OpenShift Container Platform 4.8

CLI tools

Learning how to use the command-line tools for OpenShift Container Platform

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Legal Notice

Abstract

This document provides information about installing, configuring, and using the command-line tools for OpenShift Container Platform. It also contains a reference of CLI commands and examples of how to use them.

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CHAPTER 1. OPENSHIFT CONTAINER PLATFORM CLI TOOLS OVERVIEW

A user performs a range of operations while working on OpenShift Container Platform such as the following:

- Managing clusters
- Building, deploying, and managing applications
- Managing deployment processes
- Developing Operators
- Creating and maintaining Operator catalogs

OpenShift Container Platform offers a set of command-line interface (CLI) tools that simplify these tasks by enabling users to perform various administration and development operations from the terminal. These tools expose simple commands to manage the applications, as well as interact with each component of the system.

1.1. LIST OF CLI TOOLS

The following set of CLI tools are available in OpenShift Container Platform:

- OpenShift CLI (oc): This is the most commonly used CLI tool by OpenShift Container Platform users. It helps both cluster administrators and developers to perform end-to-end operations across OpenShift Container Platform using the terminal. Unlike the web console, it allows the user to work directly with the project source code using command scripts.
- Developer CLI (odo): The **odo** CLI tool helps developers focus on their main goal of creating and maintaining applications on OpenShift Container Platform by abstracting away complex Kubernetes and OpenShift Container Platform concepts. It helps the developers to write, build, and debug applications on a cluster from the terminal without the need to administer the cluster.
- Knative CLI (kn): The Knative (**kn**) CLI tool provides simple and intuitive terminal commands that can be used to interact with OpenShift Serverless components, such as Knative Serving and Eventing.
- Pipelines CLI (tkn): OpenShift Pipelines is a continuous integration and continuous delivery (CI/CD) solution in OpenShift Container Platform, which internally uses Tekton. The **tkn** CLI tool provides simple and intuitive commands to interact with OpenShift Pipelines using the terminal.
- opm CLI: The **opm** CLI tool helps the Operator developers and cluster administrators to create and maintain the catalogs of Operators from the terminal.
- Operator SDK: The Operator SDK, a component of the Operator Framework, provides a CLI tool that Operator developers can use to build, test, and deploy an Operator from the terminal. It simplifies the process of building Kubernetes-native applications, which can require deep, application-specific operational knowledge.

CHAPTER 2. OPENSHIFT CLI (OC)

2.1. GETTING STARTED WITH THE OPENSHIFT CLI

2.1.1. About the OpenShift CLI

With the OpenShift command-line interface (CLI), the **oc** command, you can create applications and manage OpenShift Container Platform projects from a terminal. The OpenShift CLI is ideal in the following situations:

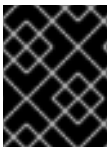
- Working directly with project source code
- Scripting OpenShift Container Platform operations
- Managing projects while restricted by bandwidth resources and the web console is unavailable

2.1.2. Installing the OpenShift CLI

You can install the OpenShift CLI (**oc**) either by downloading the binary or by using an RPM.

2.1.2.1. Installing the OpenShift CLI by downloading the binary

You can install the OpenShift CLI (**oc**) to interact with OpenShift Container Platform from a command-line interface. You can install **oc** on Linux, Windows, or macOS.



IMPORTANT

If you installed an earlier version of **oc**, you cannot use it to complete all of the commands in OpenShift Container Platform 4.8. Download and install the new version of **oc**.

Installing the OpenShift CLI on Linux
You can install the OpenShift CLI (**oc**) binary on Linux by using the following procedure.

Procedure

1. Navigate to the OpenShift Container Platform downloads page on the Red Hat Customer Portal.
2. Select the appropriate version in the **Version** drop-down menu.
3. Click **Download Now** next to the **OpenShift v4.8 Linux Client** entry and save the file.
4. Unpack the archive:

```
$ tar xvzf <file>
```

5. Place the **oc** binary in a directory that is on your **PATH**.
   To check your **PATH**, execute the following command:

```
$ echo $PATH
```

After you install the OpenShift CLI, it is available using the **oc** command:

```
$ oc <command>
```

Installing the OpenShift CLI on Windows
You can install the OpenShift CLI (**oc**) binary on Windows by using the following procedure.

Procedure

1. Navigate to the OpenShift Container Platform downloads page on the Red Hat Customer Portal.
2. Select the appropriate version in the **Version** drop-down menu.
3. Click **Download Now** next to the **OpenShift v4.8 Windows Client** entry and save the file.
4. Unzip the archive with a ZIP program.
5. Move the **oc** binary to a directory that is on your **PATH**.
   To check your **PATH**, open the command prompt and execute the following command:

   ```
   C:\> path
   ```

After you install the OpenShift CLI, it is available using the **oc** command:

```
C:\> oc <command>
```

Installing the OpenShift CLI on macOS
You can install the OpenShift CLI (**oc**) binary on macOS by using the following procedure.

Procedure

1. Navigate to the OpenShift Container Platform downloads page on the Red Hat Customer Portal.
2. Select the appropriate version in the **Version** drop-down menu.
3. Click **Download Now** next to the **OpenShift v4.8 MacOSX Client** entry and save the file.
4. Unpack and unzip the archive.
5. Move the **oc** binary to a directory on your PATH.
   To check your **PATH**, open a terminal and execute the following command:

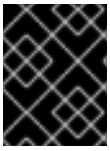
   ```
   $ echo $PATH
   ```

After you install the OpenShift CLI, it is available using the **oc** command:

```
$ oc <command>
```

2.1.2.2. Installing the OpenShift CLI by using the web console

You can install the OpenShift CLI (**oc**) to interact with OpenShift Container Platform from a web console. You can install **oc** on Linux, Windows, or macOS.



IMPORTANT

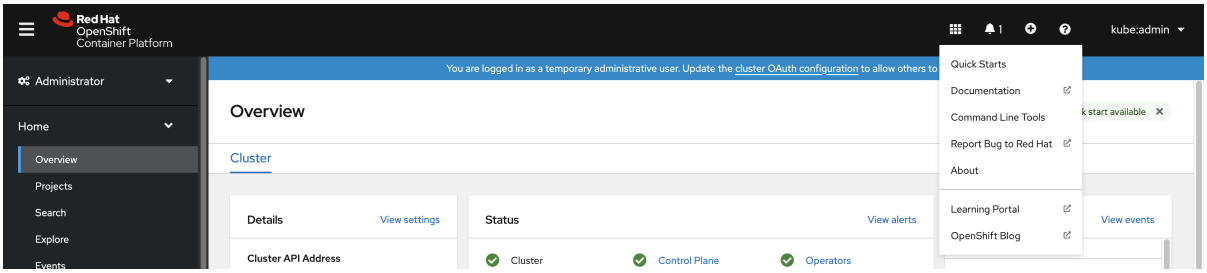
If you installed an earlier version of **oc**, you cannot use it to complete all of the commands in OpenShift Container Platform 4.8. Download and install the new version of **oc**.

2.1.2.2.1. Installing the OpenShift CLI on Linux using the web console

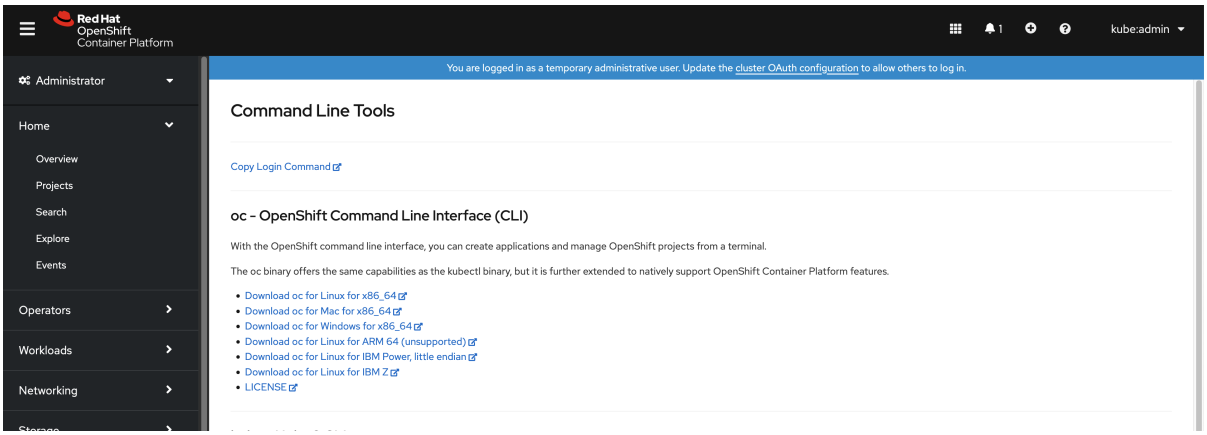
You can install the OpenShift CLI (**oc**) binary on Linux by using the following procedure.

Procedure

1. From the web console, click **?**.



2. Click **Command Line Tools**.



3. Select appropriate **oc** binary for your Linux platform, and then click **Download oc for Linux**
4. Save the file.
5. Unpack the archive.

```
$ tar xvzf <file>
```

6. Move the **oc** binary to a directory that is on your **PATH**.
   To check your **PATH**, execute the following command:

```
$ echo $PATH
```

After you install the OpenShift CLI, it is available using the **oc** command:

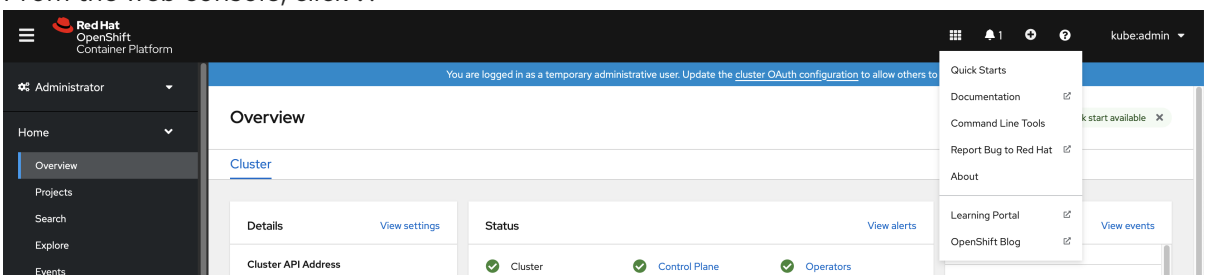
```
$ oc <command>
```

2.1.2.2.2. Installing the OpenShift CLI on Windows using the web console

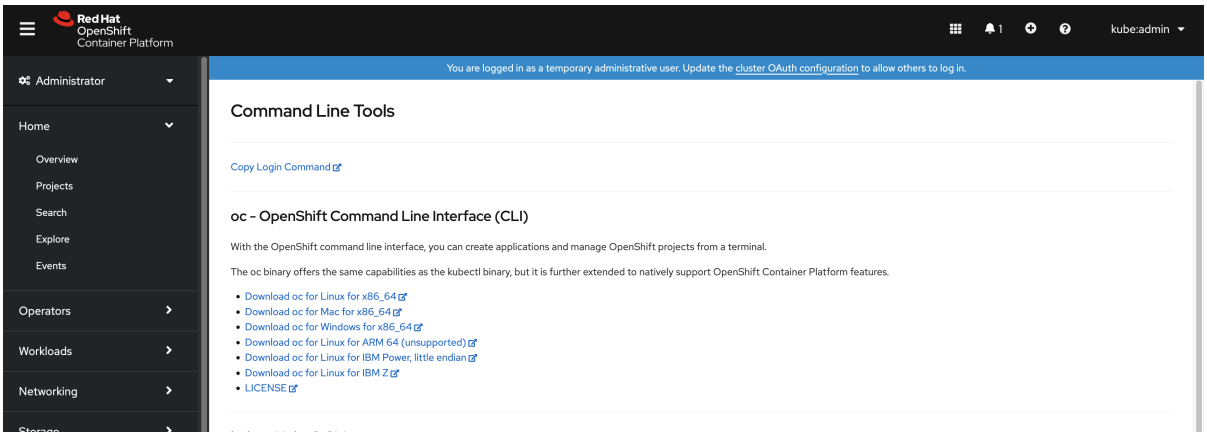
You can install the OpenShift CLI (**oc**) binary on Winndows by using the following procedure.

Procedure

1. From the web console, click **?**.



2. Click **Command Line Tools**.



3. Select the **oc** binary for Windows platform, and then click **Download oc for Windows for x86_64**.

4. Save the file.

5. Unzip the archive with a ZIP program.

6. Move the **oc** binary to a directory that is on your **PATH**.
   To check your **PATH**, open the command prompt and execute the following command:

```
C:\> path
```

After you install the OpenShift CLI, it is available using the **oc** command:

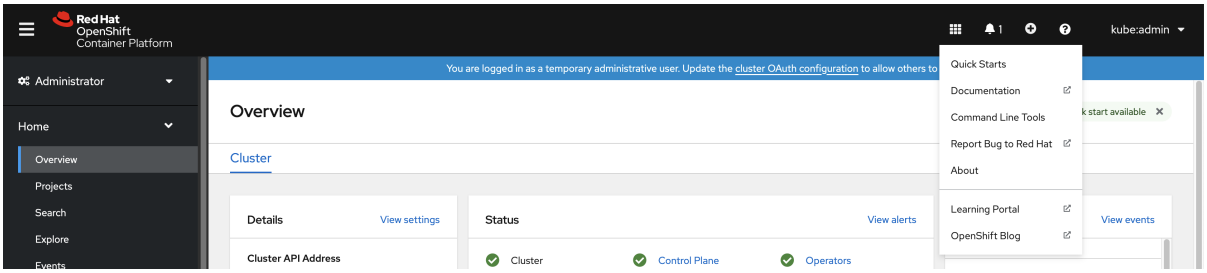
```
C:\> oc <command>
```

2.1.2.2.3. Installing the OpenShift CLI on macOS using the web console

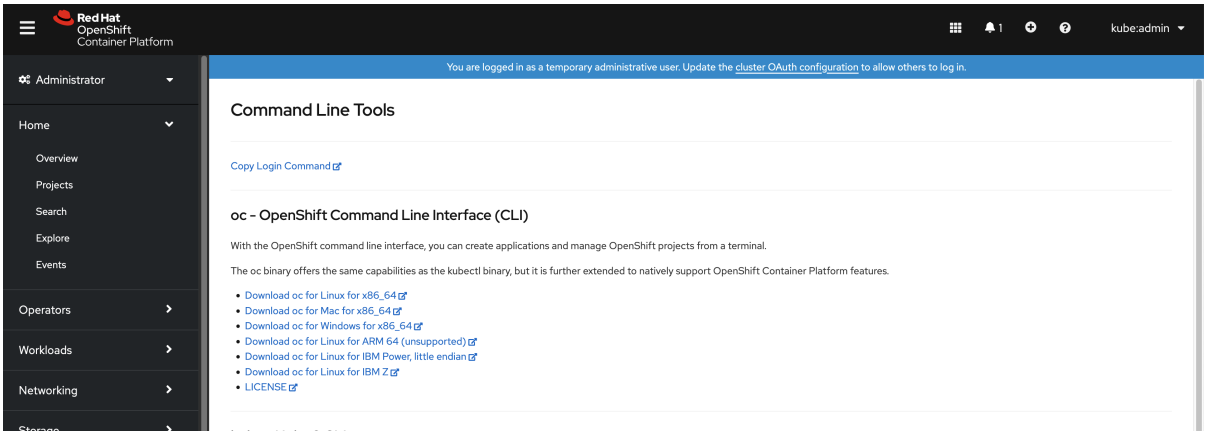
You can install the OpenShift CLI (**oc**) binary on macOS by using the following procedure.

Procedure

1. From the web console, click **?**.



2. Click **Command Line Tools**.



3. Select the **oc** binary for macOS platform, and then click **Download oc for Mac for x86_64**
4. Save the file.
5. Unpack and unzip the archive.
6. Move the **oc** binary to a directory on your PATH.
   To check your **PATH**, open a terminal and execute the following command:

```
$ echo $PATH
```

After you install the OpenShift CLI, it is available using the **oc** command:

```
$ oc <command>
```

2.1.2.3. Installing the OpenShift CLI by using an RPM

For Red Hat Enterprise Linux (RHEL), you can install the OpenShift CLI (**oc**) as an RPM if you have an active OpenShift Container Platform subscription on your Red Hat account.

Prerequisites

- Must have root or sudo privileges.

Procedure

1. Register with Red Hat Subscription Manager:

```
# subscription-manager register
```

2. Pull the latest subscription data:

```
# subscription-manager refresh
```

3. List the available subscriptions:

```
# subscription-manager list --available --matches '*OpenShift*'
```

4. In the output for the previous command, find the pool ID for an OpenShift Container Platform subscription and attach the subscription to the registered system:

```
# subscription-manager attach --pool=<pool_id>
```

5. Enable the repositories required by OpenShift Container Platform 4.8.
   - For Red Hat Enterprise Linux 8:

```
# subscription-manager repos --enable="rhocp-4.8-for-rhel-8-x86_64-rpms"
```

   - For Red Hat Enterprise Linux 7:

```
# subscription-manager repos --enable="rhel-7-server-ose-4.8-rpms"
```

6. Install the **openshift-clients** package:

```
# yum install openshift-clients
```

After you install the CLI, it is available using the **oc** command:

```
$ oc <command>
```

2.1.2.4. Installing the OpenShift CLI by using Homebrew

For macOS, you can install the OpenShift CLI (**oc**) by using the Homebrew package manager.

Prerequisites

- You must have Homebrew (**brew**) installed.

Procedure

- Run the following command to install the openshift-cli package:

```
$ brew install openshift-cli
```

2.1.3. Logging in to the OpenShift CLI

You can log in to the OpenShift CLI (**oc**) to access and manage your cluster.

Prerequisites

- You must have access to an OpenShift Container Platform cluster.

- You must have installed the OpenShift CLI (**oc**).

NOTE

To access a cluster that is accessible only over an HTTP proxy server, you can set the **HTTP_PROXY**, **HTTPS_PROXY** and **NO_PROXY** variables. These environment variables are respected by the **oc** CLI so that all communication with the cluster goes through the HTTP proxy.

Authentication headers are sent only when using HTTPS transport.

Procedure

1. Enter the **oc login** command and pass in a user name:

```
$ oc login -u user1
```

2. When prompted, enter the required information:

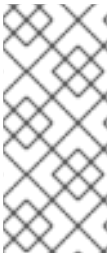
Example output

```
Server [https://localhost:8443]: https://openshift.example.com:6443 (1)
The server uses a certificate signed by an unknown authority.
You can bypass the certificate check, but any data you send to the server could be intercepted by others.
Use insecure connections? (y/n): y (2)

Authentication required for https://openshift.example.com:6443 (openshift)
Username: user1
Password: (3)
Login successful.

You don't have any projects. You can try to create a new project, by running

    oc new-project <projectname>

Welcome! See 'oc help' to get started.
```

(1) Enter the OpenShift Container Platform server URL.

(2) Enter whether to use insecure connections.

(3) Enter the user's password.



NOTE

If you are logged in to the web console, you can generate an **oc login** command that includes your token and server information. You can use the command to log in to the OpenShift Container Platform CLI without the interactive prompts. To generate the command, select **Copy login command** from the username drop-down menu at the top right of the web console.

You can now create a project or issue other commands for managing your cluster.

2.1.4. Using the OpenShift CLI

Review the following sections to learn how to complete common tasks using the CLI.

2.1.4.1. Creating a project

Use the **oc new-project** command to create a new project.

```
$ oc new-project my-project
```

Example output

```
Now using project "my-project" on server "https://openshift.example.com:6443".
```

2.1.4.2. Creating a new app

Use the **oc new-app** command to create a new application.

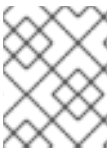
```
$ oc new-app https://github.com/sclorg/cakephp-ex
```

Example output

```
--> Found image 40de956 (9 days old) in imagestream "openshift/php" under tag "7.2" for "php"

...

    Run 'oc status' to view your app.
```

2.1.4.3. Viewing pods

Use the **oc get pods** command to view the pods for the current project.



NOTE

When you run **oc** inside a pod and do not specify a namespace, the namespace of the pod is used by default.

```
$ oc get pods -o wide
```

Example output

```
NAME                READY   STATUS      RESTARTS   AGE     IP            NODE
NOMINATED NODE
cakephp-ex-1-build  0/1     Completed   0          5m45s   10.131.0.10   ip-10-0-141-74.ec2.internal
<none>
cakephp-ex-1-deploy 0/1     Completed   0          3m44s   10.129.2.9    ip-10-0-147-65.ec2.internal
<none>
cakephp-ex-1-ktz97  1/1     Running     0          3m33s   10.128.2.11   ip-10-0-168-105.ec2.internal
<none>
```

2.1.4.4. Viewing pod logs

Use the **oc logs** command to view logs for a particular pod.

```
$ oc logs cakephp-ex-1-deploy
```

Example output

```
--> Scaling cakephp-ex-1 to 1
--> Success
```

2.1.4.5. Viewing the current project

Use the **oc project** command to view the current project.

```
$ oc project
```

Example output

```
Using project "my-project" on server "https://openshift.example.com:6443".
```

2.1.4.6. Viewing the status for the current project

Use the **oc status** command to view information about the current project, such as services, deployments, and build configs.

```
$ oc status
```

Example output

```
In project my-project on server https://openshift.example.com:6443

svc/cakephp-ex - 172.30.236.80 ports 8080, 8443
  dc/cakephp-ex deploys istag/cakephp-ex:latest <-
    bc/cakephp-ex source builds https://github.com/sclorg/cakephp-ex on openshift/php:7.2
    deployment #1 deployed 2 minutes ago - 1 pod

3 infos identified, use 'oc status --suggest' to see details.
```

2.1.4.7. Listing supported API resources

Use the **oc api-resources** command to view the list of supported API resources on the server.

```
$ oc api-resources
```

Example output

```
NAME                              SHORTNAMES   APIGROUP                       NAMESPACED   KIND
bindings                                                                      true         Binding
componentstatuses                 cs                                          false        ComponentStatus
```

```
configmaps                cm                                  true        ConfigMap
...
```

2.1.5. Getting help

You can get help with CLI commands and OpenShift Container Platform resources in the following ways.

- Use **oc help** to get a list and description of all available CLI commands:

  Example: Get general help for the CLI

  ```
  $ oc help
  ```

  Example output

  ```
  OpenShift Client

  This client helps you develop, build, deploy, and run your applications on any OpenShift or
  Kubernetes compatible
  platform. It also includes the administrative commands for managing a cluster under the 'adm'
  subcommand.

  Usage:
    oc [flags]

  Basic Commands:
    login           Log in to a server
    new-project     Request a new project
    new-app         Create a new application

  ...
  ```

- Use the **--help** flag to get help about a specific CLI command:

  Example: Get help for the oc create command

  ```
  $ oc create --help
  ```

  Example output

  ```
  Create a resource by filename or stdin

  JSON and YAML formats are accepted.

  Usage:
    oc create -f FILENAME [flags]

  ...
  ```

- Use the **oc explain** command to view the description and fields for a particular resource:

  Example: View documentation for the Pod resource

```
$ oc explain pods
```

Example output

```
KIND:     Pod
VERSION:  v1

DESCRIPTION:
     Pod is a collection of containers that can run on a host. This resource is
     created by clients and scheduled onto hosts.

FIELDS:
   apiVersion <string>
     APIVersion defines the versioned schema of this representation of an
     object. Servers should convert recognized schemas to the latest internal
     value, and may reject unrecognized values. More info:
     https://git.k8s.io/community/contributors/devel/api-conventions.md#resources

...
```

2.1.6. Logging out of the OpenShift CLI

You can log out the OpenShift CLI to end your current session.

- Use the **oc logout** command.

```
$ oc logout
```

Example output

```
Logged "user1" out on "https://openshift.example.com"
```

This deletes the saved authentication token from the server and removes it from your configuration file.

2.2. CONFIGURING THE OPENSHIFT CLI

2.2.1. Enabling tab completion

You can enable tab completion for the Bash or Zsh shells.

2.2.1.1. Enabling tab completion for Bash

After you install the OpenShift CLI (**oc**), you can enable tab completion to automatically complete **oc** commands or suggest options when you press Tab. The following procedure enables tab completion for the Bash shell.

Prerequisites

- You must have the OpenShift CLI (**oc**) installed.
- You must have the package **bash-completion** installed.

Procedure

1. Save the Bash completion code to a file:

```
$ oc completion bash > oc_bash_completion
```

2. Copy the file to **/etc/bash_completion.d/**:

```
$ sudo cp oc_bash_completion /etc/bash_completion.d/
```

   You can also save the file to a local directory and source it from your **.bashrc** file instead.

Tab completion is enabled when you open a new terminal.

2.2.1.2. Enabling tab completion for Zsh

After you install the OpenShift CLI (**oc**), you can enable tab completion to automatically complete **oc** commands or suggest options when you press Tab. The following procedure enables tab completion for the Zsh shell.

Prerequisites

- You must have the OpenShift CLI (**oc**) installed.

Procedure

- To add tab completion for **oc** to your **.zshrc** file, run the following command:

```
$ cat >>~/.zshrc<<EOF
if [ $commands[oc] ]; then
  source <(oc completion zsh)
  compdef _oc oc
fi
EOF
```

Tab completion is enabled when you open a new terminal.

2.3. MANAGING CLI PROFILES

A CLI configuration file allows you to configure different profiles, or contexts, for use with the CLI tools overview. A context consists of user authentication and OpenShift Container Platform server information associated with a *nickname*.

2.3.1. About switches between CLI profiles

Contexts allow you to easily switch between multiple users across multiple OpenShift Container Platform servers, or clusters, when using CLI operations. Nicknames make managing CLI configurations easier by providing short-hand references to contexts, user credentials, and cluster details. After logging in with the CLI for the first time, OpenShift Container Platform creates a ~/**.kube/config** file if one does not already exist. As more authentication and connection details are provided to the CLI, either automatically during an **oc login** operation or by manually configuring CLI profiles, the updated information is stored in the configuration file:

CLI config file

```
apiVersion: v1
clusters: (1)
- cluster:
    insecure-skip-tls-verify: true
    server: https://openshift1.example.com:8443
  name: openshift1.example.com:8443
- cluster:
    insecure-skip-tls-verify: true
    server: https://openshift2.example.com:8443
  name: openshift2.example.com:8443
contexts: (2)
- context:
    cluster: openshift1.example.com:8443
    namespace: alice-project
    user: alice/openshift1.example.com:8443
  name: alice-project/openshift1.example.com:8443/alice
- context:
    cluster: openshift1.example.com:8443
    namespace: joe-project
    user: alice/openshift1.example.com:8443
  name: joe-project/openshift1/alice
current-context: joe-project/openshift1.example.com:8443/alice (3)
kind: Config
preferences: {}
users: (4)
- name: alice/openshift1.example.com:8443
  user:
    token: xZHd2piv5_9vQrg-SKXRJ2Dsl9SceNJdhNTljEKTb8k
```

(1) The **clusters** section defines connection details for OpenShift Container Platform clusters, including the address for their master server. In this example, one cluster is nicknamed **openshift1.example.com:8443** and another is nicknamed **openshift2.example.com:8443**.

(2) This **contexts** section defines two contexts: one nicknamed **alice-project/openshift1.example.com:8443/alice**, using the **alice-project** project, **openshift1.example.com:8443** cluster, and **alice** user, and another nicknamed **joe-project/openshift1.example.com:8443/alice**, using the **joe-project** project, **openshift1.example.com:8443** cluster and **alice** user.

