Installing GitOps

Installing the Openshift GitOps Operator and logging in to the Argo CD instance
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Abstract

This document provides information about sizing requirements and prerequisites for installing the OpenShift GitOps Operator. It also discusses how to install the OpenShift GitOps Operator and log in to the Argo CD instance.
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CHAPTER 1. PREPARING TO INSTALL RED HAT OPENSHIFT GITOPS

Read the following information about sizing requirements and prerequisites before you install Red Hat OpenShift GitOps on OpenShift Container Platform. Sizing requirements also provides the sizing details for the default ArgoCD instance that is instantiated by the Red Hat OpenShift GitOps Operator.

1.1. SIZING REQUIREMENTS FOR GITOPS

Red Hat OpenShift GitOps is a declarative way to implement continuous deployment for cloud-native applications. Through GitOps, you can define and configure the CPU and memory requirements of your application.

Every time you install the Red Hat OpenShift GitOps Operator, the resources on the namespace are installed within the defined limits. If the default installation does not set any limits or requests, the Operator fails within the namespace with quotas. Without enough resources, the cluster cannot schedule ArgoCD related pods. The following table details the resource requests and limits for the default workloads:

<table>
<thead>
<tr>
<th>Workload</th>
<th>CPU requests</th>
<th>CPU limits</th>
<th>Memory requests</th>
<th>Memory limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>argocd-application-controller</td>
<td>1</td>
<td>2</td>
<td>1024M</td>
<td>2048M</td>
</tr>
<tr>
<td>applicationset-controller</td>
<td>1</td>
<td>2</td>
<td>512M</td>
<td>1024M</td>
</tr>
<tr>
<td>argocd-server</td>
<td>0.125</td>
<td>0.5</td>
<td>128M</td>
<td>256M</td>
</tr>
<tr>
<td>argocd-repo-server</td>
<td>0.5</td>
<td>1</td>
<td>256M</td>
<td>1024M</td>
</tr>
<tr>
<td>argocd-redis</td>
<td>0.25</td>
<td>0.5</td>
<td>128M</td>
<td>256M</td>
</tr>
<tr>
<td>argocd-dex</td>
<td>0.25</td>
<td>0.5</td>
<td>128M</td>
<td>256M</td>
</tr>
<tr>
<td>HAProxy</td>
<td>0.25</td>
<td>0.5</td>
<td>128M</td>
<td>256M</td>
</tr>
</tbody>
</table>

Optionally, you can also use the ArgoCD custom resource with the `oc` command to see the specifics and modify them:

```
oc edit argocd <name of argo cd> -n namespace
```
CHAPTER 2. INSTALLING RED HAT OPENSSHIFT GITOPS

Red Hat OpenShift GitOps uses Argo CD to manage specific cluster-scoped resources, including cluster Operators, optional Operator Lifecycle Manager (OLM) Operators, and user management.

2.1. PREREQUISITES

- You have access to the OpenShift Container Platform web console.
- You are logged in as a user with the `cluster-admin` role.
- You are logged in to the OpenShift Container Platform cluster as an administrator.
- Your cluster has the Marketplace capability enabled or the Red Hat Operator catalog source configured manually.

**WARNING**

If you have already installed the Community version of the Argo CD Operator, remove the Argo CD Community Operator before you install the Red Hat OpenShift GitOps Operator.

This guide explains how to install the Red Hat OpenShift GitOps Operator to an OpenShift Container Platform cluster and log in to the Argo CD instance.

**IMPORTANT**

The latest channel enables installation of the most recent stable version of the Red Hat OpenShift GitOps Operator. Currently, it is the default channel for installing the Red Hat OpenShift GitOps Operator.

To install a specific version of the Red Hat OpenShift GitOps Operator, cluster administrators can use the corresponding `gitops-<version>` channel. For example, to install the Red Hat OpenShift GitOps Operator version 1.8.x, you can use the `gitops-1.8` channel.

2.2. INSTALLING RED HAT OPENS SHIFT GITOPS OPERATOR IN WEB CONSOLE

You can install Red Hat OpenShift GitOps Operator from the OperatorHub by using the web console.

**Procedure**

1. Open the Administrator perspective of the web console and go to Operators → OperatorHub.
2. Search for OpenShift GitOps, click the Red Hat OpenShift GitOps tile, and then click Install.
3. On the Install Operator page:
a. Select an **Update channel**.

b. Select a GitOps **Version** to install.

c. Choose an **Installed Namespace**. The default installation namespace is **openshift-gitops-operator**.

    **NOTE**
    For the GitOps version 1.10 and later, the default namespace changed from **openshift-operators** to **openshift-gitops operator**.

d. Select the **Enable Operator recommended cluster monitoring on this Namespace** checkbox to enable cluster monitoring.

    **NOTE**
    You can enable cluster monitoring on any namespace by applying the **openshift.io/cluster-monitoring=true** label:

    ```bash
    $ oc label namespace <namespace> openshift.io/cluster-monitoring=true
    namespace/<namespace> labeled
    ```

4. Click **Install** to make the GitOps Operator available on the OpenShift Container Platform cluster.

    Red Hat OpenShift GitOps is installed in all namespaces of the cluster.

5. Verify that the Red Hat OpenShift GitOps Operator is listed in **Operators → Installed Operators**. The **Status** should resolve to **Succeeded**.

