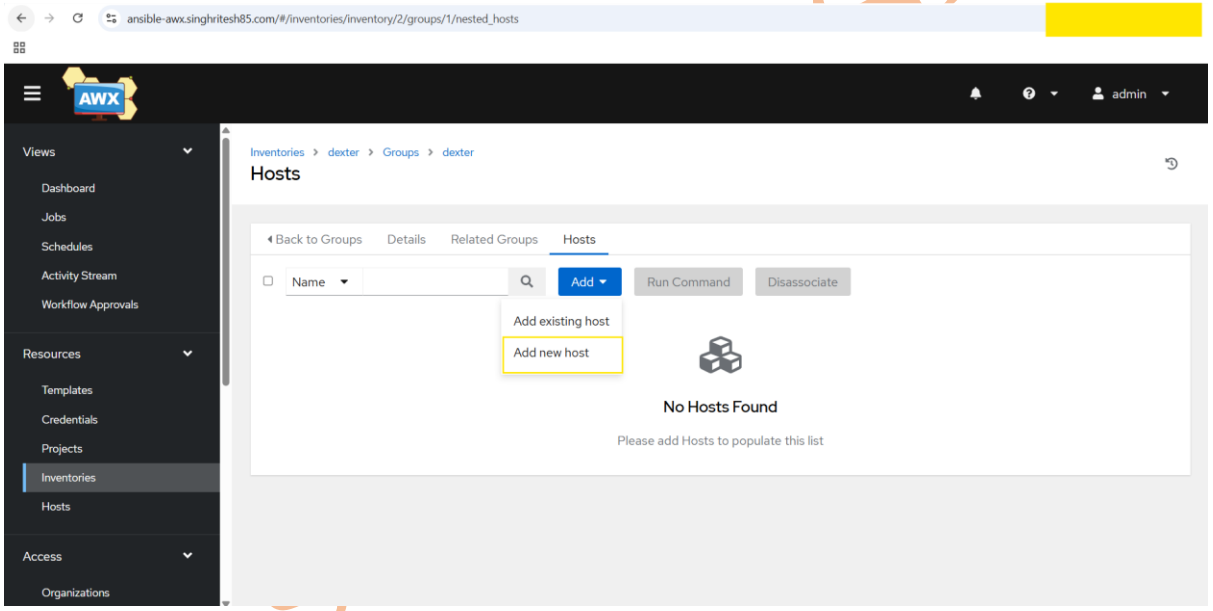

ansible-awx.singhritesh85.com/#/inventories
AWX
admin
Views
Dashboard
Jobs
Schedules
Activity Stream
Workflow Approvals
Resources
Templates
Credentials
Projects
Inventories
Hosts
Access
Organizations
Inventories
Name
Add
Delete
1 - 1 of 1
Name
Sync Status
Type
Organization
Actions
Demo Inventory
Disabled
Inventory
Default
1 - 1 of 1 items
1
of 1 page

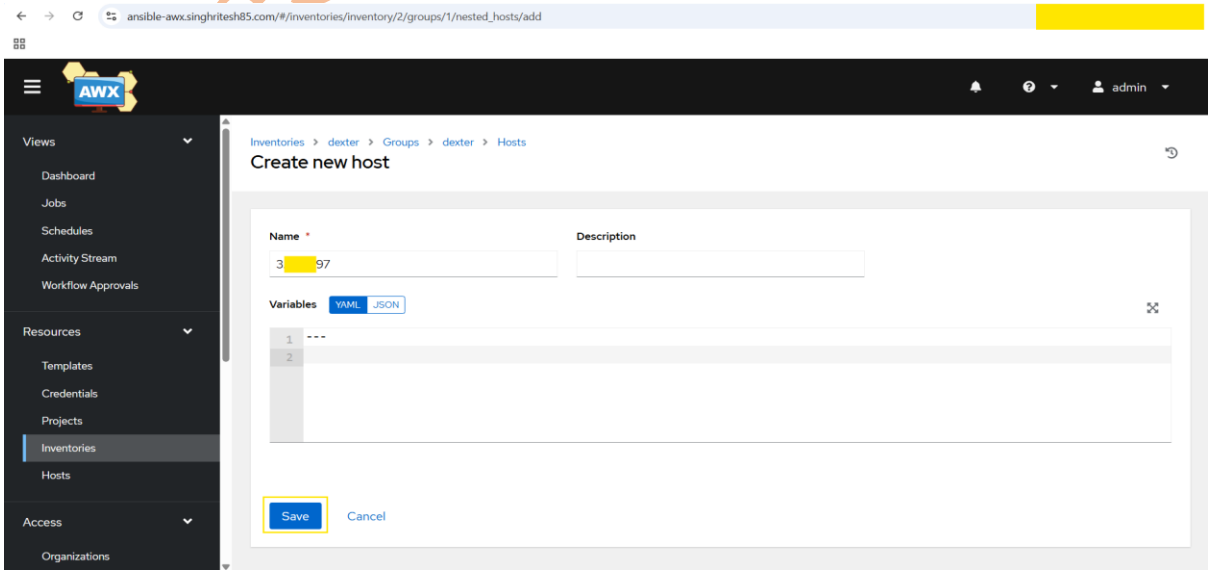

ansible-awx.singhritesh85.com/#/inventories/inventory/add
AWX
admin
Views
Dashboard
Jobs
Schedules
Activity Stream
Workflow Approvals
Resources
Templates
Credentials
Projects
Inventories
Hosts
Access
Organizations
Inventories
Create new inventory
Name *
dexter
Description
Organization *
Default
Instance Groups
Labels
Options
Prevent Instance Group Fallback
Variables
YAML
JSON
1 ---


ansible-awx.singhritesh85.com/#/inventories/inventory/2/groups
AWX
admin
Views
Dashboard
Jobs
Schedules
Activity Stream
Workflow Approvals
Resources
Templates
Credentials
Projects
Inventories
Hosts
Access
Organizations
Inventories > dexter
Groups
Back to Inventories
Details
Access
Groups
Hosts
Sources
Jobs
Job Templates
Name
Add
Run Command
Delete
No Items Found
Please add Items to populate this list

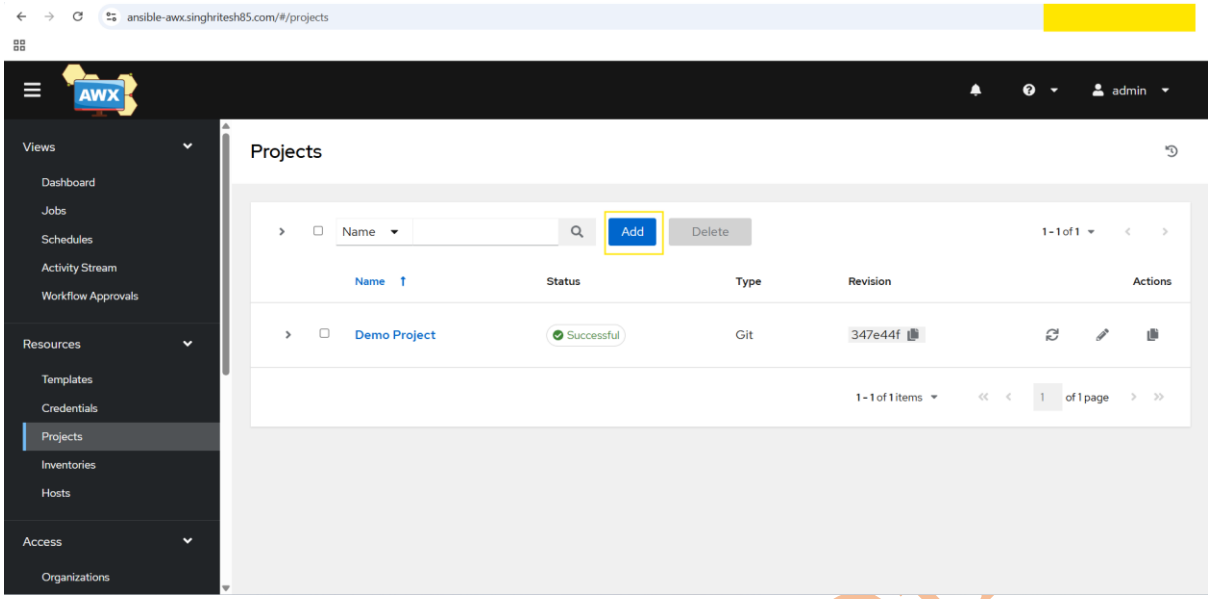

ansible-awx.singhritesh85.com/#/inventories/inventory/2/groups/add
AWX
admin
Views
Dashboard
Jobs
Schedules
Activity Stream
Workflow Approvals
Resources
Templates
Credentials
Projects
Inventories
Hosts
Access
Organizations
Inventories > dexter > Groups
Create new group
Name *
dexter
Description
Variables
YAML
JSON

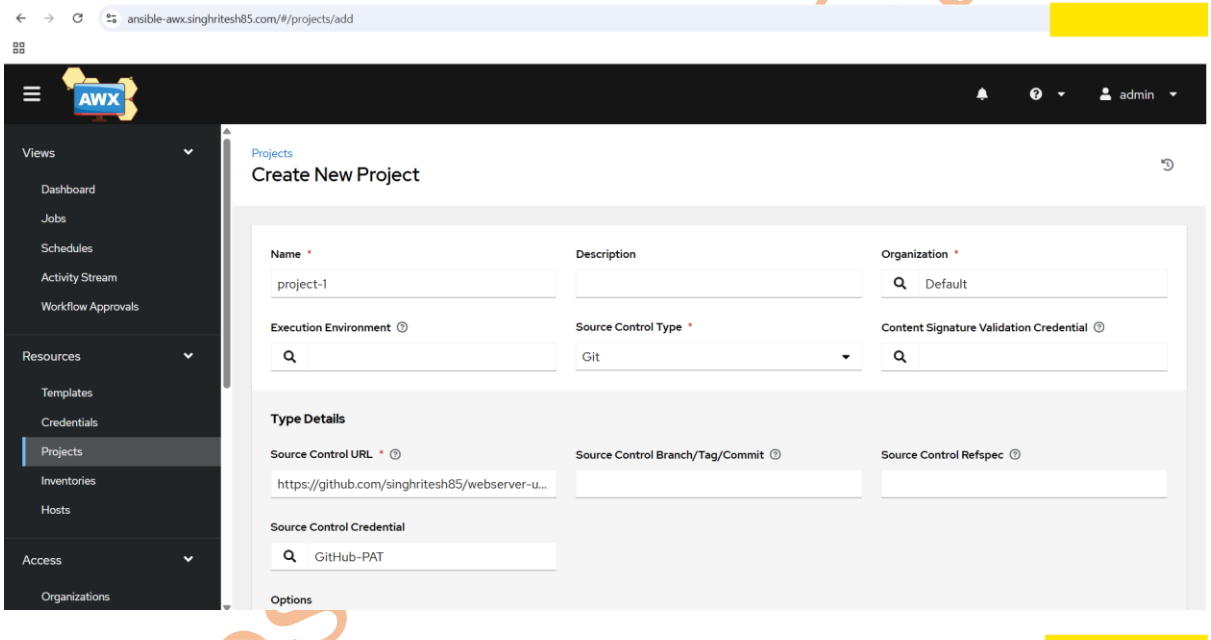
Save
Cancel

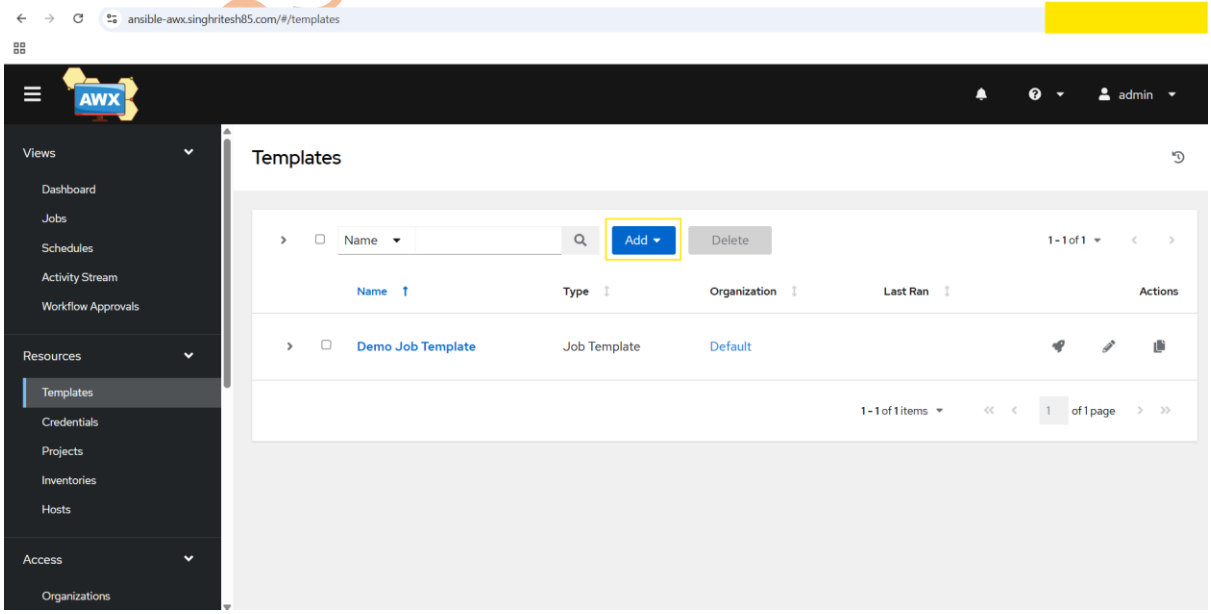

ansible-awx.singhritesh85.com/#/inventories/inventory/2/groups/1/nested_hosts
AWX
admin
Views
Dashboard
Jobs
Schedules
Activity Stream
Workflow Approvals
Resources
Templates
Credentials
Projects
Inventories
Hosts
Access
Organizations
Inventories > dexter > Groups > dexter
Hosts
Back to Groups
Details
Related Groups
Hosts
Name
Add
Run Command
Disassociate
Add existing host
Add new host
No Hosts Found
Please add Hosts to populate this list

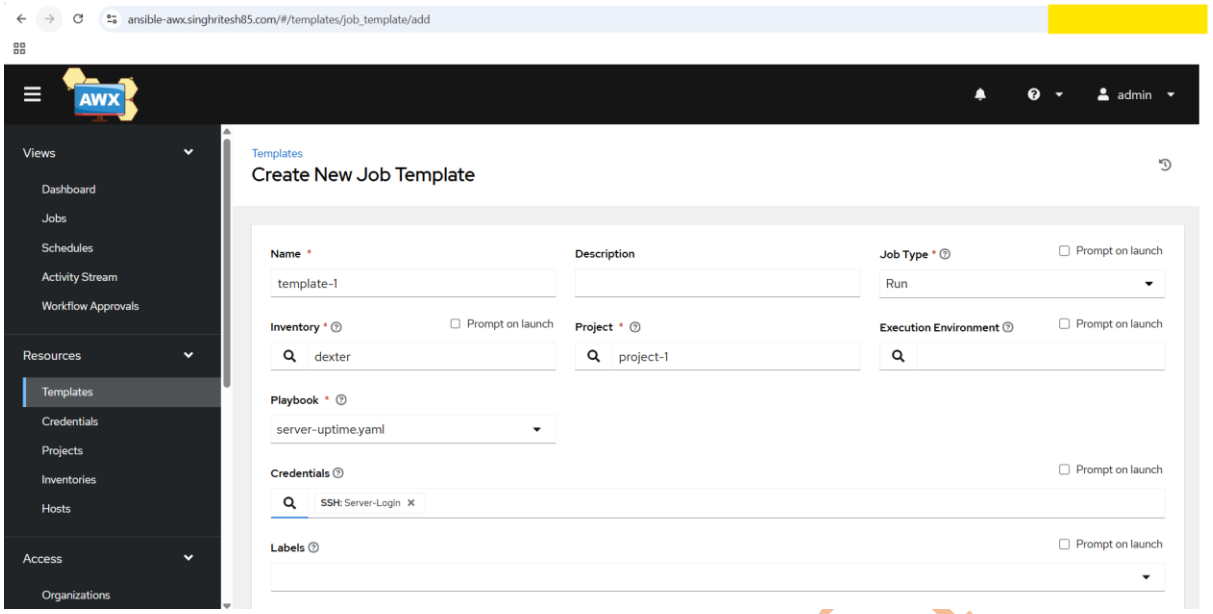

ansible-awx.singhritesh85.com/#/inventories/inventory/2/groups/1/nested_hosts/add
AWX
admin
Views
Dashboard
Jobs
Schedules
Activity Stream
Workflow Approvals
Resources
Templates
Credentials
Projects
Inventories
Hosts
Access
Organizations
Inventories > dexter > Groups > dexter > Hosts
Create new host
Name *
Description
Variables
YAML
JSON

Save
Cancel

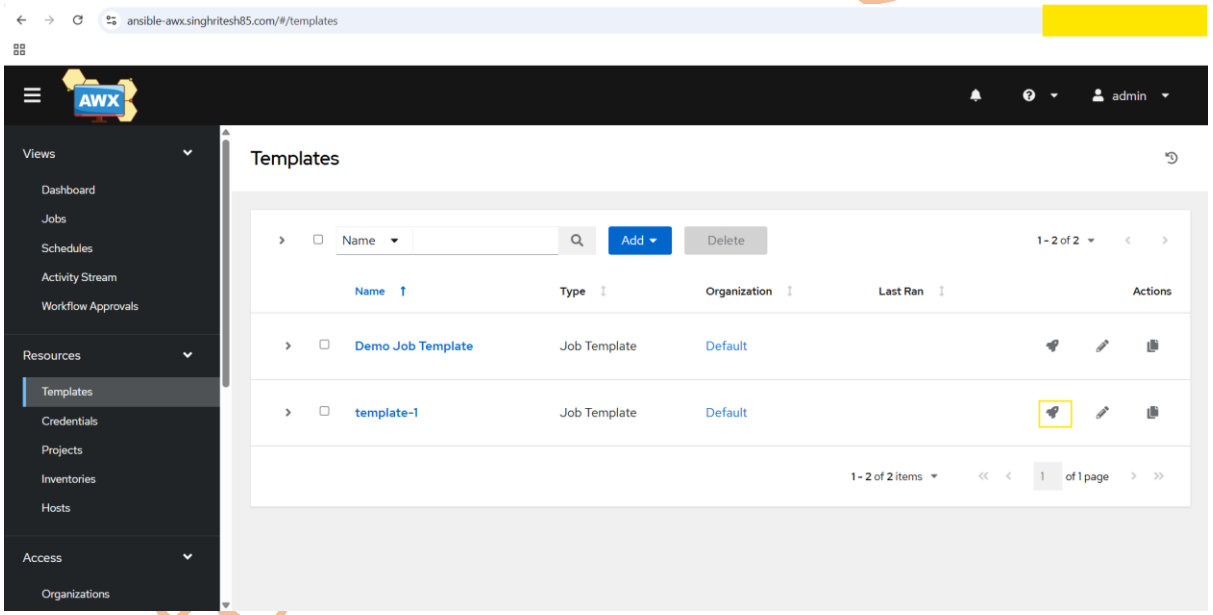

ansible-awx.singhritesh85.com/#/projects
AWX
admin
Views
Dashboard
Jobs
Schedules
Activity Stream
Workflow Approvals
Resources
Templates
Credentials
Projects
Inventories
Hosts
Access
Organizations
Projects
Name
Add
Delete
1 - 1 of 1
Name
Status
Type
Revision
Actions
Demo Project
Successful
Git
347e44f
1 - 1 of 1 items
1
of 1 page