(3) The **current-context** parameter shows that the **joe-project/openshift1.example.com:8443/alice** context is currently in use, allowing the **alice** user to work in the **joe-project** project on the **openshift1.example.com:8443** cluster.

(4) The **users** section defines user credentials. In this example, the user nickname **alice/openshift1.example.com:8443** uses an access token.

The CLI can support multiple configuration files which are loaded at runtime and merged together along with any override options specified from the command line. After you are logged in, you can use the **oc status** or **oc project** command to verify your current working environment:

Verify the current working environment

```
$ oc status
```

Example output

```
oc status
In project Joe's Project (joe-project)

service database (172.30.43.12:5434 -> 3306)
  database deploys docker.io/openshift/mysql-55-centos7:latest
    #1 deployed 25 minutes ago - 1 pod

service frontend (172.30.159.137:5432 -> 8080)
  frontend deploys origin-ruby-sample:latest <-
    builds https://github.com/openshift/ruby-hello-world with joe-project/ruby-20-centos7:latest
    #1 deployed 22 minutes ago - 2 pods

To see more information about a service or deployment, use 'oc describe service <name>' or 'oc
describe dc <name>'.
You can use 'oc get all' to see lists of each of the types described in this example.
```

List the current project

```
$ oc project
```

Example output

```
Using project "joe-project" from context named "joe-project/openshift1.example.com:8443/alice" on
server "https://openshift1.example.com:8443".
```

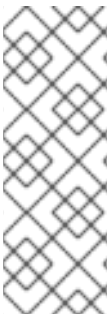
You can run the **oc login** command again and supply the required information during the interactive process, to log in using any other combination of user credentials and cluster details. A context is constructed based on the supplied information if one does not already exist. If you are already logged in and want to switch to another project the current user already has access to, use the **oc project** command and enter the name of the project:

```
$ oc project alice-project
```

Example output

```
Now using project "alice-project" on server "https://openshift1.example.com:8443".
```

At any time, you can use the **oc config view** command to view your current CLI configuration, as seen in the output. Additional CLI configuration commands are also available for more advanced usage.



NOTE

If you have access to administrator credentials but are no longer logged in as the default system user **system:admin**, you can log back in as this user at any time as long as the credentials are still present in your CLI config file. The following command logs in and switches to the default project:

```
$ oc login -u system:admin -n default
```

2.3.2. Manual configuration of CLI profiles

NOTE

This section covers more advanced usage of CLI configurations. In most situations, you can use the **oc login** and **oc project** commands to log in and switch between contexts and projects.

If you want to manually configure your CLI config files, you can use the **oc config** command instead of directly modifying the files. The **oc config** command includes a number of helpful sub-commands for this purpose:

Table 2.1. CLI configuration subcommands

Subcommand	Usage
set-cluster	Sets a cluster entry in the CLI config file. If the referenced cluster nickname already exists, the specified information is merged in. `$ oc config set-cluster <cluster_nickname> [--server=<master_ip_or_fqdn>] [--certificate-authority=<path/to/certificate/authority>] [--api-version=<apiversion>] [--insecure-skip-tls-verify=true]`
set-context	Sets a context entry in the CLI config file. If the referenced context nickname already exists, the specified information is merged in. `$ oc config set-context <context_nickname> [--cluster=<cluster_nickname>] [--user=<user_nickname>] [--namespace=<namespace>]`
use-context	Sets the current context using the specified context nickname. `$ oc config use-context <context_nickname>`
set	Sets an individual value in the CLI config file. `$ oc config set <property_name> <property_value>` The **<property_name>** is a dot-delimited name where each token represents either an attribute name or a map key. The **<property_value>** is the new value being set.
unset	Unsets individual values in the CLI config file. `$ oc config unset <property_name>` The **<property_name>** is a dot-delimited name where each token represents either an attribute name or a map key.

Subcommand	Usage

view	Displays the merged CLI configuration currently in use.
	`$ oc config view`
	Displays the result of the specified CLI config file.
	`$ oc config view --config=<specific_filename>`

Example usage

- Log in as a user that uses an access token. This token is used by the **alice** user:

```
$ oc login https://openshift1.example.com --
token=ns7yVhuRNpDM9cgzfhhxQ7bM5s7N2ZVrkZepSRf4LC0
```

- View the cluster entry automatically created:

```
$ oc config view
```

Example output

```
apiVersion: v1
clusters:
- cluster:
    insecure-skip-tls-verify: true
    server: https://openshift1.example.com
  name: openshift1-example-com
contexts:
- context:
    cluster: openshift1-example-com
    namespace: default
    user: alice/openshift1-example-com
  name: default/openshift1-example-com/alice
current-context: default/openshift1-example-com/alice
kind: Config
preferences: {}
users:
- name: alice/openshift1.example.com
  user:
    token: ns7yVhuRNpDM9cgzfhhxQ7bM5s7N2ZVrkZepSRf4LC0
```

- Update the current context to have users log in to the desired namespace:

```
$ oc config set-context `oc config current-context` --namespace=<project_name>
```

- Examine the current context, to confirm that the changes are implemented:

```
$ oc whoami -c
```

All subsequent CLI operations uses the new context, unless otherwise specified by overriding CLI options or until the context is switched.

2.3.3. Load and merge rules

You can follow these rules, when issuing CLI operations for the loading and merging order for the CLI configuration:

- CLI config files are retrieved from your workstation, using the following hierarchy and merge rules:
  - If the **--config** option is set, then only that file is loaded. The flag is set once and no merging takes place.
  - If the **$KUBECONFIG** environment variable is set, then it is used. The variable can be a list of paths, and if so the paths are merged together. When a value is modified, it is modified in the file that defines the stanza. When a value is created, it is created in the first file that exists. If no files in the chain exist, then it creates the last file in the list.
  - Otherwise, the ***~/.kube/config*** file is used and no merging takes place.
- The context to use is determined based on the first match in the following flow:
  - The value of the **--context** option.
  - The **current-context** value from the CLI config file.
  - An empty value is allowed at this stage.
- The user and cluster to use is determined. At this point, you may or may not have a context; they are built based on the first match in the following flow, which is run once for the user and once for the cluster:
  - The value of the **--user** for user name and **--cluster** option for cluster name.
  - If the **--context** option is present, then use the context's value.
  - An empty value is allowed at this stage.
- The actual cluster information to use is determined. At this point, you may or may not have cluster information. Each piece of the cluster information is built based on the first match in the following flow:
  - The values of any of the following command line options:
    - **--server**,
    - **--api-version**
    - **--certificate-authority**
    - **--insecure-skip-tls-verify**
  - If cluster information and a value for the attribute is present, then use it.

- If you do not have a server location, then there is an error.

- The actual user information to use is determined. Users are built using the same rules as clusters, except that you can only have one authentication technique per user; conflicting techniques cause the operation to fail. Command line options take precedence over config file values. Valid command line options are:
  - **--auth-path**
  - **--client-certificate**
  - **--client-key**
  - **--token**

- For any information that is still missing, default values are used and prompts are given for additional information.

2.4. EXTENDING THE OPENSHIFT CLI WITH PLUGINS

You can write and install plugins to build on the default **oc** commands, allowing you to perform new and more complex tasks with the OpenShift Container Platform CLI.

2.4.1. Writing CLI plugins

You can write a plugin for the OpenShift Container Platform CLI in any programming language or script that allows you to write command-line commands. Note that you can not use a plugin to overwrite an existing **oc** command.

Procedure

This procedure creates a simple Bash plugin that prints a message to the terminal when the **oc foo** command is issued.

1. Create a file called **oc-foo**.
   When naming your plugin file, keep the following in mind:
   - The file must begin with **oc-** or **kubectl-** to be recognized as a plugin.
   - The file name determines the command that invokes the plugin. For example, a plugin with the file name **oc-foo-bar** can be invoked by a command of **oc foo bar**. You can also use underscores if you want the command to contain dashes. For example, a plugin with the file name **oc-foo_bar** can be invoked by a command of **oc foo-bar**.

2. Add the following contents to the file.

```
#!/bin/bash

# optional argument handling
if [[ "$1" == "version" ]]
then
    echo "1.0.0"
    exit 0
fi

# optional argument handling
```

```
if [[ "$1" == "config" ]]
then
    echo $KUBECONFIG
    exit 0
fi

echo "I am a plugin named kubectl-foo"
```

After you install this plugin for the OpenShift Container Platform CLI, it can be invoked using the **oc foo** command.

Additional resources

- Review the Sample plugin repository for an example of a plugin written in Go.
- Review the CLI runtime repository for a set of utilities to assist in writing plugins in Go.

2.4.2. Installing and using CLI plugins

After you write a custom plugin for the OpenShift Container Platform CLI, you must install it to use the functionality that it provides.

Prerequisites

- You must have the **oc** CLI tool installed.
- You must have a CLI plugin file that begins with **oc-** or **kubectl-**.

Procedure

1. If necessary, update the plugin file to be executable.

```
$ chmod +x <plugin_file>
```

2. Place the file anywhere in your **PATH**, such as **/usr/local/bin/**.

```
$ sudo mv <plugin_file> /usr/local/bin/.
```

3. Run **oc plugin list** to make sure that the plugin is listed.

```
$ oc plugin list
```

Example output

```
The following compatible plugins are available:

/usr/local/bin/<plugin_file>
```

If your plugin is not listed here, verify that the file begins with **oc-** or **kubectl-**, is executable, and is on your **PATH**.

4. Invoke the new command or option introduced by the plugin.

For example, if you built and installed the **kubectl-ns** plugin from the Sample plugin repository, you can use the following command to view the current namespace.

```
$ oc ns
```

Note that the command to invoke the plugin depends on the plugin file name. For example, a plugin with the file name of **oc-foo-bar** is invoked by the **oc foo bar** command.

2.5. OPENSHIFT CLI DEVELOPER COMMAND REFERENCE

This reference provides descriptions and example commands for OpenShift CLI (**oc**) developer commands. For administrator commands, see the OpenShift CLI administrator command reference.

Run **oc help** to list all commands or run **oc <command> --help** to get additional details for a specific command.

2.5.1. OpenShift CLI (oc) developer commands

2.5.1.1. oc annotate

Update the annotations on a resource

Example usage

```
# Update pod 'foo' with the annotation 'description' and the value 'my frontend'.
# If the same annotation is set multiple times, only the last value will be applied
oc annotate pods foo description='my frontend'

# Update a pod identified by type and name in "pod.json"
oc annotate -f pod.json description='my frontend'

# Update pod 'foo' with the annotation 'description' and the value 'my frontend running nginx', overwriting any existing value.
oc annotate --overwrite pods foo description='my frontend running nginx'

# Update all pods in the namespace
oc annotate pods --all description='my frontend running nginx'

# Update pod 'foo' only if the resource is unchanged from version 1.
oc annotate pods foo description='my frontend running nginx' --resource-version=1

# Update pod 'foo' by removing an annotation named 'description' if it exists.
# Does not require the --overwrite flag.
oc annotate pods foo description-
```

2.5.1.2. oc api-resources

Print the supported API resources on the server

Example usage

```
# Print the supported API Resources
oc api-resources
```

```
# Print the supported API Resources with more information
oc api-resources -o wide

# Print the supported API Resources sorted by a column
oc api-resources --sort-by=name

# Print the supported namespaced resources
oc api-resources --namespaced=true

# Print the supported non-namespaced resources
oc api-resources --namespaced=false

# Print the supported API Resources with specific APIGroup
oc api-resources --api-group=extensions
```

2.5.1.3. oc api-versions

Print the supported API versions on the server, in the form of "group/version"

Example usage

```
# Print the supported API versions
oc api-versions
```

2.5.1.4. oc apply

Apply a configuration to a resource by filename or stdin

Example usage

```
# Apply the configuration in pod.json to a pod.
oc apply -f ./pod.json

# Apply resources from a directory containing kustomization.yaml - e.g. dir/kustomization.yaml.
oc apply -k dir/

# Apply the JSON passed into stdin to a pod.
cat pod.json | oc apply -f -

# Note: --prune is still in Alpha
# Apply the configuration in manifest.yaml that matches label app=nginx and delete all the other resources that are not in the file and match label app=nginx.
oc apply --prune -f manifest.yaml -l app=nginx

# Apply the configuration in manifest.yaml and delete all the other configmaps that are not in the file.
oc apply --prune -f manifest.yaml --all --prune-whitelist=core/v1/ConfigMap
```

2.5.1.5. oc apply edit-last-applied

Edit latest last-applied-configuration annotations of a resource/object

Example usage

```
# Edit the last-applied-configuration annotations by type/name in YAML.
oc apply edit-last-applied deployment/nginx

# Edit the last-applied-configuration annotations by file in JSON.
oc apply edit-last-applied -f deploy.yaml -o json
```

2.5.1.6. oc apply set-last-applied

Set the last-applied-configuration annotation on a live object to match the contents of a file.

Example usage

```
# Set the last-applied-configuration of a resource to match the contents of a file.
oc apply set-last-applied -f deploy.yaml

# Execute set-last-applied against each configuration file in a directory.
oc apply set-last-applied -f path/

# Set the last-applied-configuration of a resource to match the contents of a file, will create the annotation if it does not already exist.
oc apply set-last-applied -f deploy.yaml --create-annotation=true
```

2.5.1.7. oc apply view-last-applied

View latest last-applied-configuration annotations of a resource/object

Example usage

```
# View the last-applied-configuration annotations by type/name in YAML.
oc apply view-last-applied deployment/nginx

# View the last-applied-configuration annotations by file in JSON
oc apply view-last-applied -f deploy.yaml -o json
```

2.5.1.8. oc attach

Attach to a running container

Example usage

```
# Get output from running pod mypod, use the oc.kubernetes.io/default-container annotation
# for selecting the container to be attached or the first container in the pod will be chosen
oc attach mypod

# Get output from ruby-container from pod mypod
oc attach mypod -c ruby-container

# Switch to raw terminal mode, sends stdin to 'bash' in ruby-container from pod mypod
# and sends stdout/stderr from 'bash' back to the client
oc attach mypod -c ruby-container -i -t

# Get output from the first pod of a ReplicaSet named nginx
oc attach rs/nginx
```

2.5.1.9. oc auth can-i

Check whether an action is allowed

Example usage

```
# Check to see if I can create pods in any namespace
oc auth can-i create pods --all-namespaces

# Check to see if I can list deployments in my current namespace
oc auth can-i list deployments.apps

# Check to see if I can do everything in my current namespace ("*" means all)
oc auth can-i '*' '*'

# Check to see if I can get the job named "bar" in namespace "foo"
oc auth can-i list jobs.batch/bar -n foo

# Check to see if I can read pod logs
oc auth can-i get pods --subresource=log

# Check to see if I can access the URL /logs/
oc auth can-i get /logs/

# List all allowed actions in namespace "foo"
oc auth can-i --list --namespace=foo
```

2.5.1.10. oc auth reconcile

Reconciles rules for RBAC Role, RoleBinding, ClusterRole, and ClusterRoleBinding objects

Example usage

```
# Reconcile rbac resources from a file
oc auth reconcile -f my-rbac-rules.yaml
```

2.5.1.11. oc autoscale

Autoscale a deployment config, deployment, replica set, stateful set, or replication controller

Example usage

```
# Auto scale a deployment "foo", with the number of pods between 2 and 10, no target CPU utilization specified so a default autoscaling policy will be used:
oc autoscale deployment foo --min=2 --max=10

# Auto scale a replication controller "foo", with the number of pods between 1 and 5, target CPU utilization at 80%:
oc autoscale rc foo --max=5 --cpu-percent=80
```

2.5.1.12. oc cancel-build

Cancel running, pending, or new builds

Example usage

```
# Cancel the build with the given name
oc cancel-build ruby-build-2

# Cancel the named build and print the build logs
oc cancel-build ruby-build-2 --dump-logs

# Cancel the named build and create a new one with the same parameters
oc cancel-build ruby-build-2 --restart

# Cancel multiple builds
oc cancel-build ruby-build-1 ruby-build-2 ruby-build-3

# Cancel all builds created from the 'ruby-build' build config that are in the 'new' state
oc cancel-build bc/ruby-build --state=new
```

2.5.1.13. oc cluster-info

Display cluster info

Example usage

```
# Print the address of the control plane and cluster services
oc cluster-info
```

2.5.1.14. oc cluster-info dump

Dump lots of relevant info for debugging and diagnosis

Example usage

```
# Dump current cluster state to stdout
oc cluster-info dump

# Dump current cluster state to /path/to/cluster-state
oc cluster-info dump --output-directory=/path/to/cluster-state

# Dump all namespaces to stdout
oc cluster-info dump --all-namespaces

# Dump a set of namespaces to /path/to/cluster-state
oc cluster-info dump --namespaces default,kube-system --output-directory=/path/to/cluster-state
```

2.5.1.15. oc completion

Output shell completion code for the specified shell (bash or zsh)

Example usage

```
# Installing bash completion on macOS using homebrew
## If running Bash 3.2 included with macOS
brew install bash-completion
```

```
## or, if running Bash 4.1+
brew install bash-completion@2
## If oc is installed via homebrew, this should start working immediately.
## If you've installed via other means, you may need add the completion to your completion directory
oc completion bash > $(brew --prefix)/etc/bash_completion.d/oc


# Installing bash completion on Linux
## If bash-completion is not installed on Linux, please install the 'bash-completion' package
## via your distribution's package manager.
## Load the oc completion code for bash into the current shell
source <(oc completion bash)
## Write bash completion code to a file and source it from .bash_profile
oc completion bash > ~/.kube/completion.bash.inc
printf "
# Kubectl shell completion
source '$HOME/.kube/completion.bash.inc'
" >> $HOME/.bash_profile
source $HOME/.bash_profile

# Load the oc completion code for zsh[1] into the current shell
source <(oc completion zsh)
# Set the oc completion code for zsh[1] to autoload on startup
oc completion zsh > "${fpath[1]}/_oc"
```

2.5.1.16. oc config current-context

Displays the current-context

Example usage

```
# Display the current-context
oc config current-context
```

2.5.1.17. oc config delete-cluster

Delete the specified cluster from the kubeconfig

Example usage

```
# Delete the minikube cluster
oc config delete-cluster minikube
```

2.5.1.18. oc config delete-context

Delete the specified context from the kubeconfig

Example usage

```
# Delete the context for the minikube cluster
oc config delete-context minikube
```

2.5.1.19. oc config delete-user

Delete the specified user from the kubeconfig

Example usage

```
# Delete the minikube user
oc config delete-user minikube
```

2.5.1.20. oc config get-clusters

Display clusters defined in the kubeconfig

Example usage

```
# List the clusters oc knows about
oc config get-clusters
```

2.5.1.21. oc config get-contexts

Describe one or many contexts

Example usage

```
# List all the contexts in your kubeconfig file
oc config get-contexts

# Describe one context in your kubeconfig file.
oc config get-contexts my-context
```

2.5.1.22. oc config get-users

Display users defined in the kubeconfig

Example usage

```
# List the users oc knows about
oc config get-users
```

2.5.1.23. oc config rename-context

Renames a context from the kubeconfig file.

Example usage

```
# Rename the context 'old-name' to 'new-name' in your kubeconfig file
oc config rename-context old-name new-name
```

2.5.1.24. oc config set

Sets an individual value in a kubeconfig file

Example usage

-

```
# Set server field on the my-cluster cluster to https://1.2.3.4
oc config set clusters.my-cluster.server https://1.2.3.4

# Set certificate-authority-data field on the my-cluster cluster.
oc config set clusters.my-cluster.certificate-authority-data $(echo "cert_data_here" | base64 -i -)

# Set cluster field in the my-context context to my-cluster.
oc config set contexts.my-context.cluster my-cluster

# Set client-key-data field in the cluster-admin user using --set-raw-bytes option.
oc config set users.cluster-admin.client-key-data cert_data_here --set-raw-bytes=true
```

2.5.1.25. oc config set-cluster

Sets a cluster entry in kubeconfig

Example usage

```
# Set only the server field on the e2e cluster entry without touching other values.
oc config set-cluster e2e --server=https://1.2.3.4

# Embed certificate authority data for the e2e cluster entry
oc config set-cluster e2e --embed-certs --certificate-authority=~/.kube/e2e/kubernetes.ca.crt

# Disable cert checking for the dev cluster entry
oc config set-cluster e2e --insecure-skip-tls-verify=true

# Set custom TLS server name to use for validation for the e2e cluster entry
oc config set-cluster e2e --tls-server-name=my-cluster-name
```

2.5.1.26. oc config set-context

Sets a context entry in kubeconfig

Example usage

```
# Set the user field on the gce context entry without touching other values
oc config set-context gce --user=cluster-admin
```

2.5.1.27. oc config set-credentials

Sets a user entry in kubeconfig

Example usage

```
# Set only the "client-key" field on the "cluster-admin"
# entry, without touching other values:
oc config set-credentials cluster-admin --client-key=~/.kube/admin.key

# Set basic auth for the "cluster-admin" entry
oc config set-credentials cluster-admin --username=admin --password=uXFGweU9l35qcif

# Embed client certificate data in the "cluster-admin" entry
```

```
  oc config set-credentials cluster-admin --client-certificate=~/.kube/admin.crt --embed-certs=true

  # Enable the Google Compute Platform auth provider for the "cluster-admin" entry
  oc config set-credentials cluster-admin --auth-provider=gcp

  # Enable the OpenID Connect auth provider for the "cluster-admin" entry with additional args
  oc config set-credentials cluster-admin --auth-provider=oidc --auth-provider-arg=client-id=foo --auth-
provider-arg=client-secret=bar

  # Remove the "client-secret" config value for the OpenID Connect auth provider for the "cluster-
admin" entry
  oc config set-credentials cluster-admin --auth-provider=oidc --auth-provider-arg=client-secret-

  # Enable new exec auth plugin for the "cluster-admin" entry
  oc config set-credentials cluster-admin --exec-command=/path/to/the/executable --exec-api-
version=client.authentication.k8s.io/v1beta1

  # Define new exec auth plugin args for the "cluster-admin" entry
  oc config set-credentials cluster-admin --exec-arg=arg1 --exec-arg=arg2

  # Create or update exec auth plugin environment variables for the "cluster-admin" entry
  oc config set-credentials cluster-admin --exec-env=key1=val1 --exec-env=key2=val2

  # Remove exec auth plugin environment variables for the "cluster-admin" entry
  oc config set-credentials cluster-admin --exec-env=var-to-remove-
```

2.5.1.28. oc config unset

Unsets an individual value in a kubeconfig file

Example usage

```
  # Unset the current-context.
  oc config unset current-context

  # Unset namespace in foo context.
  oc config unset contexts.foo.namespace
```

2.5.1.29. oc config use-context

Sets the current-context in a kubeconfig file

Example usage

```
  # Use the context for the minikube cluster
  oc config use-context minikube
```

2.5.1.30. oc config view

Display merged kubeconfig settings or a specified kubeconfig file

Example usage

```
# Show merged kubeconfig settings.
oc config view

# Show merged kubeconfig settings and raw certificate data.
oc config view --raw

# Get the password for the e2e user
oc config view -o jsonpath='{.users[?(@.name == "e2e")].user.password}'
```

2.5.1.31. oc cp

Copy files and directories to and from containers.

Example usage

```
# !!!Important Note!!!
# Requires that the 'tar' binary is present in your container
# image.  If 'tar' is not present, 'oc cp' will fail.
#
# For advanced use cases, such as symlinks, wildcard expansion or
# file mode preservation consider using 'oc exec'.

# Copy /tmp/foo local file to /tmp/bar in a remote pod in namespace <some-namespace>
tar cf - /tmp/foo | oc exec -i -n <some-namespace> <some-pod> -- tar xf - -C /tmp/bar

# Copy /tmp/foo from a remote pod to /tmp/bar locally
oc exec -n <some-namespace> <some-pod> -- tar cf - /tmp/foo | tar xf - -C /tmp/bar

# Copy /tmp/foo_dir local directory to /tmp/bar_dir in a remote pod in the default namespace
oc cp /tmp/foo_dir <some-pod>:/tmp/bar_dir

# Copy /tmp/foo local file to /tmp/bar in a remote pod in a specific container
oc cp /tmp/foo <some-pod>:/tmp/bar -c <specific-container>

# Copy /tmp/foo local file to /tmp/bar in a remote pod in namespace <some-namespace>
oc cp /tmp/foo <some-namespace>/<some-pod>:/tmp/bar

# Copy /tmp/foo from a remote pod to /tmp/bar locally
oc cp <some-namespace>/<some-pod>:/tmp/foo /tmp/bar
```

2.5.1.32. oc create

Create a resource from a file or from stdin.

Example usage

```
# Create a pod using the data in pod.json.
oc create -f ./pod.json

# Create a pod based on the JSON passed into stdin.
cat pod.json | oc create -f -

# Edit the data in docker-registry.yaml in JSON then create the resource using the edited data.
oc create -f docker-registry.yaml --edit -o json
```

2.5.1.33. oc create build

Create a new build

Example usage

```
  # Create a new build
  oc create build myapp
```

2.5.1.34. oc create clusterresourcequota

Create a cluster resource quota

Example usage

```
  # Create a cluster resource quota limited to 10 pods
  oc create clusterresourcequota limit-bob --project-annotation-selector=openshift.io/requester=user-bob --hard=pods=10
```

2.5.1.35. oc create clusterrole

Create a ClusterRole.

Example usage

```
  # Create a ClusterRole named "pod-reader" that allows user to perform "get", "watch" and "list" on pods
  oc create clusterrole pod-reader --verb=get,list,watch --resource=pods

  # Create a ClusterRole named "pod-reader" with ResourceName specified
  oc create clusterrole pod-reader --verb=get --resource=pods --resource-name=readablepod --resource-name=anotherpod

  # Create a ClusterRole named "foo" with API Group specified
  oc create clusterrole foo --verb=get,list,watch --resource=rs.extensions

  # Create a ClusterRole named "foo" with SubResource specified
  oc create clusterrole foo --verb=get,list,watch --resource=pods,pods/status

  # Create a ClusterRole name "foo" with NonResourceURL specified
  oc create clusterrole "foo" --verb=get --non-resource-url=/logs/*

  # Create a ClusterRole name "monitoring" with AggregationRule specified
  oc create clusterrole monitoring --aggregation-rule="rbac.example.com/aggregate-to-monitoring=true"
```

2.5.1.36. oc create clusterrolebinding

Create a ClusterRoleBinding for a particular ClusterRole

Example usage

```
  # Create a ClusterRoleBinding for user1, user2, and group1 using the cluster-admin ClusterRole
  oc create clusterrolebinding cluster-admin --clusterrole=cluster-admin --user=user1 --user=user2 --
group=group1
```

2.5.1.37. oc create configmap

Create a configmap from a local file, directory or literal value

Example usage

```
  # Create a new configmap named my-config based on folder bar
  oc create configmap my-config --from-file=path/to/bar

  # Create a new configmap named my-config with specified keys instead of file basenames on disk
  oc create configmap my-config --from-file=key1=/path/to/bar/file1.txt --from-
file=key2=/path/to/bar/file2.txt

  # Create a new configmap named my-config with key1=config1 and key2=config2
  oc create configmap my-config --from-literal=key1=config1 --from-literal=key2=config2

  # Create a new configmap named my-config from the key=value pairs in the file
  oc create configmap my-config --from-file=path/to/bar

  # Create a new configmap named my-config from an env file
  oc create configmap my-config --from-env-file=path/to/bar.env
```

2.5.1.38. oc create cronjob

Create a cronjob with the specified name.