After the Red Hat OpenShift GitOps Operator is installed, it automatically sets up a ready-to-use Argo CD instance that is available in the **openshift-gitops** namespace, and an Argo CD icon is displayed in the console toolbar. You can create subsequent Argo CD instances for your applications under your projects.

### 2.3. INSTALLING RED HAT OPENSHIFT GITOPS OPERATOR USING CLI

You can install Red Hat OpenShift GitOps Operator from the OperatorHub by using the CLI.

    **NOTE**
    For the GitOps version 1.10 and later, the default namespace changed from **openshift-operators** to **openshift-gitops operator**.

**Procedure**

1. Create a **openshift-gitops-operator** namespace:

    ```bash
    $ oc create ns openshift-gitops-operator
    ```
Example output

namespace/openshift-gitops-operator created

NOTE

You can enable cluster monitoring on openshift-gitops-operator, or any namespace, by applying the openshift.io/cluster-monitoring=true label:

```bash
$ oc label namespace <namespace> openshift.io/cluster-monitoring=true
```

Example output

namespace/<namespace> labeled

2. Create a **OperatorGroup** object YAML file, for example, **gitops-operator-group.yaml**:

**Example OperatorGroup**

```yaml
apiVersion: operators.coreos.com/v1
kind: OperatorGroup
metadata:
  name: openshift-gitops-operator
  namespace: openshift-gitops-operator
spec:
  upgradeStrategy: Default

$ oc apply -f gitops-operator-group.yaml
```

Example output

operatorgroup.operators.coreos.com/openshift-gitops-operator created

3. Apply the **OperatorGroup** to the cluster:

```bash
$ oc apply -f gitops-operator-group.yaml
```

Example output

operatorgroup.operators.coreos.com/openshift-gitops-operator created

4. Create a **Subscription** object YAML file to subscribe a namespace to the Red Hat OpenShift GitOps Operator, for example, **openshift-gitops-sub.yaml**:

**Example Subscription**

```yaml
apiVersion: operators.coreos.com/v1alpha1
kind: Subscription
metadata:
  name: openshift-gitops-operator
  namespace: openshift-gitops-operator
spec:
  channel: latest
  installPlanApproval: Automatic
  name: openshift-gitops-operator
  source: redhat-operators
  sourceNamespace: openshift-marketplace
```

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Specify the channel name from where you want to subscribe the Operator.

Specify the name of the Operator to subscribe to.

Specify the name of the CatalogSource that provides the Operator.

The namespace of the CatalogSource. Use `openshift-marketplace` for the default OperatorHub CatalogSources.

5. Apply the **Subscription** to the cluster:

```
$ oc apply -f openshift-gitops-sub.yaml
```

**Example output**

```
subscription.operators.coreos.com/openshift-gitops-operator created
```

6. After the installation is complete, verify that all the pods in the **openshift-gitops** namespace are running:

```
$ oc get pods -n openshift-gitops
```

**Example output**

```
NAME                                                         READY   STATUS    RESTARTS   AGE
cluster-b5798d6f9-zr576                                      1/1    Running   0          65m
kam-69866d7c48-8nsjv                                         1/1    Running   0          65m
openshift-gitops-application-set-controller-6447b8dfdd-5ckgh   1/1    Running   0          65m
openshift-gitops-dex-server-569b498bd9-vf6mr                  1/1     Running   0          65m
openshift-gitops-operator-controller-manager-664966d547-vr4vb  2/2     Running   0          65m
```

7. Verify that the pods in the **openshift-gitops-operator** namespace are running:

```
$ oc get pods -n openshift-gitops-operator
```

**Example output**

```
NAME                                                                 READY   STATUS    RESTARTS   AGE
openshift-gitops-operator-controller-manager-664966d547-vr4vb      2/2     Running   0          65m
```

2.4. LOGGING IN TO THE ARGO CD INSTANCE BY USING THE ARGO CD ADMIN ACCOUNT

Red Hat OpenShift GitOps Operator automatically creates a ready-to-use Argo CD instance that is available in the **openshift-gitops** namespace.

**Prerequisites**
You have installed the Red Hat OpenShift GitOps Operator in your cluster.

### Procedure

1. In the Administrator perspective of the web console, navigate to Operators → Installed Operators to verify that the Red Hat OpenShift GitOps Operator is installed.

2. Navigate to the menu → OpenShift GitOps → Cluster Argo CD. The login page of the Argo CD UI is displayed in a new window.

3. Optional: To log in with your OpenShift Container Platform credentials, ensure you are a user of the cluster-admins group and then select the LOG IN VIA OPENSHIFT option in the Argo CD user interface.

   **NOTE**

   To be a user of the cluster-admins group, use the `oc adm groups new cluster-admins <user>` command, where `<user>` is the default cluster role that you can bind to users and groups cluster-wide or locally.

4. To log in with your username and password, obtain the password for the Argo CD instance:

   a. In the left panel of the console, use the perspective switcher to switch to the Developer perspective.

   b. Use the Project drop-down list and select the openshift-gitops project.

   c. Use the left navigation panel to navigate to the Secrets page.

   d. Select the openshift-gitops-cluster instance to display the password.

   e. Copy the password.

5. Use this password and admin as the username to log in to the Argo CD UI in the new window.

   **NOTE**

   You cannot create two Argo CD CRs in the same namespace.