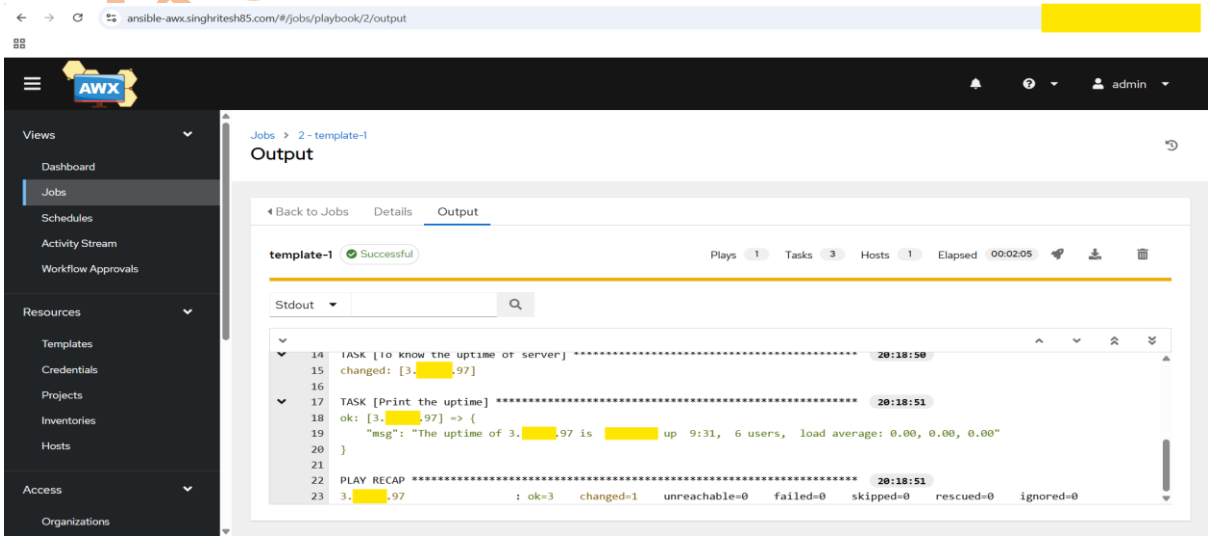

ansible-awx.singhritesh85.com/#/projects/add
AWX
admin
Views
Dashboard
Jobs
Schedules
Activity Stream
Workflow Approvals
Resources
Templates
Credentials
Projects
Inventories
Hosts
Access
Organizations
Projects
Create New Project
Name *
project-1
Description
Organization *
Default
Execution Environment
Source Control Type *
Git
Content Signature Validation Credential
Type Details
Source Control URL *
https://github.com/singhritesh85/webserver-u...
Source Control Branch/Tag/Commit
Source Control Refspec
Source Control Credential
GitHub-PAT
Options


ansible-awx.singhritesh85.com/#/templates
AWX
admin
Views
Dashboard
Jobs
Schedules
Activity Stream
Workflow Approvals
Resources
Templates
Credentials
Projects
Inventories
Hosts
Access
Organizations
Templates
Name
Add
Delete
1 - 1 of 1
Name
Type
Organization
Last Ran
Actions
Demo Job Template
Job Template
Default
1 - 1 of 1 items
1
of 1 page



Finally, Run the Template as shown below.





Module-2: - DevOps Project Ansible Awx (AKS)

In this module I will explain about installation of Ansible Awx on the top of Private AKS Cluster and Azure Database for PostgreSQL Flexible Servers had been used as the database. To access the Ansible Awx using the URL I had used Azure Application Gateway Ingress Controller (for Kubernetes Secrets of tls, Wildcard SSL Certificate had been used). A DNS Zone had been created in Azure DNS Zone using the Terraform Script present in the GitHub Repo https://github.com/singhritesh85/DevOps-Project-Ansible-Awx.git at the path **terraform-azure-dns-zone**.

Commands as written below had been used to create infrastructure using Terraform.

terraform init -------> initializes a working directory containing configuration files and installs plugins for required providers.

terraform validate --------> verify that terraform configuration file is correct or not

terraform plan ---------> Check which resources are going to be created.

Then you can run the command **terraform apply -auto-approve** -----> Finally, Create the resources.

After running the Terraform Script update your domain provider with the generated Nameserver of the DNS Zone of Azure DNS Zone.

```
    }

  # module.dns.azurerm_resource_group.dns_rg will be created
  + resource "azurerm_resource_group" "dns_rg" {
      + id       = (known after apply)
      + location = "eastus"
      + name     = "dns-rosource-group"
    }

Plan: 2 to add, 0 to change, 0 to destroy.

Changes to Outputs:
  + azure_dns_zone_name_and_nameserver = {
      + dns_zone_name = "singhritesh85.com"
      + name_servers  = (known after apply)
    }
module.dns.azurerm_resource_group.dns_rg: Creating...
module.dns.azurerm_resource_group.dns_rg: Still creating... [00m10s elapsed]
module.dns.azurerm_resource_group.dns_rg: Still creating... [00m20s elapsed]
module.dns.azurerm_resource_group.dns_rg: Creation complete after 23s [id=/subscriptions/[redacted]/resourceGroups/dns-rosource-grou
p]
module.dns.azurerm_dns_zone.dns_zone: Creating...
module.dns.azurerm_dns_zone.dns_zone: Creation complete after 5s [id=/subscriptions/[redacted]/resourceGroups/dns-rosource-group/pro
viders/Microsoft.Network/dnsZones/singhritesh85.com]

Apply complete! Resources: 2 added, 0 changed, 0 destroyed.

Outputs:

azure_dns_zone_name_and_nameserver = {
  "dns_zone_name" = "singhritesh85.com"
  "name_servers" = toset([
    "[redacted]",
    "[redacted]",
    "[redacted]",
    "[redacted]",
  ])
}
```

Then Private AKS Cluster, a K8S-Management Node and Azure Database for PostgreSQL Server had been created using the Terraform Script present in the GitHub Repo https://github.com/singhritesh85/DevOps-Project-Ansible-Awx.git at the path **terraform-private-aks-cluster-postgresql-flexible-servers**. Cluster Autoscaler is already enabled in AKS Cluster.

Commands as written below had been used to create infrastructure using Terraform.

terraform init -------> initializes a working directory containing configuration files and installs plugins for required providers.

terraform validate --------> verify that terraform configuration file is correct or not

terraform plan ---------> Check which resources are going to be created.

Then you can run the command **terraform apply -auto-approve** -----> Finally, Create the resources.

```
module.aks.azurerm_monitor_metric_alert.alert_rule1: Still creating... [00m40s elapsed]
module.aks.azurerm_kubernetes_cluster_node_pool.autoscale_node_pool: Still creating... [00m40s elapsed]
module.aks.azurerm_monitor_metric_alert.alert_rule1: Still creating... [00m50s elapsed]
module.aks.azurerm_kubernetes_cluster_node_pool.autoscale_node_pool: Still creating... [00m50s elapsed]
module.aks.azurerm_monitor_metric_alert.alert_rule1: Still creating... [01m00s elapsed]
module.aks.azurerm_kubernetes_cluster_node_pool.autoscale_node_pool: Still creating... [01m00s elapsed]
module.aks.azurerm_monitor_metric_alert.alert_rule1: Still creating... [01m10s elapsed]
module.aks.azurerm_kubernetes_cluster_node_pool.autoscale_node_pool: Still creating... [01m10s elapsed]
module.aks.azurerm_monitor_metric_alert.alert_rule1: Still creating... [01m20s elapsed]
module.aks.azurerm_kubernetes_cluster_node_pool.autoscale_node_pool: Still creating... [01m20s elapsed]
module.aks.azurerm_monitor_metric_alert.alert_rule1: Still creating... [01m30s elapsed]
module.aks.azurerm_kubernetes_cluster_node_pool.autoscale_node_pool: Still creating... [01m30s elapsed]
module.aks.azurerm_monitor_metric_alert.alert_rule1: Still creating... [01m40s elapsed]
module.aks.azurerm_kubernetes_cluster_node_pool.autoscale_node_pool: Still creating... [01m40s elapsed]
module.aks.azurerm_kubernetes_cluster_node_pool.autoscale_node_pool: Creation complete after 1m49s [id=/subscriptions/[redacted]/res
ourceGroups/ansible-awx-rg/providers/Microsoft.ContainerService/managedClusters/ansible-awx-cluster/agentPools/userpool]
module.aks.null_resource.kubectl: Creating...
module.aks.null_resource.kubectl: Provisioning with 'local-exec'...
module.aks.null_resource.kubectl (local-exec): Executing: ["/bin/bash" "-c" "az account set --subscription $(az account show --query id|tr -d '\"') && az aks
get-credentials --resource-group ansible-awx-rg --name ansible-awx-cluster --overwrite-existing && chmod 600 ~/.kube/config"]
module.aks.azurerm_monitor_metric_alert.alert_rule1: Still creating... [01m50s elapsed]
module.aks.null_resource.kubectl (local-exec): WARNING: Merged "ansible-awx-cluster" as current context in /root/.kube/config
module.aks.null_resource.kubectl: Creation complete after 2s [id=[redacted]]
module.aks.azurerm_monitor_metric_alert.alert_rule1: Still creating... [02m00s elapsed]
module.aks.azurerm_monitor_metric_alert.alert_rule1: Creation complete after 2m3s [id=/subscriptions/[redacted]/resourceGroups/ansib
le-awx-rg/providers/Microsoft.Insights/metricAlerts/ansible-awx-alert-rule1]

Apply complete! Resources: 36 added, 0 changed, 0 destroyed.

Outputs:

azurevm_private_ip_and_aks_details_and_application_gateway_name = {
  "aks_id" = "/subscriptions/[redacted]/resourceGroups/ansible-awx-rg/providers/Microsoft.ContainerService/managedClusters/ansible-a
wx-cluster"
  "aks_name" = "ansible-awx-cluster"
  "application_gateway_name" = "app-gtw-ingress-controller"
  "azurevm_k8s_management_node_privateip" = "10.224.0.10"
}
```

```
[demo@k8s-management-node-vm ~]$ kubectl get nodes
NAME                                STATUS   ROLES    AGE     VERSION
aks-agentpool-[redacted]-vmss000001   Ready    <none>   3m17s   v1.33.0
aks-userpool-[redacted]-vmss000000    Ready    <none>   2m32s   v1.33.0
```

Installation of AWX using Helm

helm repo add awx-operator https://ansible-community.github.io/awx-operator-helm/

helm repo update

helm install ansible-awx-operator awx-operator/awx-operator -n awx --create-namespace

```
[demo@k8s-management-node-vm ~]$ helm repo add awx-operator https://ansible-community.github.io/awx-operator-helm/
"awx-operator" has been added to your repositories
[demo@k8s-management-node-vm ~]$ helm repo update
Hang tight while we grab the latest from your chart repositories...
...Successfully got an update from the "awx-operator" chart repository
Update Complete. ⎈Happy Helming!⎈
[demo@k8s-management-node-vm ~]$ helm install ansible-awx-operator awx-operator/awx-operator -n awx --create-namespace
```

```
[demo@k8s-management-node-vm ~]$ cat awx-postgres-secret.yaml
apiVersion: v1
kind: Secret
metadata:
  name: awx-postgres-configuration
  namespace: awx
stringData:
  host: "ansible-awx-postgresql3.postgres.database.azure.com"
  port: "5432"
  database: "dexter"
  username: "postgres"
  password: "QJlnI^oTwPD_2nTQ"
  sslmode: "prefer" # or 'require' if you enforce SSL on RDS
  type: "unmanaged"
type: Opaque
[demo@k8s-management-node-vm ~]$ kubectl apply -f awx-postgres-secret.yaml
secret/awx-postgres-configuration created
```

```
[demo@k8s-management-node-vm ~]$ kubectl get secrets -n awx|grep "awx-postgres-configuration"
awx-postgres-configuration                Opaque                7      2m7s
```

```
[demo@k8s-management-node-vm ~]$ cat ansible-awx.yaml
apiVersion: awx.ansible.com/v1beta1
kind: AWX
metadata:
  name: ansible-awx
  namespace: awx
spec:
  postgres_configuration_secret: awx-postgres-configuration
  service_type: ClusterIP
  admin_user: admin
  admin_password_secret: awx-admin-password-secret
[demo@k8s-management-node-vm ~]$ kubectl apply -f ansible-awx.yaml
awx.awx.ansible.com/ansible-awx created
```

```
[demo@k8s-management-node-vm ~]$ kubectl get all -n awx
NAME                                               READY   STATUS      RESTARTS   AGE
pod/ansible-awx-migration-24.6.1-[redacted]        0/1     Completed   0          6m51s
pod/ansible-awx-task-[redacted]                    4/4     Running     0          7m31s
pod/ansible-awx-web-[redacted]                     3/3     Running     0          7m33s
pod/awx-operator-controller-manager-[redacted]     2/2     Running     0          13m

NAME                                                     TYPE        CLUSTER-IP     EXTERNAL-IP   PORT(S)    AGE
service/ansible-awx-service                              ClusterIP   10.0.105.111   <none>        80/TCP     7m36s
service/awx-operator-controller-manager-metrics-service  ClusterIP   10.0.230.233   <none>        8443/TCP   13m

NAME                                          READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/ansible-awx-task              1/1     1            1           7m31s
deployment.apps/ansible-awx-web               1/1     1            1           7m33s
deployment.apps/awx-operator-controller-manager   1/1     1            1           13m

NAME                                                DESIRED   CURRENT   READY   AGE
replicaset.apps/ansible-awx-task-[redacted]         1         1         1       7m31s
replicaset.apps/ansible-awx-web-[redacted]          1         1         1       7m33s
replicaset.apps/awx-operator-controller-manager-[redacted]   1         1         1       13m

NAME                                  STATUS     COMPLETIONS   DURATION   AGE
job.batch/ansible-awx-migration-24.6.1   Complete   1/1           4m5s       6m51s
```

```
cat awx-postgres-secret.yaml
apiVersion: v1
kind: Secret
metadata:
  name: awx-postgres-configuration
  namespace: awx
stringData:
  host: "ansible-awx-postgresql3.postgres.database.azure.com"
  port: "5432"
  database: "dexter"
  username: "postgres"
  password: "XXXXXXXXXXXXXXXX"
  sslmode: "prefer" # or 'require' if you enforce SSL on RDS
  type: "unmanaged"
type: Opaque
```

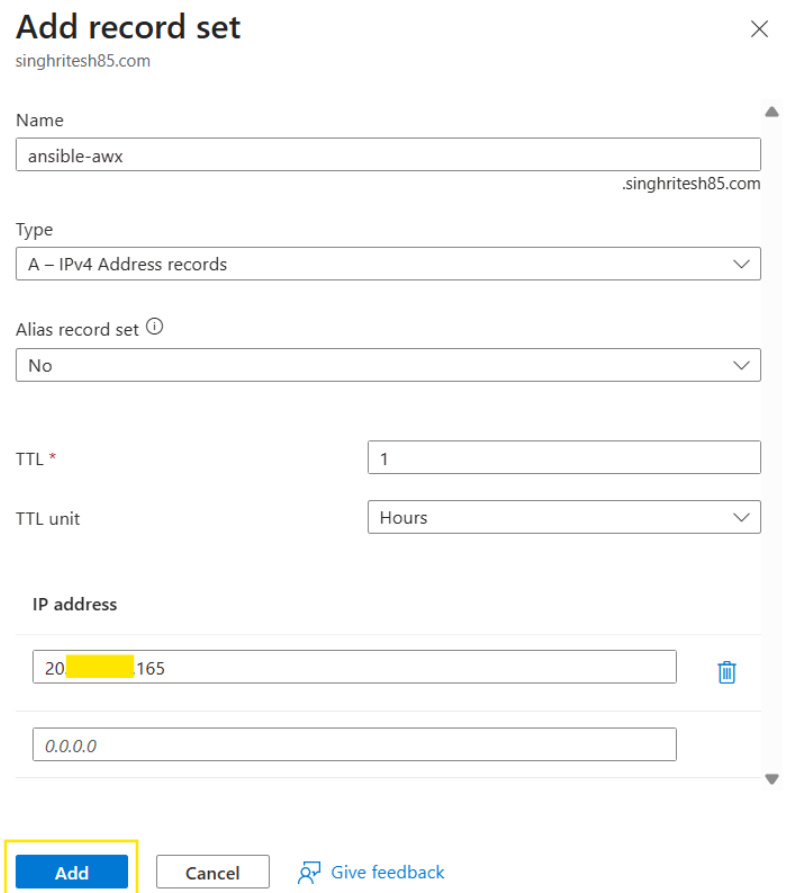
```
cat ansible-awx.yaml
apiVersion: awx.ansible.com/v1beta1
kind: AWX
metadata:
  name: ansible-awx
  namespace: awx
spec:
  postgres_configuration_secret: awx-postgres-configuration
  service_type: ClusterIP
  admin_user: admin
```

Then I created the Ingress rule (to route the traffic through Application Gateway Ingress Controller in AKS) and did the entry of created LoadBalancer Service Public IP Address to create the Record-Set of A-Type in Azure DNS Zone as shown in the screenshot attached below.

```
[demo@k8s-management-node-vm ~]$ ls
STAR_singhritesh85_com.crt  ansible-awx.yaml  awx-postgres-secret.yaml  mykey.key
[demo@k8s-management-node-vm ~]$ kubectl create secret tls awx-tls-secret --cert=STAR_singhritesh85_com.crt --key=mykey.key -n awx
secret/awx-tls-secret created
[demo@k8s-management-node-vm ~]$ kubectl get secrets -n awx|grep "awx-tls-secret"
awx-tls-secret                    kubernetes.io/tls    2      32s
```

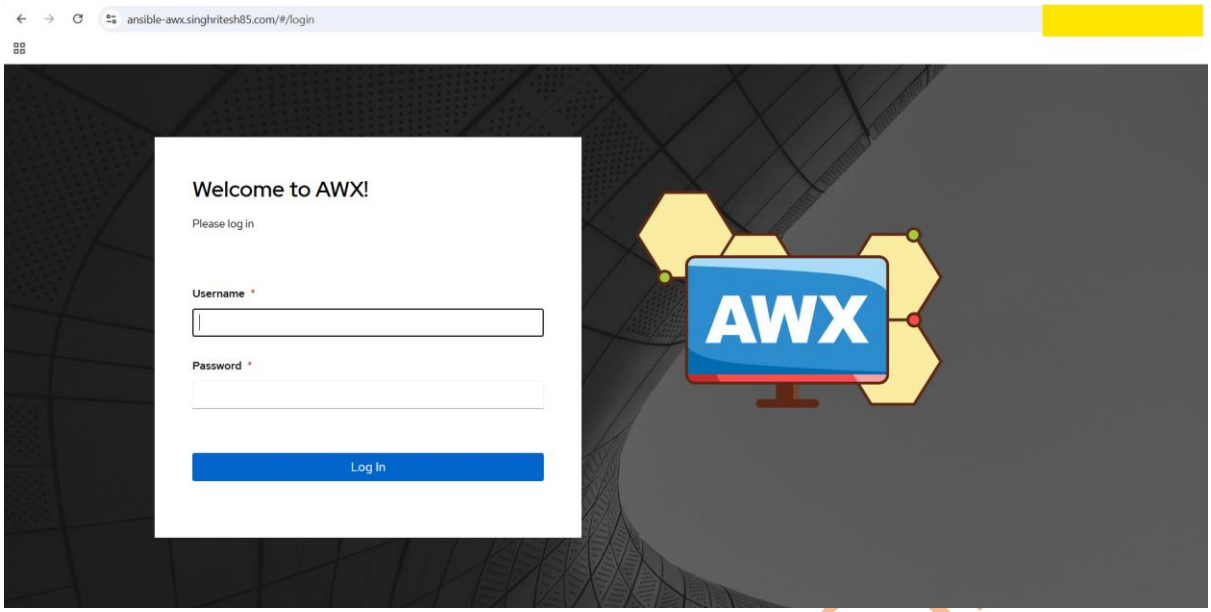
```
[demo@k8s-management-node-vm ~]$ cat ingress-rule-awx-aks.yaml
# kubectl create secret tls awx-tls-secret --cert=STAR_singhritesh85_com.crt --key=mykey.key -n awx
---
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: ansible-awx-ingress
  namespace: awx
  annotations:
    appgw.ingress.kubernetes.io/ssl-redirect: "true"
spec:
  ingressClassName: azure-application-gateway
  tls:
  - secretName: awx-tls-secret
  rules:
  - host: ansible-awx.singhritesh85.com
    http:
      paths:
      - path: /
        pathType: Prefix
        backend:
          service:
            name: ansible-awx-service
            port:
              number: 80

[demo@k8s-management-node-vm ~]$ kubectl apply -f ingress-rule-awx-aks.yaml
ingress.networking.k8s.io/ansible-awx-ingress created
[demo@k8s-management-node-vm ~]$ kubectl get ing -n awx
NAME                CLASS                    HOSTS                          ADDRESS          PORTS     AGE
ansible-awx-ingress   azure-application-gateway   ansible-awx.singhritesh85.com   20.[redacted].165   80, 443   7s
```

To access the Ansible-Awx using the URL I did the entry of Public IP Address of the Ingress as shown in the screenshot attached above in the Azure DNS Zone to create the A-Type Record Set.



```
cat ingress-rule-awx-aks.yaml
# kubectl create secret tls awx-tls-secret --cert=STAR_singhritesh85_com.crt --key=mykey.key -n awx
---
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
 name: ansible-awx-ingress
 namespace: awx
 annotations:
  appgw.ingress.kubernetes.io/ssl-redirect: "true"
spec:
 ingressClassName: azure-application-gateway
 tls:
 - secretName: awx-tls-secret
 rules:
 - host: ansible-awx.singhritesh85.com
  http:
   paths:
   - path: /
    pathType: Prefix
    backend:
     service:
      name: ansible-awx-service
      port:
       number: 80
```

Finally, I was able to access the Ansible-Awx using the URL as shown in the screenshot attached below.