Example usage

```
  # Create a cronjob
  oc create cronjob my-job --image=busybox --schedule="*/1 * * * *"

  # Create a cronjob with command
  oc create cronjob my-job --image=busybox --schedule="*/1 * * * *" -- date
```

2.5.1.39. oc create deployment

Create a deployment with the specified name.

Example usage

```
  # Create a deployment named my-dep that runs the busybox image.
  oc create deployment my-dep --image=busybox

  # Create a deployment with command
  oc create deployment my-dep --image=busybox -- date

  # Create a deployment named my-dep that runs the nginx image with 3 replicas.
  oc create deployment my-dep --image=nginx --replicas=3
```

```
# Create a deployment named my-dep that runs the busybox image and expose port 5701.
oc create deployment my-dep --image=busybox --port=5701
```

2.5.1.40. oc create deploymentconfig

Create a deployment config with default options that uses a given image

Example usage

```
# Create an nginx deployment config named my-nginx
oc create deploymentconfig my-nginx --image=nginx
```

2.5.1.41. oc create identity

Manually create an identity (only needed if automatic creation is disabled)

Example usage

```
# Create an identity with identity provider "acme_ldap" and the identity provider username
"adamjones"
oc create identity acme_ldap:adamjones
```

2.5.1.42. oc create imagestream

Create a new empty image stream

Example usage

```
# Create a new image stream
oc create imagestream mysql
```

2.5.1.43. oc create imagestreamtag

Create a new image stream tag

Example usage

```
# Create a new image stream tag based on an image in a remote registry
oc create imagestreamtag mysql:latest --from-image=myregistry.local/mysql/mysql:5.0
```

2.5.1.44. oc create ingress

Create an ingress with the specified name.

Example usage

```
# Create a single ingress called 'simple' that directs requests to foo.com/bar to svc
# svc1:8080 with a tls secret "my-cert"
oc create ingress simple --rule="foo.com/bar=svc1:8080,tls=my-cert"

# Create a catch all ingress of "/path" pointing to service svc:port and Ingress Class as
```

```
"otheringress"
 oc create ingress catch-all --class=otheringress --rule="/path=svc:port"

 # Create an ingress with two annotations: ingress.annotation1 and ingress.annotations2
 oc create ingress annotated --class=default --rule="foo.com/bar=svc:port" \
 --annotation ingress.annotation1=foo \
 --annotation ingress.annotation2=bla

 # Create an ingress with the same host and multiple paths
 oc create ingress multipath --class=default \
 --rule="foo.com/=svc:port" \
 --rule="foo.com/admin/=svcadmin:portadmin"

 # Create an ingress with multiple hosts and the pathType as Prefix
 oc create ingress ingress1 --class=default \
 --rule="foo.com/path*=svc:8080" \
 --rule="bar.com/admin*=svc2:http"

 # Create an ingress with TLS enabled using the default ingress certificate and different path types
 oc create ingress ingtls --class=default \
 --rule="foo.com/=svc:https,tls" \
 --rule="foo.com/path/subpath*=othersvc:8080"

 # Create an ingress with TLS enabled using a specific secret and pathType as Prefix
 oc create ingress ingsecret --class=default \
 --rule="foo.com/*=svc:8080,tls=secret1"

 # Create an ingress with a default backend
 oc create ingress ingdefault --class=default \
 --default-backend=defaultsvc:http \
 --rule="foo.com/*=svc:8080,tls=secret1"
```

2.5.1.45. oc create job

Create a job with the specified name.

Example usage

```
 # Create a job
 oc create job my-job --image=busybox

 # Create a job with command
 oc create job my-job --image=busybox -- date

 # Create a job from a CronJob named "a-cronjob"
 oc create job test-job --from=cronjob/a-cronjob
```

2.5.1.46. oc create namespace

Create a namespace with the specified name

Example usage

```
# Create a new namespace named my-namespace
oc create namespace my-namespace
```

2.5.1.47. oc create poddisruptionbudget

Create a pod disruption budget with the specified name.

Example usage

```
# Create a pod disruption budget named my-pdb that will select all pods with the app=rails label
# and require at least one of them being available at any point in time.
oc create poddisruptionbudget my-pdb --selector=app=rails --min-available=1

# Create a pod disruption budget named my-pdb that will select all pods with the app=nginx label
# and require at least half of the pods selected to be available at any point in time.
oc create pdb my-pdb --selector=app=nginx --min-available=50%
```

2.5.1.48. oc create priorityclass

Create a priorityclass with the specified name.

Example usage

```
# Create a priorityclass named high-priority
oc create priorityclass high-priority --value=1000 --description="high priority"

# Create a priorityclass named default-priority that considered as the global default priority
oc create priorityclass default-priority --value=1000 --global-default=true --description="default
priority"

# Create a priorityclass named high-priority that can not preempt pods with lower priority
oc create priorityclass high-priority --value=1000 --description="high priority" --preemption-
policy="Never"
```

2.5.1.49. oc create quota

Create a quota with the specified name.

Example usage

```
# Create a new resourcequota named my-quota
oc create quota my-quota --
hard=cpu=1,memory=1G,pods=2,services=3,replicationcontrollers=2,resourcequotas=1,secrets=5,persis
tentvolumeclaims=10

# Create a new resourcequota named best-effort
oc create quota best-effort --hard=pods=100 --scopes=BestEffort
```

2.5.1.50. oc create role

Create a role with single rule.

Example usage

```
  # Create a Role named "pod-reader" that allows user to perform "get", "watch" and "list" on pods
  oc create role pod-reader --verb=get --verb=list --verb=watch --resource=pods

  # Create a Role named "pod-reader" with ResourceName specified
  oc create role pod-reader --verb=get --resource=pods --resource-name=readablepod --resource-
name=anotherpod

  # Create a Role named "foo" with API Group specified
  oc create role foo --verb=get,list,watch --resource=rs.extensions

  # Create a Role named "foo" with SubResource specified
  oc create role foo --verb=get,list,watch --resource=pods,pods/status
```

2.5.1.51. oc create rolebinding

Create a RoleBinding for a particular Role or ClusterRole

Example usage

```
  # Create a RoleBinding for user1, user2, and group1 using the admin ClusterRole
  oc create rolebinding admin --clusterrole=admin --user=user1 --user=user2 --group=group1
```

2.5.1.52. oc create route edge

Create a route that uses edge TLS termination

Example usage

```
  # Create an edge route named "my-route" that exposes the frontend service
  oc create route edge my-route --service=frontend

  # Create an edge route that exposes the frontend service and specify a path
  # If the route name is omitted, the service name will be used
  oc create route edge --service=frontend --path /assets
```

2.5.1.53. oc create route passthrough

Create a route that uses passthrough TLS termination

Example usage

```
  # Create a passthrough route named "my-route" that exposes the frontend service
  oc create route passthrough my-route --service=frontend

  # Create a passthrough route that exposes the frontend service and specify
  # a host name. If the route name is omitted, the service name will be used
  oc create route passthrough --service=frontend --hostname=www.example.com
```

2.5.1.54. oc create route reencrypt

Create a route that uses reencrypt TLS termination

Example usage

```
  # Create a route named "my-route" that exposes the frontend service
  oc create route reencrypt my-route --service=frontend --dest-ca-cert cert.cert

  # Create a reencrypt route that exposes the frontend service, letting the
  # route name default to the service name and the destination CA certificate
  # default to the service CA
  oc create route reencrypt --service=frontend
```

2.5.1.55. oc create secret docker-registry

Create a secret for use with a Docker registry

Example usage

```
  # If you don't already have a .dockercfg file, you can create a dockercfg secret directly by using:
  oc create secret docker-registry my-secret --docker-server=DOCKER_REGISTRY_SERVER --
docker-username=DOCKER_USER --docker-password=DOCKER_PASSWORD --docker-
email=DOCKER_EMAIL

  # Create a new secret named my-secret from ~/.docker/config.json
  oc create secret docker-registry my-secret --from-file=.dockerconfigjson=path/to/.docker/config.json
```

2.5.1.56. oc create secret generic

Create a secret from a local file, directory or literal value

Example usage

```
  # Create a new secret named my-secret with keys for each file in folder bar
  oc create secret generic my-secret --from-file=path/to/bar

  # Create a new secret named my-secret with specified keys instead of names on disk
  oc create secret generic my-secret --from-file=ssh-privatekey=path/to/id_rsa --from-file=ssh-
publickey=path/to/id_rsa.pub

  # Create a new secret named my-secret with key1=supersecret and key2=topsecret
  oc create secret generic my-secret --from-literal=key1=supersecret --from-literal=key2=topsecret

  # Create a new secret named my-secret using a combination of a file and a literal
  oc create secret generic my-secret --from-file=ssh-privatekey=path/to/id_rsa --from-
literal=passphrase=topsecret

  # Create a new secret named my-secret from an env file
  oc create secret generic my-secret --from-env-file=path/to/bar.env
```

2.5.1.57. oc create secret tls

Create a TLS secret

Example usage

```
# Create a new TLS secret named tls-secret with the given key pair:
oc create secret tls tls-secret --cert=path/to/tls.cert --key=path/to/tls.key
```

2.5.1.58. oc create service clusterip

Create a ClusterIP service.

Example usage

```
# Create a new ClusterIP service named my-cs
oc create service clusterip my-cs --tcp=5678:8080

# Create a new ClusterIP service named my-cs (in headless mode)
oc create service clusterip my-cs --clusterip="None"
```

2.5.1.59. oc create service externalname

Create an ExternalName service.

Example usage

```
# Create a new ExternalName service named my-ns
oc create service externalname my-ns --external-name bar.com
```

2.5.1.60. oc create service loadbalancer

Create a LoadBalancer service.

Example usage

```
# Create a new LoadBalancer service named my-lbs
oc create service loadbalancer my-lbs --tcp=5678:8080
```

2.5.1.61. oc create service nodeport

Create a NodePort service.

Example usage

```
# Create a new NodePort service named my-ns
oc create service nodeport my-ns --tcp=5678:8080
```

2.5.1.62. oc create serviceaccount

Create a service account with the specified name

Example usage

```
# Create a new service account named my-service-account
oc create serviceaccount my-service-account
```

2.5.1.63. oc create user

Manually create a user (only needed if automatic creation is disabled)

Example usage

```
# Create a user with the username "ajones" and the display name "Adam Jones"
oc create user ajones --full-name="Adam Jones"
```

2.5.1.64. oc create useridentitymapping

Manually map an identity to a user

Example usage

```
# Map the identity "acme_ldap:adamjones" to the user "ajones"
oc create useridentitymapping acme_ldap:adamjones ajones
```

2.5.1.65. oc debug

Launch a new instance of a pod for debugging

Example usage

```
# Start a shell session into a pod using the OpenShift tools image
oc debug

# Debug a currently running deployment by creating a new pod
oc debug deploy/test

# Debug a node as an administrator
oc debug node/master-1

# Launch a shell in a pod using the provided image stream tag
oc debug istag/mysql:latest -n openshift

# Test running a job as a non-root user
oc debug job/test --as-user=1000000

# Debug a specific failing container by running the env command in the 'second' container
oc debug daemonset/test -c second -- /bin/env

# See the pod that would be created to debug
oc debug mypod-9xbc -o yaml

# Debug a resource but launch the debug pod in another namespace
# Note: Not all resources can be debugged using --to-namespace without modification. For
example,
# volumes and service accounts are namespace-dependent. Add '-o yaml' to output the debug pod
```

```
definition
  # to disk.  If necessary, edit the definition then run 'oc debug -f -' or run without --to-namespace
  oc debug mypod-9xbc --to-namespace testns
```

2.5.1.66. oc delete

Delete resources by filenames, stdin, resources and names, or by resources and label selector

Example usage

```
  # Delete a pod using the type and name specified in pod.json.
  oc delete -f ./pod.json

  # Delete resources from a directory containing kustomization.yaml - e.g. dir/kustomization.yaml.
  oc delete -k dir

  # Delete a pod based on the type and name in the JSON passed into stdin.
  cat pod.json | oc delete -f -

  # Delete pods and services with same names "baz" and "foo"
  oc delete pod,service baz foo

  # Delete pods and services with label name=myLabel.
  oc delete pods,services -l name=myLabel

  # Delete a pod with minimal delay
  oc delete pod foo --now

  # Force delete a pod on a dead node
  oc delete pod foo --force

  # Delete all pods
  oc delete pods --all
```

2.5.1.67. oc describe

Show details of a specific resource or group of resources

Example usage

```
  # Describe a node
  oc describe nodes kubernetes-node-emt8.c.myproject.internal

  # Describe a pod
  oc describe pods/nginx

  # Describe a pod identified by type and name in "pod.json"
  oc describe -f pod.json

  # Describe all pods
  oc describe pods

  # Describe pods by label name=myLabel
  oc describe po -l name=myLabel
```

```
# Describe all pods managed by the 'frontend' replication controller (rc-created pods
# get the name of the rc as a prefix in the pod the name).
oc describe pods frontend
```

2.5.1.68. oc diff

Diff live version against would-be applied version

Example usage

```
# Diff resources included in pod.json.
oc diff -f pod.json

# Diff file read from stdin
cat service.yaml | oc diff -f -
```

2.5.1.69. oc edit

Edit a resource on the server

Example usage

```
# Edit the service named 'docker-registry':
oc edit svc/docker-registry

# Use an alternative editor
KUBE_EDITOR="nano" oc edit svc/docker-registry

# Edit the job 'myjob' in JSON using the v1 API format:
oc edit job.v1.batch/myjob -o json

# Edit the deployment 'mydeployment' in YAML and save the modified config in its annotation:
oc edit deployment/mydeployment -o yaml --save-config
```

2.5.1.70. oc ex dockergc

Perform garbage collection to free space in docker storage

Example usage

```
# Perform garbage collection with the default settings
oc ex dockergc
```

2.5.1.71. oc exec

Execute a command in a container

Example usage

```
# Get output from running 'date' command from pod mypod, using the first container by default
oc exec mypod -- date
```

```
  # Get output from running 'date' command in ruby-container from pod mypod
  oc exec mypod -c ruby-container -- date

  # Switch to raw terminal mode, sends stdin to 'bash' in ruby-container from pod mypod
  # and sends stdout/stderr from 'bash' back to the client
  oc exec mypod -c ruby-container -i -t -- bash -il

  # List contents of /usr from the first container of pod mypod and sort by modification time.
  # If the command you want to execute in the pod has any flags in common (e.g. -i),
  # you must use two dashes (--) to separate your command's flags/arguments.
  # Also note, do not surround your command and its flags/arguments with quotes
  # unless that is how you would execute it normally (i.e., do ls -t /usr, not "ls -t /usr").
  oc exec mypod -i -t -- ls -t /usr

  # Get output from running 'date' command from the first pod of the deployment mydeployment,
using the first container by default
  oc exec deploy/mydeployment -- date

  # Get output from running 'date' command from the first pod of the service myservice, using the first
container by default
  oc exec svc/myservice -- date
```

2.5.1.72. oc explain

Documentation of resources

Example usage

```
  # Get the documentation of the resource and its fields
  oc explain pods

  # Get the documentation of a specific field of a resource
  oc explain pods.spec.containers
```

2.5.1.73. oc expose

Expose a replicated application as a service or route

Example usage

```
  # Create a route based on service nginx. The new route will reuse nginx's labels
  oc expose service nginx

  # Create a route and specify your own label and route name
  oc expose service nginx -l name=myroute --name=fromdowntown

  # Create a route and specify a host name
  oc expose service nginx --hostname=www.example.com

  # Create a route with a wildcard
  oc expose service nginx --hostname=x.example.com --wildcard-policy=Subdomain
  # This would be equivalent to *.example.com. NOTE: only hosts are matched by the wildcard;
subdomains would not be included
```

```
  # Expose a deployment configuration as a service and use the specified port
  oc expose dc ruby-hello-world --port=8080

  # Expose a service as a route in the specified path
  oc expose service nginx --path=/nginx

  # Expose a service using different generators
  oc expose service nginx --name=exposed-svc --port=12201 --protocol="TCP" --
generator="service/v2"
  oc expose service nginx --name=my-route --port=12201 --generator="route/v1"

  # Exposing a service using the "route/v1" generator (default) will create a new exposed route with
the "--name" provided
  # (or the name of the service otherwise). You may not specify a "--protocol" or "--target-port" option
when using this generator
```

2.5.1.74. oc extract

Extract secrets or config maps to disk

Example usage

```
  # Extract the secret "test" to the current directory
  oc extract secret/test

  # Extract the config map "nginx" to the /tmp directory
  oc extract configmap/nginx --to=/tmp

  # Extract the config map "nginx" to STDOUT
  oc extract configmap/nginx --to=-

  # Extract only the key "nginx.conf" from config map "nginx" to the /tmp directory
  oc extract configmap/nginx --to=/tmp --keys=nginx.conf
```

2.5.1.75. oc get

Display one or many resources

Example usage

```
  # List all pods in ps output format.
  oc get pods

  # List all pods in ps output format with more information (such as node name).
  oc get pods -o wide

  # List a single replication controller with specified NAME in ps output format.
  oc get replicationcontroller web

  # List deployments in JSON output format, in the "v1" version of the "apps" API group:
  oc get deployments.v1.apps -o json

  # List a single pod in JSON output format.
```

```
  oc get -o json pod web-pod-13je7

  # List a pod identified by type and name specified in "pod.yaml" in JSON output format.
  oc get -f pod.yaml -o json

  # List resources from a directory with kustomization.yaml - e.g. dir/kustomization.yaml.
  oc get -k dir/

  # Return only the phase value of the specified pod.
  oc get -o template pod/web-pod-13je7 --template={{.status.phase}}

  # List resource information in custom columns.
  oc get pod test-pod -o custom-
columns=CONTAINER:.spec.containers[0].name,IMAGE:.spec.containers[0].image

  # List all replication controllers and services together in ps output format.
  oc get rc,services

  # List one or more resources by their type and names.
  oc get rc/web service/frontend pods/web-pod-13je7
```

2.5.1.76. oc idle

Idle scalable resources

Example usage

```
  # Idle the scalable controllers associated with the services listed in to-idle.txt
  $ oc idle --resource-names-file to-idle.txt
```

2.5.1.77. oc image append

Add layers to images and push them to a registry

Example usage

```
  # Remove the entrypoint on the mysql:latest image
  oc image append --from mysql:latest --to myregistry.com/myimage:latest --image '{"Entrypoint":null}'

  # Add a new layer to the image
  oc image append --from mysql:latest --to myregistry.com/myimage:latest layer.tar.gz

  # Add a new layer to the image and store the result on disk
  # This results in $(pwd)/v2/mysql/blobs,manifests
  oc image append --from mysql:latest --to file://mysql:local layer.tar.gz

  # Add a new layer to the image and store the result on disk in a designated directory
  # This will result in $(pwd)/mysql-local/v2/mysql/blobs,manifests
  oc image append --from mysql:latest --to file://mysql:local --dir mysql-local layer.tar.gz

  # Add a new layer to an image that is stored on disk (~/mysql-local/v2/image exists)
  oc image append --from-dir ~/mysql-local --to myregistry.com/myimage:latest layer.tar.gz

  # Add a new layer to an image that was mirrored to the current directory on disk ($(pwd)/v2/image
```

```
exists)
  oc image append --from-dir v2 --to myregistry.com/myimage:latest layer.tar.gz

  # Add a new layer to a multi-architecture image for an os/arch that is different from the system's
os/arch
  # Note: Wildcard filter is not supported with append. Pass a single os/arch to append
  oc image append --from docker.io/library/busybox:latest --filter-by-os=linux/s390x --to
myregistry.com/myimage:latest layer.tar.gz
```

2.5.1.78. oc image extract

Copy files from an image to the file system

Example usage

```
  # Extract the busybox image into the current directory
  oc image extract docker.io/library/busybox:latest

  # Extract the busybox image into a designated directory (must exist)
  oc image extract docker.io/library/busybox:latest --path /:/tmp/busybox

  # Extract the busybox image into the current directory for linux/s390x platform
  # Note: Wildcard filter is not supported with extract. Pass a single os/arch to extract
  oc image extract docker.io/library/busybox:latest --filter-by-os=linux/s390x

  # Extract a single file from the image into the current directory
  oc image extract docker.io/library/centos:7 --path /bin/bash:.

  # Extract all .repo files from the image's /etc/yum.repos.d/ folder into the current directory
  oc image extract docker.io/library/centos:7 --path /etc/yum.repos.d/*.repo:.

  # Extract all .repo files from the image's /etc/yum.repos.d/ folder into a designated directory (must
exist)
  # This results in /tmp/yum.repos.d/*.repo on local system
  oc image extract docker.io/library/centos:7 --path /etc/yum.repos.d/*.repo:/tmp/yum.repos.d

  # Extract an image stored on disk into the current directory ($(pwd)/v2/busybox/blobs,manifests
exists)
  # --confirm is required because the current directory is not empty
  oc image extract file://busybox:local --confirm

  # Extract an image stored on disk in a directory other than $(pwd)/v2 into the current directory
  # --confirm is required because the current directory is not empty ($(pwd)/busybox-mirror-
dir/v2/busybox exists)
  oc image extract file://busybox:local --dir busybox-mirror-dir --confirm

  # Extract an image stored on disk in a directory other than $(pwd)/v2 into a designated directory
(must exist)
  oc image extract file://busybox:local --dir busybox-mirror-dir --path /:/tmp/busybox

  # Extract the last layer in the image
  oc image extract docker.io/library/centos:7[-1]

  # Extract the first three layers of the image
  oc image extract docker.io/library/centos:7[:3]
```

```
# Extract the last three layers of the image
oc image extract docker.io/library/centos:7[-3:]
```

2.5.1.79. oc image info

Display information about an image

Example usage

```
# Show information about an image
oc image info quay.io/openshift/cli:latest

# Show information about images matching a wildcard
oc image info quay.io/openshift/cli:4.*

# Show information about a file mirrored to disk under DIR
oc image info --dir=DIR file://library/busybox:latest

# Select which image from a multi-OS image to show
oc image info library/busybox:latest --filter-by-os=linux/arm64
```

2.5.1.80. oc image mirror

Mirror images from one repository to another

Example usage

```
# Copy image to another tag
oc image mirror myregistry.com/myimage:latest myregistry.com/myimage:stable

# Copy image to another registry
oc image mirror myregistry.com/myimage:latest docker.io/myrepository/myimage:stable

# Copy all tags starting with mysql to the destination repository
oc image mirror myregistry.com/myimage:mysql* docker.io/myrepository/myimage

# Copy image to disk, creating a directory structure that can be served as a registry
oc image mirror myregistry.com/myimage:latest file://myrepository/myimage:latest

# Copy image to S3 (pull from <bucket>.s3.amazonaws.com/image:latest)
 oc image mirror myregistry.com/myimage:latest
s3://s3.amazonaws.com/<region>/<bucket>/image:latest

# Copy image to S3 without setting a tag (pull via @<digest>)
oc image mirror myregistry.com/myimage:latest s3://s3.amazonaws.com/<region>/<bucket>/image

# Copy image to multiple locations
oc image mirror myregistry.com/myimage:latest docker.io/myrepository/myimage:stable \
docker.io/myrepository/myimage:dev

# Copy multiple images
oc image mirror myregistry.com/myimage:latest=myregistry.com/other:test \
myregistry.com/myimage:new=myregistry.com/other:target
```

```
  # Copy manifest list of a multi-architecture image, even if only a single image is found
  oc image mirror myregistry.com/myimage:latest=myregistry.com/other:test \
  --keep-manifest-list=true

  # Copy specific os/arch manifest of a multi-architecture image
  # Run 'oc image info myregistry.com/myimage:latest' to see available os/arch for multi-arch images
  # Note that with multi-arch images, this results in a new manifest list digest that includes only
  # the filtered manifests
  oc image mirror myregistry.com/myimage:latest=myregistry.com/other:test \
  --filter-by-os=os/arch

  # Copy all os/arch manifests of a multi-architecture image
  # Run 'oc image info myregistry.com/myimage:latest' to see list of os/arch manifests that will be
mirrored
  oc image mirror myregistry.com/myimage:latest=myregistry.com/other:test \
  --keep-manifest-list=true

  # Note the above command is equivalent to
  oc image mirror myregistry.com/myimage:latest=myregistry.com/other:test \
  --filter-by-os=.*
```

2.5.1.81. oc import-image

Import images from a container image registry

Example usage

```
  # Import tag latest into a new image stream
  oc import-image mystream --from=registry.io/repo/image:latest --confirm

  # Update imported data for tag latest in an already existing image stream
  oc import-image mystream

  # Update imported data for tag stable in an already existing image stream
  oc import-image mystream:stable

  # Update imported data for all tags in an existing image stream
  oc import-image mystream --all

  # Import all tags into a new image stream
  oc import-image mystream --from=registry.io/repo/image --all --confirm

  # Import all tags into a new image stream using a custom timeout
  oc --request-timeout=5m import-image mystream --from=registry.io/repo/image --all --confirm
```

2.5.1.82. oc kustomize

Build a kustomization target from a directory or URL.

