

IBM watsonx Discovery Installation Guide on OpenShift (OCP) Airgapped Environment

General Information

- **Product:** IBM watsonx Discovery
 - **Version:** 9.0.3
 - **Deployment environment:** OpenShift Container Platform (OCP) - Airgapped
 - **Installation date:** 18/07/2025
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Installer Information

- **Installer name:** John Moreno
 - **Email:** john.moreno@ibm.com
 - **Role/Title:** Solutions Architect
 - **Company / Organization:** IBM ExpertLabs
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Prerequisites

Infrastructure

- OpenShift Container Platform: 4.14
- Access to download Images
- Access to git repository
- Internal/private container image registry
- Bastion machine to download the images
- Elastic License
- [CRDs.yaml](#)
- [operator.yaml](#)

Software Requirements

- Podman / Docker for image management
-

Environment Preparation

1. Validate OCP cluster status and node health
2. [Download the images from IBM SharePoint](#)
3. Clone the project repository to your local machine:

```
git git@github.com:jmorenor86/scaffolding-infra.git
cd scaffolding-infra
```

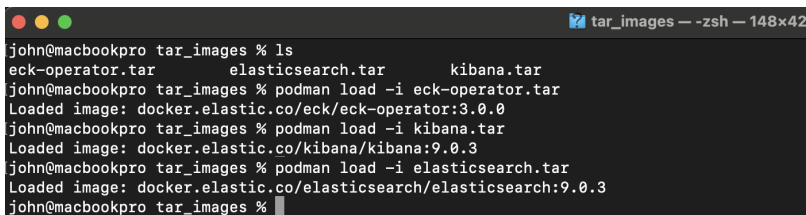
4. Download license in json format

```
{
  "license": {
  }
}
```

5. Download the images and load into bastion

```
podman load -i <PATH_FOLDER_DOWNLOAD_IMAGES>/elasticsearch.tar
podman load -i <PATH_FOLDER_DOWNLOAD_IMAGES>/kibana.tar
podman load -i <PATH_FOLDER_DOWNLOAD_IMAGES>/eck-operator.tar
```

e.g.



```
tar_images --zsh -- 148x42
john@macbookpro tar_images % ls
eck-operator.tar      elasticsearch.tar      kibana.tar
john@macbookpro tar_images % podman load -i eck-operator.tar
Loaded image: docker.elastic.co/eck/eck-operator:3.0.0
john@macbookpro tar_images % podman load -i kibana.tar
Loaded image: docker.elastic.co/kibana/kibana:9.0.3
john@macbookpro tar_images % podman load -i elasticsearch.tar
Loaded image: docker.elastic.co/elasticsearch/elasticsearch:9.0.3
john@macbookpro tar_images %
```

6. Modify the file on-ocp.sh

```
# Set to true if installing in an airgapped (disconnected) environment;
false otherwise.
# Controls which templates and resources the script uses during
deployment.
export AIRGAPPED=true
# Set to true if you are already logged into the OCP cluster
# Set to false if you want the script to log in using OCP_HOST, OCP_USER,
and OCP_PASSWORD
export EXIST_LOGIN_OCP=true
export OCP_HOST="CHANGE_ME"
export OCP_USER="CHANGE_ME"
export OCP_PASSWORD="CHANGE_ME"
## Variables for setting up the Elastic cluster
export ES_NAMESPACE="elastic"
export ES_CLUSTER="wxd"
export ES_STORAGE="50Gi"
export ES_VERSION="9.0.3"
export ES_NODES="3"
export ES_CONTAINER_NAME="elasticsearch"
export ES_CONTAINER_REQUEST_MEMORY="8Gi"
export ES_CONTAINER_REQUEST_CPU="2"
export ES_CONTAINER_LIMIT_MEMORY="8Gi"
export ES_CONTAINER_LIMIT_CPU="8"
```