Now, I will reset the Ansible-Awx **admin** user **password** using the procedure as explained below.

kubectl get pods -n awx

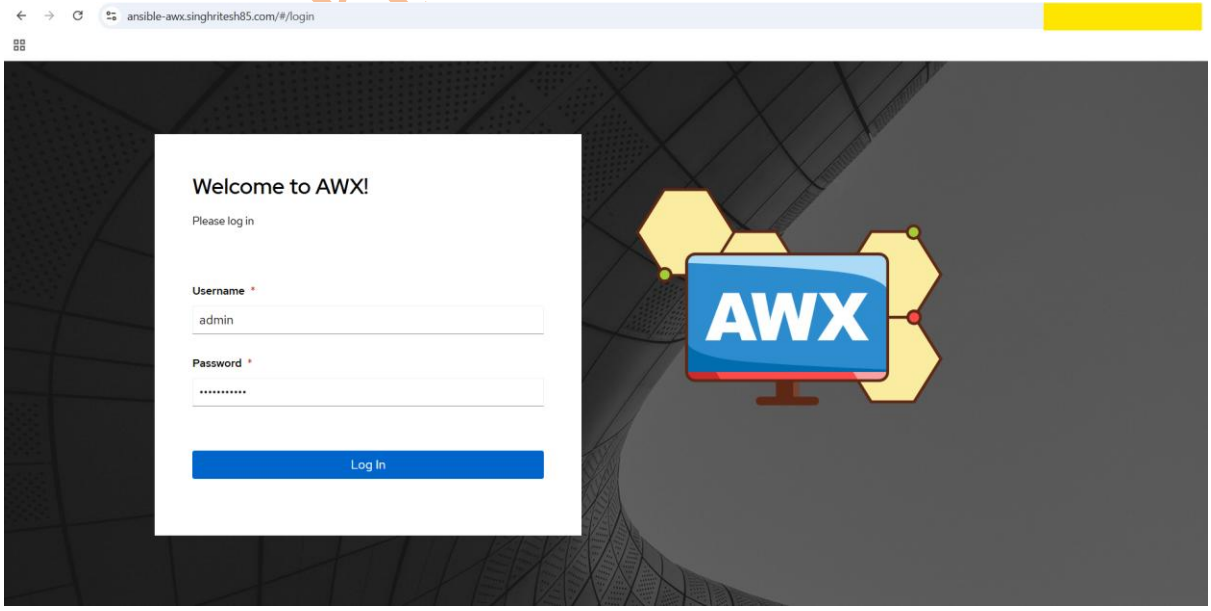
Log-into the ansible-awx-web Pod as shown below

kubectl exec -it <ansible-awx-web pod> -n awx -- bash

awx-manage update_password --username=admin --password=<provide-your-password-here>

```
[demo@k8s-management-node-vm ~]$ kubectl exec -it ansible-awx-web-                -n awx -- bash
bash-5.1$ awx-manage update_password --username=admin --password=
Password updated
```

Then, I logged-into the Ansible-Awx using the updated password as shown below.



Now, you can proceed further with the steps as I discussed in module-1.

Module-3: - DevOps Project Ansible Awx (GKE)

In this module I will explain about installation of Ansible Awx on the top of Private GKE Standard Cluster and Cloud SQL (PostgreSQL) had been used as the database. To access the Ansible Awx using the URL I had used GKE Ingress for Application Load Balancers (for Kubernetes Secrets of tls, Standard SSL Certificate had been used). A DNS Zone had been created in GCP Cloud DNS using the Terraform Script present in the GitHub Repo https://github.com/singhritesh85/DevOps-Project-Ansible-Awx.git at the path **terraform-gcp-cloud-dns**.

Commands as written below had been used to create infrastructure using Terraform.

terraform init -------> initializes a working directory containing configuration files and installs plugins for required providers.

terraform validate --------> verify that terraform configuration file is correct or not

terraform plan ---------> Check which resources are going to be created.

Then you can run the command **terraform apply -auto-approve** -----> Finally, Create the resources.

After running the Terraform Script update your domain provider with the generated Nameserver of the Zone of GCP Cloud DNS.

```
        + enable_logging = true
      }

    + dnssec_config {
        + kind          = "dns#managedZoneDnsSecConfig"
        + non_existence = (known after apply)
        + state         = "on"

        + default_key_specs (known after apply)
      }
  }

Plan: 1 to add, 0 to change, 0 to destroy.

Changes to Outputs:
  + gcp_cloud_dns_name_and_dns_name = {
      + dns_zone_nameservers = (known after apply)
      + zone_dns_name        = "singhritesh85.com."
      + zone_name            = "public-hosted-zone-logging-enabled"
    }
module.gcp_cloud_dns.google_dns_managed_zone.cloud_logging_enabled_zone: Creating...
module.gcp_cloud_dns.google_dns_managed_zone.cloud_logging_enabled_zone: Creation complete after 1s [id=projects/[redacted]/managedZones/public-hoste
d-zone-logging-enabled]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.

Outputs:

gcp_cloud_dns_name_and_dns_name = {
  "dns_zone_nameservers" = tolist([
    "[redacted]",
    "[redacted]",
    "[redacted]",
    "[redacted]",
  ])
  "zone_dns_name" = "singhritesh85.com."
  "zone_name" = "public-hosted-zone-logging-enabled"
}
```

Then Private GKE Standard Cluster, a K8S-Management Node and Cloud SQL (PostgreSQL) had been created using the Terraform Script present in the GitHub Repo https://github.com/singhritesh85/DevOps-Project-Ansible-Awx.git at the path **terraform-gke-cluster-cloudsql**. Cluster Autoscaler is already enabled in GKE Standard Cluster.

Commands as written below had been used to create infrastructure using Terraform.

terraform init -------> initializes a working directory containing configuration files and installs plugins for required providers.

terraform validate --------> verify that terraform configuration file is correct or not

terraform plan ---------> Check which resources are going to be created.

Then you can run the command **terraform apply -auto-approve** -----> Finally, Create the resources.

```
module.gke.google_sql_database_instance.db_instance: Still creating... [14m40s elapsed]
module.gke.google_sql_database_instance.db_instance: Still creating... [14m50s elapsed]
module.gke.google_sql_database_instance.db_instance: Still creating... [15m00s elapsed]
module.gke.google_sql_database_instance.db_instance: Still creating... [15m10s elapsed]
module.gke.google_sql_database_instance.db_instance: Still creating... [15m20s elapsed]
module.gke.google_sql_database_instance.db_instance: Still creating... [15m30s elapsed]
module.gke.google_sql_database_instance.db_instance: Still creating... [15m40s elapsed]
module.gke.google_sql_database_instance.db_instance: Still creating... [15m50s elapsed]
module.gke.google_sql_database_instance.db_instance: Still creating... [16m00s elapsed]
module.gke.google_sql_database_instance.db_instance: Still creating... [16m10s elapsed]
module.gke.google_sql_database_instance.db_instance: Creation complete after 16m19s [id=awx-private-dbinstance-       ]
module.gke.google_sql_database.dexter_dbschema: Creating...
module.gke.google_sql_user.db_users: Creating...
module.gke.google_sql_database.dexter_dbschema: Creation complete after 6s [id=projects/                  /instances/awx-private-dbinstance-       /database
s/dexter]
module.gke.google_sql_user.db_users: Creation complete after 9s [id=dbadmin//awx-private-dbinstance-       ]

Apply complete! Resources: 34 added, 0 changed, 0 destroyed.

Outputs:

gcp_cloud_sql_vm_instance_gke_details = {
  "GCP_Linux_VM_Instance_External_IP" = "34.      .24"
  "GCP_Linux_VM_Instance_Internal_IP" = "10.20.15.200"
  "cloud_sql_connection_name" = "                    :us-central1:awx-private-dbinstance-       "
  "cloud_sql_db_instance_name" = "awx-private-dbinstance-       "
  "cloud_sql_private_ip_address" = "          "
  "gke_standard_cluster_endpoint" = "          "
  "gke_standard_cluster_name" = "awx-gke-cluster"
  "gke_standard_cluster_node_pool_instance_group_urls" = tolist([
    "https://www.googleapis.com/compute/v1/projects/                  /zones/us-central1-a/instanceGroupManagers/gke-awx-gke-cluster-awx-linux-nodepoo-
-grp",
    "https://www.googleapis.com/compute/v1/projects/                  /zones/us-central1-c/instanceGroupManagers/gke-awx-gke-cluster-awx-linux-nodepoo-
-grp",
  ])
  "gke_standard_cluster_node_pool_name" = "awx-linux-nodepool-1"
  "gke_standard_cluster_node_pool_version" = "1.33.5"
}
```

```
[k8s-management@awx-k8s-management-node ~]$ kubectl get nodes
NAME                                                  STATUS   ROLES    AGE     VERSION
gke-awx-gke-cluster-awx-linux-nodepoo-                Ready    <none>   6m52s   v1.33.5-gke.2172001
gke-awx-gke-cluster-awx-linux-nodepoo-                Ready    <none>   6m42s   v1.33.5-gke.2172001
```

Installation of AWX using Helm

helm repo add awx-operator https://ansible-community.github.io/awx-operator-helm/

helm repo update

helm install ansible-awx-operator awx-operator/awx-operator -n awx --create-namespace

```
[k8s-management@awx-k8s-management-node ~]$ helm repo add awx-operator https://ansible-community.github.io/awx-operator-helm/
"awx-operator" has been added to your repositories
[k8s-management@awx-k8s-management-node ~]$ helm repo update
Hang tight while we grab the latest from your chart repositories...
...Successfully got an update from the "awx-operator" chart repository
Update Complete. ⎈Happy Helming!⎈
[k8s-management@awx-k8s-management-node ~]$ helm install ansible-awx-operator awx-operator/awx-operator -n awx --create-namespace
```

```
[k8s-management@awx-k8s-management-node ~]$ cat awx-postgres-secret.yaml
apiVersion: v1
kind: Secret
metadata:
  name: awx-postgres-configuration
  namespace: awx
stringData:
  host: "                    "
  port: "5432"
  database: "dexter"
  username: "dbadmin"
  password: "                    "
  sslmode: "prefer" # or 'require' if you enforce SSL on RDS
  type: "unmanaged"
type: Opaque
[k8s-management@awx-k8s-management-node ~]$ kubectl apply -f awx-postgres-secret.yaml
secret/awx-postgres-configuration created
```

```
[k8s-management@awx-k8s-management-node ~]$ kubectl get secrets -n awx|grep "awx-postgres-configuration"
awx-postgres-configuration                  Opaque              7      15s
```

```
[k8s-management@awx-k8s-management-node ~]$ cat ansible-awx.yaml
apiVersion: awx.ansible.com/v1beta1
kind: AWX
metadata:
  name: ansible-awx
  namespace: awx
spec:
  postgres_configuration_secret: awx-postgres-configuration
  service_type: ClusterIP
  admin_user: admin
  admin_password_secret: awx-admin-password-secret
[k8s-management@awx-k8s-management-node ~]$ kubectl apply -f ansible-awx.yaml
awx.awx.ansible.com/ansible-awx created
```

```
[k8s-management@awx-k8s-management-node ~]$ kubectl get all -n awx
NAME                                                READY   STATUS      RESTARTS   AGE
pod/ansible-awx-migration-24.6.1-[redacted]         0/1     Completed   0          18m
pod/ansible-awx-task-[redacted]                     4/4     Running     0          19m
pod/ansible-awx-web-[redacted]                      3/3     Running     0          19m
pod/awx-operator-controller-manager-[redacted]      2/2     Running     0          31m

NAME                                                     TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)    AGE
service/ansible-awx-service                              ClusterIP   172.19.244.214   <none>        80/TCP     19m
service/awx-operator-controller-manager-metrics-service  ClusterIP   172.19.40.235    <none>        8443/TCP   31m

NAME                                               READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/ansible-awx-task                   1/1     1            1           19m
deployment.apps/ansible-awx-web                    1/1     1            1           19m
deployment.apps/awx-operator-controller-manager    1/1     1            1           31m

NAME                                                  DESIRED   CURRENT   READY   AGE
replicaset.apps/ansible-awx-task-[redacted]           1         1         1       19m
replicaset.apps/ansible-awx-web-[redacted]            1         1         1       19m
replicaset.apps/awx-operator-controller-manager-[redacted]   1         1         1       31m

NAME                                  STATUS     COMPLETIONS   DURATION   AGE
job.batch/ansible-awx-migration-24.6.1   Complete   1/1           16m        18m
```

```
cat awx-postgres-secret.yaml
apiVersion: v1
kind: Secret
metadata:
  name: awx-postgres-configuration
  namespace: awx
stringData:
  host: " XX.XXX.XXX.X"
  port: "5432"
  database: "dexter"
  username: "dbadmin"
  password: "XXXXXXXXXXXXXXXX"
  sslmode: "prefer" # or 'require' if you enforce SSL on RDS
  type: "unmanaged"
type: Opaque
```

```
cat ansible-awx.yaml
apiVersion: awx.ansible.com/v1beta1
kind: AWX
metadata:
  name: ansible-awx
  namespace: awx
spec:
  postgres_configuration_secret: awx-postgres-configuration
  service_type: ClusterIP
  admin_user: admin
```

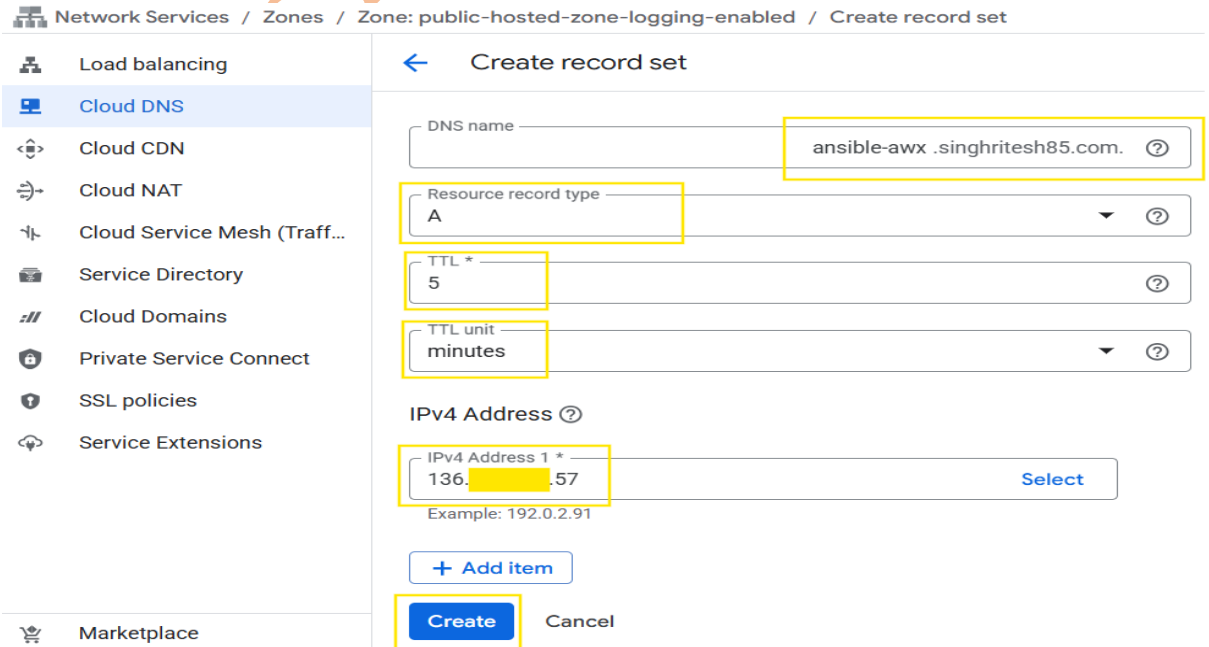
Then Ingress Rule (to route the traffic through GKE Ingress for Application Load Balancers) had been created and did the entry of created LoadBalancer Service Public IP Address to create the Record-Set of A-Type in GCP Cloud DNS Zone as shown in the screenshot attached below.

```
[k8s-management@awx-k8s-management-node ~]$ ls
ansible-awx.yaml  awx-postgres-secret.yaml  f[redacted]b.crt  server.key
[k8s-management@awx-k8s-management-node ~]$ kubectl create secret tls awx-tls-secret --cert=f[redacted]b.crt --key=server.key -n awx
secret/awx-tls-secret created
[k8s-management@awx-k8s-management-node ~]$ kubectl get secrets -n awx|grep -i "awx-tls-secret"
awx-tls-secret                       kubernetes.io/tls    2      45s
```

```
[k8s-management@awx-k8s-management-node ~]$ cat ingress-rule-gke.yaml
# kubectl create secret tls awx-tls-secret --cert=f58ce5a18a182d4b.crt --key=server.key -n awx
---
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: awx-ingress
  namespace: awx
  annotations:
    kubernetes.io/ingress.class: "gce" # Specify the Ingress class
    kubernetes.io/ingress.allow-http: "false"
#    cloud.google.com/backend-config: '{"default": "bankapp-backendconfig"}'
spec:
  ingressClassName: "gce"
  tls:
  - hosts:
    - ansible-awx.singhritesh85.com
    secretName: awx-tls-secret
  rules:
  - host: "ansible-awx.singhritesh85.com"
    http:
      paths:
      - path: /
        pathType: Prefix
        backend:
          service:
            name: ansible-awx-service
            port:
              number: 80
[k8s-management@awx-k8s-management-node ~]$ kubectl apply -f ingress-rule-gke.yaml
ingress.networking.k8s.io/awx-ingress created
```