Example usage

```
  # Build the current working directory
  oc kustomize
```

```
# Build some shared configuration directory
oc kustomize /home/config/production

# Build from github
oc kustomize https://github.com/kubernetes-sigs/kustomize.git/examples/helloWorld?ref=v1.0.6
```

2.5.1.83. oc label

Update the labels on a resource

Example usage

```
# Update pod 'foo' with the label 'unhealthy' and the value 'true'.
oc label pods foo unhealthy=true

# Update pod 'foo' with the label 'status' and the value 'unhealthy', overwriting any existing value.
oc label --overwrite pods foo status=unhealthy

# Update all pods in the namespace
oc label pods --all status=unhealthy

# Update a pod identified by the type and name in "pod.json"
oc label -f pod.json status=unhealthy

# Update pod 'foo' only if the resource is unchanged from version 1.
oc label pods foo status=unhealthy --resource-version=1

# Update pod 'foo' by removing a label named 'bar' if it exists.
# Does not require the --overwrite flag.
oc label pods foo bar-
```

2.5.1.84. oc login

Log in to a server

Example usage

```
# Log in interactively
oc login --username=myuser

# Log in to the given server with the given certificate authority file
oc login localhost:8443 --certificate-authority=/path/to/cert.crt

# Log in to the given server with the given credentials (will not prompt interactively)
oc login localhost:8443 --username=myuser --password=mypass
```

2.5.1.85. oc logout

End the current server session

Example usage

```
# Log out
oc logout
```

2.5.1.86. oc logs

Print the logs for a container in a pod

Example usage

```
# Start streaming the logs of the most recent build of the openldap build config
oc logs -f bc/openldap

# Start streaming the logs of the latest deployment of the mysql deployment config
oc logs -f dc/mysql

# Get the logs of the first deployment for the mysql deployment config. Note that logs
# from older deployments may not exist either because the deployment was successful
# or due to deployment pruning or manual deletion of the deployment
oc logs --version=1 dc/mysql

# Return a snapshot of ruby-container logs from pod backend
oc logs backend -c ruby-container

# Start streaming of ruby-container logs from pod backend
oc logs -f pod/backend -c ruby-container
```

2.5.1.87. oc new-app

Create a new application

Example usage

```
# List all local templates and image streams that can be used to create an app
oc new-app --list

# Create an application based on the source code in the current git repository (with a public remote)
and a Docker image
oc new-app . --docker-image=registry/repo/langimage

# Create an application myapp with Docker based build strategy expecting binary input
oc new-app  --strategy=docker --binary --name myapp

# Create a Ruby application based on the provided [image]~[source code] combination
oc new-app centos/ruby-25-centos7~https://github.com/sclorg/ruby-ex.git

# Use the public Docker Hub MySQL image to create an app. Generated artifacts will be labeled
with db=mysql
oc new-app mysql MYSQL_USER=user MYSQL_PASSWORD=pass MYSQL_DATABASE=testdb -
l db=mysql

# Use a MySQL image in a private registry to create an app and override application artifacts'
names
oc new-app --docker-image=myregistry.com/mycompany/mysql --name=private
```

```
# Create an application from a remote repository using its beta4 branch
oc new-app https://github.com/openshift/ruby-hello-world#beta4

# Create an application based on a stored template, explicitly setting a parameter value
oc new-app --template=ruby-helloworld-sample --param=MYSQL_USER=admin

# Create an application from a remote repository and specify a context directory
oc new-app https://github.com/youruser/yourgitrepo --context-dir=src/build

# Create an application from a remote private repository and specify which existing secret to use
oc new-app https://github.com/youruser/yourgitrepo --source-secret=yoursecret

# Create an application based on a template file, explicitly setting a parameter value
oc new-app --file=./example/myapp/template.json --param=MYSQL_USER=admin

# Search all templates, image streams, and Docker images for the ones that match "ruby"
oc new-app --search ruby

# Search for "ruby", but only in stored templates (--template, --image-stream and --docker-image
# can be used to filter search results)
oc new-app --search --template=ruby

# Search for "ruby" in stored templates and print the output as YAML
oc new-app --search --template=ruby --output=yaml
```

2.5.1.88. oc new-build

Create a new build configuration

Example usage

```
# Create a build config based on the source code in the current git repository (with a public
# remote) and a Docker image
oc new-build . --docker-image=repo/langimage

# Create a NodeJS build config based on the provided [image]~[source code] combination
oc new-build centos/nodejs-8-centos7~https://github.com/sclorg/nodejs-ex.git

# Create a build config from a remote repository using its beta2 branch
oc new-build https://github.com/openshift/ruby-hello-world#beta2

# Create a build config using a Dockerfile specified as an argument
oc new-build -D $'FROM centos:7\nRUN yum install -y httpd'

# Create a build config from a remote repository and add custom environment variables
oc new-build https://github.com/openshift/ruby-hello-world -e RACK_ENV=development

# Create a build config from a remote private repository and specify which existing secret to use
oc new-build https://github.com/youruser/yourgitrepo --source-secret=yoursecret

# Create a build config from a remote repository and inject the npmrc into a build
oc new-build https://github.com/openshift/ruby-hello-world --build-secret npmrc:.npmrc

# Create a build config from a remote repository and inject environment data into a build
oc new-build https://github.com/openshift/ruby-hello-world --build-config-map env:config
```

```
  # Create a build config that gets its input from a remote repository and another Docker image
  oc new-build https://github.com/openshift/ruby-hello-world --source-image=openshift/jenkins-1-
centos7 --source-image-path=/var/lib/jenkins:tmp
```

2.5.1.89. oc new-project

Request a new project

Example usage

```
  # Create a new project with minimal information
  oc new-project web-team-dev

  # Create a new project with a display name and description
  oc new-project web-team-dev --display-name="Web Team Development" --
description="Development project for the web team."
```

2.5.1.90. oc observe

Observe changes to resources and react to them (experimental)

Example usage

```
  # Observe changes to services
  oc observe services

  # Observe changes to services, including the clusterIP and invoke a script for each
  oc observe services --template '{ .spec.clusterIP }' -- register_dns.sh

  # Observe changes to services filtered by a label selector
  oc observe namespaces -l regist-dns=true --template '{ .spec.clusterIP }' -- register_dns.sh
```

2.5.1.91. oc patch

Update field(s) of a resource

Example usage

```
  # Partially update a node using a strategic merge patch. Specify the patch as JSON.
  oc patch node k8s-node-1 -p '{"spec":{"unschedulable":true}}'

  # Partially update a node using a strategic merge patch. Specify the patch as YAML.
  oc patch node k8s-node-1 -p $'spec:\n unschedulable: true'

  # Partially update a node identified by the type and name specified in "node.json" using strategic
merge patch.
  oc patch -f node.json -p '{"spec":{"unschedulable":true}}'

  # Update a container's image; spec.containers[*].name is required because it's a merge key.
  oc patch pod valid-pod -p '{"spec":{"containers":[{"name":"kubernetes-serve-
hostname","image":"new image"}]}}'
```

```
  # Update a container's image using a json patch with positional arrays.
  oc patch pod valid-pod --type='json' -p='[{"op": "replace", "path": "/spec/containers/0/image",
"value":"new image"}]'
```

2.5.1.92. oc policy add-role-to-user

Add a role to users or service accounts for the current project

Example usage

```
  # Add the 'view' role to user1 for the current project
  oc policy add-role-to-user view user1

  # Add the 'edit' role to serviceaccount1 for the current project
  oc policy add-role-to-user edit -z serviceaccount1
```

2.5.1.93. oc policy scc-review

Check which service account can create a pod

Example usage

```
  # Check whether service accounts sa1 and sa2 can admit a pod with a template pod spec specified
in my_resource.yaml
  # Service Account specified in myresource.yaml file is ignored
  oc policy scc-review -z sa1,sa2 -f my_resource.yaml

  # Check whether service accounts system:serviceaccount:bob:default can admit a pod with a
template pod spec specified in my_resource.yaml
  oc policy scc-review -z system:serviceaccount:bob:default -f my_resource.yaml

  # Check whether the service account specified in my_resource_with_sa.yaml can admit the pod
  oc policy scc-review -f my_resource_with_sa.yaml

  # Check whether the default service account can admit the pod; default is taken since no service
account is defined in myresource_with_no_sa.yaml
  oc policy scc-review -f myresource_with_no_sa.yaml
```

2.5.1.94. oc policy scc-subject-review

Check whether a user or a service account can create a pod

Example usage

```
  # Check whether user bob can create a pod specified in myresource.yaml
  oc policy scc-subject-review -u bob -f myresource.yaml

  # Check whether user bob who belongs to projectAdmin group can create a pod specified in
myresource.yaml
  oc policy scc-subject-review -u bob -g projectAdmin -f myresource.yaml
```

```
  # Check whether a service account specified in the pod template spec in myresourcewithsa.yaml
can create the pod
  oc policy scc-subject-review -f myresourcewithsa.yaml
```

2.5.1.95. oc port-forward

Forward one or more local ports to a pod

Example usage

```
  # Listen on ports 5000 and 6000 locally, forwarding data to/from ports 5000 and 6000 in the pod
  oc port-forward pod/mypod 5000 6000

  # Listen on ports 5000 and 6000 locally, forwarding data to/from ports 5000 and 6000 in a pod
selected by the deployment
  oc port-forward deployment/mydeployment 5000 6000

  # Listen on port 8443 locally, forwarding to the targetPort of the service's port named "https" in a pod
selected by the service
  oc port-forward service/myservice 8443:https

  # Listen on port 8888 locally, forwarding to 5000 in the pod
  oc port-forward pod/mypod 8888:5000

  # Listen on port 8888 on all addresses, forwarding to 5000 in the pod
  oc port-forward --address 0.0.0.0 pod/mypod 8888:5000

  # Listen on port 8888 on localhost and selected IP, forwarding to 5000 in the pod
  oc port-forward --address localhost,10.19.21.23 pod/mypod 8888:5000

  # Listen on a random port locally, forwarding to 5000 in the pod
  oc port-forward pod/mypod :5000
```

2.5.1.96. oc process

Process a template into list of resources

Example usage

```
  # Convert the template.json file into a resource list and pass to create
  oc process -f template.json | oc create -f -

  # Process a file locally instead of contacting the server
  oc process -f template.json --local -o yaml

  # Process template while passing a user-defined label
  oc process -f template.json -l name=mytemplate

  # Convert a stored template into a resource list
  oc process foo

  # Convert a stored template into a resource list by setting/overriding parameter values
  oc process foo PARM1=VALUE1 PARM2=VALUE2
```

```
# Convert a template stored in different namespace into a resource list
oc process openshift//foo

# Convert template.json into a resource list
cat template.json | oc process -f -
```

2.5.1.97. oc project

Switch to another project

Example usage

```
# Switch to the 'myapp' project
oc project myapp

# Display the project currently in use
oc project
```

2.5.1.98. oc projects

Display existing projects

Example usage

```
# List all projects
oc projects
```

2.5.1.99. oc proxy

Run a proxy to the Kubernetes API server

Example usage

```
# To proxy all of the kubernetes api and nothing else.
oc proxy --api-prefix=/

# To proxy only part of the kubernetes api and also some static files.
# You can get pods info with 'curl localhost:8001/api/v1/pods'
oc proxy --www=/my/files --www-prefix=/static/ --api-prefix=/api/

# To proxy the entire kubernetes api at a different root.
# You can get pods info with 'curl localhost:8001/custom/api/v1/pods'
oc proxy --api-prefix=/custom/

# Run a proxy to kubernetes apiserver on port 8011, serving static content from ./local/www/
oc proxy --port=8011 --www=./local/www/

# Run a proxy to kubernetes apiserver on an arbitrary local port.
# The chosen port for the server will be output to stdout.
oc proxy --port=0
```

```
# Run a proxy to kubernetes apiserver, changing the api prefix to k8s-api
# This makes e.g. the pods api available at localhost:8001/k8s-api/v1/pods/
oc proxy --api-prefix=/k8s-api
```

2.5.1.100. oc registry info

Print information about the integrated registry

Example usage

```
# Display information about the integrated registry
oc registry info
```

2.5.1.101. oc registry login

Log in to the integrated registry

Example usage

```
# Log in to the integrated registry
oc registry login

# Log in as the default service account in the current namespace
oc registry login -z default

# Log in to different registry using BASIC auth credentials
oc registry login --registry quay.io/myregistry --auth-basic=USER:PASS
```

2.5.1.102. oc replace

Replace a resource by filename or stdin

Example usage

```
# Replace a pod using the data in pod.json.
oc replace -f ./pod.json

# Replace a pod based on the JSON passed into stdin.
cat pod.json | oc replace -f -

# Update a single-container pod's image version (tag) to v4
oc get pod mypod -o yaml | sed 's/\(image: myimage\):.*$/\1:v4/' | oc replace -f -

# Force replace, delete and then re-create the resource
oc replace --force -f ./pod.json
```

2.5.1.103. oc rollback

Revert part of an application back to a previous deployment

Example usage

```
# Perform a rollback to the last successfully completed deployment for a deployment config
oc rollback frontend

# See what a rollback to version 3 will look like, but do not perform the rollback
oc rollback frontend --to-version=3 --dry-run

# Perform a rollback to a specific deployment
oc rollback frontend-2

# Perform the rollback manually by piping the JSON of the new config back to oc
oc rollback frontend -o json | oc replace dc/frontend -f -

# Print the updated deployment configuration in JSON format instead of performing the rollback
oc rollback frontend -o json
```

2.5.1.104. oc rollout cancel

Cancel the in-progress deployment

Example usage

```
# Cancel the in-progress deployment based on 'nginx'
oc rollout cancel dc/nginx
```

2.5.1.105. oc rollout history

View rollout history

Example usage

```
# View the rollout history of a deployment
oc rollout history dc/nginx

# View the details of deployment revision 3
oc rollout history dc/nginx --revision=3
```

2.5.1.106. oc rollout latest

Start a new rollout for a deployment config with the latest state from its triggers

Example usage

```
# Start a new rollout based on the latest images defined in the image change triggers
oc rollout latest dc/nginx

# Print the rolled out deployment config
oc rollout latest dc/nginx -o json
```

2.5.1.107. oc rollout pause

Mark the provided resource as paused

Example usage

```
# Mark the nginx deployment as paused. Any current state of
# the deployment will continue its function, new updates to the deployment will not
# have an effect as long as the deployment is paused
oc rollout pause dc/nginx
```

2.5.1.108. oc rollout restart

Restart a resource

Example usage

```
# Restart a deployment
oc rollout restart deployment/nginx

# Restart a daemonset
oc rollout restart daemonset/abc
```

2.5.1.109. oc rollout resume

Resume a paused resource

Example usage

```
# Resume an already paused deployment
oc rollout resume dc/nginx
```

2.5.1.110. oc rollout retry

Retry the latest failed rollout

Example usage

```
# Retry the latest failed deployment based on 'frontend'
# The deployer pod and any hook pods are deleted for the latest failed deployment
oc rollout retry dc/frontend
```

2.5.1.111. oc rollout status

Show the status of the rollout

Example usage

```
# Watch the status of the latest rollout
oc rollout status dc/nginx
```

2.5.1.112. oc rollout undo

Undo a previous rollout

Example usage

```
# Roll back to the previous deployment
oc rollout undo dc/nginx

# Roll back to deployment revision 3. The replication controller for that version must exist
oc rollout undo dc/nginx --to-revision=3
```

2.5.1.113. oc rsh

Start a shell session in a container

Example usage

```
# Open a shell session on the first container in pod 'foo'
oc rsh foo

# Open a shell session on the first container in pod 'foo' and namespace 'bar'
# (Note that oc client specific arguments must come before the resource name and its arguments)
oc rsh -n bar foo

# Run the command 'cat /etc/resolv.conf' inside pod 'foo'
oc rsh foo cat /etc/resolv.conf

# See the configuration of your internal registry
oc rsh dc/docker-registry cat config.yml

# Open a shell session on the container named 'index' inside a pod of your job
oc rsh -c index job/sheduled
```

2.5.1.114. oc rsync

Copy files between a local file system and a pod

Example usage

```
# Synchronize a local directory with a pod directory
oc rsync ./local/dir/ POD:/remote/dir

# Synchronize a pod directory with a local directory
oc rsync POD:/remote/dir/ ./local/dir
```

2.5.1.115. oc run

Run a particular image on the cluster

Example usage

```
# Start a nginx pod.
oc run nginx --image=nginx

# Start a hazelcast pod and let the container expose port 5701.
oc run hazelcast --image=hazelcast/hazelcast --port=5701
```

```
  # Start a hazelcast pod and set environment variables "DNS_DOMAIN=cluster" and
"POD_NAMESPACE=default" in the container.
  oc run hazelcast --image=hazelcast/hazelcast --env="DNS_DOMAIN=cluster" --
env="POD_NAMESPACE=default"

  # Start a hazelcast pod and set labels "app=hazelcast" and "env=prod" in the container.
  oc run hazelcast --image=hazelcast/hazelcast --labels="app=hazelcast,env=prod"

  # Dry run. Print the corresponding API objects without creating them.
  oc run nginx --image=nginx --dry-run=client

  # Start a nginx pod, but overload the spec with a partial set of values parsed from JSON.
  oc run nginx --image=nginx --overrides='{ "apiVersion": "v1", "spec": { ... } }'

  # Start a busybox pod and keep it in the foreground, don't restart it if it exits.
  oc run -i -t busybox --image=busybox --restart=Never

  # Start the nginx pod using the default command, but use custom arguments (arg1 .. argN) for that
command.
  oc run nginx --image=nginx -- <arg1> <arg2> ... <argN>

  # Start the nginx pod using a different command and custom arguments.
  oc run nginx --image=nginx --command -- <cmd> <arg1> ... <argN>
```

2.5.1.116. oc scale

Set a new size for a Deployment, ReplicaSet or Replication Controller

Example usage

```
  # Scale a replicaset named 'foo' to 3.
  oc scale --replicas=3 rs/foo

  # Scale a resource identified by type and name specified in "foo.yaml" to 3.
  oc scale --replicas=3 -f foo.yaml

  # If the deployment named mysql's current size is 2, scale mysql to 3.
  oc scale --current-replicas=2 --replicas=3 deployment/mysql

  # Scale multiple replication controllers.
  oc scale --replicas=5 rc/foo rc/bar rc/baz

  # Scale statefulset named 'web' to 3.
  oc scale --replicas=3 statefulset/web
```

2.5.1.117. oc secrets link

Link secrets to a service account

Example usage

```
  # Add an image pull secret to a service account to automatically use it for pulling pod images
  oc secrets link serviceaccount-name pull-secret --for=pull
```

```
  # Add an image pull secret to a service account to automatically use it for both pulling and pushing build images
  oc secrets link builder builder-image-secret --for=pull,mount

  # If the cluster's serviceAccountConfig is operating with limitSecretReferences: True, secrets must be added to the pod's service account whitelist in order to be available to the pod
  oc secrets link pod-sa pod-secret
```

2.5.1.118. oc secrets unlink

Detach secrets from a service account

Example usage

```
  # Unlink a secret currently associated with a service account
  oc secrets unlink serviceaccount-name secret-name another-secret-name ...
```

2.5.1.119. oc serviceaccounts create-kubeconfig

Generate a kubeconfig file for a service account

Example usage

```
  # Create a kubeconfig file for service account 'default'
  oc serviceaccounts create-kubeconfig 'default' > default.kubeconfig
```

2.5.1.120. oc serviceaccounts get-token

Get a token assigned to a service account

Example usage

```
  # Get the service account token from service account 'default'
  oc serviceaccounts get-token 'default'
```

2.5.1.121. oc serviceaccounts new-token

Generate a new token for a service account

Example usage

```
  # Generate a new token for service account 'default'
  oc serviceaccounts new-token 'default'

  # Generate a new token for service account 'default' and apply
  # labels 'foo' and 'bar' to the new token for identification
  oc serviceaccounts new-token 'default' --labels foo=foo-value,bar=bar-value
```

2.5.1.122. oc set build-hook

Update a build hook on a build config

Example usage

```
  # Clear post-commit hook on a build config
  oc set build-hook bc/mybuild --post-commit --remove

  # Set the post-commit hook to execute a test suite using a new entrypoint
  oc set build-hook bc/mybuild --post-commit --command -- /bin/bash -c /var/lib/test-image.sh

  # Set the post-commit hook to execute a shell script
  oc set build-hook bc/mybuild --post-commit --script="/var/lib/test-image.sh param1 param2 &&
/var/lib/done.sh"
```

2.5.1.123. oc set build-secret

Update a build secret on a build config

Example usage

```
  # Clear the push secret on a build config
  oc set build-secret --push --remove bc/mybuild

  # Set the pull secret on a build config
  oc set build-secret --pull bc/mybuild mysecret

  # Set the push and pull secret on a build config
  oc set build-secret --push --pull bc/mybuild mysecret

  # Set the source secret on a set of build configs matching a selector
  oc set build-secret --source -l app=myapp gitsecret
```

2.5.1.124. oc set data

Update the data within a config map or secret

Example usage

```
  # Set the 'password' key of a secret
  oc set data secret/foo password=this_is_secret

  # Remove the 'password' key from a secret
  oc set data secret/foo password-

  # Update the 'haproxy.conf' key of a config map from a file on disk
  oc set data configmap/bar --from-file=../haproxy.conf

  # Update a secret with the contents of a directory, one key per file
  oc set data secret/foo --from-file=secret-dir
```

2.5.1.125. oc set deployment-hook

Update a deployment hook on a deployment config

Example usage

```
# Clear pre and post hooks on a deployment config
oc set deployment-hook dc/myapp --remove --pre --post

# Set the pre deployment hook to execute a db migration command for an application
# using the data volume from the application
oc set deployment-hook dc/myapp --pre --volumes=data -- /var/lib/migrate-db.sh

# Set a mid deployment hook along with additional environment variables
oc set deployment-hook dc/myapp --mid --volumes=data -e VAR1=value1 -e VAR2=value2 --
/var/lib/prepare-deploy.sh
```

2.5.1.126. oc set env

Update environment variables on a pod template

Example usage

```
# Update deployment config 'myapp' with a new environment variable
oc set env dc/myapp STORAGE_DIR=/local

# List the environment variables defined on a build config 'sample-build'
oc set env bc/sample-build --list

# List the environment variables defined on all pods
oc set env pods --all --list

# Output modified build config in YAML
oc set env bc/sample-build STORAGE_DIR=/data -o yaml

# Update all containers in all replication controllers in the project to have ENV=prod
oc set env rc --all ENV=prod

# Import environment from a secret
oc set env --from=secret/mysecret dc/myapp

# Import environment from a config map with a prefix
oc set env --from=configmap/myconfigmap --prefix=MYSQL_ dc/myapp

# Remove the environment variable ENV from container 'c1' in all deployment configs
oc set env dc --all --containers="c1" ENV-

# Remove the environment variable ENV from a deployment config definition on disk and
# update the deployment config on the server
oc set env -f dc.json ENV-

# Set some of the local shell environment into a deployment config on the server
oc set env | grep RAILS_ | oc env -e - dc/myapp
```

2.5.1.127. oc set image

Update image of a pod template

Example usage

```
  # Set a deployment configs's nginx container image to 'nginx:1.9.1', and its busybox container image to 'busybox'.
  oc set image dc/nginx busybox=busybox nginx=nginx:1.9.1

  # Set a deployment configs's app container image to the image referenced by the imagestream tag 'openshift/ruby:2.3'.
  oc set image dc/myapp app=openshift/ruby:2.3 --source=imagestreamtag

  # Update all deployments' and rc's nginx container's image to 'nginx:1.9.1'
  oc set image deployments,rc nginx=nginx:1.9.1 --all

  # Update image of all containers of daemonset abc to 'nginx:1.9.1'
  oc set image daemonset abc *=nginx:1.9.1

  # Print result (in yaml format) of updating nginx container image from local file, without hitting the server
  oc set image -f path/to/file.yaml nginx=nginx:1.9.1 --local -o yaml
```

2.5.1.128. oc set image-lookup

Change how images are resolved when deploying applications

Example usage

```
  # Print all of the image streams and whether they resolve local names
  oc set image-lookup

  # Use local name lookup on image stream mysql
  oc set image-lookup mysql

  # Force a deployment to use local name lookup
  oc set image-lookup deploy/mysql

  # Show the current status of the deployment lookup
  oc set image-lookup deploy/mysql --list

  # Disable local name lookup on image stream mysql
  oc set image-lookup mysql --enabled=false

  # Set local name lookup on all image streams
  oc set image-lookup --all
```

2.5.1.129. oc set probe

Update a probe on a pod template

Example usage

```
  # Clear both readiness and liveness probes off all containers
  oc set probe dc/myapp --remove --readiness --liveness

  # Set an exec action as a liveness probe to run 'echo ok'
  oc set probe dc/myapp --liveness -- echo ok
```

```
# Set a readiness probe to try to open a TCP socket on 3306
oc set probe rc/mysql --readiness --open-tcp=3306

# Set an HTTP startup probe for port 8080 and path /healthz over HTTP on the pod IP
oc probe dc/webapp --startup --get-url=http://:8080/healthz

# Set an HTTP readiness probe for port 8080 and path /healthz over HTTP on the pod IP
oc probe dc/webapp --readiness --get-url=http://:8080/healthz

# Set an HTTP readiness probe over HTTPS on 127.0.0.1 for a hostNetwork pod
oc set probe dc/router --readiness --get-url=https://127.0.0.1:1936/stats

# Set only the initial-delay-seconds field on all deployments
oc set probe dc --all --readiness --initial-delay-seconds=30
```

2.5.1.130. oc set resources

Update resource requests/limits on objects with pod templates

Example usage

```
# Set a deployments nginx container CPU limits to "200m and memory to 512Mi"
oc set resources deployment nginx -c=nginx --limits=cpu=200m,memory=512Mi

# Set the resource request and limits for all containers in nginx
oc set resources deployment nginx --limits=cpu=200m,memory=512Mi --
requests=cpu=100m,memory=256Mi

# Remove the resource requests for resources on containers in nginx
oc set resources deployment nginx --limits=cpu=0,memory=0 --requests=cpu=0,memory=0

# Print the result (in YAML format) of updating nginx container limits locally, without hitting the server
oc set resources -f path/to/file.yaml --limits=cpu=200m,memory=512Mi --local -o yaml
```

2.5.1.131. oc set route-backends

Update the backends for a route

Example usage

```
# Print the backends on the route 'web'
oc set route-backends web

# Set two backend services on route 'web' with 2/3rds of traffic going to 'a'
oc set route-backends web a=2 b=1

# Increase the traffic percentage going to b by 10%% relative to a
oc set route-backends web --adjust b=+10%%

# Set traffic percentage going to b to 10%% of the traffic going to a
oc set route-backends web --adjust b=10%%

# Set weight of b to 10
oc set route-backends web --adjust b=10
```

```
  # Set the weight to all backends to zero
  oc set route-backends web --zero
```

2.5.1.132. oc set selector

Set the selector on a resource

Example usage

```
  # Set the labels and selector before creating a deployment/service pair.
  oc create service clusterip my-svc --clusterip="None" -o yaml --dry-run | oc set selector --local -f -
'environment=qa' -o yaml | oc create -f -
  oc create deployment my-dep -o yaml --dry-run | oc label --local -f - environment=qa -o yaml | oc
create -f -
```

2.5.1.133. oc set serviceaccount

Update ServiceAccount of a resource

Example usage

```
  # Set deployment nginx-deployment's service account to serviceaccount1
  oc set serviceaccount deployment nginx-deployment serviceaccount1

  # Print the result (in YAML format) of updated nginx deployment with service account from a local
file, without hitting the API server
  oc set sa -f nginx-deployment.yaml serviceaccount1 --local --dry-run -o yaml
```

2.5.1.134. oc set subject

Update User, Group or ServiceAccount in a RoleBinding/ClusterRoleBinding

Example usage

```
  # Update a cluster role binding for serviceaccount1
  oc set subject clusterrolebinding admin --serviceaccount=namespace:serviceaccount1

  # Update a role binding for user1, user2, and group1
  oc set subject rolebinding admin --user=user1 --user=user2 --group=group1

  # Print the result (in YAML format) of updating role binding subjects locally, without hitting the server
  oc create rolebinding admin --role=admin --user=admin -o yaml --dry-run | oc set subject --local -f -
--user=foo -o yaml
```

2.5.1.135. oc set triggers

Update the triggers on one or more objects

Example usage

```
  # Print the triggers on the deployment config 'myapp'
```

```
oc set triggers dc/myapp

# Set all triggers to manual
oc set triggers dc/myapp --manual

# Enable all automatic triggers
oc set triggers dc/myapp --auto

# Reset the GitHub webhook on a build to a new, generated secret
oc set triggers bc/webapp --from-github
oc set triggers bc/webapp --from-webhook

# Remove all triggers
oc set triggers bc/webapp --remove-all

# Stop triggering on config change
oc set triggers dc/myapp --from-config --remove

# Add an image trigger to a build config
oc set triggers bc/webapp --from-image=namespace1/image:latest

# Add an image trigger to a stateful set on the main container
oc set triggers statefulset/db --from-image=namespace1/image:latest -c main
```

2.5.1.136. oc set volumes

Update volumes on a pod template

Example usage

```
# List volumes defined on all deployment configs in the current project
oc set volume dc --all

# Add a new empty dir volume to deployment config (dc) 'myapp' mounted under
# /var/lib/myapp
oc set volume dc/myapp --add --mount-path=/var/lib/myapp

# Use an existing persistent volume claim (pvc) to overwrite an existing volume 'v1'
oc set volume dc/myapp --add --name=v1 -t pvc --claim-name=pvc1 --overwrite

# Remove volume 'v1' from deployment config 'myapp'
oc set volume dc/myapp --remove --name=v1

# Create a new persistent volume claim that overwrites an existing volume 'v1'
oc set volume dc/myapp --add --name=v1 -t pvc --claim-size=1G --overwrite

# Change the mount point for volume 'v1' to /data
oc set volume dc/myapp --add --name=v1 -m /data --overwrite

# Modify the deployment config by removing volume mount "v1" from container "c1"
# (and by removing the volume "v1" if no other containers have volume mounts that reference it)
oc set volume dc/myapp --remove --name=v1 --containers=c1
```

```
# Add new volume based on a more complex volume source (AWS EBS, GCE PD,
# Ceph, Gluster, NFS, ISCSI, ...)
oc set volume dc/myapp --add -m /data --source=<json-string>
```

2.5.1.137. oc start-build

Start a new build

Example usage

```
# Starts build from build config "hello-world"
oc start-build hello-world

# Starts build from a previous build "hello-world-1"
oc start-build --from-build=hello-world-1

# Use the contents of a directory as build input
oc start-build hello-world --from-dir=src/

# Send the contents of a Git repository to the server from tag 'v2'
oc start-build hello-world --from-repo=../hello-world --commit=v2

# Start a new build for build config "hello-world" and watch the logs until the build
# completes or fails
oc start-build hello-world --follow

# Start a new build for build config "hello-world" and wait until the build completes. It
# exits with a non-zero return code if the build fails
oc start-build hello-world --wait
```

2.5.1.138. oc status

Show an overview of the current project

Example usage

```
# See an overview of the current project
oc status

# Export the overview of the current project in an svg file
oc status -o dot | dot -T svg -o project.svg

# See an overview of the current project including details for any identified issues
oc status --suggest
```

2.5.1.139. oc tag

Tag existing images into image streams

Example usage

```
# Tag the current image for the image stream 'openshift/ruby' and tag '2.0' into the image stream
'yourproject/ruby with tag 'tip'
```

```
  oc tag openshift/ruby:2.0 yourproject/ruby:tip

  # Tag a specific image
  oc tag
openshift/ruby@sha256:6b646fa6bf5e5e4c7fa41056c27910e679c03ebe7f93e361e6515a9da7e258cc
yourproject/ruby:tip

  # Tag an external container image
  oc tag --source=docker openshift/origin-control-plane:latest yourproject/ruby:tip

  # Tag an external container image and request pullthrough for it
  oc tag --source=docker openshift/origin-control-plane:latest yourproject/ruby:tip --reference-
policy=local

  # Remove the specified spec tag from an image stream
  oc tag openshift/origin-control-plane:latest -d
```

2.5.1.140. oc version

Print the client and server version information

Example usage

```
  # Print the OpenShift client, kube-apiserver, and openshift-apiserver version information for the
current context
  oc version

  # Print the OpenShift client, kube-apiserver, and openshift-apiserver version numbers for the current
context
  oc version --short

  # Print the OpenShift client version information for the current context
  oc version --client
```

2.5.1.141. oc wait

Experimental: Wait for a specific condition on one or many resources.