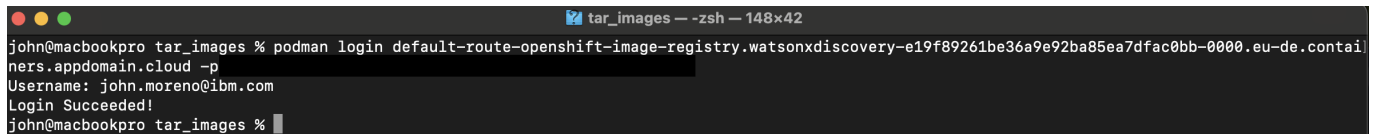
```
## change to the storage class you need to use
export STORAGECLASS="CHANGE_ME"
## Path to the crds.yaml
export ES_ECK_CRDS="CHANGE_ME"
## Path to the operator.yaml
export ES_ECK_OPERATOR="CHANGE_ME"
## Path to the license file
export LICENSE_FILE="CHANGE_ME"
```

watsonx Discovery Installation

Step 1: Log in to the container registry using Podman or Docker

```
podman login default-route-openshift-image-
registry.apps.ocpuat1.caas.central.root.alpha.gr -p <TOKEN>
```

e.g.



```
tar_images --zsh -- 148x42
john@macbookpro tar_images % podman login default-route-openshift-image-registry.watsonxdiscovery-e19f89261be36a9e92ba85ea7dfac0bb-0000.eu-de.containers.appdomain.cloud -p
Username: john.moreno@ibm.com
Login Succeeded!
john@macbookpro tar_images %
```

Step 2: Tagging the images

```
podman tag docker.elastic.co/elasticsearch/elasticsearch:9.0.3 default-
route-openshift-image-
registry.apps.ocpuat1.caas.central.root.alpha.gr/elastic/elasticsearch:9.0
.3
podman tag docker.elastic.co/elasticsearch/kibana:9.0.3 default-route-
openshift-image-
registry.apps.ocpuat1.caas.central.root.alpha.gr/elastic/kibana:9.0.3
podman tag docker.elastic.co/elasticsearch/eck-operator:3.0.0 default-
route-openshift-image-
registry.apps.ocpuat1.caas.central.root.alpha.gr/elastic-system/eck-
operator:3.0.0
```

e.g.

```

tar_images -- zsh -- 148x42
john@macbookpro tar_images % podman tag docker.elastic.co/elasticsearch/elasticsearch:9.0.3 default-route-openshift-image-registry.watsonxdiscovery-e19f89261be36a9e92ba85ea7dfac0bb-0000.eu-de.containers.appdomain.cloud/elastic/elasticsearch:9.0.3
john@macbookpro tar_images % podman tag docker.elastic.co/elasticsearch/kibana:9.0.3 default-route-openshift-image-registry.watsonxdiscovery-e19f89261be36a9e92ba85ea7dfac0bb-0000.eu-de.containers.appdomain.cloud/elastic/kibana:9.0.3
Error: failed to find image docker.elastic.co/elasticsearch/kibana:9.0.3: docker.elastic.co/elasticsearch/kibana:9.0.3: image not known
john@macbookpro tar_images % podman tag docker.elastic.co/kibana/kibana default-route-openshift-image-registry.watsonxdiscovery-e19f89261be36a9e92ba85ea7dfac0bb-0000.eu-de.containers.appdomain.cloud/elastic/kibana:9.0.3
Error: failed to find image docker.elastic.co/kibana/kibana: docker.elastic.co/kibana/kibana: image not known
john@macbookpro tar_images % podman tag docker.elastic.co/kibana/kibana:9.0.3 default-route-openshift-image-registry.watsonxdiscovery-e19f89261be36a9e92ba85ea7dfac0bb-0000.eu-de.containers.appdomain.cloud/elastic/kibana:9.0.3
john@macbookpro tar_images % podman tag docker.elastic.co/elasticsearch/eck-operator:3.0.0 default-route-openshift-image-registry.watsonxdiscovery-e19f89261be36a9e92ba85ea7dfac0bb-0000.eu-de.containers.appdomain.cloud/elastic-system/eck-operator:3.0.0
Error: failed to find image docker.elastic.co/elasticsearch/eck-operator:3.0.0: docker.elastic.co/elasticsearch/eck-operator:3.0.0: image not known
john@macbookpro tar_images % podman tag docker.elastic.co/eck/eck-operator default-route-openshift-image-registry.watsonxdiscovery-e19f89261be36a9e92ba85ea7dfac0bb-0000.eu-de.containers.appdomain.cloud/elastic-system/eck-operator:3.0.0
Error: failed to find image docker.elastic.co/eck/eck-operator: docker.elastic.co/eck/eck-operator: image not known
john@macbookpro tar_images % podman tag docker.elastic.co/eck/eck-operator:3.0.0 default-route-openshift-image-registry.watsonxdiscovery-e19f89261be36a9e92ba85ea7dfac0bb-0000.eu-de.containers.appdomain.cloud/elastic-system/eck-operator:3.0.0
john@macbookpro tar_images %