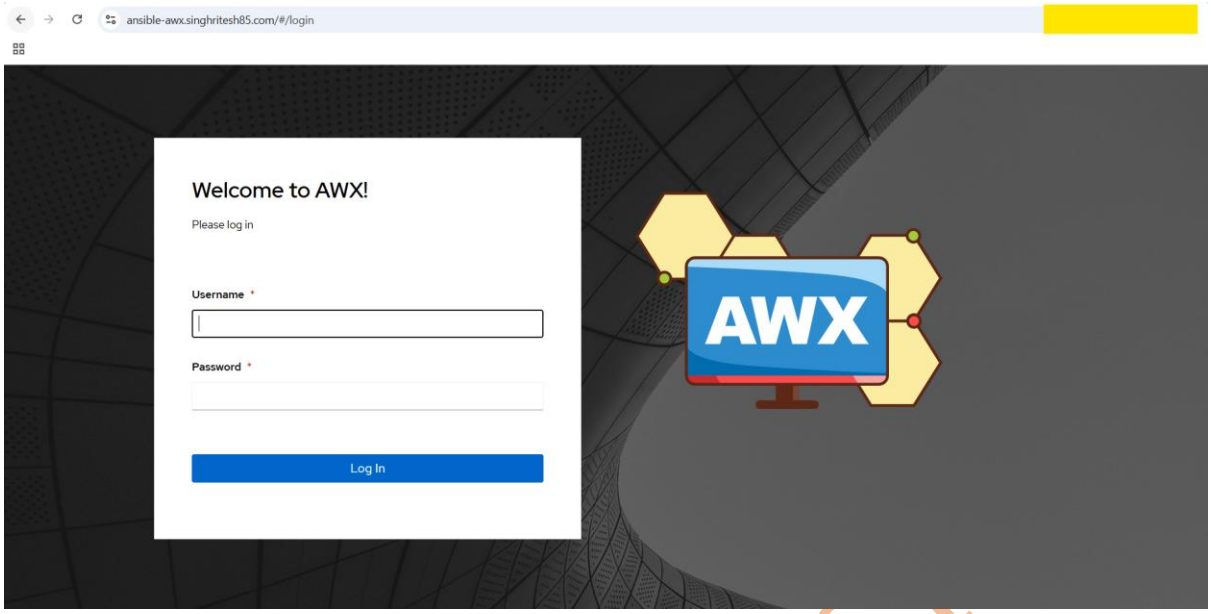
```
[k8s-management@awx-k8s-management-node ~]$ kubectl get ing -n awx
NAME          CLASS    HOSTS                          ADDRESS          PORTS     AGE
awx-ingress   gce      ansible-awx.singhritesh85.com  136.[redacted].57  80, 443   2m57s
```

To access the Ansible-Awx using the URL I did the entry of Public IP Address of the Ingress as shown in the screenshot attached above in the GCP Cloud DNS Zone to create the A-Type Record Set.



```
cat ingress-rule-gke.yaml
# kubectl create secret tls awx-tls-secret --cert=f58ce5a18a182d4b.crt --key=server.key -n awx
---
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
 name: awx-ingress
 namespace: awx
 annotations:
   kubernetes.io/ingress.class: "gce" # Specify the Ingress class
   kubernetes.io/ingress.allow-http: "false"
#    cloud.google.com/backend-config: '{"default": "bankapp-backendconfig"}'
spec:
 ingressClassName: "gce"
 tls:
 - hosts:
   - ansible-awx.singhritesh85.com
   secretName: awx-tls-secret
 rules:
 - host: "ansible-awx.singhritesh85.com"
   http:
     paths:
     - path: /
       pathType: Prefix
       backend:
         service:
           name: ansible-awx-service
           port:
             number: 80
```

Finally, I was able to access the Ansible-Awx using the URL as shown in the screenshot attached below.



Now, I will reset the Ansible-Awx **admin** user **password** using the procedure as explained below.

kubectl get pods -n awx

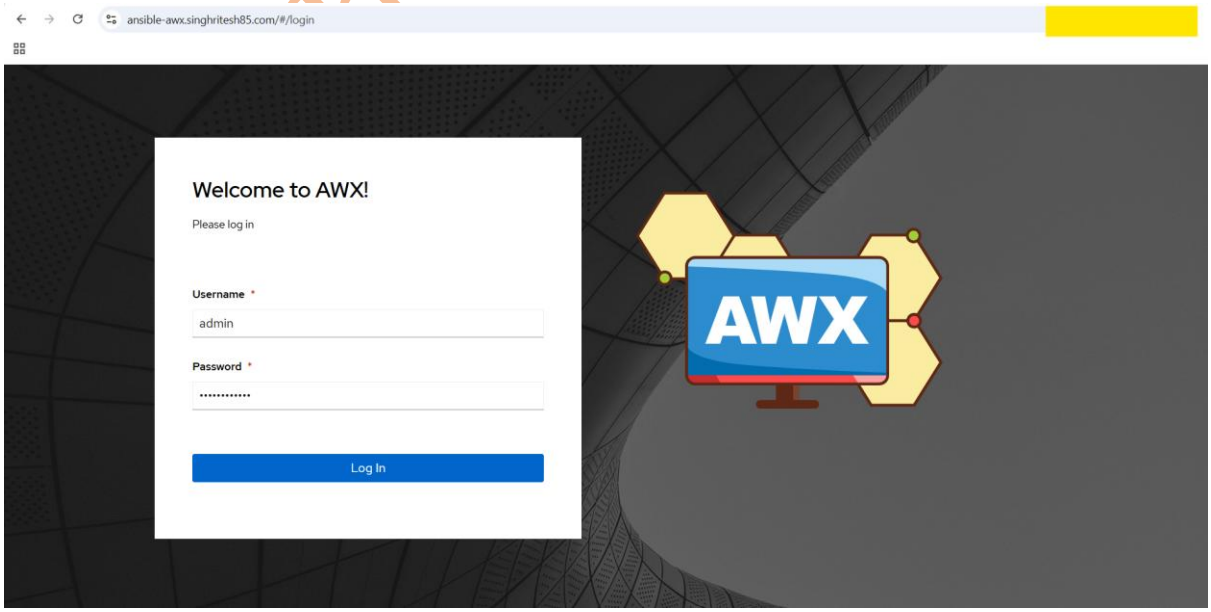
Log-into the ansible-awx-web Pod as shown below

kubectl exec -it <ansible-awx-web pod> -n awx -- bash

awx-manage update_password --username=admin --password=<provide-your-password-here>

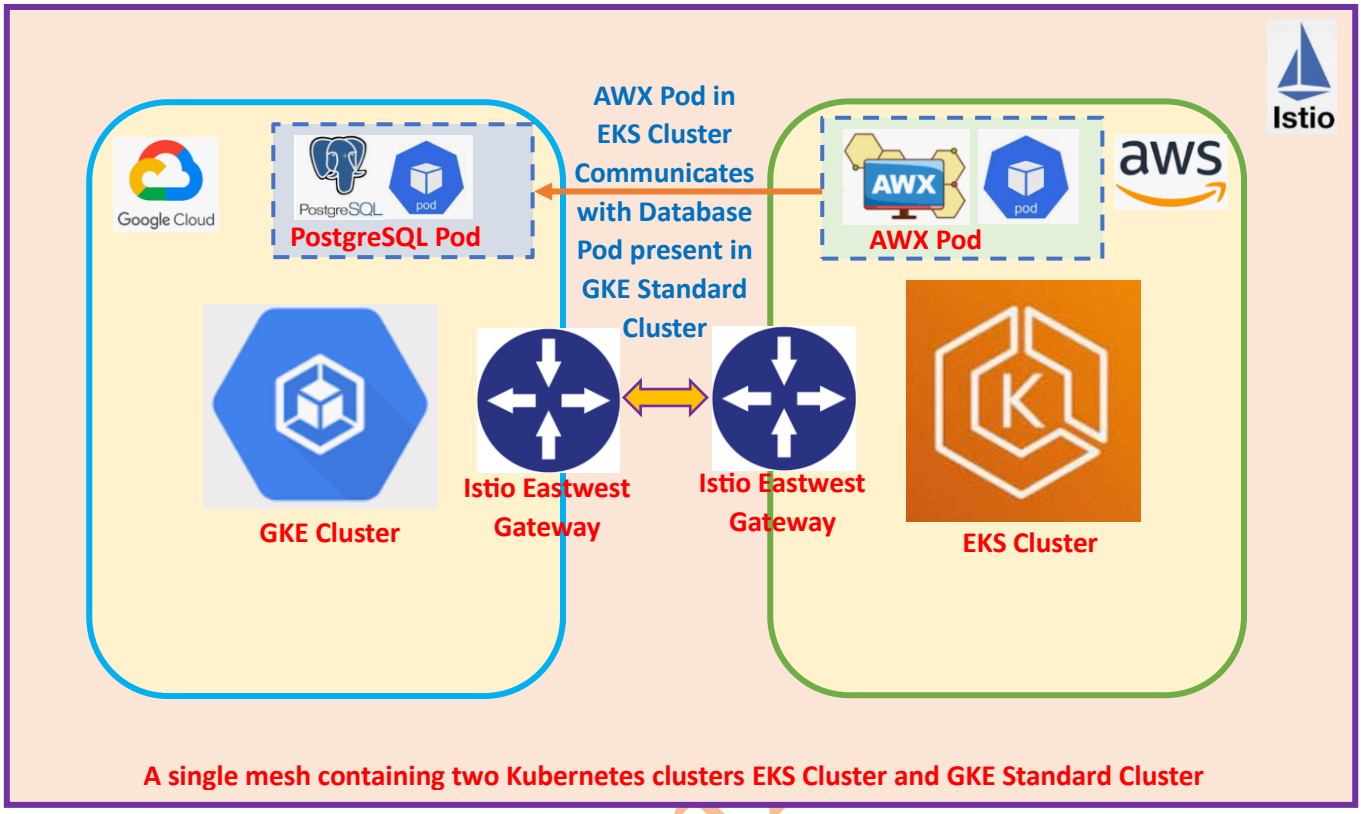
```
[k8s-management@awx-k8s-management-node ~]$ kubectl exec -it ansible-awx-web-                -n awx -- bash
bash-5.1$ awx-manage update_password --username=admin --password=
Password updated
```

Then, I logged-into the Ansible-Awx using the updated password as shown below.



Now, you can proceed further with the steps as I discussed in module-1.

Module-4: - DevOps Project Ansible Awx (using Multicloud Multicluster EKS and GKE)



Kubernetes Multicluster refers to managing and deploying multiple kubernetes Clusters as a single and unified platform. I had created a single mesh using Istio and two Kubernetes Clusters (GKE Standard Cluster and EKS Cluster) with the help of Istio Eastwest Gateway which is Gateway in Istio for internal cross-cluster communication. I had created GKE (Google Kubernetes Engine) Standard Cluster and EKS (Elastic Kubernetes Services) Cluster using the Terraform Script present in the GitHub Repo https://github.com/singhritesh85/DevOps-Project-Ansible-Awx.git at the path **multicluster-multicloud/terraform-eks-cluster-and-gke-cluster**. After creation of the two Kubernetes Cluster (GKE Standard Cluster and EKS Cluster) I installed Istio in each of the Kubernetes Cluster using helm. Before installing the Istio I create the Root CA Certificate and generated intermediate certificate for each cluster. A common root CA certificate is used to establish a shared trust and enable secure communication across clusters. I installed Istio using multi-primary on different networks.

I installed terraform on Rocky Linux GCP VM Instance and State file was kept in the GCP Bucket and state lock had been achieved using the same GCP Bucket. Before running the terraform script I ran the shell script present in the directory **terraform-eks-cluster-and-gke-cluster** as shown in the screenshot attached below. This shell script will install the aws cli.

```
[root@terraform-server terraform-eks-cluster-and-gke-cluster]# pwd
/root/terraform-eks-cluster-and-gke-cluster
[root@terraform-server terraform-eks-cluster-and-gke-cluster]# ls
README.md  initial-setup.sh  karpenter.yaml  main  module
```

```
[root@terraform-server terraform-eks-cluster-and-gke-cluster]# ./initial-setup.sh
```

Then I logged-out and login again then ran the command aws configure as shown in the screenshot attached below. As it is an important step to Authenticate and Authorize the user before creating resources using terraform in the AWS Account.

```
[root@terraform-server main]# aws configure
AWS Access Key ID [None]:
AWS Secret Access Key [None]:
Default region name [None]:
Default output format [None]:
```

Then you can run the below commands

terraform init -------> initializes a working directory containing configuration files and installs plugins for required providers.

terraform validate --------> verify that terraform configuration file is correct or not

terraform plan ---------> Check which resources are going to be created. Then you can run the command

terraform apply -auto-approve -----> Finally, Create the resources.

```
cations/us-central1/clusters/awx-gke-cluster/nodePools/awx-linux-nodepool-1]
module.eks_cluster_and_standard_gke_cluster.null_resource.gke_kubectl: Creating...
module.eks_cluster_and_standard_gke_cluster.null_resource.gke_kubectl: Provisioning with 'local-exec'...
module.eks_cluster_and_standard_gke_cluster.null_resource.gke_kubectl (local-exec): Executing: ["/bin/sh" "-c" "gcloud container clusters get-credentials awx-
gke-cluster --location=us-central1 --project=                && chmod 600 ~/.kube/config"]
module.eks_cluster_and_standard_gke_cluster.null_resource.gke_kubectl (local-exec): WARNING: Accessing a Kubernetes Engine cluster requires the kubernetes com
mandline
module.eks_cluster_and_standard_gke_cluster.null_resource.gke_kubectl (local-exec): client [kubectl]. To install, run
module.eks_cluster_and_standard_gke_cluster.null_resource.gke_kubectl (local-exec):   $ gcloud components install kubectl

module.eks_cluster_and_standard_gke_cluster.null_resource.gke_kubectl (local-exec): Fetching cluster endpoint and auth data.
module.eks_cluster_and_standard_gke_cluster.null_resource.gke_kubectl (local-exec): CRITICAL: ACTION REQUIRED: gke-gcloud-auth-plugin, which is needed for con
tinued use of kubectl, was not found or is not executable. Install gke-gcloud-auth-plugin for use with kubectl by following https://cloud.google.com/kubernete
s-engine/docs/how-to/cluster-access-for-kubectl#install_plugin
module.eks_cluster_and_standard_gke_cluster.null_resource.gke_kubectl (local-exec): kubeconfig entry generated for awx-gke-cluster.
module.eks_cluster_and_standard_gke_cluster.null_resource.gke_kubectl: Creation complete after 4s [id=                ]

Apply complete! Resources: 93 added, 0 changed, 0 destroyed.

Outputs:

eks_and_karpenter_iam_role_and_standard_gke_cluster_details = {
  "GCP_Linux_VM_Instance_K8S_Management_External_IP" = "35.      .41"
  "GCP_Linux_VM_Instance_K8S_Management_Internal_IP" = "10.      .200"
  "eks_cluster_endpoint" = "https://                                        .us-east-2.eks.amazonaws.com"
  "eks_cluster_name" = "eks-demo-cluster-dev"
  "gke_standard_cluster_endpoint" = "34.      .60"
  "gke_standard_cluster_name" = "awx-gke-cluster"
  "gke_standard_cluster_node_pool_instance_group_urls" = tolist([
    "https://www.googleapis.com/compute/v1/projects/                /zones/us-central1-a/instanceGroupManagers/gke-awx-gke-cluster-awx-linux-nodepoo-
-grp",
    "https://www.googleapis.com/compute/v1/projects/                /zones/us-central1-c/instanceGroupManagers/gke-awx-gke-cluster-awx-linux-nodepoo-
-grp",
  ])
  "gke_standard_cluster_node_pool_name" = "awx-linux-nodepool-1"
  "gke_standard_cluster_node_pool_version" = "1.33.5"
  "karpenter_node_spun_iam_role_arn" = "arn:aws:iam::02      6:role/karpenter-eks-noderole"
}
```

After creation of the resources a common kubeconfig file was generated for both the GKE and EKS Cluster.

```
[k8s-management@awx-k8s-management-node ~]$ aws configure
AWS Access Key ID [None]:
AWS Secret Access Key [None]:
Default region name [None]:
Default output format [None]:
[k8s-management@awx-k8s-management-node ~]$ kubectl get nodes --context=gke_                _us-central1_awx-gke-cluster
NAME                                                  STATUS   ROLES    AGE   VERSION
gke-awx-gke-cluster-awx-linux-nodepoo-                Ready    <none>   10m   v1.33.5-gke.2228001
gke-awx-gke-cluster-awx-linux-nodepoo-                Ready    <none>   10m   v1.33.5-gke.2228001
[k8s-management@awx-k8s-management-node ~]$ kubectl get nodes --context=arn:aws:eks:us-east-2:02      6:cluster/eks-demo-cluster-dev
NAME                                          STATUS   ROLES    AGE   VERSION
ip-10-10-1-236.us-east-2.compute.internal     Ready    <none>   13m   v1.33.0-eks-802817d
ip-10-10-2-28.us-east-2.compute.internal      Ready    <none>   13m   v1.33.0-eks-802817d
ip-10-10-3-114.us-east-2.compute.internal     Ready    <none>   13m   v1.33.0-eks-802817d
```

Install Istioctl as shown in the screenshot attached below.

```
[k8s-management@awx-k8s-management-node ~]$ curl -L https://istio.io/downloadIstio | sh -
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100   102  100   102    0     0    772      0 --:--:-- --:--:-- --:--:--   772
100  5124  100  5124    0     0  23290      0 --:--:-- --:--:-- --:--:-- 23290

Downloading istio-1.28.3 from https://github.com/istio/istio/releases/download/1.28.3/istio-1.28.3-linux-amd64.tar.gz ...

Istio 1.28.3 download complete!

The Istio release archive has been downloaded to the istio-1.28.3 directory.

To configure the istioctl client tool for your workstation,
add the /home/k8s-management/istio-1.28.3/bin directory to your environment path variable with:
         export PATH="$PATH:/home/k8s-management/istio-1.28.3/bin"

Begin the Istio pre-installation check by running:
         istioctl x precheck

Try Istio in ambient mode
       https://istio.io/latest/docs/ambient/getting-started/
Try Istio in sidecar mode
       https://istio.io/latest/docs/setup/getting-started/
Install guides for ambient mode
       https://istio.io/latest/docs/ambient/install/
Install guides for sidecar mode
       https://istio.io/latest/docs/setup/install/

Need more information? Visit https://istio.io/latest/docs/
```

```
[k8s-management@awx-k8s-management-node ~]$ cat ~/.bashrc
# .bashrc

# Source global definitions
if [ -f /etc/bashrc ]; then
        . /etc/bashrc
fi

# User specific environment
if ! [[ "$PATH" =~ "$HOME/.local/bin:$HOME/bin:" ]]
then
    PATH="$HOME/.local/bin:$HOME/bin:$PATH"
fi
export PATH

# Uncomment the following line if you don't like systemctl's auto-paging feature:
# export SYSTEMD_PAGER=

# User specific aliases and functions

PATH="$PATH:/home/k8s-management/istio-1.28.3/bin"
```