Example usage

```
  # Wait for the pod "busybox1" to contain the status condition of type "Ready".
  oc wait --for=condition=Ready pod/busybox1

  # The default value of status condition is true, you can set false.
  oc wait --for=condition=Ready=false pod/busybox1

  # Wait for the pod "busybox1" to be deleted, with a timeout of 60s, after having issued the "delete"
command.
  oc delete pod/busybox1
  oc wait --for=delete pod/busybox1 --timeout=60s
```

2.5.1.142. oc whoami

Return information about the current session

Example usage

```
# Display the currently authenticated user
oc whoami
```

2.5.2. Additional resources

- OpenShift CLI administrator command reference

2.6. OPENSHIFT CLI ADMINISTRATOR COMMAND REFERENCE

This reference provides descriptions and example commands for OpenShift CLI (**oc**) administrator commands. You must have **cluster-admin** or equivalent permissions to use these commands.

For developer commands, see the OpenShift CLI developer command reference.

Run **oc adm -h** to list all administrator commands or run **oc <command> --help** to get additional details for a specific command.

2.6.1. OpenShift CLI (oc) administrator commands

2.6.1.1. oc adm build-chain

Output the inputs and dependencies of your builds

Example usage

```
# Build the dependency tree for the 'latest' tag in <image-stream>
oc adm build-chain <image-stream>

# Build the dependency tree for the 'v2' tag in dot format and visualize it via the dot utility
oc adm build-chain <image-stream>:v2 -o dot | dot -T svg -o deps.svg

# Build the dependency tree across all namespaces for the specified image stream tag found in the 'test' namespace
oc adm build-chain <image-stream> -n test --all
```

2.6.1.2. oc adm catalog mirror

Mirror an operator-registry catalog

Example usage

```
# Mirror an operator-registry image and its contents to a registry
oc adm catalog mirror quay.io/my/image:latest myregistry.com

# Mirror an operator-registry image and its contents to a particular namespace in a registry
oc adm catalog mirror quay.io/my/image:latest myregistry.com/my-namespace

# Mirror to an airgapped registry by first mirroring to files
oc adm catalog mirror quay.io/my/image:latest file:///local/index
oc adm catalog mirror file:///local/index/my/image:latest my-airgapped-registry.com
```

```
# Configure a cluster to use a mirrored registry
oc apply -f manifests/imageContentSourcePolicy.yaml

# Edit the mirroring mappings and mirror with "oc image mirror" manually
oc adm catalog mirror --manifests-only quay.io/my/image:latest myregistry.com
oc image mirror -f manifests/mapping.txt

# Delete all ImageContentSourcePolicies generated by oc adm catalog mirror
oc delete imagecontentsourcepolicy -l operators.openshift.org/catalog=true
```

2.6.1.3. oc adm completion

Output shell completion code for the specified shell (bash or zsh)

Example usage

```
# Installing bash completion on macOS using homebrew
## If running Bash 3.2 included with macOS
brew install bash-completion
## or, if running Bash 4.1+
brew install bash-completion@2
## If oc is installed via homebrew, this should start working immediately.
## If you've installed via other means, you may need add the completion to your completion directory
oc completion bash > $(brew --prefix)/etc/bash_completion.d/oc


# Installing bash completion on Linux
## If bash-completion is not installed on Linux, please install the 'bash-completion' package
## via your distribution's package manager.
## Load the oc completion code for bash into the current shell
source <(oc completion bash)
## Write bash completion code to a file and source it from .bash_profile
oc completion bash > ~/.kube/completion.bash.inc
printf "
# Kubectl shell completion
source '$HOME/.kube/completion.bash.inc'
" >> $HOME/.bash_profile
source $HOME/.bash_profile

# Load the oc completion code for zsh[1] into the current shell
source <(oc completion zsh)
# Set the oc completion code for zsh[1] to autoload on startup
oc completion zsh > "${fpath[1]}/_oc"
```

2.6.1.4. oc adm config current-context

Displays the current-context

Example usage

```
# Display the current-context
oc config current-context
```

2.6.1.5. oc adm config delete-cluster

Delete the specified cluster from the kubeconfig

Example usage

```
# Delete the minikube cluster
oc config delete-cluster minikube
```

2.6.1.6. oc adm config delete-context

Delete the specified context from the kubeconfig

Example usage

```
# Delete the context for the minikube cluster
oc config delete-context minikube
```

2.6.1.7. oc adm config delete-user

Delete the specified user from the kubeconfig

Example usage

```
# Delete the minikube user
oc config delete-user minikube
```

2.6.1.8. oc adm config get-clusters

Display clusters defined in the kubeconfig

Example usage

```
# List the clusters oc knows about
oc config get-clusters
```

2.6.1.9. oc adm config get-contexts

Describe one or many contexts

Example usage

```
# List all the contexts in your kubeconfig file
oc config get-contexts

# Describe one context in your kubeconfig file.
oc config get-contexts my-context
```

2.6.1.10. oc adm config get-users

Display users defined in the kubeconfig

Example usage

```
# List the users oc knows about
oc config get-users
```

2.6.1.11. oc adm config rename-context

Renames a context from the kubeconfig file.

Example usage

```
# Rename the context 'old-name' to 'new-name' in your kubeconfig file
oc config rename-context old-name new-name
```

2.6.1.12. oc adm config set

Sets an individual value in a kubeconfig file

Example usage

```
# Set server field on the my-cluster cluster to https://1.2.3.4
oc config set clusters.my-cluster.server https://1.2.3.4

# Set certificate-authority-data field on the my-cluster cluster.
oc config set clusters.my-cluster.certificate-authority-data $(echo "cert_data_here" | base64 -i -)

# Set cluster field in the my-context context to my-cluster.
oc config set contexts.my-context.cluster my-cluster

# Set client-key-data field in the cluster-admin user using --set-raw-bytes option.
oc config set users.cluster-admin.client-key-data cert_data_here --set-raw-bytes=true
```

2.6.1.13. oc adm config set-cluster

Sets a cluster entry in kubeconfig

Example usage

```
# Set only the server field on the e2e cluster entry without touching other values.
oc config set-cluster e2e --server=https://1.2.3.4

# Embed certificate authority data for the e2e cluster entry
oc config set-cluster e2e --embed-certs --certificate-authority=~/.kube/e2e/kubernetes.ca.crt

# Disable cert checking for the dev cluster entry
oc config set-cluster e2e --insecure-skip-tls-verify=true

# Set custom TLS server name to use for validation for the e2e cluster entry
oc config set-cluster e2e --tls-server-name=my-cluster-name
```

2.6.1.14. oc adm config set-context

Sets a context entry in kubeconfig

Example usage

```
# Set the user field on the gce context entry without touching other values
oc config set-context gce --user=cluster-admin
```

2.6.1.15. oc adm config set-credentials

Sets a user entry in kubeconfig

Example usage

```
# Set only the "client-key" field on the "cluster-admin"
# entry, without touching other values:
oc config set-credentials cluster-admin --client-key=~/.kube/admin.key

# Set basic auth for the "cluster-admin" entry
oc config set-credentials cluster-admin --username=admin --password=uXFGweU9l35qcif

# Embed client certificate data in the "cluster-admin" entry
oc config set-credentials cluster-admin --client-certificate=~/.kube/admin.crt --embed-certs=true

# Enable the Google Compute Platform auth provider for the "cluster-admin" entry
oc config set-credentials cluster-admin --auth-provider=gcp

# Enable the OpenID Connect auth provider for the "cluster-admin" entry with additional args
oc config set-credentials cluster-admin --auth-provider=oidc --auth-provider-arg=client-id=foo --auth-
provider-arg=client-secret=bar

# Remove the "client-secret" config value for the OpenID Connect auth provider for the "cluster-
admin" entry
oc config set-credentials cluster-admin --auth-provider=oidc --auth-provider-arg=client-secret-

# Enable new exec auth plugin for the "cluster-admin" entry
oc config set-credentials cluster-admin --exec-command=/path/to/the/executable --exec-api-
version=client.authentication.k8s.io/v1beta1

# Define new exec auth plugin args for the "cluster-admin" entry
oc config set-credentials cluster-admin --exec-arg=arg1 --exec-arg=arg2

# Create or update exec auth plugin environment variables for the "cluster-admin" entry
oc config set-credentials cluster-admin --exec-env=key1=val1 --exec-env=key2=val2

# Remove exec auth plugin environment variables for the "cluster-admin" entry
oc config set-credentials cluster-admin --exec-env=var-to-remove-
```

2.6.1.16. oc adm config unset

Unsets an individual value in a kubeconfig file

Example usage

```
# Unset the current-context.
```

```
oc config unset current-context

# Unset namespace in foo context.
oc config unset contexts.foo.namespace
```

2.6.1.17. oc adm config use-context

Sets the current-context in a kubeconfig file

Example usage

```
# Use the context for the minikube cluster
oc config use-context minikube
```

2.6.1.18. oc adm config view

Display merged kubeconfig settings or a specified kubeconfig file

Example usage

```
# Show merged kubeconfig settings.
oc config view

# Show merged kubeconfig settings and raw certificate data.
oc config view --raw

# Get the password for the e2e user
oc config view -o jsonpath='{.users[?(@.name == "e2e")].user.password}'
```

2.6.1.19. oc adm cordon

Mark node as unschedulable

Example usage

```
# Mark node "foo" as unschedulable.
oc adm cordon foo
```

2.6.1.20. oc adm create-bootstrap-project-template

Create a bootstrap project template

Example usage

```
# Output a bootstrap project template in YAML format to stdout
oc adm create-bootstrap-project-template -o yaml
```

2.6.1.21. oc adm create-error-template

Create an error page template

Example usage

```
# Output a template for the error page to stdout
oc adm create-error-template
```

2.6.1.22. oc adm create-login-template

Create a login template

Example usage

```
# Output a template for the login page to stdout
oc adm create-login-template
```

2.6.1.23. oc adm create-provider-selection-template

Create a provider selection template

Example usage

```
# Output a template for the provider selection page to stdout
oc adm create-provider-selection-template
```

2.6.1.24. oc adm drain

Drain node in preparation for maintenance

Example usage

```
# Drain node "foo", even if there are pods not managed by a ReplicationController, ReplicaSet, Job,
DaemonSet or StatefulSet on it.
$ oc adm drain foo --force

# As above, but abort if there are pods not managed by a ReplicationController, ReplicaSet, Job,
DaemonSet or StatefulSet, and use a grace period of 15 minutes.
$ oc adm drain foo --grace-period=900
```

2.6.1.25. oc adm groups add-users

Add users to a group

Example usage

```
# Add user1 and user2 to my-group
oc adm groups add-users my-group user1 user2
```

2.6.1.26. oc adm groups new

Create a new group

Example usage

```
# Add a group with no users
```

```
oc adm groups new my-group

# Add a group with two users
oc adm groups new my-group user1 user2

# Add a group with one user and shorter output
oc adm groups new my-group user1 -o name
```

2.6.1.27. oc adm groups prune

Remove old OpenShift groups referencing missing records from an external provider

Example usage

```
# Prune all orphaned groups
oc adm groups prune --sync-config=/path/to/ldap-sync-config.yaml --confirm

# Prune all orphaned groups except the ones from the blacklist file
oc adm groups prune --blacklist=/path/to/blacklist.txt --sync-config=/path/to/ldap-sync-config.yaml --confirm

# Prune all orphaned groups from a list of specific groups specified in a whitelist file
oc adm groups prune --whitelist=/path/to/whitelist.txt --sync-config=/path/to/ldap-sync-config.yaml --confirm

# Prune all orphaned groups from a list of specific groups specified in a whitelist
oc adm groups prune groups/group_name groups/other_name --sync-config=/path/to/ldap-sync-config.yaml --confirm
```

2.6.1.28. oc adm groups remove-users

Remove users from a group

Example usage

```
# Remove user1 and user2 from my-group
oc adm groups remove-users my-group user1 user2
```

2.6.1.29. oc adm groups sync

Sync OpenShift groups with records from an external provider

Example usage

```
# Sync all groups with an LDAP server
oc adm groups sync --sync-config=/path/to/ldap-sync-config.yaml --confirm

# Sync all groups except the ones from the blacklist file with an LDAP server
oc adm groups sync --blacklist=/path/to/blacklist.txt --sync-config=/path/to/ldap-sync-config.yaml --confirm

# Sync specific groups specified in a whitelist file with an LDAP server
oc adm groups sync --whitelist=/path/to/whitelist.txt --sync-config=/path/to/sync-config.yaml --
```

```
confirm

  # Sync all OpenShift groups that have been synced previously with an LDAP server
  oc adm groups sync --type=openshift --sync-config=/path/to/ldap-sync-config.yaml --confirm

  # Sync specific OpenShift groups if they have been synced previously with an LDAP server
  oc adm groups sync groups/group1 groups/group2 groups/group3 --sync-config=/path/to/sync-
config.yaml --confirm
```

2.6.1.30. oc adm inspect

Collect debugging data for a given resource

Example usage

```
  # Collect debugging data for the "openshift-apiserver" clusteroperator
  oc adm inspect clusteroperator/openshift-apiserver

  # Collect debugging data for the "openshift-apiserver" and "kube-apiserver" clusteroperators
  oc adm inspect clusteroperator/openshift-apiserver clusteroperator/kube-apiserver

  # Collect debugging data for all clusteroperators
  oc adm inspect clusteroperator

  # Collect debugging data for all clusteroperators and clusterversions
  oc adm inspect clusteroperators,clusterversions
```

2.6.1.31. oc adm migrate template-instances

Update template instances to point to the latest group-version-kinds

Example usage

```
  # Perform a dry-run of updating all objects
  oc adm migrate template-instances

  # To actually perform the update, the confirm flag must be appended
  oc adm migrate template-instances --confirm
```

2.6.1.32. oc adm must-gather

Launch a new instance of a pod for gathering debug information

Example usage

```
  # Gather information using the default plug-in image and command, writing into ./must-gather.local.
<rand>
  oc adm must-gather

  # Gather information with a specific local folder to copy to
  oc adm must-gather --dest-dir=/local/directory

  # Gather audit information
```

```
  oc adm must-gather -- /usr/bin/gather_audit_logs

  # Gather information using multiple plug-in images
  oc adm must-gather --image=quay.io/kubevirt/must-gather --image=quay.io/openshift/origin-must-gather

  # Gather information using a specific image stream plug-in
  oc adm must-gather --image-stream=openshift/must-gather:latest

  # Gather information using a specific image, command, and pod-dir
  oc adm must-gather --image=my/image:tag --source-dir=/pod/directory -- myspecial-command.sh
```

2.6.1.33. oc adm new-project

Create a new project

Example usage

```
  # Create a new project using a node selector
  oc adm new-project myproject --node-selector='type=user-node,region=east'
```

2.6.1.34. oc adm node-logs

Display and filter node logs

Example usage

```
  # Show kubelet logs from all masters
  oc adm node-logs --role master -u kubelet

  # See what logs are available in masters in /var/logs
  oc adm node-logs --role master --path=/

  # Display cron log file from all masters
  oc adm node-logs --role master --path=cron
```

2.6.1.35. oc adm pod-network isolate-projects

Isolate project network

Example usage

```
  # Provide isolation for project p1
  oc adm pod-network isolate-projects <p1>

  # Allow all projects with label name=top-secret to have their own isolated project network
  oc adm pod-network isolate-projects --selector='name=top-secret'
```

2.6.1.36. oc adm pod-network join-projects

Join project network

Example usage

```
# Allow project p2 to use project p1 network
oc adm pod-network join-projects --to=<p1> <p2>

# Allow all projects with label name=top-secret to use project p1 network
oc adm pod-network join-projects --to=<p1> --selector='name=top-secret'
```

2.6.1.37. oc adm pod-network make-projects-global

Make project network global

Example usage

```
# Allow project p1 to access all pods in the cluster and vice versa
oc adm pod-network make-projects-global <p1>

# Allow all projects with label name=share to access all pods in the cluster and vice versa
oc adm pod-network make-projects-global --selector='name=share'
```

2.6.1.38. oc adm policy add-role-to-user

Add a role to users or service accounts for the current project

Example usage

```
# Add the 'view' role to user1 for the current project
oc policy add-role-to-user view user1

# Add the 'edit' role to serviceaccount1 for the current project
oc policy add-role-to-user edit -z serviceaccount1
```

2.6.1.39. oc adm policy add-scc-to-group

Add a security context constraint to groups

Example usage

```
# Add the 'restricted' security context constraint to group1 and group2
oc adm policy add-scc-to-group restricted group1 group2
```

2.6.1.40. oc adm policy add-scc-to-user

Add a security context constraint to users or a service account

Example usage

```
# Add the 'restricted' security context constraint to user1 and user2
oc adm policy add-scc-to-user restricted user1 user2

# Add the 'privileged' security context constraint to serviceaccount1 in the current namespace
oc adm policy add-scc-to-user privileged -z serviceaccount1
```

2.6.1.41. oc adm policy scc-review

Check which service account can create a pod

Example usage

```
  # Check whether service accounts sa1 and sa2 can admit a pod with a template pod spec specified in my_resource.yaml
  # Service Account specified in myresource.yaml file is ignored
  oc policy scc-review -z sa1,sa2 -f my_resource.yaml

  # Check whether service accounts system:serviceaccount:bob:default can admit a pod with a template pod spec specified in my_resource.yaml
  oc policy scc-review -z system:serviceaccount:bob:default -f my_resource.yaml

  # Check whether the service account specified in my_resource_with_sa.yaml can admit the pod
  oc policy scc-review -f my_resource_with_sa.yaml

  # Check whether the default service account can admit the pod; default is taken since no service account is defined in myresource_with_no_sa.yaml
  oc policy scc-review -f myresource_with_no_sa.yaml
```

2.6.1.42. oc adm policy scc-subject-review

Check whether a user or a service account can create a pod

Example usage

```
  # Check whether user bob can create a pod specified in myresource.yaml
  oc policy scc-subject-review -u bob -f myresource.yaml

  # Check whether user bob who belongs to projectAdmin group can create a pod specified in myresource.yaml
  oc policy scc-subject-review -u bob -g projectAdmin -f myresource.yaml

  # Check whether a service account specified in the pod template spec in myresourcewithsa.yaml can create the pod
  oc policy scc-subject-review -f myresourcewithsa.yaml
```

2.6.1.43. oc adm prune builds

Remove old completed and failed builds

Example usage

```
  # Dry run deleting older completed and failed builds and also including
  # all builds whose associated build config no longer exists
  oc adm prune builds --orphans

  # To actually perform the prune operation, the confirm flag must be appended
  oc adm prune builds --orphans --confirm
```

2.6.1.44. oc adm prune deployments

Remove old completed and failed deployment configs

Example usage

```
# Dry run deleting all but the last complete deployment for every deployment config
oc adm prune deployments --keep-complete=1

# To actually perform the prune operation, the confirm flag must be appended
oc adm prune deployments --keep-complete=1 --confirm
```

2.6.1.45. oc adm prune groups

Remove old OpenShift groups referencing missing records from an external provider

Example usage

```
# Prune all orphaned groups
oc adm prune groups --sync-config=/path/to/ldap-sync-config.yaml --confirm

# Prune all orphaned groups except the ones from the blacklist file
oc adm prune groups --blacklist=/path/to/blacklist.txt --sync-config=/path/to/ldap-sync-config.yaml --confirm

# Prune all orphaned groups from a list of specific groups specified in a whitelist file
oc adm prune groups --whitelist=/path/to/whitelist.txt --sync-config=/path/to/ldap-sync-config.yaml --confirm

# Prune all orphaned groups from a list of specific groups specified in a whitelist
oc adm prune groups groups/group_name groups/other_name --sync-config=/path/to/ldap-sync-config.yaml --confirm
```

2.6.1.46. oc adm prune images

Remove unreferenced images

Example usage

```
# See what the prune command would delete if only images and their referrers were more than an hour old
# and obsoleted by 3 newer revisions under the same tag were considered
oc adm prune images --keep-tag-revisions=3 --keep-younger-than=60m

# To actually perform the prune operation, the confirm flag must be appended
oc adm prune images --keep-tag-revisions=3 --keep-younger-than=60m --confirm

# See what the prune command would delete if we are interested in removing images
# exceeding currently set limit ranges ('openshift.io/Image')
oc adm prune images --prune-over-size-limit

# To actually perform the prune operation, the confirm flag must be appended
oc adm prune images --prune-over-size-limit --confirm

# Force the insecure http protocol with the particular registry host name
oc adm prune images --registry-url=http://registry.example.org --confirm
```

```
# Force a secure connection with a custom certificate authority to the particular registry host name
oc adm prune images --registry-url=registry.example.org --certificate-
authority=/path/to/custom/ca.crt --confirm
```

2.6.1.47. oc adm release extract

Extract the contents of an update payload to disk

Example usage

```
# Use git to check out the source code for the current cluster release to DIR
oc adm release extract --git=DIR

# Extract cloud credential requests for AWS
oc adm release extract --credentials-requests --cloud=aws
```

2.6.1.48. oc adm release info

Display information about a release

Example usage

```
# Show information about the cluster's current release
oc adm release info

# Show the source code that comprises a release
oc adm release info 4.2.2 --commit-urls

# Show the source code difference between two releases
oc adm release info 4.2.0 4.2.2 --commits

# Show where the images referenced by the release are located
oc adm release info quay.io/openshift-release-dev/ocp-release:4.2.2 --pullspecs
```

2.6.1.49. oc adm release mirror

Mirror a release to a different image registry location

Example usage

```
# Perform a dry run showing what would be mirrored, including the mirror objects
oc adm release mirror 4.3.0 --to myregistry.local/openshift/release \
--release-image-signature-to-dir /tmp/releases --dry-run

# Mirror a release into the current directory
oc adm release mirror 4.3.0 --to file://openshift/release \
--release-image-signature-to-dir /tmp/releases

# Mirror a release to another directory in the default location
oc adm release mirror 4.3.0 --to-dir /tmp/releases

# Upload a release from the current directory to another server
```

```
  oc adm release mirror --from file://openshift/release --to myregistry.com/openshift/release \
  --release-image-signature-to-dir /tmp/releases

  # Mirror the 4.3.0 release to repository registry.example.com and apply signatures to connected
cluster
  oc adm release mirror --from=quay.io/openshift-release-dev/ocp-release:4.3.0-x86_64 \
  --to=registry.example.com/your/repository --apply-release-image-signature
```

2.6.1.50. oc adm release new

Create a new OpenShift release

Example usage

```
  # Create a release from the latest origin images and push to a DockerHub repo
  oc adm release new --from-image-stream=4.1 -n origin --to-image
docker.io/mycompany/myrepo:latest

  # Create a new release with updated metadata from a previous release
  oc adm release new --from-release registry.svc.ci.openshift.org/origin/release:v4.1 --name 4.1.1 \
  --previous 4.1.0 --metadata ... --to-image docker.io/mycompany/myrepo:latest

  # Create a new release and override a single image
  oc adm release new --from-release registry.svc.ci.openshift.org/origin/release:v4.1 \
  cli=docker.io/mycompany/cli:latest --to-image docker.io/mycompany/myrepo:latest

  # Run a verification pass to ensure the release can be reproduced
  oc adm release new --from-release registry.svc.ci.openshift.org/origin/release:v4.1
```

2.6.1.51. oc adm taint

Update the taints on one or more nodes

Example usage

```
  # Update node 'foo' with a taint with key 'dedicated' and value 'special-user' and effect 'NoSchedule'.
  # If a taint with that key and effect already exists, its value is replaced as specified.
  oc adm taint nodes foo dedicated=special-user:NoSchedule

  # Remove from node 'foo' the taint with key 'dedicated' and effect 'NoSchedule' if one exists.
  oc adm taint nodes foo dedicated:NoSchedule-

  # Remove from node 'foo' all the taints with key 'dedicated'
  oc adm taint nodes foo dedicated-

  # Add a taint with key 'dedicated' on nodes having label mylabel=X
  oc adm taint node -l myLabel=X  dedicated=foo:PreferNoSchedule

  # Add to node 'foo' a taint with key 'bar' and no value
  oc adm taint nodes foo bar:NoSchedule
```

2.6.1.52. oc adm top images

Show usage statistics for images

Example usage

```
# Show usage statistics for images
oc adm top images
```

2.6.1.53. oc adm top imagestreams

Show usage statistics for image streams

Example usage

```
# Show usage statistics for image streams
oc adm top imagestreams
```

2.6.1.54. oc adm top node

Display Resource (CPU/Memory) usage of nodes

Example usage

```
# Show metrics for all nodes
oc adm top node

# Show metrics for a given node
oc adm top node NODE_NAME
```

2.6.1.55. oc adm top pod

Display Resource (CPU/Memory) usage of pods

Example usage

```
# Show metrics for all pods in the default namespace
oc adm top pod

# Show metrics for all pods in the given namespace
oc adm top pod --namespace=NAMESPACE

# Show metrics for a given pod and its containers
oc adm top pod POD_NAME --containers

# Show metrics for the pods defined by label name=myLabel
oc adm top pod -l name=myLabel
```

2.6.1.56. oc adm uncordon

Mark node as schedulable

Example usage

```
# Mark node "foo" as schedulable.
$ oc adm uncordon foo
```

2.6.1.57. oc adm verify-image-signature

Verify the image identity contained in the image signature

Example usage

```
  # Verify the image signature and identity using the local GPG keychain
  oc adm verify-image-signature
sha256:c841e9b64e4579bd56c794bdd7c36e1c257110fd2404bebbb8b613e4935228c4 \
  --expected-identity=registry.local:5000/foo/bar:v1

  # Verify the image signature and identity using the local GPG keychain and save the status
  oc adm verify-image-signature
sha256:c841e9b64e4579bd56c794bdd7c36e1c257110fd2404bebbb8b613e4935228c4 \
  --expected-identity=registry.local:5000/foo/bar:v1 --save

  # Verify the image signature and identity via exposed registry route
  oc adm verify-image-signature
sha256:c841e9b64e4579bd56c794bdd7c36e1c257110fd2404bebbb8b613e4935228c4 \
  --expected-identity=registry.local:5000/foo/bar:v1 \
  --registry-url=docker-registry.foo.com

  # Remove all signature verifications from the image
  oc adm verify-image-signature
sha256:c841e9b64e4579bd56c794bdd7c36e1c257110fd2404bebbb8b613e4935228c4 --remove-all
```

2.6.2. Additional resources

- OpenShift CLI developer command reference

2.7. USAGE OF OC AND KUBECTL COMMANDS

The Kubernetes command-line interface (CLI), **kubectl**, can be used to run commands against a Kubernetes cluster. Because OpenShift Container Platform is a certified Kubernetes distribution, you can use the supported **kubectl** binaries that ship with OpenShift Container Platform, or you can gain extended functionality by using the **oc** binary.