```

Step 3: Create projects

```

oc new-project elastic
oc new-project elastic-system

```

e.g.

```

tar_images -- zsh -- 148x42
john@macbookpro tar_images % oc new-project elastic
Now using project "elastic" on server "https://c100-e.eu-de.containers.cloud.ibm.com:30636".

You can add applications to this project with the 'new-app' command. For example, try:

  oc new-app rails-postgresql-example

to build a new example application in Ruby. Or use kubectl to deploy a simple Kubernetes application:

  kubectl create deployment hello-node --image=registry.k8s.io/e2e-test-images/agnhost:2.43 -- /agnhost serve-hostname
john@macbookpro tar_images % oc new-project elastic-system
Now using project "elastic-system" on server "https://c100-e.eu-de.containers.cloud.ibm.com:30636".

You can add applications to this project with the 'new-app' command. For example, try:

  oc new-app rails-postgresql-example

to build a new example application in Ruby. Or use kubectl to deploy a simple Kubernetes application:

  kubectl create deployment hello-node --image=registry.k8s.io/e2e-test-images/agnhost:2.43 -- /agnhost serve-hostname
john@macbookpro tar_images %

```

Step 4: Create Images Stream

```

oc create is elasticsearch -n elastic
oc create is kibana -n elastic
oc create is eck-operator -n elastic-system

```

Step 5: Push the images

```

podman push default-route-openshift-image-registry.apps.ocpuat1.caas.central.root.alpha.gr/elastic/elasticsearch:9.0.3
podman push default-route-openshift-image-registry.apps.ocpuat1.caas.central.root.alpha.gr/elastic/kibana:9.0.3
podman push default-route-openshift-image-

```

```
registry.apps.ocpuat1.caas.central.root.alpha.gr/elastic-system/eck-
operator:3.0.0
```