I created first the **istio-system** namespace in both the clusters (GKE and EKS Cluster) as shown in the screenshot attached below.

```
[k8s-management@awx-k8s-management-node ~]$ kubectl create ns istio-system --context=gke_XXXX-XXXXXXX-2XXXX6_us-central1_awx-gke-cluster
namespace/istio-system created
[k8s-management@awx-k8s-management-node ~]$ kubectl create ns istio-system --context=arn:aws:eks:us-east-2:02XXXXXXXXX6:cluster/eks-demo-cluster-dev
namespace/istio-system created
```

kubectl create ns istio-system --context=gke_XXXX-XXXXXXX-2XXXX6_us-central1_awx-gke-cluster

kubectl create ns istio-system --context=arn:aws:eks:us-east-2:02XXXXXXXXX6:cluster/eks-demo-cluster-dev

To create the Root CA certificate and certificate for each of the clusters I used make command and I install the same as shown in the screenshot attached below.

sudo yum groupinstall 'Development Tools' -y

```
[k8s-management@awx-k8s-management-node ~]$ sudo yum groupinstall 'Development Tools' -y
```

It will install Java-1.8 which you can uninstall later after creating the Root CA certificate and certificate for each of the clusters.

```
[k8s-management@awx-k8s-management-node ~]$ java -version
openjdk version "1.8.0_482"
OpenJDK Runtime Environment (build 1.8.0_482-b08)
OpenJDK 64-Bit Server VM (build 25.482-b08, mixed mode)
```

I used below command to create the Root CA certificate and certificate for each of the clusters.

mkdir certs

cd certs/

make -f ../istio-1.28.3/tools/certs/Makefile.selfsigned.mk root-ca

make -f ../istio-1.28.3/tools/certs/Makefile.selfsigned.mk awx-gke-cluster-cacerts

make -f ../istio-1.28.3/tools/certs/Makefile.selfsigned.mk eks-demo-cluster-dev-cacerts

cd

```
[k8s-management@awx-k8s-management-node ~]$ mkdir certs
[k8s-management@awx-k8s-management-node ~]$ cd certs/
[k8s-management@awx-k8s-management-node certs]$ make -f ../istio-1.28.3/tools/certs/Makefile.selfsigned.mk root-ca
generating root-key.pem
Generating RSA private key, 4096 bit long modulus (2 primes)
.....................................................................................................++++
.............++++
e is 65537 (0x010001)
generating root-cert.csr
generating root-cert.pem
Signature ok
subject=O = Istio, CN = Root CA
Getting Private key
[k8s-management@awx-k8s-management-node certs]$ make -f ../istio-1.28.3/tools/certs/Makefile.selfsigned.mk awx-gke-cluster-cacerts
generating awx-gke-cluster/ca-key.pem
Generating RSA private key, 4096 bit long modulus (2 primes)
.....................................................................................................++++
.....++++
e is 65537 (0x010001)
generating awx-gke-cluster/cluster-ca.csr
generating awx-gke-cluster/ca-cert.pem
Signature ok
subject=O = Istio, CN = Intermediate CA, L = awx-gke-cluster
Getting CA Private Key
generating awx-gke-cluster/cert-chain.pem
Intermediate inputs stored in awx-gke-cluster/
done
rm awx-gke-cluster/cluster-ca.csr awx-gke-cluster/intermediate.conf
```

```
[k8s-management@awx-k8s-management-node certs]$ make -f ../istio-1.28.3/tools/certs/Makefile.selfsigned.mk eks-demo-cluster-dev-cacerts
generating eks-demo-cluster-dev/ca-key.pem
Generating RSA private key, 4096 bit long modulus (2 primes)
.....................................................................................................++++
.............++++
e is 65537 (0x010001)
generating eks-demo-cluster-dev/cluster-ca.csr
generating eks-demo-cluster-dev/ca-cert.pem
Signature ok
subject=O = Istio, CN = Intermediate CA, L = eks-demo-cluster-dev
Getting CA Private Key
generating eks-demo-cluster-dev/cert-chain.pem
Intermediate inputs stored in eks-demo-cluster-dev/
done
rm eks-demo-cluster-dev/intermediate.conf eks-demo-cluster-dev/cluster-ca.csr
```

Then created the kubernetes secrets **cacerts** in the namespace **istio-system** in each of the kubernetes cluster (GKE Cluster and EKS Cluster) as shown in the screenshot attached below.

kubectl create secret generic cacerts --from-file=certs/awx-gke-cluster/ca-cert.pem --from-file=certs/awx-gke-cluster/ca-key.pem --from-file=certs/awx-gke-cluster/root-cert.pem --from-file=certs/awx-gke-cluster/cert-chain.pem -n istio-system --context=gke_XXXX-XXXXXXX-2XXXX6_us-central1_awx-gke-cluster

kubectl create secret generic cacerts --from-file=certs/eks-demo-cluster-dev/ca-cert.pem --from-file=certs/eks-demo-cluster-dev/ca-key.pem --from-file=certs/eks-demo-cluster-dev/root-cert.pem --from-file=certs/eks-demo-cluster-dev/cert-chain.pem -n istio-system --context=arn:aws:eks:us-east-2:02XXXXXXXX6:cluster/eks-demo-cluster-dev

```
[k8s-management@awx-k8s-management-node ~]$ kubectl create secret generic cacerts --from-file=certs/awx-gke-cluster/ca-cert.pem --from-file=certs/awx-gke-clus
ter/ca-key.pem --from-file=certs/awx-gke-cluster/root-cert.pem --from-file=certs/awx-gke-cluster/cert-chain.pem -n istio-system --context=gke_
_us-central1_awx-gke-cluster
secret/cacerts created
[k8s-management@awx-k8s-management-node ~]$ kubectl create secret generic cacerts --from-file=certs/eks-demo-cluster-dev/ca-cert.pem --from-file=certs/eks-dem
o-cluster-dev/ca-key.pem --from-file=certs/eks-demo-cluster-dev/root-cert.pem --from-file=certs/eks-demo-cluster-dev/cert-chain.pem -n istio-system --context=
arn:aws:eks:us-east-2:02        6:cluster/eks-demo-cluster-dev

secret/cacerts created
```

For Istio installation I installed istio-base, istiod and then istio Eastwest gateway on GKE Standard Cluster as shown in the screenshot attached below.

kubectl create secret generic cacerts --from-file=certs/awx-gke-cluster/ca-cert.pem --from-file=certs/awx-gke-cluster/ca-key.pem --from-file=certs/awx-gke-cluster/root-cert.pem --from-file=certs/awx-gke-cluster/cert-chain.pem -n istio-system --context=gke_XXXX-XXXXXXX-2XXXX6_us-central1_awx-gke-cluster

helm repo add istio https://istio-release.storage.googleapis.com/charts

helm repo update

helm install istio-base istio/base -n istio-system --kube-context=gke_XXXX-XXXXXXX-2XXXX6_us-central1_awx-gke-cluster

helm install istiod istio/istiod -n istio-system --set global.meshID=mesh1 --set global.multiCluster.clusterName=awx-gke-cluster --set global.network=network2 --kube-context=gke_XXXX-XXXXXXX-2XXXX6_us-central1_awx-gke-cluster

helm install istio-eastwestgateway istio/gateway -n istio-system --set name=istio-eastwestgateway --set networkGateway=network2 --kube-context=gke_XXXX-XXXXXXX-2XXXX6_us-central1_awx-gke-cluster

kubectl get svc istio-eastwestgateway -n istio-system --context=gke_XXXX-XXXXXXX-2XXXX6_us-central1_awx-gke-cluster

I applied the label **topology.istio.io/network=network2** to the namespace **istio-system** in GKE Standard Cluster as shown in the screenshot attached below.

```
[k8s-management@awx-k8s-management-node ~]$ kubectl get namespace istio-system && kubectl label namespace istio-system topology.istio.io/network=network2 --co
ntext=gke_                  _us-central1_awx-gke-cluster
NAME           STATUS   AGE
istio-system   Active   23m
namespace/istio-system labeled
```

```
[k8s-management@awx-k8s-management-node ~]$ helm repo add istio https://istio-release.storage.googleapis.com/charts
"istio" has been added to your repositories
[k8s-management@awx-k8s-management-node ~]$
[k8s-management@awx-k8s-management-node ~]$ helm repo update
Hang tight while we grab the latest from your chart repositories...
...Successfully got an update from the "istio" chart repository
Update Complete. ⎈Happy Helming!⎈
```

```
[k8s-management@awx-k8s-management-node ~]$ helm install istio-base istio/base -n istio-system --kube-context=gke_[redacted]_us-central1_awx-gke-clus
ter
```

```
[k8s-management@awx-k8s-management-node ~]$ helm install istiod istio/istiod -n istio-system --set global.meshID=mesh1 --set global.multiCluster.clusterName=a
wx-gke-cluster --set global.network=network2 --kube-context=gke_[redacted]_us-central1_awx-gke-cluster
```

```
[k8s-management@awx-k8s-management-node ~]$ kubectl get svc istio-eastwestgateway -n istio-system --context=gke_[redacted]_us-central1_awx-gke-cluste
r
NAME                    TYPE           CLUSTER-IP       EXTERNAL-IP      PORT(S)                                                                   AGE
istio-eastwestgateway   LoadBalancer   172.19.146.228   34.[redacted].199   15021:31715/TCP,15443:31415/TCP,15012:31287/TCP,15017:30280/TCP   5m52s
```

```
[k8s-management@awx-k8s-management-node ~]$ cat expose-service.yaml
apiVersion: networking.istio.io/v1
kind: Gateway
metadata:
  name: cross-network-gateway
spec:
  selector:
    istio: eastwestgateway
  servers:
    - port:
        number: 15443
        name: tls
        protocol: TLS
      tls:
        mode: AUTO_PASSTHROUGH
      hosts:
        - "*.local"
[k8s-management@awx-k8s-management-node ~]$ kubectl apply -f expose-service.yaml --context=gke_[redacted]_us-central1_awx-gke-cluster
gateway.networking.istio.io/cross-network-gateway created
[k8s-management@awx-k8s-management-node ~]$
```

For Istio installation on EKS Cluster I installed istio-base, istiod and then istio Eastwest gateway on as shown in the screenshot attached below.

kubectl create secret generic cacerts --from-file=certs/eks-demo-cluster-dev/ca-cert.pem --from-file=certs/eks-demo-cluster-dev/ca-key.pem --from-file=certs/eks-demo-cluster-dev/root-cert.pem --from-file=certs/eks-demo-cluster-dev/cert-chain.pem -n istio-system --context=arn:aws:eks:us-east-2:02XXXXXXXXX6:cluster/eks-demo-cluster-dev

kubectl get namespace istio-system && kubectl label namespace istio-system topology.istio.io/network=network1 --context=arn:aws:eks:us-east-2:02XXXXXXXXX6:cluster/eks-demo-cluster-dev

helm repo add istio https://istio-release.storage.googleapis.com/charts

helm repo update

helm install istio-base istio/base -n istio-system --kube-context=arn:aws:eks:us-east-2:02XXXXXXXXX6:cluster/eks-demo-cluster-dev

helm install istiod istio/istiod -n istio-system --set global.meshID=mesh1 --set global.multiCluster.clusterName=eks-demo-cluster-dev --set global.network=network1 --kube-context=arn:aws:eks:us-east-2:02XXXXXXXXX6:cluster/eks-demo-cluster-dev

helm install istio-eastwestgateway istio/gateway -n istio-system --set name=istio-eastwestgateway --set networkGateway=network1 --kube-context=arn:aws:eks:us-east-2:02XXXXXXXXX6:cluster/eks-demo-cluster-dev

kubectl get svc istio-eastwestgateway -n istio-system --context=arn:aws:eks:us-east-2:02XXXXXXXXX6:cluster/eks-demo-cluster-dev

I applied the label **topology.istio.io/network=network1** to the namespace **istio-system** in EKS Cluster as shown in the screenshot attached below.

```
[k8s-management@awx-k8s-management-node ~]$ kubectl get namespace istio-system && kubectl label namespace istio-system topology.istio.io/network=network1 --co
ntext=arn:aws:eks:us-east-2:02        6:cluster/eks-demo-cluster-dev
NAME           STATUS   AGE
istio-system   Active   48m
namespace/istio-system labeled
[k8s-management@awx-k8s-management-node ~]$ helm repo update
Hang tight while we grab the latest from your chart repositories...
...Successfully got an update from the "istio" chart repository
Update Complete. ⎈Happy Helming!⎈
[k8s-management@awx-k8s-management-node ~]$ helm install istio-base istio/base -n istio-system --kube-context=arn:aws:eks:us-east-2:02        6:cluster/eks-d
emo-cluster-dev
```

```
[k8s-management@awx-k8s-management-node ~]$ helm install istiod istio/istiod -n istio-system --set global.meshID=mesh1 --set global.multiCluster.clusterName=e
ks-demo-cluster-dev --set global.network=network1 --kube-context=arn:aws:eks:us-east-2:02        6:cluster/eks-demo-cluster-dev
```

```
[k8s-management@awx-k8s-management-node ~]$ helm install istio-eastwestgateway istio/gateway -n istio-system --set name=istio-eastwestgateway --set networkGat
eway=network1 --kube-context=arn:aws:eks:us-east-2:02        6:cluster/eks-demo-cluster-dev
```

```
[k8s-management@awx-k8s-management-node ~]$ kubectl get svc istio-eastwestgateway -n istio-system --context=arn:aws:eks:us-east-2:02        6:cluster/eks-dem
o-cluster-dev
NAME                    TYPE           CLUSTER-IP       EXTERNAL-IP                                                              PORT(S)
                                      AGE
istio-eastwestgateway   LoadBalancer   172.20.252.151   a                                3.us-east-2.elb.amazonaws.com   15021:32720/TCP,15443:30540/
TCP,15012:32716/TCP,15017:32555/TCP   10s
```

cat expose-service.yaml

```
apiVersion: networking.istio.io/v1
kind: Gateway
metadata:
  name: cross-network-gateway
spec:
  selector:
    istio: eastwestgateway
  servers:
    - port:
        number: 15443
        name: tls
        protocol: TLS
      tls:
        mode: AUTO_PASSTHROUGH
      hosts:
        - "*.local"
```

```
[k8s-management@awx-k8s-management-node ~]$ cat expose-service.yaml
apiVersion: networking.istio.io/v1
kind: Gateway
metadata:
  name: cross-network-gateway
spec:
  selector:
    istio: eastwestgateway
  servers:
    - port:
        number: 15443
        name: tls
        protocol: TLS
      tls:
        mode: AUTO_PASSTHROUGH
      hosts:
        - "*.local"
[k8s-management@awx-k8s-management-node ~]$ kubectl apply -f expose-service.yaml --context=arn:aws:eks:us-east-2:02        6:cluster/eks-demo-cluster-dev
gateway.networking.istio.io/cross-network-gateway created
```

==========

Enable endpoint discovery in GKE and EKS Cluster

==========

istioctl create-remote-secret --name=eks-demo-cluster-dev | kubectl apply -f - --context=gke_XXXX-XXXXXXX-2XXXX6_us-central1_awx-gke-cluster

istioctl create-remote-secret --name=awx-gke-cluster | kubectl apply -f - --context=arn:aws:eks:us-east-2:02XXXXXXXXX6:cluster/eks-demo-cluster-dev

```
[k8s-management@awx-k8s-management-node ~]$ istioctl create-remote-secret --name=awx-gke-cluster | kubectl apply -f - --context=arn:aws:eks:us-east-2:02
6:cluster/eks-demo-cluster-dev
secret/istio-remote-secret-awx-gke-cluster created
[k8s-management@awx-k8s-management-node ~]$ istioctl create-remote-secret --name=eks-demo-cluster-dev | kubectl apply -f - --context=gke_
s-central1_awx-gke-cluster
secret/istio-remote-secret-eks-demo-cluster-dev created
```

Now verify that istiod can communicate with the remote cluster control plan

istioctl remote-clusters --context=arn:aws:eks:us-east-2:02XXXXXXXXX6:cluster/eks-demo-cluster-dev

istioctl remote-clusters --context=gke_XXXX-XXXXXXX-2XXXX6_us-central1_awx-gke-cluster

```
[k8s-management@awx-k8s-management-node ~]$ istioctl remote-clusters --context=arn:aws:eks:us-east-2:02       6:cluster/eks-demo-cluster-dev
NAME                  SECRET                                                  STATUS     ISTIOD
eks-demo-cluster-dev                                                          synced     istiod-
awx-gke-cluster       istio-system/istio-remote-secret-awx-gke-cluster        synced     istiod-
[k8s-management@awx-k8s-management-node ~]$ istioctl remote-clusters --context=gke_                  _us-central1_awx-gke-cluster
NAME                  SECRET                                                  STATUS     ISTIOD
awx-gke-cluster                                                               synced     istiod-
eks-demo-cluster-dev  istio-system/istio-remote-secret-eks-demo-cluster-dev    synced     istiod-
```

Finally, Multicluster Kubernetes Cluster (with GKE and EKS Clusters) had been created using Istio with **multi-primary on different networks**.

As shown in the diagram drawn in Module-4, **PostgreSQL Pods and Service** will be created in the GKE Standard Cluster and **AWX pods and Service along with PostgreSQL Service** will be created in the EKS Cluster.