2.7.1. The oc binary

The **oc** binary offers the same capabilities as the **kubectl** binary, but it extends to natively support additional OpenShift Container Platform features, including:

- **Full support for OpenShift Container Platform resources**
  Resources such as **DeploymentConfig**, **BuildConfig**, **Route**, **ImageStream**, and **ImageStreamTag** objects are specific to OpenShift Container Platform distributions, and build upon standard Kubernetes primitives.

- **Authentication**
  The **oc** binary offers a built-in **login** command that allows authentication and enables you to work with OpenShift Container Platform projects, which map Kubernetes namespaces to authenticated users. See Understanding authentication for more information.

- **Additional commands**

The additional command **oc new-app**, for example, makes it easier to get new applications started using existing source code or pre-built images. Similarly, the additional command **oc new-project** makes it easier to start a project that you can switch to as your default.

IMPORTANT

If you installed an earlier version of the **oc** binary, you cannot use it to complete all of the commands in OpenShift Container Platform 4.8. If you want the latest features, you must download and install the latest version of the **oc** binary corresponding to your OpenShift Container Platform server version.

Non-security API changes will involve, at minimum, two minor releases (4.1 to 4.2 to 4.3, for example) to allow older **oc** binaries to update. Using new capabilities might require newer **oc** binaries. A 4.3 server might have additional capabilities that a 4.2 **oc** binary cannot use and a 4.3 **oc** binary might have additional capabilities that are unsupported by a 4.2 server.

Table 2.2. Compatibility Matrix

	X.Y (**oc** Client)	**X.Y+N** footnote:versionpolicyn[Where **N** is a number greater than or equal to 1.] (**oc** Client)
X.Y (Server)	1	3
X.Y+N footnote:versionpolicyn[] (Server)	2	1

1 Fully compatible.

2 **oc** client might be unable to access server features.

3 **oc** client might provide options and features that might not be compatible with the accessed server.

2.7.2. The kubectl binary

The **kubectl** binary is provided as a means to support existing workflows and scripts for new OpenShift Container Platform users coming from a standard Kubernetes environment, or for those who prefer to use the **kubectl** CLI. Existing users of **kubectl** can continue to use the binary to interact with Kubernetes primitives, with no changes required to the OpenShift Container Platform cluster.

You can install the supported **kubectl** binary by following the steps to Install the OpenShift CLI. The **kubectl** binary is included in the archive if you download the binary, or is installed when you install the CLI by using an RPM.

For more information, see the kubectl documentation.

CHAPTER 3. DEVELOPER CLI (ODO)

3.1. ODO RELEASE NOTES

3.1.1. Notable changes and improvements in odo version 2.5.0

- Creates unique routes for each component, using **adler32** hashing
- Supports additional fields in the devfile for assigning resources:
  - cpuRequest
  - cpuLimit
  - memoryRequest
  - memoryLimit
- Adds the **--deploy** flag to the **odo delete** command, to remove components deployed using the **odo deploy** command:

```
$ odo delete --deploy
```

- Adds mapping support to the **odo link** command
- Supports ephemeral volumes using the **ephemeral** field in **volume** components
- Sets the default answer to **yes** when asking for telemetry opt-in
- Improves metrics by sending additional telemetry data to the devfile registry
- Updates the bootstrap image to **registry.access.redhat.com/ocp-tools-4/odo-init-container-rhel8:1.1.11**
- The upstream repository is available at https://github.com/redhat-developer/odo

3.1.2. Bug fixes

- Previously, **odo deploy** would fail if the **.odo/env** file did not exist. The command now creates the **.odo/env** file if required.
- Previously, interactive component creation using the **odo create** command would fail if disconnect from the cluster. This issue is fixed in the latest release.

3.1.3. Getting support

For Product

If you find an error, encounter a bug, or have suggestions for improving the functionality of **odo**, file an issue in Bugzilla. Choose **OpenShift Developer Tools and Services** as a product type and **odo** as a component.

Provide as many details in the issue description as possible.

For Documentation

If you find an error or have suggestions for improving the documentation, file a Jira issue for the most relevant documentation component.

3.2. UNDERSTANDING ODO

Red Hat OpenShift Developer CLI (**odo**) is a tool for creating applications on OpenShift Container Platform and Kubernetes. With **odo**, you can develop, test, debug, and deploy microservices-based applications on a Kubernetes cluster without having a deep understanding of the platform.

odo follows a *create and push* workflow. As a user, when you *create*, the information (or manifest) is stored in a configuration file. When you *push*, the corresponding resources are created on the Kubernetes cluster. All of this configuration is stored in the Kubernetes API for seamless accessibility and functionality.

odo uses *service* and *link* commands to link components and services together. **odo** achieves this by creating and deploying services based on Kubernetes Operators in the cluster. Services can be created using any of the Operators available on the Operator Hub. After linking a service, **odo** injects the service configuration into the component. Your application can then use this configuration to communicate with the Operator-backed service.

3.2.1. odo key features

odo is designed to be a developer-friendly interface to Kubernetes, with the ability to:

- Quickly deploy applications on a Kubernetes cluster by creating a new manifest or using an existing one
- Use commands to easily create and update the manifest, without the need to understand and maintain Kubernetes configuration files
- Provide secure access to applications running on a Kubernetes cluster
- Add and remove additional storage for applications on a Kubernetes cluster
- Create Operator-backed services and link your application to them
- Create a link between multiple microservices that are deployed as **odo** components
- Remotely debug applications you deployed using **odo** in your IDE
- Easily test applications deployed on Kubernetes using **odo**

3.2.2. odo core concepts

odo abstracts Kubernetes concepts into terminology that is familiar to developers:

Application

A typical application, developed with a cloud-native approach, that is used to perform a particular task.
Examples of *applications* include online video streaming, online shopping, and hotel reservation systems.

Component

A set of Kubernetes resources that can run and be deployed separately. A cloud-native application is a collection of small, independent, loosely coupled *components*.
Examples of *components* include an API back-end, a web interface, and a payment back-end.

Project

A single unit containing your source code, tests, and libraries.

Context

A directory that contains the source code, tests, libraries, and **odo** config files for a single component.

URL

A mechanism to expose a component for access from outside the cluster.

Storage

Persistent storage in the cluster. It persists the data across restarts and component rebuilds.

Service

An external application that provides additional functionality to a component.
Examples of *services* include PostgreSQL, MySQL, Redis, and RabbitMQ.

In **odo**, services are provisioned from the OpenShift Service Catalog and must be enabled within your cluster.

devfile

An open standard for defining containerized development environments that enables developer tools to simplify and accelerate workflows. For more information, see the documentation at https://devfile.io.
You can connect to publicly available *devfile* registries, or you can install a Secure Registry.

3.2.3. Listing components in odo

odo uses the portable *devfile* format to describe components and their related URLs, storage, and services. **odo** can connect to various devfile registries to download devfiles for different languages and frameworks. See the documentation for the **odo registry** command for more information on how to manage the registries used by **odo** to retrieve devfile information.

You can list all the *devfiles* available of the different registries with the **odo catalog list components** command.

Procedure

1. Log in to the cluster with **odo**:

```
$ odo login -u developer -p developer
```

2. List the available **odo** components:

```
$ odo catalog list components
```

Example output

```
Odo Devfile Components:
```

```
NAME                        DESCRIPTION                                        REGISTRY
dotnet50                    Stack with .NET 5.0
DefaultDevfileRegistry
dotnet60                    Stack with .NET 6.0
DefaultDevfileRegistry
dotnetcore31                Stack with .NET Core 3.1
DefaultDevfileRegistry
go                          Stack with the latest Go version
DefaultDevfileRegistry
java-maven                  Upstream Maven and OpenJDK 11
DefaultDevfileRegistry
java-openliberty            Java application Maven-built stack using the Open Liberty ru...
DefaultDevfileRegistry
java-openliberty-gradle     Java application Gradle-built stack using the Open Liberty r...
DefaultDevfileRegistry
java-quarkus                Quarkus with Java
DefaultDevfileRegistry
java-springboot             Spring Boot® using Java
DefaultDevfileRegistry
java-vertx                  Upstream Vert.x using Java
DefaultDevfileRegistry
java-websphereliberty       Java application Maven-built stack using the WebSphere
Liber...    DefaultDevfileRegistry
java-websphereliberty-gradle    Java application Gradle-built stack using the WebSphere
Libe...    DefaultDevfileRegistry
java-wildfly                Upstream WildFly
DefaultDevfileRegistry
java-wildfly-bootable-jar   Java stack with WildFly in bootable Jar mode, OpenJDK 11
and...    DefaultDevfileRegistry
nodejs                      Stack with Node.js 14
DefaultDevfileRegistry
nodejs-angular              Stack with Angular 12
DefaultDevfileRegistry
nodejs-nextjs               Stack with Next.js 11
DefaultDevfileRegistry
nodejs-nuxtjs               Stack with Nuxt.js 2
DefaultDevfileRegistry
nodejs-react                Stack with React 17
DefaultDevfileRegistry
nodejs-svelte               Stack with Svelte 3
DefaultDevfileRegistry
nodejs-vue                  Stack with Vue 3
DefaultDevfileRegistry
php-laravel                 Stack with Laravel 8
DefaultDevfileRegistry
python                      Python Stack with Python 3.7
DefaultDevfileRegistry
python-django               Python3.7 with Django
DefaultDevfileRegistry
```

3.2.4. Telemetry in odo

odo collects information about how it is being used, including metrics on the operating system, RAM, CPU, number of cores, **odo** version, errors, success/failures, and how long **odo** commands take to complete.

You can modify your telemetry consent by using the **odo preference** command:

- **odo preference set ConsentTelemetry true** consents to telemetry.
- **odo preference unset ConsentTelemetry** disables telemetry.
- **odo preference view** shows the current preferences.

3.3. INSTALLING ODO

You can install the **odo** CLI on Linux, Windows, or macOS by downloading a binary. You can also install the OpenShift VS Code extension, which uses both the **odo** and the **oc** binaries to interact with your OpenShift Container Platform cluster. For Red Hat Enterprise Linux (RHEL), you can install the **odo** CLI as an RPM.

NOTE

Currently, **odo** does not support installation in a restricted network environment.

3.3.1. Installing odo on Linux

The **odo** CLI is available to download as a binary and as a tarball for multiple operating systems and architectures including:

Operating System	Binary	Tarball
Linux	odo-linux-amd64	odo-linux-amd64.tar.gz
Linux on IBM Power	odo-linux-ppc64le	odo-linux-ppc64le.tar.gz
Linux on IBM Z and LinuxONE	odo-linux-s390x	odo-linux-s390x.tar.gz

Procedure

1. Navigate to the content gateway and download the appropriate file for your operating system and architecture.
   - If you download the binary, rename it to **odo**:

     ```
     $ curl -L https://developers.redhat.com/content-gateway/rest/mirror/pub/openshift-v4/clients/odo/latest/odo-linux-amd64 -o odo
     ```

   - If you download the tarball, extract the binary:

     ```
     $ curl -L https://developers.redhat.com/content-gateway/rest/mirror/pub/openshift-v4/clients/odo/latest/odo-linux-amd64.tar.gz -o odo.tar.gz
     $ tar xvzf odo.tar.gz
     ```

2. Change the permissions on the binary:

   ```
   $ chmod +x <filename>
   ```

3. Place the **odo** binary in a directory that is on your **PATH**.
To check your **PATH**, execute the following command:

```
$ echo $PATH
```

4. Verify that **odo** is now available on your system:

```
$ odo version
```

3.3.2. Installing odo on Windows

The **odo** CLI for Windows is available to download as a binary and as an archive.

Operating System	Binary	Tarball
Windows	odo-windows-amd64.exe	odo-windows-amd64.exe.zip

Procedure

1. Navigate to the content gateway and download the appropriate file:
   - If you download the binary, rename it to **odo.exe**.
   - If you download the archive, unzip the binary with a ZIP program and then rename it to **odo.exe**.
2. Move the **odo.exe** binary to a directory that is on your **PATH**.
To check your **PATH**, open the command prompt and execute the following command:

```
C:\> path
```

3. Verify that **odo** is now available on your system:

```
C:\> odo version
```

3.3.3. Installing odo on macOS

The **odo** CLI for macOS is available to download as a binary and as a tarball.

Operating System	Binary	Tarball
macOS	odo-darwin-amd64	odo-darwin-amd64.tar.gz

Procedure

1. Navigate to the content gateway and download the appropriate file:

- If you download the binary, rename it to **odo**:

```
$ curl -L https://developers.redhat.com/content-gateway/rest/mirror/pub/openshift-v4/clients/odo/latest/odo-darwin-amd64 -o odo
```

- If you download the tarball, extract the binary:

```
$ curl -L https://developers.redhat.com/content-gateway/rest/mirror/pub/openshift-v4/clients/odo/latest/odo-darwin-amd64.tar.gz -o odo.tar.gz
$ tar xvzf odo.tar.gz
```

2. Change the permissions on the binary:

```
# chmod +x odo
```

3. Place the **odo** binary in a directory that is on your **PATH**.
To check your **PATH**, execute the following command:

```
$ echo $PATH
```

4. Verify that **odo** is now available on your system:

```
$ odo version
```

3.3.4. Installing odo on VS Code

The OpenShift VS Code extension uses both **odo** and the **oc** binary to interact with your OpenShift Container Platform cluster. To work with these features, install the OpenShift VS Code extension on VS Code.

Prerequisites

- You have installed VS Code.

Procedure

1. Open VS Code.
2. Launch VS Code Quick Open with **Ctrl**+**P**.
3. Enter the following command:

```
$ ext install redhat.vscode-openshift-connector
```

3.3.5. Installing odo on Red Hat Enterprise Linux (RHEL) using an RPM

For Red Hat Enterprise Linux (RHEL), you can install the **odo** CLI as an RPM.

Procedure

1. Register with Red Hat Subscription Manager:

```
# subscription-manager register
```

2. Pull the latest subscription data:

```
# subscription-manager refresh
```

3. List the available subscriptions:

```
# subscription-manager list --available --matches '*OpenShift Developer Tools and Services*'
```

4. In the output of the previous command, find the **Pool ID** field for your OpenShift Container Platform subscription and attach the subscription to the registered system:

```
# subscription-manager attach --pool=<pool_id>
```

5. Enable the repositories required by **odo**:

```
# subscription-manager repos --enable="ocp-tools-4.9-for-rhel-8-x86_64-rpms"
```

6. Install the **odo** package:

```
# yum install odo
```

7. Verify that **odo** is now available on your system:

```
$ odo version
```

3.4. CONFIGURING THE ODO CLI

You can find the global settings for **odo** in the **preference.yaml** file which is located by default in your **$HOME/.odo** directory.

You can set a different location for the **preference.yaml** file by exporting the **GLOBALODOCONFIG** variable.

3.4.1. Viewing the current configuration

You can view the current **odo** CLI configuration by using the following command:

```
$ odo preference view
```

Example output

```
PARAMETER           CURRENT_VALUE
UpdateNotification
NamePrefix
Timeout
BuildTimeout
PushTimeout
Ephemeral
ConsentTelemetry    true
```

3.4.2. Setting a value

You can set a value for a preference key by using the following command:

```
$ odo preference set <key> <value>
```

NOTE

Preference keys are case-insensitive.

Example command

```
$ odo preference set updatenotification false
```

Example output

```
Global preference was successfully updated
```

3.4.3. Unsetting a value

You can unset a value for a preference key by using the following command:

```
$ odo preference unset <key>
```

NOTE

You can use the **-f** flag to skip the confirmation.

Example command

```
$ odo preference unset updatenotification
? Do you want to unset updatenotification in the preference (y/N) y
```

Example output

```
Global preference was successfully updated
```

3.4.4. Preference key table

The following table shows the available options for setting preference keys for the **odo** CLI:

Preference key	Description	Default value
UpdateNotification	Control whether a notification to update **odo** is shown.	True
NamePrefix	Set a default name prefix for an **odo** resource. For example, **component** or **storage**.	Current directory name

Preference key	Description	Default value
Timeout	Timeout for the Kubernetes server connection check.	1 second
BuildTimeout	Timeout for waiting for a build of the git component to complete.	300 seconds
PushTimeout	Timeout for waiting for a component to start.	240 seconds
Ephemeral	Controls whether **odo** should create an **emptyDir** volume to store source code.	True
ConsentTelemetry	Controls whether **odo** can collect telemetry for the user's **odo** usage.	False

3.4.5. Ignoring files or patterns

You can configure a list of files or patterns to ignore by modifying the **.odoignore** file in the root directory of your application. This applies to both **odo push** and **odo watch**.

If the **.odoignore** file does *not* exist, the **.gitignore** file is used instead for ignoring specific files and folders.

To ignore **.git** files, any files with the **.js** extension, and the folder **tests**, add the following to either the **.odoignore** or the **.gitignore** file:

```
.git
*.js
tests/
```

The **.odoignore** file allows any glob expressions.

3.5. ODO CLI REFERENCE

3.5.1. odo build-images

odo can build container images based on Dockerfiles, and push these images to their registries.

When running the **odo build-images** command, **odo** searches for all components in the **devfile.yaml** with the **image** type, for example:

```
components:
- image:
    imageName: quay.io/myusername/myimage
    dockerfile:
      uri: ./Dockerfile (1)
      buildContext: ${PROJECTS_ROOT} (2)
  name: component-built-from-dockerfile
```

1. The **uri** field indicates the relative path of the Dockerfile to use, relative to the directory containing the **devfile.yaml**. The devfile specification indicates that **uri** could also be an HTTP URL, but this case is not supported by odo yet.

2. The **buildContext** indicates the directory used as build context. The default value is **${PROJECTS_ROOT}**.

For each image component, odo executes either **podman** or **docker** (the first one found, in this order), to build the image with the specified Dockerfile, build context, and arguments.

If the **--push** flag is passed to the command, the images are pushed to their registries after they are built.

3.5.2. odo catalog

odo uses different *catalogs* to deploy *components* and *services*.

3.5.2.1. Components

odo uses the portable *devfile* format to describe the components. It can connect to various devfile registries to download devfiles for different languages and frameworks. See **odo registry** for more information.

3.5.2.1.1. Listing components

To list all the *devfiles* available on the different registries, run the command:

```
$ odo catalog list components
```

Example output

```
NAME            DESCRIPTION                        REGISTRY
go              Stack with the latest Go version   DefaultDevfileRegistry
java-maven      Upstream Maven and OpenJDK 11      DefaultDevfileRegistry
nodejs          Stack with Node.js 14              DefaultDevfileRegistry
php-laravel     Stack with Laravel 8               DefaultDevfileRegistry
python          Python Stack with Python 3.7       DefaultDevfileRegistry
[...]
```

3.5.2.1.2. Getting information about a component

To get more information about a specific component, run the command:

```
$ odo catalog describe component
```

For example, run the command:

```
$ odo catalog describe component nodejs
```

Example output

```
* Registry: DefaultDevfileRegistry 1
```

```
Starter Projects: (2)
---
name: nodejs-starter
attributes: {}
description: ""
subdir: ""
projectsource:
  sourcetype: ""
  git:
    gitlikeprojectsource:
      commonprojectsource: {}
      checkoutfrom: null
      remotes:
        origin: https://github.com/odo-devfiles/nodejs-ex.git
  zip: null
  custom: null
```

(1) *Registry* is the registry from which the devfile is retrieved.

(2) *Starter projects* are sample projects in the same language and framework of the devfile, that can help you start a new project.

See **odo create** for more information on creating a project from a starter project.

3.5.2.2. Services

odo can deploy *services* with the help of *Operators*.

Only Operators deployed with the help of the *Operator Lifecycle Manager* are supported by odo.

3.5.2.2.1. Listing services

To list the available Operators and their associated services, run the command:

```
$ odo catalog list services
```

Example output

```
Services available through Operators
NAME                            CRDs
postgresql-operator.v0.1.1          Backup, Database
redis-operator.v0.8.0               RedisCluster, Redis
```

In this example, two Operators are installed in the cluster. The **postgresql-operator.v0.1.1** Operator deploys services related to PostgreSQL: **Backup** and **Database**. The **redis-operator.v0.8.0** Operator deploys services related to Redis: **RedisCluster** and **Redis**.

NOTE

To get a list of all the available Operators, **odo** fetches the ClusterServiceVersion (CSV) resources of the current namespace that are in a *Succeeded* phase. For Operators that support cluster-wide access, when a new namespace is created, these resources are automatically added to it. However, it may take some time before they are in the *Succeeded* phase, and **odo** may return an empty list until the resources are ready.

3.5.2.2.2. Searching services

To search for a specific service by a keyword, run the command:

```
$ odo catalog search service
```

For example, to retrieve the PostgreSQL services, run the command:

```
$ odo catalog search service postgres
```

Example output

```
Services available through Operators
NAME                          CRDs
postgresql-operator.v0.1.1    Backup, Database
```

You will see a list of Operators that contain the searched keyword in their name.

3.5.2.2.3. Getting information about a service

To get more information about a specific service, run the command:

```
$ odo catalog describe service
```

For example:

```
$ odo catalog describe service postgresql-operator.v0.1.1/Database
```

Example output

```
KIND:    Database
VERSION: v1alpha1

DESCRIPTION:
    Database is the Schema for the the Database Database API

FIELDS:
  awsAccessKeyId (string)
    AWS S3 accessKey/token ID

    Key ID of AWS S3 storage. Default Value: nil Required to create the Secret
    with the data to allow send the backup files to AWS S3 storage.
[...]
```

A service is represented in the cluster by a CustomResourceDefinition (CRD) resource. The previous command displays the details about the CRD such as **kind**, **version**, and the list of fields available to define an instance of this custom resource.

The list of fields is extracted from the *OpenAPI schema* included in the CRD. This information is optional in a CRD, and if it is not present, it is extracted from the ClusterServiceVersion (CSV) resource representing the service instead.

It is also possible to request the description of an Operator-backed service, without providing CRD type information. To describe the Redis Operator on a cluster, without CRD, run the following command:

```
$ odo catalog describe service redis-operator.v0.8.0
```

Example output

```
NAME: redis-operator.v0.8.0
DESCRIPTION:

 A Golang based redis operator that will make/oversee Redis
 standalone/cluster mode setup on top of the Kubernetes. It can create a
 redis cluster setup with best practices on Cloud as well as the Bare metal
 environment. Also, it provides an in-built monitoring capability using

... (cut short for beverity)

 Logging Operator is licensed under [Apache License, Version
 2.0](https://github.com/OT-CONTAINER-KIT/redis-operator/blob/master/LICENSE)


CRDs:
 NAME          DESCRIPTION
 RedisCluster  Redis Cluster
 Redis         Redis
```

3.5.3. odo create

odo uses a *devfile* to store the configuration of a component and to describe the component's resources such as storage and services. The *odo create* command generates this file.

3.5.3.1. Creating a component

To create a *devfile* for an existing project, run the **odo create** command with the name and type of your component (for example, **nodejs** or **go**):

```
odo create nodejs mynodejs
```

In the example, **nodejs** is the type of the component and **mynodejs** is the name of the component that **odo** creates for you.

NOTE

For a list of all the supported component types, run the command **odo catalog list components**.

If your source code exists outside the current directory, the **--context** flag can be used to specify the path. For example, if the source for the nodejs component is in a folder called **node-backend** relative to the current working directory, run the command:

```
odo create nodejs mynodejs --context ./node-backend
```

The **--context** flag supports relative and absolute paths.

To specify the project or app where your component will be deployed, use the **--project** and **--app** flags. For example, to create a component that is part of the **myapp** app inside the **backend** project, run the command:

```
odo create nodejs --app myapp --project backend
```

NOTE

If these flags are not specified, they will default to the active app and project.

3.5.3.2. Starter projects

Use the starter projects if you do not have existing source code but want to get up and running quickly to experiment with devfiles and components. To use a starter project, add the **--starter** flag to the **odo create** command.

To get a list of available starter projects for a component type, run the **odo catalog describe component** command. For example, to get all available starter projects for the nodejs component type, run the command:

```
odo catalog describe component nodejs
```

Then specify the desired project using the **--starter** flag on the **odo create** command:

```
odo create nodejs --starter nodejs-starter
```

This will download the example template corresponding to the chosen component type, in this instance, **nodejs**. The template is downloaded to your current directory, or to the location specified by the **--context** flag. If a starter project has its own devfile, then this devfile will be preserved.

3.5.3.3. Using an existing devfile

If you want to create a new component from an existing devfile, you can do so by specifying the path to the devfile using the **--devfile** flag. For example, to create a component called **mynodejs**, based on a devfile from GitHub, use the following command:

```
odo create mynodejs --devfile https://raw.githubusercontent.com/odo-devfiles/registry/master/devfiles/nodejs/devfile.yaml
```

3.5.3.4. Interactive creation

You can also run the **odo create** command interactively, to guide you through the steps needed to create a component:

```
$ odo create

? Which devfile component type do you wish to create go
? What do you wish to name the new devfile component go-api
? What project do you want the devfile component to be created in default
Devfile Object Validation
 ✓  Checking devfile existence [164258ns]
 ✓  Creating a devfile component from registry: DefaultDevfileRegistry [246051ns]
Validation
 ✓  Validating if devfile name is correct [92255ns]
? Do you want to download a starter project Yes

Starter Project
 ✓  Downloading starter project go-starter from https://github.com/devfile-samples/devfile-stack-go.git
[429ms]

Please use odo push command to create the component with source deployed
```

You are prompted to choose the component type, name, and the project for the component. You can also choose whether or not to download a starter project. Once finished, a new **devfile.yaml** file is created in the working directory.