e.g.

```
john@macbookpro elastic % podman push default-route-openshift-image-registry.watsonxdiscovery-e19f89261be36a9e92ba85ea7dfac0bb-0000.eu-de.containers
.appdomain.cloud/elastic-system/eck-operator:3.0.0
Getting image source signatures
Copying blob sha256:3d4de96382b88693c9e5eed8d3ed908b8ff4ff3e82617dfa2148cc3524f1b20a
Copying blob sha256:e64109102188e0c7362ef4e9cdabc379a55758a9901331e1b13521c112c2da24
Copying config sha256:1b6e1e5fc7324738a9cac22ab3d46a89acb1e86869d2d49ea68267e1bb7d562a
Writing manifest to image destination
john@macbookpro elastic % podman push default-route-openshift-image-registry.watsonxdiscovery-e19f89261be36a9e92ba85ea7dfac0bb-0000.eu-de.containers
.appdomain.cloud/elastic/elasticsearch:9.0.3
Getting image source signatures
Copying blob sha256:e3e78d9579cb41f31e67a0f88b66a4b4c4d2350b65ef173a2f06814badd32afe
Copying blob sha256:b5cd97301a67a3e78a1895afd47cbf099427b26dfb1e0e7db3753c0217670144
Copying blob sha256:b3f0252afafcd32753c4dabb793f83a954c5fe0b965112339d1b0f162999690
Copying blob sha256:3546e43b06c780e8cbb8566113d5d85eb5043f32f98fcb7eb15a7521e174c871
Copying blob sha256:000ebc9d40d0d4a9b3c044e5eed827f001838a478a6645d2b24020a1aa26aaab
Copying blob sha256:5f70bf18a086007016e948b04aed3b82103a36bea41755b6cddf10ace3c6ef
Copying blob sha256:34465f2f1d0ff960b35501034aacbacccdf0e103ecec03bfa385e4e19da2bdc
Copying blob sha256:3d3667a1a83bb05cb3ea472a2c28e462aa2ac6532c3b212ca67b278c1eccbb3e
Copying blob sha256:4c3efdaf060d19cc66cd38c6c5d48992d3010177e725a0a28ed32bf94e6887cf
Copying blob sha256:597b3aa6ae74219fbcd478daa598b8a911fa1b4f2ddf0ce080e22fc1ddddd6e5c
Copying config sha256:fc7a4b5df48db962998e87ba721ba2fad36b0077255525b0eb730e6372e01a
Writing manifest to image destination
john@macbookpro elastic % podman push default-route-openshift-image-registry.watsonxdiscovery-e19f89261be36a9e92ba85ea7dfac0bb-0000.eu-de.containers
.appdomain.cloud/elastic/kibana:9.0.3
Getting image source signatures
Copying blob sha256:ff4dc9ec80e9aef90c9a2efb89a54a5e659a1d20693e531d69af88c0474f9cb8
Copying blob sha256:890b686a5cabcd5d180185cfaa22b11eb5c51cda69bb9f741eede09091d5a9b14
Copying blob sha256:b3f0252afafcd32753c4dabb793f83a954c5fe0b965112339d1b0f162999690
Copying blob sha256:acc68390462a1203604d636ee9f14477e1e97a628a4f89a286eda489c37464f1
Copying blob sha256:f8e42fc2bcc61530c98ef4e10ebad0f19cfd87603f4ae0897ad359a487211dcc
Copying blob sha256:aef90abe63e7c969114361db93a64d6dc7964a36d075d19fc970229113c948f9
Copying blob sha256:5f70bf18a086007016e948b04aed3b82103a36bea41755b6cddf10ace3c6ef
Copying blob sha256:94c2e30d5ab6ede6e2b5930388323eae4990b988639b777c9290afd2b6cebc34
Copying blob sha256:cd3851a0f77de94cbff42bc52da0a254047d1df690453e96e6d2edc33a7f5969
Copying blob sha256:e059147c291f05430755072c6f8fe5c474251d4583598f013498240855bd8d97
Copying blob sha256:5969b6730d489d13e305885c0cb773e1a672637c4b29e0c075cabfa42aa5e87c
Copying blob sha256:23ae57e2b0459e60030c815ae83d33a68d9015f26717261f86876e845142f841
Copying blob sha256:534f3eadd28c44d291aca07367ac9109d0ad6799b4d1afd5fe77bfeef8763d6d4
Copying blob sha256:096f30dbcebc9558b28f914e04598c8da340547c9934dcc4cd2e54424b193e21
Copying config sha256:a5435342ce06bd61de24911ea3decca37eb850d520822603d8e1c65be0cc3ff3
Writing manifest to image destination
john@macbookpro elastic %
```

Step 6: Modify the files

operator.yaml

```
spec:
  terminationGracePeriodSeconds: 10
  serviceAccountName: elastic-operator
  automountServiceAccountToken: true
  securityContext:
    runAsNonRoot: true
  containers:
  - image: "CHANGE-ME"
    imagePullPolicy: Always
```

replace with: image-registry.openshift-image-registry.svc:5000/elastic-system/eck-operator:3.0.0

template/airgapped/elastic-cluster.sh.j2

```
containers:
  - name: ${ES_CONTAINER_NAME}
```

```

image: CHANGE_ME # path to container registry
resources:
  requests:
    memory: ${ES_CONTAINER_REQUEST_MEMORY}
    cpu: ${ES_CONTAINER_REQUEST_CPU}
  limits:
    cpu: ${ES_CONTAINER_LIMIT_CPU}
    memory: ${ES_CONTAINER_LIMIT_MEMORY}

```

replace with: image-registry.openshift-image-registry.svc:5000/elastic/elasticsearch:\${ES_VERSION}