First, I created the namespace postgresql in the GKE and EKS Cluster and the namespace awx in the EKS Cluster then provided the kubernetes label **istio-injection=enabled** as shown in the screenshot attached below. **PostgreSQL Pods and Service** in **GKE Standard cluster** had been created using the helm as shown in the screenshot attached below. The helm chart to create the PostgreSQL Pods and Service is present in the GitHub Repo https://github.com/singhritesh85/helm-repo-for-bitnami-postgresql-ha.git.

```
[k8s-management@awx-k8s-management-node ~]$ kubectl create ns awx --context=arn:aws:eks:us-east-2:02       6:cluster/eks-demo-cluster-dev
namespace/awx created
[k8s-management@awx-k8s-management-node ~]$ kubectl create ns postgresq --context=gke_                  _us-central1_awx-gke-cluster
namespace/postgresq created
[k8s-management@awx-k8s-management-node ~]$ kubectl create ns postgresql --context=arn:aws:eks:us-east-2:02       6:cluster/eks-demo-cluster-dev
namespace/postgresql created
```

```
[k8s-management@awx-k8s-management-node ~]$ kubectl label ns postgresql istio-injection=enabled --context=arn:aws:eks:us-east-2:02       6:cluster/eks-demo-
cluster-dev
namespace/postgresql labeled
[k8s-management@awx-k8s-management-node ~]$ kubectl label ns postgresql istio-injection=enabled --context=gke_                  _us-central1_awx-gke-cluster
namespace/postgresql labeled
[k8s-management@awx-k8s-management-node ~]$ kubectl label ns awx istio-injection=enabled --context=arn:aws:eks:us-east-2:02       6:cluster/eks-demo-cluster
-dev
namespace/awx labeled
```

```
[k8s-management@awx-k8s-management-node ~]$ git clone https://github.com/singhritesh85/helm-repo-for-bitnami-postgresql-ha.git
Cloning into 'helm-repo-for-bitnami-postgresql-ha'...
remote: Enumerating objects: 58, done.
remote: Counting objects: 100% (58/58), done.
remote: Compressing objects: 100% (55/55), done.
remote: Total 58 (delta 24), reused 0 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (58/58), 255.55 KiB | 2.48 MiB/s, done.
Resolving deltas: 100% (24/24), done.
[k8s-management@awx-k8s-management-node ~]$ cd helm-repo-for-bitnami-postgresql-ha/
```

```
[k8s-management@awx-k8s-management-node helm-repo-for-bitnami-postgresql-ha]$ helm upgrade --install postgresql bitnami/postgresql-ha/ -f bitnami/postgresql-h
a/values.yaml --create-namespace --namespace postgresql --set postgresql.replicaCount=3,persistence.enabled=true,persistence.size=1Gi,global.defaultStorageCla
ss=standard-rwo,service.type=ClusterIP,postgresql.username=postgres,postgresql.password=Dexter123,postgresql.database=dexter --kube-context=gke_
_us-central1_awx-gke-cluster
```

```
[k8s-management@awx-k8s-management-node helm-repo-for-bitnami-postgresql-ha]$ kubectl get pods -n postgresql --context=gke_                _us-central1_awx
-gke-cluster
NAME                                    READY   STATUS    RESTARTS   AGE
postgresql-postgresql-ha-pgpool-7              9   1/1     Running   0          3m43s
postgresql-postgresql-ha-postgresql-0   1/1     Running   0          3m42s
postgresql-postgresql-ha-postgresql-1   1/1     Running   0          3m42s
postgresql-postgresql-ha-postgresql-2   1/1     Running   0          3m42s
```

```
[k8s-management@awx-k8s-management-node ~]$ kubectl get svc -n postgresql --context=gke_                    us-central1_awx-gke-cluster
NAME                                  TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)    AGE
postgresql-postgresql-ha-pgpool       ClusterIP   172.19.250.144   <none>        5432/TCP   5m24s
postgresql-postgresql-ha-postgresql   ClusterIP   172.19.209.136   <none>        5432/TCP   5m24s
postgresql-postgresql-ha-postgresql-headless   ClusterIP   None             <none>        5432/TCP   5m24s
```

helm upgrade --install postgresql bitnami/postgresql-ha/ -f bitnami/postgresql-ha/values.yaml --create-namespace --namespace postgresql --set postgresql.replicaCount=3,persistence.enabled=true,persistence.size=1Gi,global.defaultStorageClass=standard-rwo,service.type=ClusterIP,postgresql.username=postgres,postgresql.password=Dexter123,postgresql.database=dexter --kube-context=gke_XXXX-XXXXXXX-2XXXX6_us-central1_awx-gke-cluster

As shown in the screenshot attached above, Pods and service for PostgreSQL in GKE Standard Cluster had been created.

Now, Created the Service for PostgreSQL in EKS Cluster as shown in the screenshot attached below. The helm chart is present in the GitHub Repo https://github.com/singhritesh85/helm-repo-for-bitnami-postgresql-ha-onlyservice.git.

helm upgrade --install postgresql bitnami/postgresql-ha/ -f bitnami/postgresql-ha/values.yaml --create-namespace --namespace postgresql --set postgresql.replicaCount=3 --set persistence.enabled=false --set persistence.enabled=false --set service.type=ClusterIP --set postgresql.username=postgres --set postgresql.password=Dexter123 --set postgresql.database=dexter --kube-context=arn:aws:eks:us-east-2:02XXXXXXXXX6:cluster/eks-demo-cluster-dev

```
[k8s-management@awx-k8s-management-node ~]$ git clone https://github.com/singhritesh85/helm-repo-for-bitnami-postgresql-ha-onlyservice.git
Cloning into 'helm-repo-for-bitnami-postgresql-ha-onlyservice'...
remote: Enumerating objects: 56, done.
remote: Counting objects: 100% (56/56), done.
remote: Compressing objects: 100% (52/52), done.
remote: Total 56 (delta 20), reused 0 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (56/56), 250.41 KiB | 2.75 MiB/s, done.
Resolving deltas: 100% (20/20), done.
[k8s-management@awx-k8s-management-node ~]$ cd helm-repo-for-bitnami-postgresql-ha-onlyservice
[k8s-management@awx-k8s-management-node helm-repo-for-bitnami-postgresql-ha-onlyservice]$ helm upgrade --install postgresql bitnami/postgresql-ha/ -f bitnami/
postgresql-ha/values.yaml --create-namespace --namespace postgresql --set postgresql.replicaCount=3 --set persistence.enabled=false --set persistence.enabled=
false --set service.type=ClusterIP --set postgresql.username=postgres --set postgresql.password=Dexter123 --set postgresql.database=dexter --kube-context=arn:
aws:eks:us-east-2:02        6:cluster/eks-demo-cluster-dev
```

```
[k8s-management@awx-k8s-management-node helm-repo-for-bitnami-postgresql-ha-onlyservice]$ kubectl get svc -n postgresql --context=arn:aws:eks:us-east-2:02
    6:cluster/eks-demo-cluster-dev
NAME                                  TYPE        CLUSTER-IP      EXTERNAL-IP   PORT(S)    AGE
postgresql-postgresql-ha-pgpool       ClusterIP   172.20.24.254   <none>        5432/TCP   52s
postgresql-postgresql-ha-postgresql   ClusterIP   172.20.98.40    <none>        5432/TCP   52s
postgresql-postgresql-ha-postgresql-headless   ClusterIP   None            <none>        5432/TCP   52s
```

Then created the Kubernetes Secrets and finally the pods and service for AWX using the kubernetes manifests files present in the GitHub Repo https://github.com/singhritesh85/DevOps-Project-

Ansible-Awx.git at the path **multicluster-multicloud/awx-postgres-secret-multicluster.yaml** and **multicluster-multicloud/ansible-awx.yaml**.

```
[k8s-management@awx-k8s-management-node ~]$ cat awx-postgres-secret-multicluster.yaml
apiVersion: v1
kind: Secret
metadata:
  name: awx-postgres-configuration
  namespace: awx
stringData:
  host: "postgresql-postgresql-ha-pgpool.postgresql.svc.cluster.local"
  port: "5432"
  database: "dexter"
  username: "postgres"
  password: "Dexter123"
  sslmode: "prefer" # or 'require' if you enforce SSL on RDS
  type: "unmanaged"
type: Opaque
[k8s-management@awx-k8s-management-node ~]$ kubectl apply -f awx-postgres-secret-multicluster.yaml --context=arn:aws:eks:us-east-2:02[redacted]5:cluster/eks-demo-cluster-dev
secret/awx-postgres-configuration created
[k8s-management@awx-k8s-management-node ~]$ kubectl get secrets -n awx --context=arn:aws:eks:us-east-2:02[redacted]6:cluster/eks-demo-cluster-dev | grep "awx-postgres-configuration"
awx-postgres-configuration   Opaque   7      49s
```

Install the CRD for AWX in EKS Cluster using the commands as shown in the screenshot attached below.

helm repo add awx-operator https://ansible-community.github.io/awx-operator-helm/

helm repo update

helm install ansible-awx-operator awx-operator/awx-operator -n awx --create-namespace --kube-context=arn:aws:eks:us-east-2:02XXXXXXXXX6:cluster/eks-demo-cluster-dev

```
[k8s-management@awx-k8s-management-node ~]$ helm repo add awx-operator https://ansible-community.github.io/awx-operator-helm/
"awx-operator" has been added to your repositories
[k8s-management@awx-k8s-management-node ~]$ helm repo update
Hang tight while we grab the latest from your chart repositories...
...Successfully got an update from the "awx-operator" chart repository
...Successfully got an update from the "istio" chart repository
Update Complete. ⎈Happy Helming!⎈
```

```
[k8s-management@awx-k8s-management-node ~]$ helm install ansible-awx-operator awx-operator/awx-operator -n awx --create-namespace --kube-context=arn:aws:eks:us-east-2:02[redacted]6:cluster/eks-demo-cluster-dev
```

```
[k8s-management@awx-k8s-management-node ~]$ kubectl get pods -n awx --context=arn:aws:eks:us-east-2:02[redacted]5:cluster/eks-demo-cluster-dev --watch
NAME                                          READY   STATUS    RESTARTS   AGE
awx-operator-controller-manager-[redacted]    2/2     Running   0          56s
```

```
[k8s-management@awx-k8s-management-node ~]$ cat ansible-awx.yaml
apiVersion: awx.ansible.com/v1beta1
kind: AWX
metadata:
  name: ansible-awx
  namespace: awx
spec:
  postgres_configuration_secret: awx-postgres-configuration
  service_type: ClusterIP
  admin_user: admin
[k8s-management@awx-k8s-management-node ~]$ kubectl apply -f ansible-awx.yaml --context=arn:aws:eks:us-east-2:02[redacted]5:cluster/eks-demo-cluster-dev
awx.awx.ansible.com/ansible-awx created
```

kubectl apply -f https://github.com/kubernetes-sigs/gateway-api/releases/download/v1.4.0/standard-install.yaml --context=arn:aws:eks:us-east-2:02XXXXXXXXX6:cluster/eks-demo-cluster-dev

helm upgrade --install ngf oci://ghcr.io/nginx/charts/nginx-gateway-fabric --create-namespace -n nginx-gateway --kube-context=arn:aws:eks:us-east-2:02XXXXXXXXX6:cluster/eks-demo-cluster-dev

```
[k8s-management@awx-k8s-management-node ~]$ kubectl apply -f https://github.com/kubernetes-sigs/gateway-api/releases/download/v1.4.0/standard-install.yaml --context=arn:aws:eks:us-east-2:02[redacted]6:cluster/eks-demo-cluster-dev
```

```
[k8s-management@awx-k8s-management-node ~]$ helm upgrade --install ngf oci://ghcr.io/nginx/charts/nginx-gateway-fabric --create-namespace -n nginx-gateway --kube-context=arn:aws:eks:us-east-2:02[redacted]5:cluster/eks-demo-cluster-dev
```

Finally, the pods and service for PostgreSQL in GKE Standard Cluster and service for PostgreSQL in EKS Cluster and awx pods and service in EKS Cluster had been created as shown in the screenshot attached below.

```
[k8s-management@awx-k8s-management-node ~]$ kubectl get svc -n postgresql --context=gke_[redacted]_us-central1_awx-gke-cluster
NAME                                      TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)    AGE
postgresql-postgresql-ha-pgpool           ClusterIP   172.19.83.105    <none>        5432/TCP   15m
postgresql-postgresql-ha-postgresql       ClusterIP   172.19.206.149   <none>        5432/TCP   15m
postgresql-postgresql-ha-postgresql-headless   ClusterIP   None             <none>        5432/TCP   15m
[k8s-management@awx-k8s-management-node ~]$ kubectl get pods -n postgresql --context=gke_[redacted]_us-central1_awx-gke-cluster
NAME                                 READY   STATUS    RESTARTS   AGE
postgresql-postgresql-ha-pgpool-[redacted]   2/2     Running   0          15m
postgresql-postgresql-ha-postgresql-0   2/2     Running   0          15m
postgresql-postgresql-ha-postgresql-1   2/2     Running   0          15m
postgresql-postgresql-ha-postgresql-2   2/2     Running   0          15m
```

```
[k8s-management@awx-k8s-management-node ~]$ kubectl get svc -n postgresql --context=arn:aws:eks:us-east-2:02[redacted]6:cluster/eks-demo-cluster-dev
NAME                                      TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)    AGE
postgresql-postgresql-ha-pgpool           ClusterIP   172.20.19.201    <none>        5432/TCP   14m
postgresql-postgresql-ha-postgresql       ClusterIP   172.20.43.200    <none>        5432/TCP   14m
postgresql-postgresql-ha-postgresql-headless   ClusterIP   None             <none>        5432/TCP   14m
```

```
[k8s-management@awx-k8s-management-node ~]$ kubectl get pods -n awx --context=arn:aws:eks:us-east-2:02[redacted]6:cluster/eks-demo-cluster-dev --watch
NAME                                               READY   STATUS      RESTARTS   AGE
ansible-awx-migration-24.6.1-v5j7q                 0/2     Completed   0          9m47s
ansible-awx-task-76579cd79f-sxvsb                  5/5     Running     0          10m
ansible-awx-web-5c4cb4465f-cqw9x                   4/4     Running     0          10m
awx-operator-controller-manager-56cbc8dd4c-n87wf   3/3     Running     0          11m
```

```
[k8s-management@awx-k8s-management-node ~]$ kubectl get svc -n awx --context=arn:aws:eks:us-east-2:02[redacted]6:cluster/eks-demo-cluster-dev --watch
NAME                                               TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)    AGE
ansible-awx-service                                ClusterIP   172.20.174.97    <none>        80/TCP     11m
awx-operator-controller-manager-metrics-service    ClusterIP   172.20.134.2     <none>        8443/TCP   12m
```

Then installed Gateway API to access the AWX Pods through the service present in the EKS Cluster.

kubectl apply -f https://github.com/kubernetes-sigs/gateway-api/releases/download/v1.4.0/standard-install.yaml --context=arn:aws:eks:us-east-2:02XXXXXXXXX6:cluster/eks-demo-cluster-dev

helm upgrade --install ngf oci://ghcr.io/nginx/charts/nginx-gateway-fabric --create-namespace -n nginx-gateway --kube-context=arn:aws:eks:us-east-2:02XXXXXXXXX6:cluster/eks-demo-cluster-dev

```
[k8s-management@awx-k8s-management-node ~]$ kubectl apply -f https://github.com/kubernetes-sigs/gateway-api/releases/download/v1.4.0/standard-install.yaml --context=arn:aws:eks:us-east-2:02[redacted]6:cluster/eks-demo-cluster-dev
customresourcedefinition.apiextensions.k8s.io/backendtlspolicies.gateway.networking.k8s.io created
customresourcedefinition.apiextensions.k8s.io/gatewayclasses.gateway.networking.k8s.io created
customresourcedefinition.apiextensions.k8s.io/gateways.gateway.networking.k8s.io created
customresourcedefinition.apiextensions.k8s.io/grpcroutes.gateway.networking.k8s.io created
customresourcedefinition.apiextensions.k8s.io/httproutes.gateway.networking.k8s.io created
customresourcedefinition.apiextensions.k8s.io/referencegrants.gateway.networking.k8s.io created
[k8s-management@awx-k8s-management-node ~]$ helm upgrade --install ngf oci://ghcr.io/nginx/charts/nginx-gateway-fabric --create-namespace -n nginx-gateway --kube-context=arn:aws:eks:us-east-2:02[redacted]6:cluster/eks-demo-cluster-dev
```

Created Kubernetes tls Secret as shown in the screenshot attached below. The SSL Certificate which had been used here is Wildcard SSL Certificate.

kubectl create secret tls tls-awx-ingress --cert=STAR_singhritesh85_com.crt --key=mykey.key -n awx --context=arn:aws:eks:us-east-2:02XXXXXXXXX6:cluster/eks-demo-cluster-dev

```
[k8s-management@awx-k8s-management-node ~]$ kubectl create secret tls tls-awx-ingress --cert=STAR_singhritesh85_com.crt --key=mykey.key -n awx --context=arn:aws:eks:us-east-2:02[redacted]6:cluster/eks-demo-cluster-dev
secret/tls-awx-ingress created
```

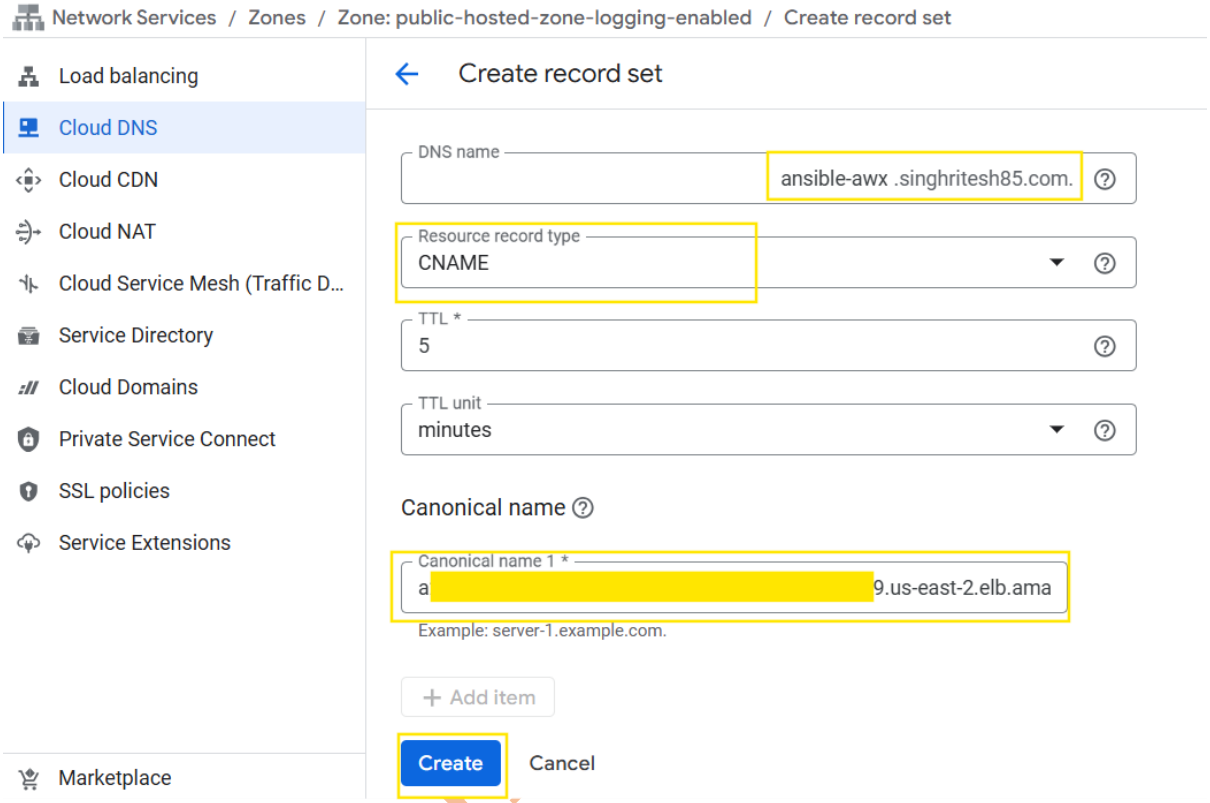
```
[k8s-management@awx-k8s-management-node ~]$ kubectl get secrets -n awx --context=arn:aws:eks:us-east-2:02[redacted]6:cluster/eks-demo-cluster-dev|grep "tls-awx-ingress"
tls-awx-ingress                  kubernetes.io/tls    2      56s
```

Then **gateway-api.yaml** file is present in the GitHub Repo https://github.com/singhritesh85/DevOps-Project-Ansible-Awx.git.