To deploy these resources to your cluster, run the command **odo push**.

3.5.4. odo delete

The **odo delete** command is useful for deleting resources that are managed by **odo**.

3.5.4.1. Deleting a component

To delete a *devfile* component, run the **odo delete** command:

```
$ odo delete
```

If the component has been pushed to the cluster, the component is deleted from the cluster, along with its dependent storage, URL, secrets, and other resources. If the component has not been pushed, the command exits with an error stating that it could not find the resources on the cluster.

Use the **-f** or **--force** flag to avoid the confirmation questions.

3.5.4.2. Undeploying devfile Kubernetes components

To undeploy the devfile Kubernetes components, that have been deployed with **odo deploy**, execute the **odo delete** command with the **--deploy** flag:

```
$ odo delete --deploy
```

Use the **-f** or **--force** flag to avoid the confirmation questions.

3.5.4.3. Delete all

To delete all artifacts including the following items, run the **odo delete** command with the **--all** flag :

- *devfile* component

- Devfile Kubernetes component that was deployed using the **odo deploy** command
- Devfile
- Local configuration

```
$ odo delete --all
```

3.5.4.4. Available flags

-f, --force

Use this flag to avoid the confirmation questions.

-w, --wait

Use this flag to wait for component deletion and any dependencies. This flag does not work when undeploying.

The documentation on *Common Flags* provides more information on the flags available for commands.

3.5.5. odo deploy

odo can be used to deploy components in a manner similar to how they would be deployed using a CI/CD system. First, **odo** builds the container images, and then it deploys the Kubernetes resources required to deploy the components.

When running the command **odo deploy**, **odo** searches for the default command of kind **deploy** in the devfile, and executes this command. The kind **deploy** is supported by the devfile format starting from version 2.2.0.

The **deploy** command is typically a *composite* command, composed of several *apply* commands:

- A command referencing an **image** component that, when applied, will build the image of the container to deploy, and then push it to its registry.
- A command referencing a Kubernetes component that, when applied, will create a Kubernetes resource in the cluster.

With the following example **devfile.yaml** file, a container image is built using the **Dockerfile** present in the directory. The image is pushed to its registry and then a Kubernetes Deployment resource is created in the cluster, using this freshly built image.

```
schemaVersion: 2.2.0
[...]
variables:
  CONTAINER_IMAGE: quay.io/phmartin/myimage
commands:
  - id: build-image
    apply:
      component: outerloop-build
  - id: deployk8s
    apply:
      component: outerloop-deploy
  - id: deploy
    composite:
      commands:
```

```
        - build-image
        - deployk8s
      group:
        kind: deploy
        isDefault: true
components:
  - name: outerloop-build
    image:
      imageName: "{{CONTAINER_IMAGE}}"
      dockerfile:
        uri: ./Dockerfile
        buildContext: ${PROJECTS_ROOT}
  - name: outerloop-deploy
    kubernetes:
      inlined: |
        kind: Deployment
        apiVersion: apps/v1
        metadata:
          name: my-component
        spec:
          replicas: 1
          selector:
            matchLabels:
              app: node-app
          template:
            metadata:
              labels:
                app: node-app
            spec:
              containers:
                - name: main
                  image: {{CONTAINER_IMAGE}}
```

3.5.6. odo link

The **odo link** command helps link an **odo** component to an Operator-backed service or another **odo** component. It does this by using the Service Binding Operator. Currently, **odo** makes use of the Service Binding library and not the Operator itself to achieve the desired functionality.

3.5.6.1. Various linking options

odo provides various options for linking a component with an Operator-backed service or another **odo** component. All these options (or flags) can be used whether you are linking a component to a service or to another component.

3.5.6.1.1. Default behavior

By default, the **odo link** command creates a directory named **kubernetes**/ in your component directory and stores the information (YAML manifests) about services and links there. When you use **odo push**, **odo** compares these manifests with the state of the resources on the Kubernetes cluster and decides whether it needs to create, modify or destroy resources to match what is specified by the user.

3.5.6.1.2. The **--inlined** flag

If you specify the **--inlined** flag to the **odo link** command, **odo** stores the link information inline in the

devfile.yaml in the component directory, instead of creating a file under the **kubernetes**/ directory. The behavior of the **--inlined** flag is similar in both the **odo link** and **odo service create** commands. This flag is helpful if you want everything stored in a single **devfile.yaml**. You have to remember to use **--inlined** flag with each **odo link** and **odo service create** command that you execute for the component.

3.5.6.1.3. The --map flag

Sometimes, you might want to add more binding information to the component, in addition to what is available by default. For example, if you are linking the component with a service and would like to bind some information from the service's spec (short for specification), you could use the **--map** flag. Note that **odo** does not do any validation against the spec of the service or component being linked. Using this flag is only recommended if you are comfortable using the Kubernetes YAML manifests.

3.5.6.1.4. The --bind-as-files flag

For all the linking options discussed so far, **odo** injects the binding information into the component as environment variables. If you would like to mount this information as files instead, you can use the **--bind-as-files** flag. This will make **odo** inject the binding information as files into the **/bindings** location within your component's Pod. Compared to the environment variables scenario, when you use **--bind-as-files**, the files are named after the keys and the value of these keys is stored as the contents of these files.

3.5.6.2. Examples

3.5.6.2.1. Default odo link

In the following example, the backend component is linked with the PostgreSQL service using the default **odo link** command. For the backend component, make sure that your component and service are pushed to the cluster:

```
$ odo list
```

Sample output

```
APP     NAME        PROJECT       TYPE       STATE      MANAGED BY ODO
app     backend     myproject     spring     Pushed     Yes
```

```
$ odo service list
```

Sample output

```
NAME                    MANAGED BY ODO     STATE      AGE
PostgresCluster/hippo     Yes (backend)      Pushed     59m41s
```

Now, run **odo link** to link the backend component with the PostgreSQL service:

```
$ odo link PostgresCluster/hippo
```

Example output

```
 ✓  Successfully created link between component "backend" and service "PostgresCluster/hippo"

To apply the link, please use `odo push`
```

And then run **odo push** to actually create the link on the Kubernetes cluster.

After a successful **odo push**, you will see a few outcomes:

1. When you open the URL for the application deployed by backend component, it shows a list of **todo** items in the database. For example, in the output for the **odo url list** command, the path where **todos** are listed is included:

   ```
   $ odo url list
   ```

   Sample output

   ```
   Found the following URLs for component backend
   NAME        STATE     URL                                  PORT    SECURE    KIND
   8080-tcp    Pushed    http://8080-tcp.192.168.39.112.nip.io    8080    false     ingress
   ```

   The correct path for the URL would be http://8080-tcp.192.168.39.112.nip.io/api/v1/todos. The exact URL depends on your setup. Also note that there are no **todos** in the database unless you add some, so the URL might just show an empty JSON object.

2. You can see binding information related to the Postgres service injected into the backend component. This binding information is injected, by default, as environment variables. You can check it using the **odo describe** command from the backend component's directory:

   ```
   $  odo describe
   ```

   Example output:

   ```
   Component Name: backend
   Type: spring
   Environment Variables:
    · PROJECTS_ROOT=/projects
    · PROJECT_SOURCE=/projects
    · DEBUG_PORT=5858
   Storage:
    · m2 of size 3Gi mounted to /home/user/.m2
   URLs:
    · http://8080-tcp.192.168.39.112.nip.io exposed via 8080
   Linked Services:
    · PostgresCluster/hippo
      Environment Variables:
      · POSTGRESCLUSTER_PGBOUNCER-EMPTY
      · POSTGRESCLUSTER_PGBOUNCER.INI
      · POSTGRESCLUSTER_ROOT.CRT
      · POSTGRESCLUSTER_VERIFIER
      · POSTGRESCLUSTER_ID_ECDSA
      · POSTGRESCLUSTER_PGBOUNCER-VERIFIER
      · POSTGRESCLUSTER_TLS.CRT
      · POSTGRESCLUSTER_PGBOUNCER-URI
      · POSTGRESCLUSTER_PATRONI.CRT-COMBINED
   ```

```
· POSTGRESCLUSTER_USER
· pgImage
· pgVersion
· POSTGRESCLUSTER_CLUSTERIP
· POSTGRESCLUSTER_HOST
· POSTGRESCLUSTER_PGBACKREST_REPO.CONF
· POSTGRESCLUSTER_PGBOUNCER-USERS.TXT
· POSTGRESCLUSTER_SSH_CONFIG
· POSTGRESCLUSTER_TLS.KEY
· POSTGRESCLUSTER_CONFIG-HASH
· POSTGRESCLUSTER_PASSWORD
· POSTGRESCLUSTER_PATRONI.CA-ROOTS
· POSTGRESCLUSTER_DBNAME
· POSTGRESCLUSTER_PGBOUNCER-PASSWORD
· POSTGRESCLUSTER_SSHD_CONFIG
· POSTGRESCLUSTER_PGBOUNCER-FRONTEND.KEY
· POSTGRESCLUSTER_PGBACKREST_INSTANCE.CONF
· POSTGRESCLUSTER_PGBOUNCER-FRONTEND.CA-ROOTS
· POSTGRESCLUSTER_PGBOUNCER-HOST
· POSTGRESCLUSTER_PORT
· POSTGRESCLUSTER_ROOT.KEY
· POSTGRESCLUSTER_SSH_KNOWN_HOSTS
· POSTGRESCLUSTER_URI
· POSTGRESCLUSTER_PATRONI.YAML
· POSTGRESCLUSTER_DNS.CRT
· POSTGRESCLUSTER_DNS.KEY
· POSTGRESCLUSTER_ID_ECDSA.PUB
· POSTGRESCLUSTER_PGBOUNCER-FRONTEND.CRT
· POSTGRESCLUSTER_PGBOUNCER-PORT
· POSTGRESCLUSTER_CA.CRT
```

Some of these variables are used in the backend component's **src/main/resources/application.properties** file so that the Java Spring Boot application can connect to the PostgreSQL database service.

3. Lastly, **odo** has created a directory called **kubernetes/** in your backend component's directory that contains the following files:

```
$ ls kubernetes
odo-service-backend-postgrescluster-hippo.yaml  odo-service-hippo.yaml
```

These files contain the information (YAML manifests) for two resources:

a. **odo-service-hippo.yaml** - the Postgres *service* created using **odo service create --from-file ../postgrescluster.yaml** command.

b. **odo-service-backend-postgrescluster-hippo.yaml** - the *link* created using **odo link** command.

3.5.6.2.2. Using odo link with the --inlined flag

Using the **--inlined** flag with the **odo link** command has the same effect as an **odo link** command without the flag, in that it injects binding information. However, the subtle difference is that in the above case, there are two manifest files under **kubernetes/** directory, one for the Postgres service and another

for the link between the backend component and this service. However, when you pass the **--inlined** flag, **odo** does not create a file under the **kubernetes/** directory to store the YAML manifest, but rather stores it inline in the **devfile.yaml** file.

To see this, unlink the component from the PostgreSQL service first:

```
$ odo unlink PostgresCluster/hippo
```

Example output:

```
 ✓  Successfully unlinked component "backend" from service "PostgresCluster/hippo"

To apply the changes, please use `odo push`
```

To unlink them on the cluster, run **odo push**. Now if you inspect the **kubernetes/** directory, you see only one file:

```
$ ls kubernetes
odo-service-hippo.yaml
```

Next, use the **--inlined** flag to create a link:

```
$ odo link PostgresCluster/hippo --inlined
```

Example output:

```
 ✓  Successfully created link between component "backend" and service "PostgresCluster/hippo"

To apply the link, please use `odo push`
```

You need to run **odo push** for the link to get created on the cluster, like the procedure that omits the **--inlined** flag. **odo** stores the configuration in **devfile.yaml**. In this file, you can see an entry like the following:

```
kubernetes:
  inlined: |
    apiVersion: binding.operators.coreos.com/v1alpha1
    kind: ServiceBinding
    metadata:
      creationTimestamp: null
      name: backend-postgrescluster-hippo
    spec:
      application:
        group: apps
        name: backend-app
        resource: deployments
        version: v1
      bindAsFiles: false
      detectBindingResources: true
      services:
      - group: postgres-operator.crunchydata.com
        id: hippo
        kind: PostgresCluster
```

```
      name: hippo
      version: v1beta1
  status:
    secret: ""
name: backend-postgrescluster-hippo
```

Now if you were to run **odo unlink PostgresCluster/hippo**, **odo** would first remove the link information from the **devfile.yaml**, and then a subsequent **odo push** would delete the link from the cluster.

3.5.6.2.3. Custom bindings

odo link accepts the flag **--map** which can inject custom binding information into the component. Such binding information will be fetched from the manifest of the resource that you are linking to your component. For example, in the context of the backend component and PostgreSQL service, you can inject information from the PostgreSQL service's manifest **postgrescluster.yaml** file into the backend component.

If the name of your **PostgresCluster** service is **hippo** (or the output of **odo service list**, if your PostgresCluster service is named differently), when you want to inject the value of **postgresVersion** from that YAML definition into your backend component, run the command:

```
$ odo link PostgresCluster/hippo --map pgVersion='{{ .hippo.spec.postgresVersion }}'
```

Note that, if the name of your Postgres service is different from **hippo**, you will have to specify that in the above command in the place of **.hippo** in the value for **pgVersion**.

After a link operation, run **odo push** as usual. Upon successful completion of the push operation, you can run the following command from your backend component directory, to validate if the custom mapping got injected properly:

```
$ odo exec -- env | grep pgVersion
```

Example output:

```
pgVersion=13
```

Since you might want to inject more than just one piece of custom binding information, **odo link** accepts multiple key-value pairs of mappings. The only constraint is that these should be specified as **--map <key>=<value>**. For example, if you want to also inject PostgreSQL image information along with the version, you could run:

```
$ odo link PostgresCluster/hippo --map pgVersion='{{ .hippo.spec.postgresVersion }}' --map
pgImage='{{ .hippo.spec.image }}'
```

and then run **odo push**. To validate if both the mappings got injected correctly, run the following command:

```
$ odo exec -- env | grep -e "pgVersion\|pgImage"
```

Example output:

```
pgVersion=13
pgImage=registry.developers.crunchydata.com/crunchydata/crunchy-postgres-ha:centos8-13.4-0
```

3.5.6.2.3.1. To inline or not?

You can accept the default behavior where **odo link** generate a manifests file for the link under **kubernetes**/ directory. Alternatively, you can use the **--inlined** flag if you prefer to store everything in a single **devfile.yaml** file.

3.5.6.3. Binding as files

Another helpful flag that **odo link** provides is **--bind-as-files**. When this flag is passed, the binding information is not injected into the component's Pod as environment variables but is mounted as a filesystem.

Ensure that there are no existing links between the backend component and the PostgreSQL service. You could do this by running **odo describe** in the backend component's directory and check if you see output similar to the following:

```
Linked Services:
 · PostgresCluster/hippo
```

Unlink the service from the component using:

```
$ odo unlink PostgresCluster/hippo
$ odo push
```

3.5.6.4. --bind-as-files examples

3.5.6.4.1. Using the default odo link

By default, **odo** creates the manifest file under the **kubernetes**/ directory, for storing the link information. Link the backend component and PostgreSQL service using:

```
$ odo link PostgresCluster/hippo --bind-as-files
$ odo push
```

Example odo describe output:

```
$ odo describe

Component Name: backend
Type: spring
Environment Variables:
 · PROJECTS_ROOT=/projects
 · PROJECT_SOURCE=/projects
 · DEBUG_PORT=5858
 · SERVICE_BINDING_ROOT=/bindings
 · SERVICE_BINDING_ROOT=/bindings
Storage:
 · m2 of size 3Gi mounted to /home/user/.m2
URLs:
 · http://8080-tcp.192.168.39.112.nip.io exposed via 8080
Linked Services:
 · PostgresCluster/hippo
   Files:
```

```
 · /bindings/backend-postgrescluster-hippo/pgbackrest_instance.conf
 · /bindings/backend-postgrescluster-hippo/user
 · /bindings/backend-postgrescluster-hippo/ssh_known_hosts
 · /bindings/backend-postgrescluster-hippo/clusterIP
 · /bindings/backend-postgrescluster-hippo/password
 · /bindings/backend-postgrescluster-hippo/patroni.yaml
 · /bindings/backend-postgrescluster-hippo/pgbouncer-frontend.crt
 · /bindings/backend-postgrescluster-hippo/pgbouncer-host
 · /bindings/backend-postgrescluster-hippo/root.key
 · /bindings/backend-postgrescluster-hippo/pgbouncer-frontend.key
 · /bindings/backend-postgrescluster-hippo/pgbouncer.ini
 · /bindings/backend-postgrescluster-hippo/uri
 · /bindings/backend-postgrescluster-hippo/config-hash
 · /bindings/backend-postgrescluster-hippo/pgbouncer-empty
 · /bindings/backend-postgrescluster-hippo/port
 · /bindings/backend-postgrescluster-hippo/dns.crt
 · /bindings/backend-postgrescluster-hippo/pgbouncer-uri
 · /bindings/backend-postgrescluster-hippo/root.crt
 · /bindings/backend-postgrescluster-hippo/ssh_config
 · /bindings/backend-postgrescluster-hippo/dns.key
 · /bindings/backend-postgrescluster-hippo/host
 · /bindings/backend-postgrescluster-hippo/patroni.crt-combined
 · /bindings/backend-postgrescluster-hippo/pgbouncer-frontend.ca-roots
 · /bindings/backend-postgrescluster-hippo/tls.key
 · /bindings/backend-postgrescluster-hippo/verifier
 · /bindings/backend-postgrescluster-hippo/ca.crt
 · /bindings/backend-postgrescluster-hippo/dbname
 · /bindings/backend-postgrescluster-hippo/patroni.ca-roots
 · /bindings/backend-postgrescluster-hippo/pgbackrest_repo.conf
 · /bindings/backend-postgrescluster-hippo/pgbouncer-port
 · /bindings/backend-postgrescluster-hippo/pgbouncer-verifier
 · /bindings/backend-postgrescluster-hippo/id_ecdsa
 · /bindings/backend-postgrescluster-hippo/id_ecdsa.pub
 · /bindings/backend-postgrescluster-hippo/pgbouncer-password
 · /bindings/backend-postgrescluster-hippo/pgbouncer-users.txt
 · /bindings/backend-postgrescluster-hippo/sshd_config
 · /bindings/backend-postgrescluster-hippo/tls.crt
```

Everything that was an environment variable in the **key=value** format in the earlier **odo describe** output is now mounted as a file. Use the **cat** command to view the contents of some of these files:

Example command:

```
$ odo exec -- cat /bindings/backend-postgrescluster-hippo/password
```

Example output:

```
q({JC:jn^mm/Bw}eu+j.GX{k
```

Example command:

```
$ odo exec -- cat /bindings/backend-postgrescluster-hippo/user
```

Example output:

```
hippo
```

Example command:

```
$ odo exec -- cat /bindings/backend-postgrescluster-hippo/clusterIP
```

Example output:

```
10.101.78.56
```

3.5.6.4.2. Using **--inlined**

The result of using **--bind-as-files** and **--inlined** together is similar to using **odo link --inlined**. The manifest of the link gets stored in the **devfile.yaml**, instead of being stored in a separate file under **kubernetes**/ directory. Other than that, the **odo describe** output would be the same as earlier.

3.5.6.4.3. Custom bindings

When you pass custom bindings while linking the backend component with the PostgreSQL service, these custom bindings are injected not as environment variables but are mounted as files. For example:

```
$ odo link PostgresCluster/hippo --map pgVersion='{{ .hippo.spec.postgresVersion }}' --map
pgImage='{{ .hippo.spec.image }}' --bind-as-files
$ odo push
```

These custom bindings get mounted as files instead of being injected as environment variables. To validate that this worked, run the following command:

Example command:

```
$ odo exec -- cat /bindings/backend-postgrescluster-hippo/pgVersion
```

Example output:

```
13
```

Example command:

```
$ odo exec -- cat /bindings/backend-postgrescluster-hippo/pgImage
```

Example output:

```
registry.developers.crunchydata.com/crunchydata/crunchy-postgres-ha:centos8-13.4-0
```

3.5.7. odo registry

odo uses the portable *devfile* format to describe the components. **odo** can connect to various devfile registries, to download devfiles for different languages and frameworks.

You can connect to publicly available devfile registries, or you can install your own *Secure Registry*.

You can use the **odo registry** command to manage the registries that are used by **odo** to retrieve devfile information.

3.5.7.1. Listing the registries

To list the registries currently contacted by **odo**, run the command:

```
$ odo registry list
```

Example output:

```
NAME                    URL                         SECURE
DefaultDevfileRegistry  https://registry.devfile.io  No
```

DefaultDevfileRegistry is the default registry used by odo; it is provided by the devfile.io project.

3.5.7.2. Adding a registry

To add a registry, run the command:

```
$ odo registry add
```

Example output:

```
$ odo registry add StageRegistry https://registry.stage.devfile.io
New registry successfully added
```

If you are deploying your own Secure Registry, you can specify the personal access token to authenticate to the secure registry with the **--token** flag:

```
$ odo registry add MyRegistry https://myregistry.example.com --token <access_token>
New registry successfully added
```

3.5.7.3. Deleting a registry

To delete a registry, run the command:

```
$ odo registry delete
```

Example output:

```
$ odo registry delete StageRegistry
? Are you sure you want to delete registry "StageRegistry" Yes
Successfully deleted registry
```

Use the **--force** (or **-f**) flag to force the deletion of the registry without confirmation.

3.5.7.4. Updating a registry

To update the URL or the personal access token of a registry already registered, run the command:

-

```
$ odo registry update
```

Example output:

```
$ odo registry update MyRegistry https://otherregistry.example.com --token <other_access_token>
? Are you sure you want to update registry "MyRegistry" Yes
Successfully updated registry
```

Use the **--force** (or **-f**) flag to force the update of the registry without confirmation.

3.5.8. odo service

odo can deploy *services* with the help of *Operators*.

The list of available Operators and services available for installation can be found using the **odo catalog** command.

Services are created in the context of a *component*, so run the **odo create** command before you deploy services.

A service is deployed using two steps:

1. Define the service and store its definition in the devfile.
2. Deploy the defined service to the cluster, using the **odo push** command.

3.5.8.1. Creating a new service

To create a new service, run the command:

```
$ odo service create
```

For example, to create an instance of a Redis service named **my-redis-service**, you can run the following command:

Example output

```
$ odo catalog list services
Services available through Operators
NAME                    CRDs
redis-operator.v0.8.0   RedisCluster, Redis

$ odo service create redis-operator.v0.8.0/Redis my-redis-service
Successfully added service to the configuration; do 'odo push' to create service on the cluster
```

This command creates a Kubernetes manifest in the **kubernetes**/ directory, containing the definition of the service, and this file is referenced from the **devfile.yaml** file.

```
$ cat kubernetes/odo-service-my-redis-service.yaml
```

Example output

```
apiVersion: redis.redis.opstreelabs.in/v1beta1
```

```
kind: Redis
metadata:
  name: my-redis-service
spec:
  kubernetesConfig:
    image: quay.io/opstree/redis:v6.2.5
    imagePullPolicy: IfNotPresent
    resources:
      limits:
        cpu: 101m
        memory: 128Mi
      requests:
        cpu: 101m
        memory: 128Mi
    serviceType: ClusterIP
  redisExporter:
    enabled: false
    image: quay.io/opstree/redis-exporter:1.0
  storage:
    volumeClaimTemplate:
      spec:
        accessModes:
        - ReadWriteOnce
        resources:
          requests:
            storage: 1Gi
```

Example command

```
$ cat devfile.yaml
```

Example output

```
[...]
components:
- kubernetes:
    uri: kubernetes/odo-service-my-redis-service.yaml
  name: my-redis-service
[...]
```

Note that the name of the created instance is optional. If you do not provide a name, it will be the lowercase name of the service. For example, the following command creates an instance of a Redis service named **redis**:

```
$ odo service create redis-operator.v0.8.0/Redis
```

3.5.8.1.1. Inlining the manifest

By default, a new manifest is created in the **kubernetes/** directory, referenced from the **devfile.yaml** file. It is possible to inline the manifest inside the **devfile.yaml** file using the **--inlined** flag:

```
$ odo service create redis-operator.v0.8.0/Redis my-redis-service --inlined
Successfully added service to the configuration; do 'odo push' to create service on the cluster
```

Example command

```
$ cat devfile.yaml
```

Example output

```
[...]
components:
- kubernetes:
    inlined: |
      apiVersion: redis.redis.opstreelabs.in/v1beta1
      kind: Redis
      metadata:
        name: my-redis-service
      spec:
        kubernetesConfig:
          image: quay.io/opstree/redis:v6.2.5
          imagePullPolicy: IfNotPresent
          resources:
            limits:
              cpu: 101m
              memory: 128Mi
            requests:
              cpu: 101m
              memory: 128Mi
          serviceType: ClusterIP
        redisExporter:
          enabled: false
          image: quay.io/opstree/redis-exporter:1.0
        storage:
          volumeClaimTemplate:
            spec:
              accessModes:
              - ReadWriteOnce
              resources:
                requests:
                  storage: 1Gi
  name: my-redis-service
[...]
```

3.5.8.1.2. Configuring the service

Without specific customization, the service will be created with a default configuration. You can use either command-line arguments or a file to specify your own configuration.

3.5.8.1.2.1. Using command-line arguments

Use the **--parameters** (or **-p**) flag to specify your own configuration.

The following example configures the Redis service with three parameters:

```
$ odo service create redis-operator.v0.8.0/Redis my-redis-service \
    -p kubernetesConfig.image=quay.io/opstree/redis:v6.2.5 \
    -p kubernetesConfig.serviceType=ClusterIP \
```

```
    -p redisExporter.image=quay.io/opstree/redis-exporter:1.0
Successfully added service to the configuration; do 'odo push' to create service on the cluster
```

Example command

```
$ cat kubernetes/odo-service-my-redis-service.yaml
```

Example output

```
apiVersion: redis.redis.opstreelabs.in/v1beta1
kind: Redis
metadata:
  name: my-redis-service
spec:
  kubernetesConfig:
    image: quay.io/opstree/redis:v6.2.5
    serviceType: ClusterIP
  redisExporter:
    image: quay.io/opstree/redis-exporter:1.0
```

You can obtain the possible parameters for a specific service using the **odo catalog describe service** command.

3.5.8.1.2.2. Using a file

Use a YAML manifest to configure your own specification. In the following example, the Redis service is configured with three parameters.

1. Create a manifest:

```
$ cat > my-redis.yaml <<EOF
apiVersion: redis.redis.opstreelabs.in/v1beta1
kind: Redis
metadata:
  name: my-redis-service
spec:
  kubernetesConfig:
    image: quay.io/opstree/redis:v6.2.5
    serviceType: ClusterIP
  redisExporter:
    image: quay.io/opstree/redis-exporter:1.0
EOF
```

2. Create the service from the manifest:

```
$ odo service create --from-file my-redis.yaml
Successfully added service to the configuration; do 'odo push' to create service on the cluster
```

3.5.8.2. Deleting a service

To delete a service, run the command:

```
$ odo service delete
```

Example output

```
$ odo service list
NAME                    MANAGED BY ODO    STATE            AGE
Redis/my-redis-service    Yes (api)         Deleted locally    5m39s
```

```
$ odo service delete Redis/my-redis-service
? Are you sure you want to delete Redis/my-redis-service Yes
Service "Redis/my-redis-service" has been successfully deleted; do 'odo push' to delete service from the cluster
```

Use the **--force** (or **-f**) flag to force the deletion of the service without confirmation.