template/airgapped/kibana-instance.sh.j2

```

spec:
  containers:
    - name: kibana
      image: CHANGE_ME # path to container registry
      env:
        - name: NODE_OPTIONS
          value: "--max-old-space-size=2048"

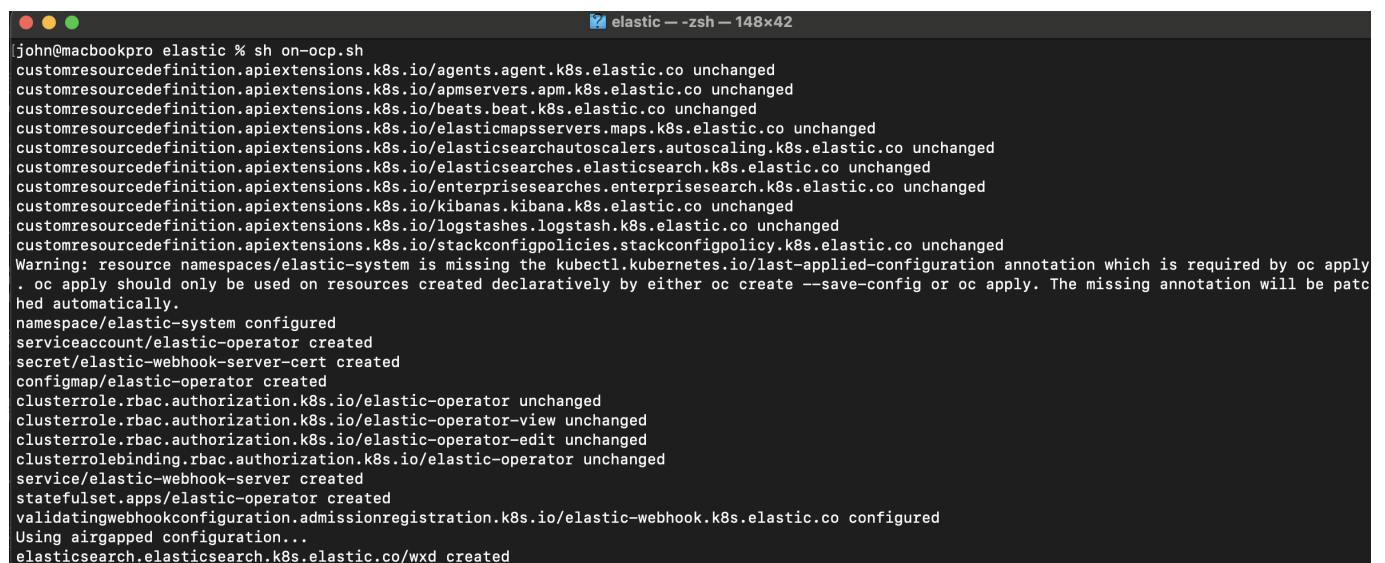
```

replace with: image-registry.openshift-image-registry.svc:5000/elastic/kibana:\${ES_VERSION}