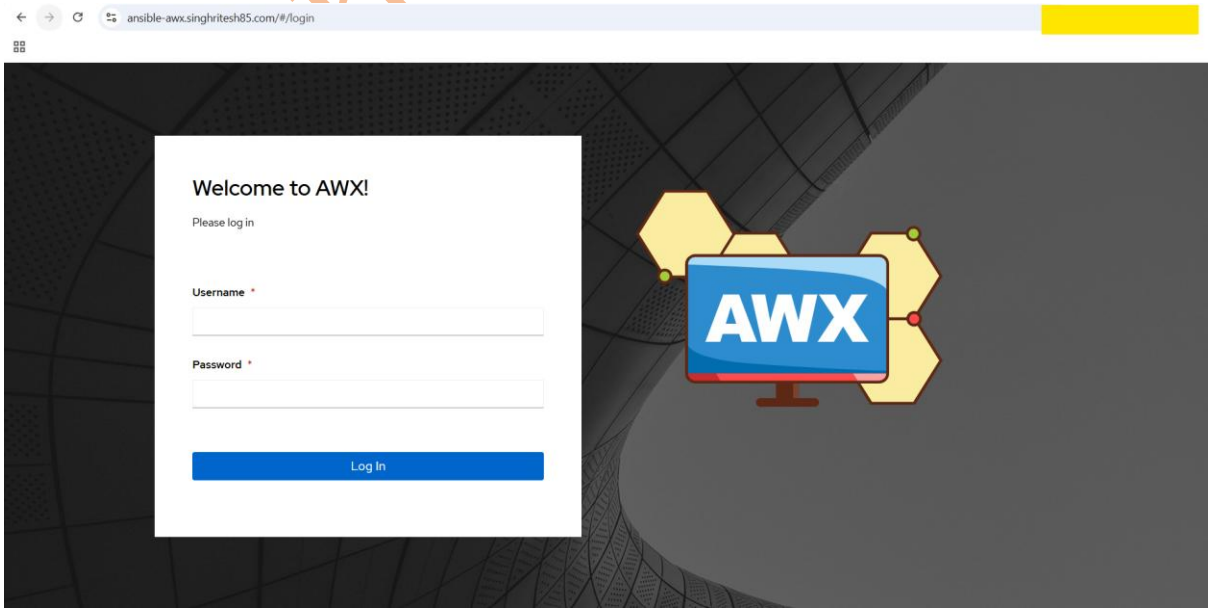
```
[k8s-management@awx-k8s-management-node ~]$ kubectl apply -f gateway-api.yaml --context=arn:aws:eks:us-east-2:02[redacted]6:cluster/eks-demo-cluster-dev
gateway.gateway.networking.k8s.io/awx-gateway created
httproute.gateway.networking.k8s.io/awx-http-to-https-redirect created
httproute.gateway.networking.k8s.io/awx-route-https created
```

```
[k8s-management@awx-k8s-management-node ~]$ kubectl get svc -n awx --context=arn:aws:eks:us-east-2:02      6:cluster/eks-demo-cluster-dev
NAME                                       TYPE           CLUSTER-IP       EXTERNAL-IP                                                              PO
RT(S)                      AGE
ansible-awx-service                        ClusterIP      172.20.174.97    <none>                                                                   80
/TCP                       27m
awx-gateway-nginx                          LoadBalancer   172.20.158.232   a                                      9.us-east-2.elb.amazonaws.com     80
:31635/TCP,443:31950/TCP   104s
awx-operator-controller-manager-metrics-service   ClusterIP      172.20.134.2     <none>                                                                   84
43/TCP                     28m
```

Create the Record Set of CNAME Type in GCP Cloud DNS with DNS Name of the LoadBalancer Service as shown in the screenshot attached above.



Finally, I was able to access Ansible-Awx using the URL as shown in the screenshot attached below.



Then, I had reset the Ansible-Awx **admin** user **password** using the procedure as explained below.

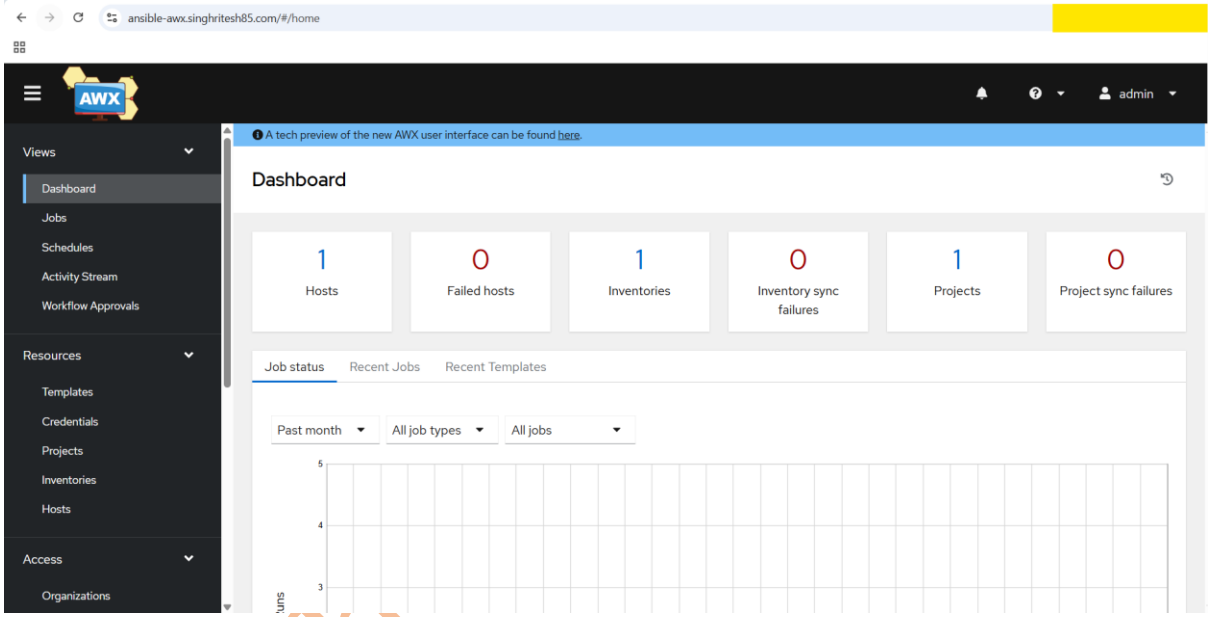
kubectl get pods -n awx

Log-into the ansible-awx-web Pod as shown below

kubectl exec -it <ansible-awx-web pod> -n awx -- bash

awx-manage update_password --username=admin --password=<provide-your-password-here>

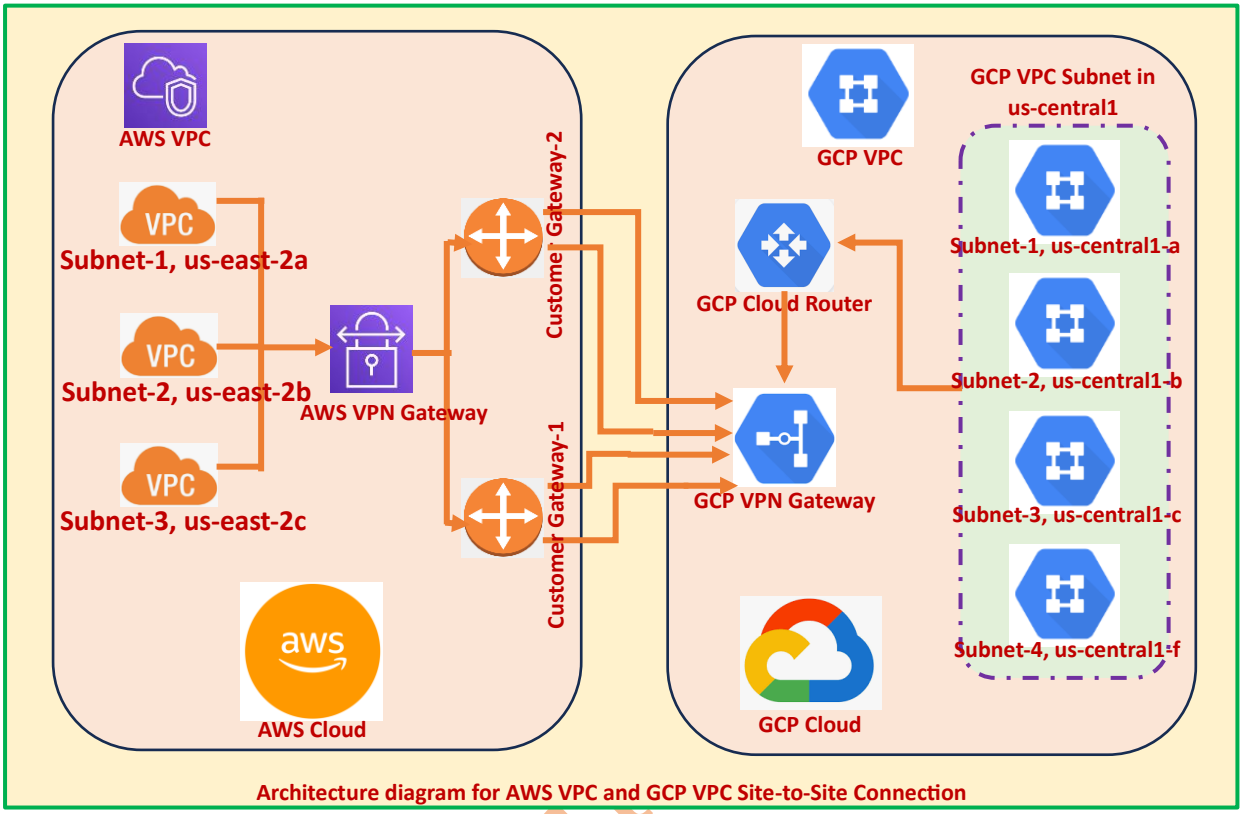
```
[k8s-management@awx-k8s-management-node main]$ kubectl get pods -n awx --context=arn:aws:eks:us-east-2:02[redacted]6:cluster/eks-demo-cluster-dev
NAME                                           READY   STATUS      RESTARTS   AGE
ansible-awx-migration-24.6.1-[redacted]        0/2     Completed   0          43m
ansible-awx-task-[redacted]                    5/5     Running     0          44m
ansible-awx-web-[redacted]                     4/4     Running     0          44m
awx-gateway-nginx-[redacted]                   2/2     Running     0          18m
awx-operator-controller-manager-[redacted]     3/3     Running     0          45m
[k8s-management@awx-k8s-management-node main]$ kubectl exec -it ansible-awx-web-[redacted] -n awx --context=arn:aws:eks:us-east-2:02[redacted]6:cluster/e
ks-demo-cluster-dev -- bash
bash-5.1$ awx-manage update_password --username=admin --password=Dexter321#!
Password updated
bash-5.1$
exit
```



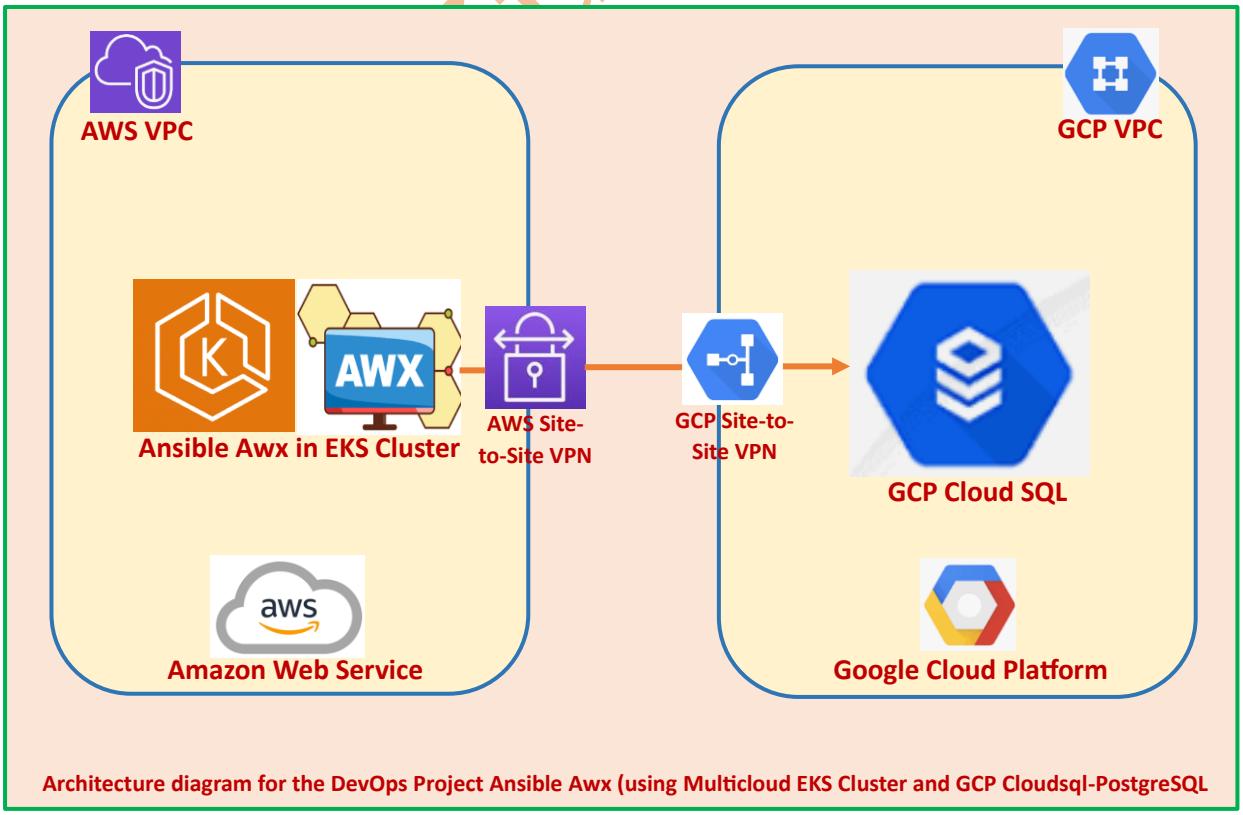
Now, you can proceed further with the steps as I discussed in module-1.

Module 5: - Multicloud

DevOps Project Ansible Awx (using Multicloud EKS Cluster and GCP Cloudsql-PostgreSQL)



Architecture diagram for AWS VPC and GCP VPC Site-to-Site Connection



Architecture diagram for the DevOps Project Ansible Awx (using Multicloud EKS Cluster and GCP Cloudsql-PostgreSQL

Here I had used multicloud concept, **vendor lock-in** happens when an organisation becomes dependent on a single cloud provider for services. To get rid of such a situation organisation can opt for multicloud concept. For this project AWS Cloud and GCP Cloud had been used, in AWS Cloud Awx Pods and Service had been created and in GCP cloud CloudSQL (PostgreSQL) had been created. The Site-to-Site VPN Connection had been established between AWS Cloud VPC and GCP Cloud VPC. The password for CloudSQL (PostgreSQL) was kept in GCP Secret Manager. Awx had been accessed using the URL created with the help of Kubernetes Gateway API in AWS EKS Cluster. To create the infrastructure, Terraform had been used and it was installed in EC2 Instance and state file was kept in the S3 Bucket. The state lock in terraform had been achieved using the S3 Bucket. To authenticate and authorize GCP Account the command used was **gcloud auth application-default login** and gcloud cli had been installed using the command as shown in the screenshot attached below.

curl -O https://dl.google.com/dl/cloudsdk/channels/rapid/downloads/google-cloud-cli-linux-x86_64.tar.gz

tar -xf google-cloud-cli-linux-x86_64.tar.gz

./google-cloud-sdk/install.sh

```
[root@                opt]# curl -O https://dl.google.com/dl/cloudsdk/channels/rapid/downloads/google-cloud-cli-linux-x86_64.tar.gz
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100  194M  100  194M    0     0   139M      0  0:00:01  0:00:01 --:--:--  139M
[root@                opt]# tar -xf google-cloud-cli-linux-x86_64.tar.gz
[root@                opt]# ./google-cloud-sdk/install.sh
```

Logout then login, finally run the command **gcloud auth application-default login**.

```
[root@                    ~]# gcloud auth application-default login
```

The Terraform script to create the resources in AWS and GCP cloud and to establish the VPN Connection between AWS Cloud VPC and GCP Cloud VPC present in the GitHub Repo https://github.com/singhritesh85/DevOps-Project-Ansible-Awx.git at the path **multicloud/terraform-aws-eks-cluster-and-gcp-cloudsql**.

Then you can run the below commands

terraform init -------> initializes a working directory containing configuration files and installs plugins for required providers.

terraform validate --------> verify that terraform configuration file is correct or not

terraform plan --------> Check which resources are going to be created. Then you can run the command

terraform apply -auto-approve -----> Finally, Create the resources.

```
module.eks_cluster.aws_eks_addon.core_dns: Still creating... [00m10s elapsed]
module.eks_cluster.aws_eks_addon.amazon_cloudwatch_observability: Still creating... [00m10s elapsed]
module.eks_cluster.aws_eks_addon.csi_snapshot_controller: Still creating... [00m10s elapsed]
module.eks_cluster.aws_eks_addon.ebs_csi_driver: Still creating... [00m10s elapsed]
module.eks_cluster.aws_eks_addon.metrics_server: Still creating... [00m10s elapsed]
module.eks_cluster.aws_eks_addon.core_dns: Creation complete after 14s [id=eks-demo-cluster-dev:coredns]
module.eks_cluster.aws_eks_addon.amazon_cloudwatch_observability: Still creating... [00m20s elapsed]
module.eks_cluster.aws_eks_addon.metrics_server: Still creating... [00m20s elapsed]
module.eks_cluster.aws_eks_addon.csi_snapshot_controller: Still creating... [00m20s elapsed]
module.eks_cluster.aws_eks_addon.ebs_csi_driver: Still creating... [00m20s elapsed]
module.eks_cluster.aws_eks_addon.amazon_cloudwatch_observability: Still creating... [00m30s elapsed]
module.eks_cluster.aws_eks_addon.ebs_csi_driver: Still creating... [00m30s elapsed]
module.eks_cluster.aws_eks_addon.metrics_server: Still creating... [00m30s elapsed]
module.eks_cluster.aws_eks_addon.csi_snapshot_controller: Still creating... [00m30s elapsed]
module.eks_cluster.aws_eks_addon.amazon_cloudwatch_observability: Still creating... [00m40s elapsed]
module.eks_cluster.aws_eks_addon.csi_snapshot_controller: Still creating... [00m40s elapsed]
module.eks_cluster.aws_eks_addon.ebs_csi_driver: Still creating... [00m40s elapsed]
module.eks_cluster.aws_eks_addon.metrics_server: Still creating... [00m40s elapsed]
module.eks_cluster.aws_eks_addon.metrics_server: Creation complete after 44s [id=eks-demo-cluster-dev:metrics-server]
module.eks_cluster.aws_eks_addon.ebs_csi_driver: Creation complete after 44s [id=eks-demo-cluster-dev:aws-ebs-csi-driver]
module.eks_cluster.aws_eks_addon.amazon_cloudwatch_observability: Creation complete after 45s [id=eks-demo-cluster-dev:amazon-cloudwatch-observability]
module.eks_cluster.aws_eks_addon.csi_snapshot_controller: Still creating... [00m50s elapsed]
module.eks_cluster.aws_eks_addon.csi_snapshot_controller: Creation complete after 55s [id=eks-demo-cluster-dev:snapshot-controller]

Apply complete! Resources: 116 added, 0 changed, 0 destroyed.

Outputs:

aws_ec2_eks_and_karpenter_iam_role_and_gcp_cloudsql_details = {
  "cloud_sql_connection_name" = "                :us-central1:awx-private-dbinstance-       "
  "cloud_sql_db_instance_name" = "awx-private-dbinstance-d5e8dd3a"
  "cloud_sql_private_ip_address" = "10.55.122.3"
  "eks_cluster_endpoint" = "https://                                .us-east-2.eks.amazonaws.com"
  "eks_cluster_name" = "eks-demo-cluster-dev"
  "k8s_management_instance_id" = "i-                "
  "k8s_management_private_ip" = "192.168.4.61"
  "karpenter_node_spun_iam_role_arn" = "arn:aws:iam::02        6:role/karpenter-eks-noderole"
}
```

```
[k8s-management@k8s-management ~]$ kubectl get nodes
NAME                                         STATUS   ROLES    AGE     VERSION
ip-192-168-1-79.us-east-2.compute.internal   Ready    <none>   5m15s   v1.33.0-eks-
ip-192-168-2-212.us-east-2.compute.internal  Ready    <none>   5m14s   v1.33.0-eks-
ip-192-168-3-167.us-east-2.compute.internal  Ready    <none>   5m14s   v1.33.0-eks-
```

Created GCP Cloud DNS Zone as explained below. The Terraform script to create the GCP Cloud DNS Zone present in the GitHub Repo https://github.com/singhritesh85/DevOps-Project-Ansible-Awx.git at the path **multicloud/terraform-gcp-cloud-dns**.

terraform init -------> initializes a working directory containing configuration files and installs plugins for required providers.

terraform validate --------> verify that terraform configuration file is correct or not

terraform plan ---------> Check which resources are going to be created. Then you can run the command

terraform apply -auto-approve -----> Finally, Create the resources.

```
          + enable_logging = true
        }

      + dnssec_config {
          + kind          = "dns#managedZoneDnsSecConfig"
          + non_existence = (known after apply)
          + state         = "on"

          + default_key_specs (known after apply)
        }
    }

Plan: 1 to add, 0 to change, 0 to destroy.

Changes to Outputs:
  + gcp_cloud_dns_name_and_dns_name = {
      + dns_zone_nameservers = (known after apply)
      + zone_dns_name        = "singhritesh85.com."
      + zone_name            = "public-hosted-zone-logging-enabled"
    }
module.gcp_cloud_dns.google_dns_managed_zone.cloud_logging_enabled_zone: Creating...
module.gcp_cloud_dns.google_dns_managed_zone.cloud_logging_enabled_zone: Creation complete after 1s [id=projects/[redacted]/managedZones/public-hoste
d-zone-logging-enabled]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.

Outputs:

gcp_cloud_dns_name_and_dns_name = {
  "dns_zone_nameservers" = tolist([
    "[redacted]",
    "[redacted]",
    "[redacted]",
    "[redacted]",
  ])
  "zone_dns_name" = "singhritesh85.com."
  "zone_name" = "public-hosted-zone-logging-enabled"
}
```

After running the Terraform Script update your domain provider with the generated Nameserver of the Zone of GCP Cloud DNS.

Installation of Awx Operator using Helm chart.

helm repo add awx-operator https://ansible-community.github.io/awx-operator-helm/

helm repo update

helm install ansible-awx-operator awx-operator/awx-operator -n awx --create-namespace

```
[k8s-management@k8s-management ~]$ helm repo add awx-operator https://ansible-community.github.io/awx-operator-helm/
"awx-operator" has been added to your repositories
[k8s-management@k8s-management ~]$ helm repo update
Hang tight while we grab the latest from your chart repositories...
...Successfully got an update from the "awx-operator" chart repository
Update Complete. ⎈Happy Helming!⎈
[k8s-management@k8s-management ~]$ helm install ansible-awx-operator awx-operator/awx-operator -n awx --create-namespace
```

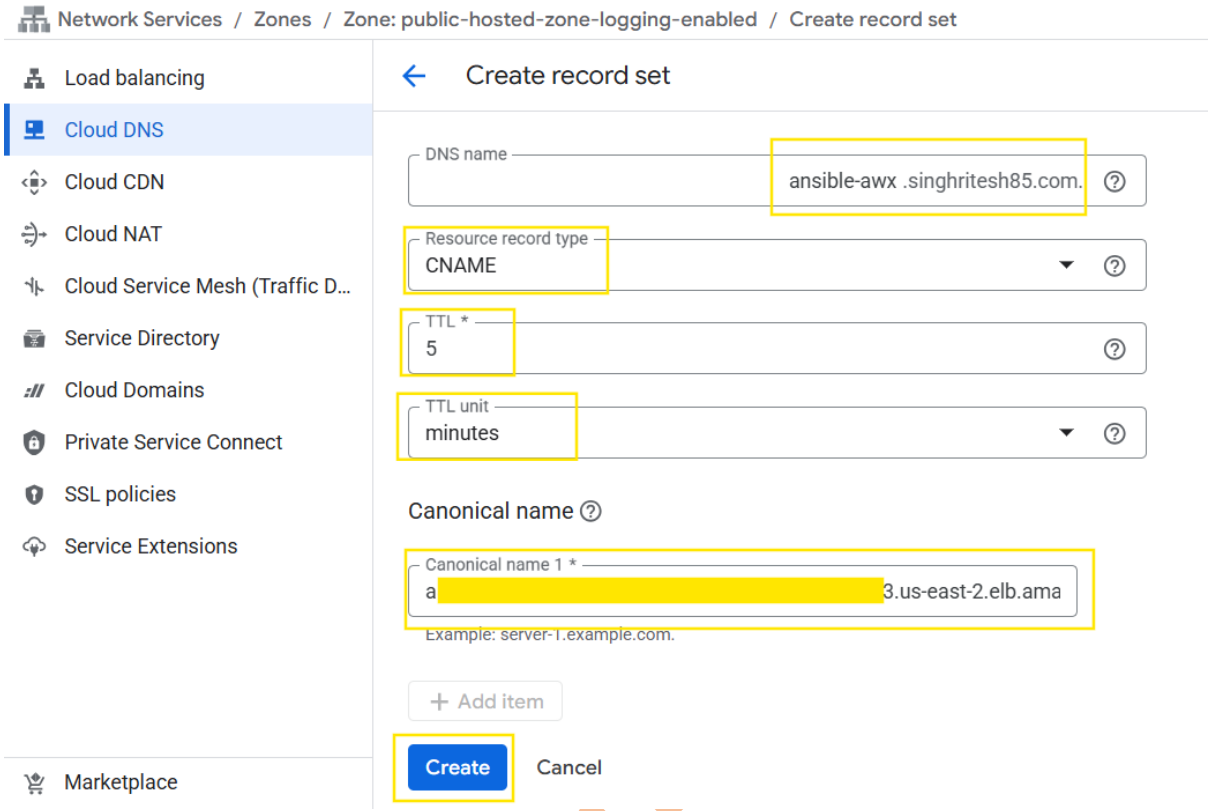
```
[k8s-management@k8s-management ~]$ cat awx-postgres-secret-multicloud.yaml
apiVersion: v1
kind: Secret
metadata:
  name: awx-postgres-configuration
  namespace: awx
stringData:
  host: "10.55.122.3"
  port: "5432"
  database: "dexter"
  username: "dbadmin"
  password: "[redacted]"
  sslmode: "prefer" # or 'require' if you enforce SSL on RDS
  type: "unmanaged"
type: Opaque
[k8s-management@k8s-management ~]$ kubectl apply -f awx-postgres-secret-multicloud.yaml
secret/awx-postgres-configuration created
[k8s-management@k8s-management ~]$ cat ansible-awx.yaml
apiVersion: awx.ansible.com/v1beta1
kind: AWX
metadata:
  name: ansible-awx
  namespace: awx
spec:
  postgres_configuration_secret: awx-postgres-configuration
  service_type: ClusterIP
  admin_user: admin
[k8s-management@k8s-management ~]$ kubectl apply -f ansible-awx.yaml
awx.awx.ansible.com/ansible-awx created
```

```
[k8s-management@k8s-management ~]$ kubectl get pods -n awx
NAME                                               READY   STATUS      RESTARTS   AGE
ansible-awx-migration-24.6.1-[redacted]            0/1     Completed   0          7m39s
ansible-awx-task-[redacted]                        4/4     Running     0          8m52s
ansible-awx-web-[redacted]                         3/3     Running     0          8m54s
awx-operator-controller-manager-[redacted]         2/2     Running     0          10m
[k8s-management@k8s-management ~]$ kubectl get svc -n awx
NAME                                               TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)    AGE
ansible-awx-service                                ClusterIP   10.[redacted].78    <none>        80/TCP     9m5s
awx-operator-controller-manager-metrics-service    ClusterIP   10.[redacted].128   <none>        8443/TCP   10m
```

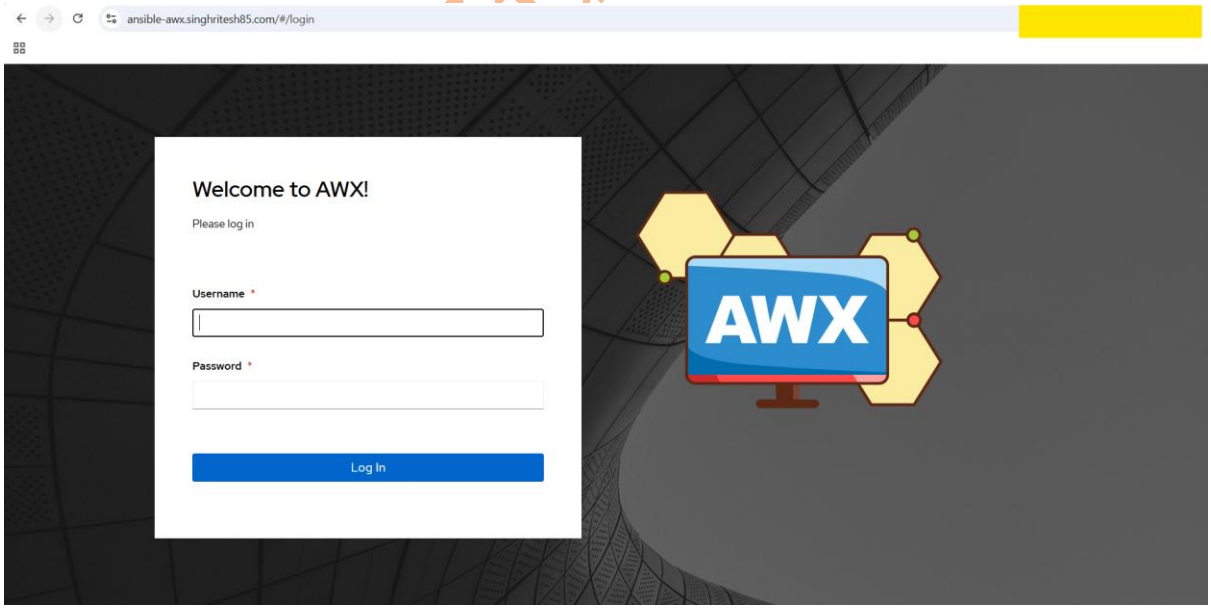
Created Kubernetes Gateway API in EKS as discussed in Module-1 as shown in screenshot attached below.

```
[k8s-management@k8s-management ~]$ kubectl apply -f https://github.com/kubernetes-sigs/gateway-api/releases/download/v1.4.0/standard-install.yaml [redacted]

helm upgrade --install ngf oci://ghcr.io/nginx/charts/nginx-gateway-fabric --create-namespace -n nginx-gateway [redacted]
customresourcedefinition.apiextensions.k8s.io/backendtlspolicies.gateway.networking.k8s.io created
customresourcedefinition.apiextensions.k8s.io/gatewayclasses.gateway.networking.k8s.io created
customresourcedefinition.apiextensions.k8s.io/gateways.gateway.networking.k8s.io created
customresourcedefinition.apiextensions.k8s.io/grpcroutes.gateway.networking.k8s.io created
customresourcedefinition.apiextensions.k8s.io/httproutes.gateway.networking.k8s.io created
customresourcedefinition.apiextensions.k8s.io/referencegrants.gateway.networking.k8s.io created
Release "ngf" does not exist. Installing it now.
Pulled: ghcr.io/nginx/charts/nginx-gateway-fabric:2.4.1
Digest: [redacted]
NAME: ngf
LAST DEPLOYED: Mon Feb 16 09:47:25 2026
NAMESPACE: nginx-gateway
STATUS: deployed
REVISION: 1
TEST SUITE: None
[k8s-management@k8s-management ~]$ kubectl create secret tls tls-awx-ingress --cert=STAR_singhritesh85_com.crt --key=mykey.key -n awx --context=arn:aws:eks:us
-east-2:02[redacted]6:cluster/eks-demo-cluster-dev
secret/tls-awx-ingress created
[k8s-management@k8s-management ~]$ kubectl get svc -n awx
NAME                                               TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)    AGE
ansible-awx-service                                ClusterIP   10.[redacted].78    <none>        80/TCP     18m
awx-operator-controller-manager-metrics-service    ClusterIP   10.[redacted].128   <none>        8443/TCP   20m
[k8s-management@k8s-management ~]$ kubectl apply -f gateway-api.yaml
gateway.gateway.networking.k8s.io/awx-gateway created
httproute.gateway.networking.k8s.io/awx-http-to-https-redirect created
httproute.gateway.networking.k8s.io/awx-route-https created
[k8s-management@k8s-management ~]$ kubectl get svc -n awx
NAME                                               TYPE           CLUSTER-IP       EXTERNAL-IP                                                                PO
RT(S)                     AGE
ansible-awx-service                                ClusterIP      10.[redacted].78    <none>                                                                     80
/TCP                      19m
awx-gateway-nginx                                  LoadBalancer   10.[redacted]244    a[redacted]3.us-east-2.elb.amazonaws.com                                   80
:31710/TCP,443:31000/TCP  6s
awx-operator-controller-manager-metrics-service    ClusterIP      10.[redacted].128   <none>                                                                     84
```

I did the entry for LoadBalancer Service DNS Name in GCP Cloud DNS Zone to create the Record Set of CNAME Type as shown in the screenshot attached below.



Finally, I was able to access the Ansible-Awx as shown in the screenshot attached below.



Now, I will reset the Ansible-Awx **admin** user **password** using the procedure as explained below.

kubectl get pods -n awx

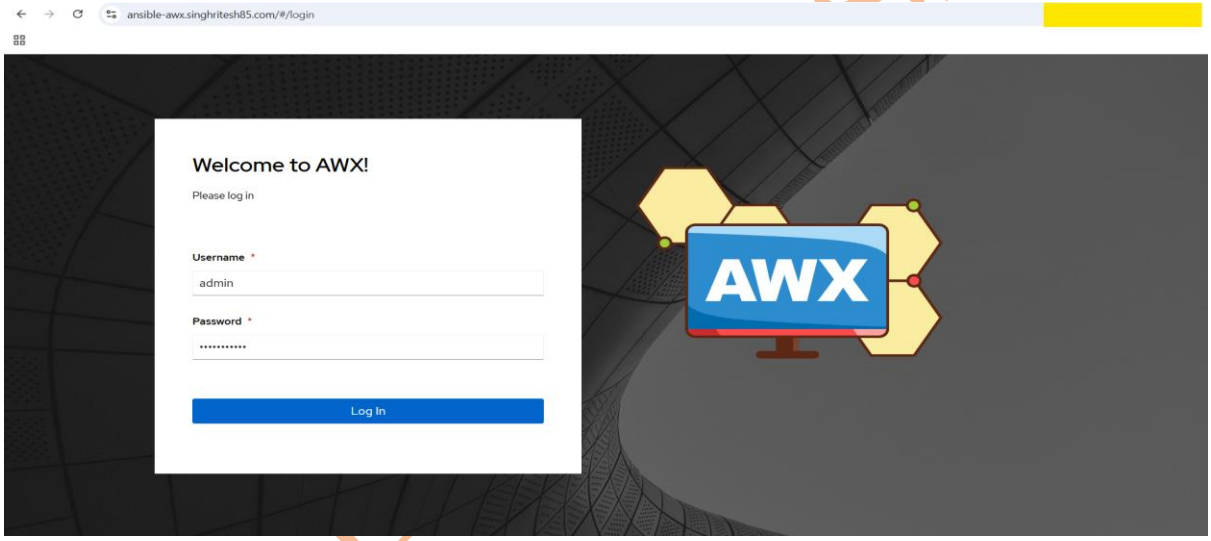
Log-into the ansible-awx-web Pod as shown below

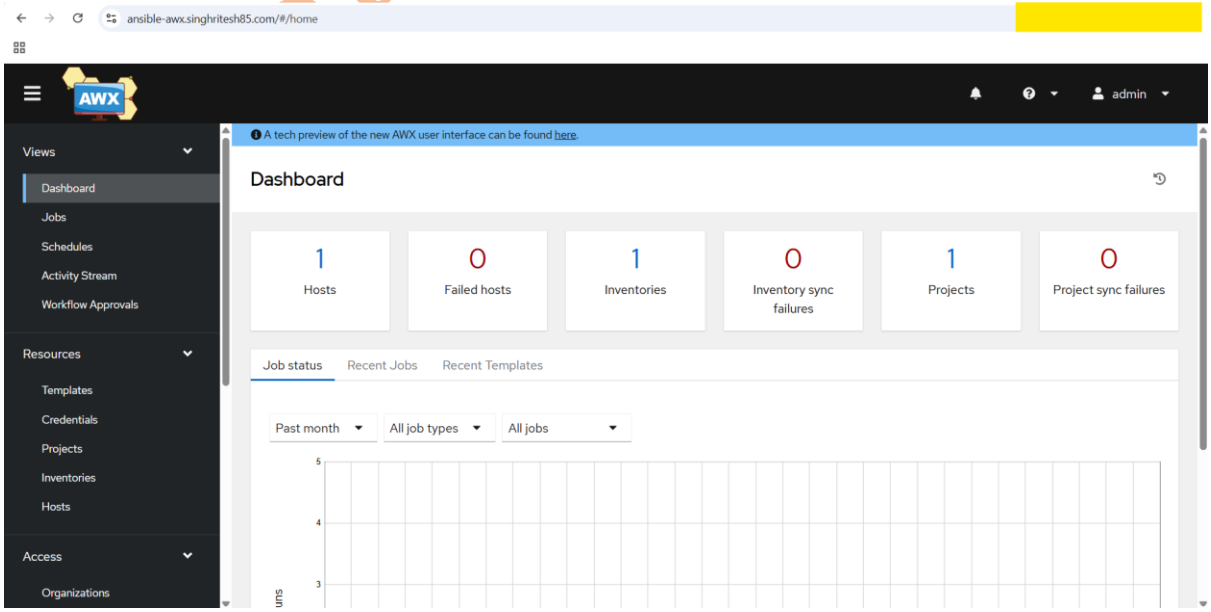
kubectl exec -it <ansible-awx-web pod> -n awx -- bash

awx-manage update_password --username=admin --password=<provide-your-password-here>

```
[k8s-management@k8s-management ~]$ kubectl get pods -n awx
NAME                                               READY   STATUS      RESTARTS   AGE
ansible-awx-migration-24.6.1-                      0/1     Completed   0          51m
ansible-awx-task-                                  4/4     Running     0          53m
ansible-awx-web-                                   3/3     Running     0          53m
awx-gateway-nginx-                                 1/1     Running     0          33m
awx-operator-controller-manager-                   2/2     Running     0          54m
[k8s-management@k8s-management ~]$ kubectl exec -it ansible-awx-web-                -n awx -- bash
bash-5.1$ awx-manage update_password --username=admin --password=
Password updated
```

Then, I logged-into the Ansible-Awx using the updated password as shown below.





Now, you can proceed further with the steps as I discussed in module-1.

GitHub Repo: - https://github.com/singhritesh85/DevOps-Project-Ansible-Awx.git

Helm Repo: - https://github.com/singhritesh85/helm-repo-for-bitnami-postgresql-ha.git

https://github.com/singhritesh85/helm-repo-for-bitnami-postgresql-ha-onlyservice.git