Step 7: Run the on-ocp.sh

```
./on-ocp.sh
```

e.g.



```

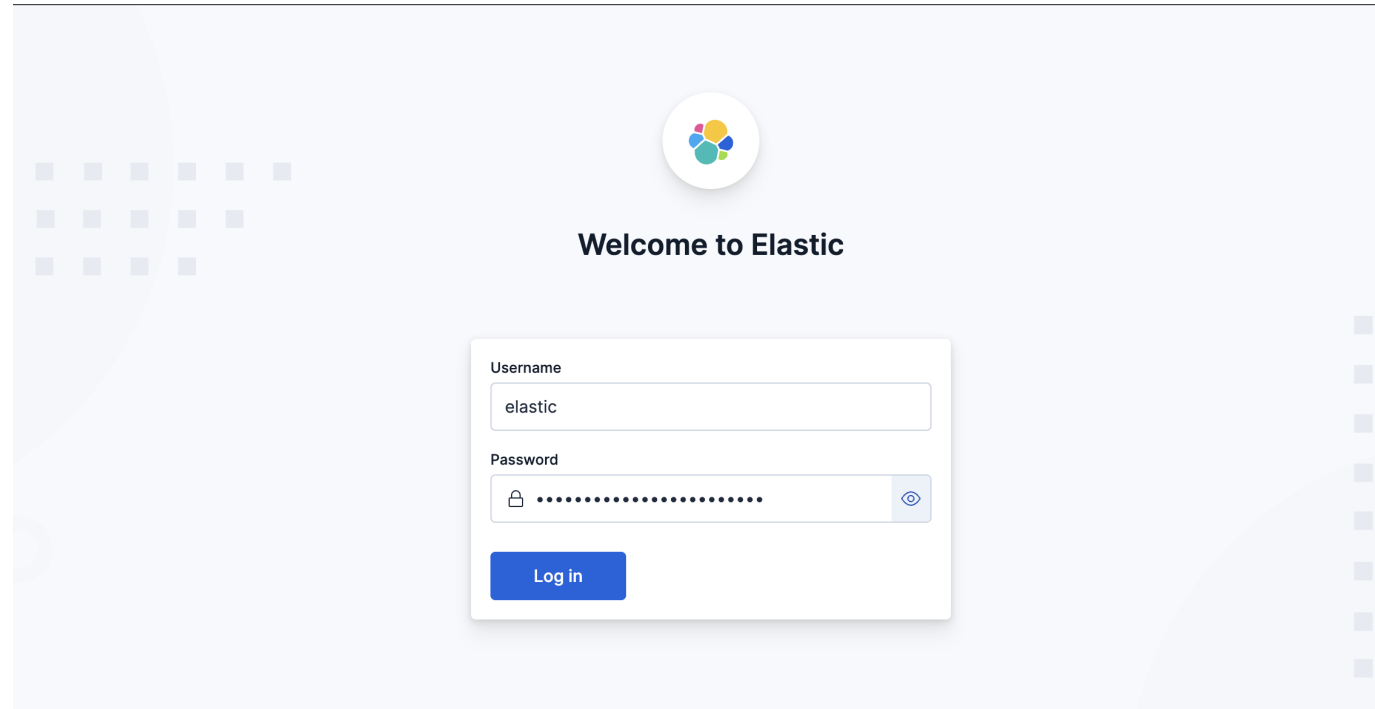
elastic — zsh — 148x42
john@macbookpro elastic % sh on-ocp.sh
customresourcedefinition.apiextensions.k8s.io/agents.agent.k8s.elastic.co unchanged
customresourcedefinition.apiextensions.k8s.io/apmservers.apm.k8s.elastic.co unchanged
customresourcedefinition.apiextensions.k8s.io/beats.beat.k8s.elastic.co unchanged
customresourcedefinition.apiextensions.k8s.io/elasticmapsservers.maps.k8s.elastic.co unchanged
customresourcedefinition.apiextensions.k8s.io/elasticsearchautoscalers.autoscaling.k8s.elastic.co unchanged
customresourcedefinition.apiextensions.k8s.io/elasticsearches.elasticsearch.k8s.elastic.co unchanged
customresourcedefinition.apiextensions.k8s.io/enterprisesearches.enterprisesearch.k8s.elastic.co unchanged
customresourcedefinition.apiextensions.k8s.io/kibanas.kibana.k8s.elastic.co unchanged
customresourcedefinition.apiextensions.k8s.io/logstash.logstash.k8s.elastic.co unchanged
customresourcedefinition.apiextensions.k8s.io/stackconfigpolicies.stackconfigpolicy.k8s.elastic.co unchanged
Warning: resource namespaces/elastic-system is missing the kubectrl.kubernetes.io/last-applied-configuration annotation which is required by oc apply
. oc apply should only be used on resources created declaratively by either oc create --save-config or oc apply. The missing annotation will be patched automatically.
namespace/elastic-system configured
serviceaccount/elastic-operator created
secret/elastic-webhook-server-cert created
configmap/elastic-operator created
clusterrole.rbac.authorization.k8s.io/elastic-operator unchanged
clusterrole.rbac.authorization.k8s.io/elastic-operator-view unchanged
clusterrole.rbac.authorization.k8s.io/elastic-operator-edit unchanged
clusterrolebinding.rbac.authorization.k8s.io/elastic-operator unchanged
service/elastic-webhook-server created
statefulset.apps/elastic-operator created
validatingwebhookconfiguration.admissionregistration.k8s.io/elastic-webhook.k8s.elastic.co configured
Using airgapped configuration...
elasticsearch.elasticsearch.k8s.elastic.co/wxd created

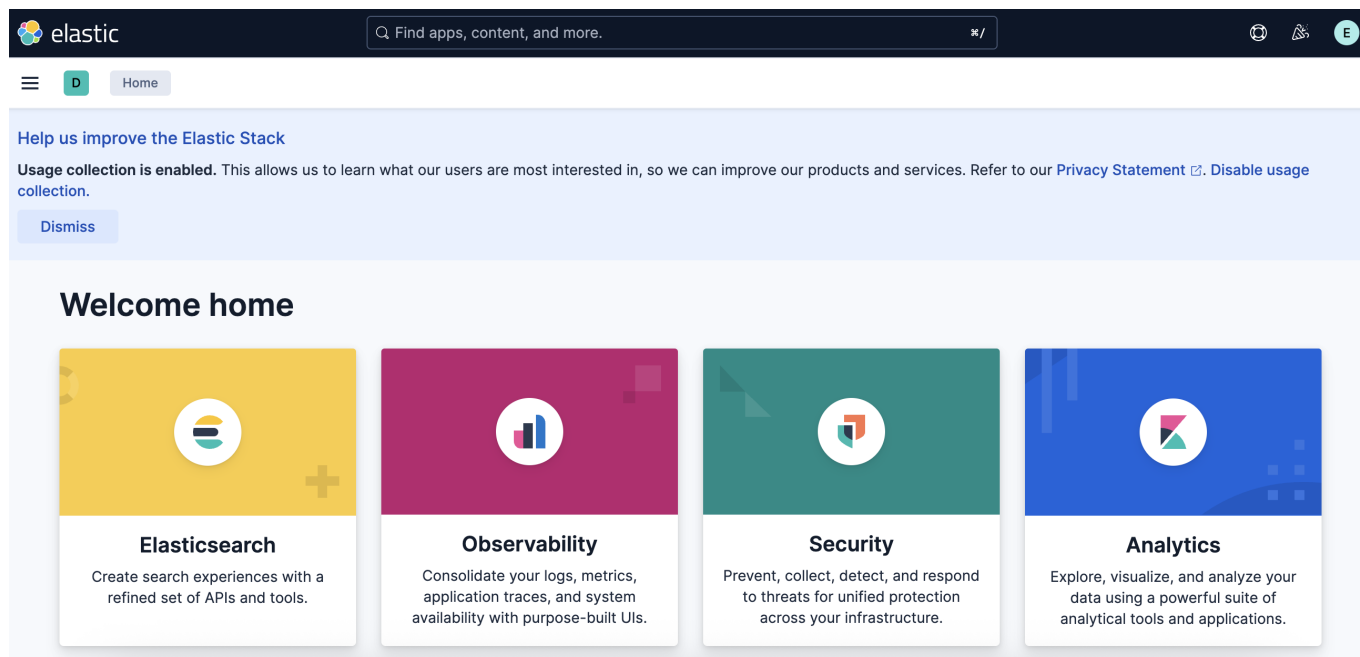
```

```
elasticsearch.elasticsearch.k8s.elastic.co/wxd created
trying elastic....
trying elastic....
trying elastic....
trying elastic....
trying elastic....
trying elastic....
Elasticsearch is healthy.
Using airgapped configuration for Kibana...
kibana.kibana.k8s.elastic.co/wxd created
trying kibana....
trying kibana....
trying kibana....
trying kibana....
Kibana is healthy.
error: error reading template/airgapped/license.json: no such file or directory
Error from server (NotFound): secrets "eck-license" not found
route.route.openshift.io/elasticsearch-kibana created
route.route.openshift.io/elasticsearch created
Elasticsearch password:
Kibana routes: NAME
PATH SERVICES PORT TERMINATION WILDCARD
elasticsearch elasticsearch-elastic.watsonxdiscovery-e19f89261be36a9e92ba85ea7dfac0bb-0000.eu-de.containers.appdomain.cloud
wxd-es-http <all> passthrough/Redirect None
elasticsearch-kibana elasticsearch-kibana-elastic.watsonxdiscovery-e19f89261be36a9e92ba85ea7dfac0bb-0000.eu-de.containers.appdomain.cloud
wxd-kb-http <all> passthrough/Redirect None
john@macbookpro elastic %
```

Step 8: Open the Kibana route

- user: elastic
- password: in console





Create users for elastic search

ROLE

```
PUT /_security/role/role-index-test
{
  "cluster": ["all"],
  "indices": [
    {
      "names": ["my-index-*"],
      "privileges": ["read", "write"]
    }
  ]
}
```

<https://www.elastic.co/docs/api/doc/elasticsearch/operation/operation-security-put-role>

User

```
POST /_security/user/jmoreno
{
  "password" : "elastic-test",
  "roles" : ["role-index-test"],
  "full_name" : "John Moreno",
  "email" : "john.moreno@ibm.com"
}
```

<https://www.elastic.co/docs/api/doc/elasticsearch/operation/operation-security-put-user>