3.5.8.3. Listing services

To list the services created for your component, run the command:

```
$ odo service list
```

Example output

```
$ odo service list
NAME                    MANAGED BY ODO    STATE            AGE
Redis/my-redis-service-1   Yes (api)         Not pushed
Redis/my-redis-service-2   Yes (api)         Pushed           52s
Redis/my-redis-service-3   Yes (api)         Deleted locally  1m22s
```

For each service, **STATE** indicates if the service has been pushed to the cluster using the **odo push** command, or if the service is still running on the cluster but removed from the devfile locally using the **odo service delete** command.

3.5.8.4. Getting information about a service

To get details of a service such as its kind, version, name, and list of configured parameters, run the command:

```
$ odo service describe
```

Example output

```
$ odo service describe Redis/my-redis-service
Version: redis.redis.opstreelabs.in/v1beta1
Kind: Redis
Name: my-redis-service
Parameters:
NAME                        VALUE
kubernetesConfig.image        quay.io/opstree/redis:v6.2.5
kubernetesConfig.serviceType  ClusterIP
redisExporter.image           quay.io/opstree/redis-exporter:1.0
```

3.5.9. odo storage

odo lets users manage storage volumes that are attached to the components. A storage volume can be either an ephemeral volume using an **emptyDir** Kubernetes volume, or a Persistent Volume Claim (PVC). A PVC allows users to claim a persistent volume (such as a GCE PersistentDisk or an iSCSI volume) without understanding the details of the particular cloud environment. The persistent storage volume can be used to persist data across restarts and rebuilds of the component.

3.5.9.1. Adding a storage volume

To add a storage volume to the cluster, run the command:

```
$ odo storage create
```

Example output:

```
$ odo storage create store --path /data --size 1Gi
✓  Added storage store to nodejs-project-ufyy

$ odo storage create tempdir --path /tmp --size 2Gi --ephemeral
✓  Added storage tempdir to nodejs-project-ufyy

Please use `odo push` command to make the storage accessible to the component
```

In the above example, the first storage volume has been mounted to the **/data** path and has a size of **1Gi**, and the second volume has been mounted to **/tmp** and is ephemeral.

3.5.9.2. Listing the storage volumes

To check the storage volumes currently used by the component, run the command:

```
$ odo storage list
```

Example output:

```
$ odo storage list
The component 'nodejs-project-ufyy' has the following storage attached:
NAME      SIZE     PATH      STATE
store     1Gi      /data     Not Pushed
tempdir   2Gi      /tmp      Not Pushed
```

3.5.9.3. Deleting a storage volume

To delete a storage volume, run the command:

```
$ odo storage delete
```

Example output:

```
$ odo storage delete store -f
Deleted storage store from nodejs-project-ufyy

Please use `odo push` command to delete the storage from the cluster
```

In the above example, using the **-f** flag force deletes the storage without asking user permission.

3.5.9.4. Adding storage to specific container

If your devfile has multiple containers, you can specify which container you want the storage to attach to, using the **--container** flag in the **odo storage create** command.

The following example is an excerpt from a devfile with multiple containers :

```
components:
  - name: nodejs1
    container:
      image: registry.access.redhat.com/ubi8/nodejs-12:1-36
      memoryLimit: 1024Mi
      endpoints:
        - name: "3000-tcp"
          targetPort: 3000
      mountSources: true
  - name: nodejs2
    container:
      image: registry.access.redhat.com/ubi8/nodejs-12:1-36
      memoryLimit: 1024Mi
```

In the example, there are two containers,**nodejs1** and **nodejs2**. To attach storage to the **nodejs2** container, use the following command:

```
$ odo storage create --container
```

Example output:

```
$ odo storage create store --path /data --size 1Gi --container nodejs2
✓  Added storage store to nodejs-testing-xnfg

Please use `odo push` command to make the storage accessible to the component
```

You can list the storage resources, using the **odo storage list** command:

```
$ odo storage list
```

Example output:

```
The component 'nodejs-testing-xnfg' has the following storage attached:
NAME      SIZE     PATH      CONTAINER     STATE
store     1Gi      /data     nodejs2       Not Pushed
```

3.5.10. Common flags

The following flags are available with most **odo** commands:

Table 3.1. odo flags

Command	Description
--context	Set the context directory where the component is defined.
--project	Set the project for the component. Defaults to the project defined in the local configuration. If none is available, then current project on the cluster.
--app	Set the application of the component. Defaults to the application defined in the local configuration. If none is available, then *app*.
--kubeconfig	Set the path to the **kubeconfig** value if not using the default configuration.
--show-log	Use this flag to see the logs.
-f, **--force**	Use this flag to tell the command not to prompt the user for confirmation.
-v, **--v**	Set the verbosity level. See Logging in odo for more information.
-h, **--help**	Output the help for a command.

NOTE

Some flags might not be available for some commands. Run the command with the **--help** flag to get a list of all the available flags.

3.5.11. JSON output

The **odo** commands that output content generally accept a **-o json** flag to output this content in JSON format, suitable for other programs to parse this output more easily.

The output structure is similar to Kubernetes resources, with the **kind**, **apiVersion**, **metadata**, **spec**, and **status** fields.

List commands return a **List** resource, containing an **items** (or similar) field listing the items of the list, with each item also being similar to Kubernetes resources.

Delete commands return a **Status** resource; see the Status Kubernetes resource.

Other commands return a resource associated with the command, for example, **Application**, **Storage**, **URL**, and so on.

The full list of commands currently accepting the **-o json** flag is:

Commands	Kind (version)	Kind (version) of list items	Complete content?
odo application describe	Application (odo.dev/v1alpha1)	*n/a*	no

Commands	Kind (version)	Kind (version) of list items	Complete content?
odo application list	List (odo.dev/v1alpha1)	Application (odo.dev/v1alpha1)	?
odo catalog list components	List (odo.dev/v1alpha1)	*missing*	yes
odo catalog list services	List (odo.dev/v1alpha1)	ClusterServiceVersion (operators.coreos.com/v1alpha1)	?
odo catalog describe component	*missing*	*n/a*	yes
odo catalog describe service	CRDDescription (odo.dev/v1alpha1)	*n/a*	yes
odo component create	Component (odo.dev/v1alpha1)	*n/a*	yes
odo component describe	Component (odo.dev/v1alpha1)	*n/a*	yes
odo component list	List (odo.dev/v1alpha1)	Component (odo.dev/v1alpha1)	yes
odo config view	DevfileConfiguration (odo.dev/v1alpha1)	*n/a*	yes
odo debug info	OdoDebugInfo (odo.dev/v1alpha1)	*n/a*	yes
odo env view	EnvInfo (odo.dev/v1alpha1)	*n/a*	yes
odo preference view	PreferenceList (odo.dev/v1alpha1)	*n/a*	yes
odo project create	Project (odo.dev/v1alpha1)	*n/a*	yes
odo project delete	Status (v1)	*n/a*	yes
odo project get	Project (odo.dev/v1alpha1)	*n/a*	yes

Commands	Kind (version)	Kind (version) of list items	Complete content?
odo project list	List (odo.dev/v1alpha1)	Project (odo.dev/v1alpha1)	yes
odo registry list	List (odo.dev/v1alpha1)	*missing*	yes
odo service create	Service	*n/a*	yes
odo service describe	Service	*n/a*	yes
odo service list	List (odo.dev/v1alpha1)	Service	yes
odo storage create	Storage (odo.dev/v1alpha1)	*n/a*	yes
odo storage delete	Status (v1)	*n/a*	yes
odo storage list	List (odo.dev/v1alpha1)	Storage (odo.dev/v1alpha1)	yes
odo url list	List (odo.dev/v1alpha1)	URL (odo.dev/v1alpha1)	yes

CHAPTER 4. KNATIVE CLI FOR USE WITH OPENSHIFT SERVERLESS

The Knative (**kn**) CLI enables simple interaction with Knative components on OpenShift Container Platform.

4.1. KEY FEATURES

The Knative (**kn**) CLI is designed to make serverless computing tasks simple and concise. Key features of the Knative CLI include:

- Deploy serverless applications from the command line.
- Manage features of Knative Serving, such as services, revisions, and traffic-splitting.
- Create and manage Knative Eventing components, such as event sources and triggers.
- Create sink bindings to connect existing Kubernetes applications and Knative services.
- Extend the Knative CLI with flexible plugin architecture, similar to the **kubectl** CLI.
- Configure autoscaling parameters for Knative services.
- Scripted usage, such as waiting for the results of an operation, or deploying custom rollout and rollback strategies.

4.2. INSTALLING THE KNATIVE CLI

See Installing the Knative CLI.

CHAPTER 5. PIPELINES CLI (TKN)

5.1. INSTALLING TKN

Use the **tkn** CLI to manage Red Hat OpenShift Pipelines from a terminal. The following section describes how to install **tkn** on different platforms.

You can also find the URL to the latest binaries from the OpenShift Container Platform web console by clicking the **?** icon in the upper-right corner and selecting **Command Line Tools**.

5.1.1. Installing Red Hat OpenShift Pipelines CLI (tkn) on Linux

For Linux distributions, you can download the CLI directly as a **tar.gz** archive.

Procedure

1. Download the relevant CLI.
   - Linux (x86_64, amd64)
   - Linux on IBM Z and LinuxONE (s390x)
   - Linux on IBM Power Systems (ppc64le)
2. Unpack the archive:

```
$ tar xvzf <file>
```

3. Place the **tkn** binary in a directory that is on your **PATH**.
4. To check your **PATH**, run:

```
$ echo $PATH
```

5.1.2. Installing Red Hat OpenShift Pipelines CLI (tkn) on Linux using an RPM

For Red Hat Enterprise Linux (RHEL) version 8, you can install the Red Hat OpenShift Pipelines CLI (**tkn**) as an RPM.

Prerequisites

- You have an active OpenShift Container Platform subscription on your Red Hat account.
- You have root or sudo privileges on your local system.

Procedure

1. Register with Red Hat Subscription Manager:

```
# subscription-manager register
```

2. Pull the latest subscription data:

```
# subscription-manager refresh
```

3. List the available subscriptions:

```
# subscription-manager list --available --matches '*pipelines*'
```

4. In the output for the previous command, find the pool ID for your OpenShift Container Platform subscription and attach the subscription to the registered system:

```
# subscription-manager attach --pool=<pool_id>
```

5. Enable the repositories required by Red Hat OpenShift Pipelines:

- Linux (x86_64, amd64)

```
# subscription-manager repos --enable="pipelines-1.5-for-rhel-8-x86_64-rpms"
```

- Linux on IBM Z and LinuxONE (s390x)

```
# subscription-manager repos --enable="pipelines-1.5-for-rhel-8-s390x-rpms"
```

- Linux on IBM Power Systems (ppc64le)

```
# subscription-manager repos --enable="pipelines-1.5-for-rhel-8-ppc64le-rpms"
```

6. Install the **openshift-pipelines-client** package:

```
# yum install openshift-pipelines-client
```

After you install the CLI, it is available using the **tkn** command:

```
$ tkn version
```

5.1.3. Installing Red Hat OpenShift Pipelines CLI (tkn) on Windows

For Windows, the **tkn** CLI is provided as a **zip** archive.

Procedure

1. Download the CLI.
2. Unzip the archive with a ZIP program.
3. Add the location of your **tkn.exe** file to your **PATH** environment variable.
4. To check your **PATH**, open the command prompt and run the command:

```
C:\> path
```

5.1.4. Installing Red Hat OpenShift Pipelines CLI (tkn) on macOS

For macOS, the **tkn** CLI is provided as a **tar.gz** archive.

Procedure

1. Download the CLI.
2. Unpack and unzip the archive.
3. Move the **tkn** binary to a directory on your PATH.
4. To check your **PATH**, open a terminal window and run:

```
$ echo $PATH
```

5.2. CONFIGURING THE OPENSHIFT PIPELINES TKN CLI

Configure the Red Hat OpenShift Pipelines **tkn** CLI to enable tab completion.

5.2.1. Enabling tab completion

After you install the **tkn** CLI, you can enable tab completion to automatically complete **tkn** commands or suggest options when you press Tab.

Prerequisites

- You must have the **tkn** CLI tool installed.
- You must have **bash-completion** installed on your local system.

Procedure

The following procedure enables tab completion for Bash.

1. Save the Bash completion code to a file:

```
$ tkn completion bash > tkn_bash_completion
```

2. Copy the file to **/etc/bash_completion.d/**:

```
$ sudo cp tkn_bash_completion /etc/bash_completion.d/
```

   Alternatively, you can save the file to a local directory and source it from your **.bashrc** file instead.

Tab completion is enabled when you open a new terminal.

5.3. OPENSHIFT PIPELINES TKN REFERENCE

This section lists the basic **tkn** CLI commands.

5.3.1. Basic syntax

tkn [command or options] [arguments…]

5.3.2. Global options

--help, -h

5.3.3. Utility commands

5.3.3.1. tkn

Parent command for **tkn** CLI.

Example: Display all options

```
$ tkn
```

5.3.3.2. completion [shell]

Print shell completion code which must be evaluated to provide interactive completion. Supported shells are **bash** and **zsh**.

Example: Completion code for bash shell

```
$ tkn completion bash
```

5.3.3.3. version

Print version information of the **tkn** CLI.

Example: Check the tkn version

```
$ tkn version
```

5.3.4. Pipelines management commands

5.3.4.1. pipeline

Manage pipelines.

Example: Display help

```
$ tkn pipeline --help
```

5.3.4.2. pipeline delete

Delete a pipeline.

Example: Delete the mypipeline pipeline from a namespace

```
$ tkn pipeline delete mypipeline -n myspace
```

5.3.4.3. pipeline describe

Describe a pipeline.

Example: Describe the mypipeline pipeline

```
$ tkn pipeline describe mypipeline
```

5.3.4.4. pipeline list

Display a list of pipelines.

Example: Display a list of pipelines

```
$ tkn pipeline list
```

5.3.4.5. pipeline logs

Display the logs for a specific pipeline.

Example: Stream the live logs for the mypipeline pipeline

```
$ tkn pipeline logs -f mypipeline
```

5.3.4.6. pipeline start

Start a pipeline.

Example: Start the mypipeline pipeline

```
$ tkn pipeline start mypipeline
```

5.3.5. Pipeline run commands

5.3.5.1. pipelinerun

Manage pipeline runs.

Example: Display help

```
$ tkn pipelinerun -h
```

5.3.5.2. pipelinerun cancel

Cancel a pipeline run.

Example: Cancel the mypipelinerun pipeline run from a namespace

```
$ tkn pipelinerun cancel mypipelinerun -n myspace
```

5.3.5.3. pipelinerun delete

Delete a pipeline run.

Example: Delete pipeline runs from a namespace

```
$ tkn pipelinerun delete mypipelinerun1 mypipelinerun2 -n myspace
```

Example: Delete all pipeline runs from a namespace, except the five most recently executed pipeline runs

```
$ tkn pipelinerun delete -n myspace --keep 5 (1)
```

(1) Replace **5** with the number of most recently executed pipeline runs you want to retain.

5.3.5.4. pipelinerun describe

Describe a pipeline run.

Example: Describe the mypipelinerun pipeline run in a namespace

```
$ tkn pipelinerun describe mypipelinerun -n myspace
```

5.3.5.5. pipelinerun list

List pipeline runs.

Example: Display a list of pipeline runs in a namespace

```
$ tkn pipelinerun list -n myspace
```

5.3.5.6. pipelinerun logs

Display the logs of a pipeline run.

Example: Display the logs of the mypipelinerun pipeline run with all tasks and steps in a namespace

```
$ tkn pipelinerun logs mypipelinerun -a -n myspace
```

5.3.6. Task management commands

5.3.6.1. task

Manage tasks.

Example: Display help

```
$ tkn task -h
```

5.3.6.2. task delete

Delete a task.

Example: Delete mytask1 and mytask2 tasks from a namespace

```
$ tkn task delete mytask1 mytask2 -n myspace
```

5.3.6.3. task describe

Describe a task.

Example: Describe the mytask task in a namespace

```
$ tkn task describe mytask -n myspace
```

5.3.6.4. task list

List tasks.

Example: List all the tasks in a namespace

```
$ tkn task list -n myspace
```

5.3.6.5. task logs

Display task logs.

Example: Display logs for the mytaskrun task run of the mytask task

```
$ tkn task logs mytask mytaskrun -n myspace
```

5.3.6.6. task start

Start a task.

Example: Start the mytask task in a namespace

```
$ tkn task start mytask -s <ServiceAccountName> -n myspace
```

5.3.7. Task run commands

5.3.7.1. taskrun

Manage task runs.

Example: Display help

```
$ tkn taskrun -h
```

5.3.7.2. taskrun cancel

Cancel a task run.

Example: Cancel the mytaskrun task run from a namespace

```
$ tkn taskrun cancel mytaskrun -n myspace
```

5.3.7.3. taskrun delete

Delete a TaskRun.

Example: Delete the mytaskrun1 and mytaskrun2 task runs from a namespace

```
$ tkn taskrun delete mytaskrun1 mytaskrun2 -n myspace
```

Example: Delete all but the five most recently executed task runs from a namespace

```
$ tkn taskrun delete -n myspace --keep 5 1
```

1 Replace **5** with the number of most recently executed task runs you want to retain.

5.3.7.4. taskrun describe

Describe a task run.

Example: Describe the mytaskrun task run in a namespace

```
$ tkn taskrun describe mytaskrun -n myspace
```

5.3.7.5. taskrun list

List task runs.

Example: List all the task runs in a namespace

```
$ tkn taskrun list -n myspace
```

5.3.7.6. taskrun logs

Display task run logs.

Example: Display live logs for the mytaskrun task run in a namespace

```
$ tkn taskrun logs -f mytaskrun -n myspace
```

5.3.8. Condition management commands

5.3.8.1. condition

Manage Conditions.

Example: Display help

```
$ tkn condition --help
```

5.3.8.2. condition delete

Delete a Condition.

Example: Delete the mycondition1 Condition from a namespace

```
$ tkn condition delete mycondition1 -n myspace
```

5.3.8.3. condition describe

Describe a Condition.

Example: Describe the mycondition1 Condition in a namespace

```
$ tkn condition describe mycondition1 -n myspace
```

5.3.8.4. condition list

List Conditions.

Example: List Conditions in a namespace

```
$ tkn condition list -n myspace
```

5.3.9. Pipeline Resource management commands

5.3.9.1. resource

Manage Pipeline Resources.

Example: Display help

```
$ tkn resource -h
```

5.3.9.2. resource create

Create a Pipeline Resource.

Example: Create a Pipeline Resource in a namespace

```
$ tkn resource create -n myspace
```

This is an interactive command that asks for input on the name of the Resource, type of the Resource, and the values based on the type of the Resource.

5.3.9.3. resource delete

Delete a Pipeline Resource.

Example: Delete the myresource Pipeline Resource from a namespace

```
$ tkn resource delete myresource -n myspace
```

5.3.9.4. resource describe

Describe a Pipeline Resource.

Example: Describe the myresource Pipeline Resource

```
$ tkn resource describe myresource -n myspace
```

5.3.9.5. resource list

List Pipeline Resources.

Example: List all Pipeline Resources in a namespace

```
$ tkn resource list -n myspace
```

5.3.10. ClusterTask management commands

5.3.10.1. clustertask

Manage ClusterTasks.

Example: Display help

```
$ tkn clustertask --help
```

5.3.10.2. clustertask delete

Delete a ClusterTask resource in a cluster.

Example: Delete mytask1 and mytask2 ClusterTasks

```
$ tkn clustertask delete mytask1 mytask2
```

5.3.10.3. clustertask describe

Describe a ClusterTask.

Example: Describe the mytask ClusterTask

```
$ tkn clustertask describe mytask1
```

5.3.10.4. clustertask list

List ClusterTasks.

Example: List ClusterTasks

```
$ tkn clustertask list
```

5.3.10.5. clustertask start

Start ClusterTasks.

Example: Start the mytask ClusterTask

```
$ tkn clustertask start mytask
```

5.3.11. Trigger management commands

5.3.11.1. eventlistener

Manage EventListeners.

Example: Display help

```
$ tkn eventlistener -h
```

5.3.11.2. eventlistener delete

Delete an EventListener.

Example: Delete mylistener1 and mylistener2 EventListeners in a namespace

```
$ tkn eventlistener delete mylistener1 mylistener2 -n myspace
```

5.3.11.3. eventlistener describe

Describe an EventListener.

Example: Describe the mylistener EventListener in a namespace

```
$ tkn eventlistener describe mylistener -n myspace
```

5.3.11.4. eventlistener list

List EventListeners.

Example: List all the EventListeners in a namespace

```
$ tkn eventlistener list -n myspace
```

5.3.11.5. eventlistener logs

Display logs of an EventListener.

Example: Display the logs of the mylistener EventListener in a namespace

```
$ tkn eventlistener logs mylistener -n myspace
```

5.3.11.6. triggerbinding

Manage TriggerBindings.

Example: Display TriggerBindings help

```
$ tkn triggerbinding -h
```

5.3.11.7. triggerbinding delete

Delete a TriggerBinding.

Example: Delete mybinding1 and mybinding2 TriggerBindings in a namespace

```
$ tkn triggerbinding delete mybinding1 mybinding2 -n myspace
```

5.3.11.8. triggerbinding describe

Describe a TriggerBinding.

Example: Describe the mybinding TriggerBinding in a namespace

```
$ tkn triggerbinding describe mybinding -n myspace
```

5.3.11.9. triggerbinding list

List TriggerBindings.

Example: List all the TriggerBindings in a namespace

```
$ tkn triggerbinding list -n myspace
```

5.3.11.10. triggertemplate

Manage TriggerTemplates.

Example: Display TriggerTemplate help

```
$ tkn triggertemplate -h
```

5.3.11.11. triggertemplate delete

Delete a TriggerTemplate.

Example: Delete mytemplate1 and mytemplate2 TriggerTemplates in a namespace

```
$ tkn triggertemplate delete mytemplate1 mytemplate2 -n `myspace`
```

5.3.11.12. triggertemplate describe

Describe a TriggerTemplate.

Example: Describe the mytemplate TriggerTemplate in a namespace

```
$ tkn triggertemplate describe mytemplate -n `myspace`
```

5.3.11.13. triggertemplate list

List TriggerTemplates.

Example: List all the TriggerTemplates in a namespace

```
$ tkn triggertemplate list -n myspace
```

5.3.11.14. clustertriggerbinding

Manage ClusterTriggerBindings.

Example: Display ClusterTriggerBindings help

```
$ tkn clustertriggerbinding -h
```

5.3.11.15. clustertriggerbinding delete

Delete a ClusterTriggerBinding.

Example: Delete myclusterbinding1 and myclusterbinding2 ClusterTriggerBindings

```
$ tkn clustertriggerbinding delete myclusterbinding1 myclusterbinding2
```

5.3.11.16. clustertriggerbinding describe

Describe a ClusterTriggerBinding.

Example: Describe the myclusterbinding ClusterTriggerBinding

```
$ tkn clustertriggerbinding describe myclusterbinding
```

5.3.11.17. clustertriggerbinding list

List ClusterTriggerBindings.

Example: List all ClusterTriggerBindings

```
$ tkn clustertriggerbinding list
```

5.3.12. Hub interaction commands

Interact with Tekton Hub for resources such as tasks and pipelines.

5.3.12.1. hub

Interact with hub.

Example: Display help

```
$ tkn hub -h
```

Example: Interact with a hub API server

```
$ tkn hub --api-server https://api.hub.tekton.dev
```

NOTE

For each example, to get the corresponding sub-commands and flags, run **tkn hub <command> --help**.

5.3.12.2. hub downgrade

Downgrade an installed resource.

Example: Downgrade the mytask task in the mynamespace namespace to it's older version

```
$ tkn hub downgrade task mytask --to version -n mynamespace
```

5.3.12.3. hub get

Get a resource manifest by its name, kind, catalog, and version.

Example: Get the manifest for a specific version of the myresource pipeline or task from the tekton catalog

```
$ tkn hub get [pipeline | task] myresource --from tekton --version version
```

5.3.12.4. hub info

Display information about a resource by its name, kind, catalog, and version.

Example: Display information about a specific version of the mytask task from the tekton catalog

```
$ tkn hub info task mytask --from tekton --version version
```

5.3.12.5. hub install

Install a resource from a catalog by its kind, name, and version.

Example: Install a specific version of the mytask task from the tekton catalog in the mynamespace namespace

```
$ tkn hub install task mytask --from tekton --version version -n mynamespace
```

5.3.12.6. hub reinstall

Reinstall a resource by its kind and name.

Example: Reinstall a specific version of the mytask task from the tekton catalog in the mynamespace namespace

```
$ tkn hub reinstall task mytask --from tekton --version version -n mynamespace
```

5.3.12.7. hub search

Search a resource by a combination of name, kind, and tags.

Example: Search a resource with a tag cli

```
$ tkn hub search --tags cli
```

5.3.12.8. hub upgrade

Upgrade an installed resource.

Example: Upgrade the installed mytask task in the mynamespace namespace to a new version

```
$ tkn hub upgrade task mytask --to version -n mynamespace
```

CHAPTER 6. OPM CLI

6.1. ABOUT OPM

The **opm** CLI tool is provided by the Operator Framework for use with the Operator bundle format. This tool allows you to create and maintain catalogs of Operators from a list of bundles, called an *index*, that are similar to software repositories. The result is a container image, called an *index image*, which can be stored in a container registry and then installed on a cluster.

An index contains a database of pointers to Operator manifest content that can be queried through an included API that is served when the container image is run. On OpenShift Container Platform, Operator Lifecycle Manager (OLM) can use the index image as a catalog by referencing it in a **CatalogSource** object, which polls the image at regular intervals to enable frequent updates to installed Operators on the cluster.

Additional resources

- See Operator Framework packaging formats for more information about the bundle format.
- To create a bundle image using the Operator SDK, see Working with bundle images.

6.2. INSTALLING OPM

You can install the **opm** CLI tool on your Linux, macOS, or Windows workstation.

Prerequisites

- For Linux, you must provide the following packages. RHEL 8 meets these requirements:
  - **podman** version 1.9.3+ (version 2.0+ recommended)
  - **glibc** version 2.28+

Procedure

1. Navigate to the OpenShift mirror site and download the latest version of the tarball that matches your operating system.
2. Unpack the archive.
   - For Linux or macOS:

     ```
     $ tar xvf <file>
     ```

   - For Windows, unzip the archive with a ZIP program.
3. Place the file anywhere in your **PATH**.
   - For Linux or macOS:
     a. Check your **PATH**:

        ```
        $ echo $PATH
        ```

b. Move the file. For example:

```
$ sudo mv ./opm /usr/local/bin/
```

- For Windows:

a. Check your **PATH**:

```
C:\> path
```

b. Move the file:

```
C:\> move opm.exe <directory>
```

Verification

- After you install the **opm** CLI, verify that it is available:

```
$ opm version
```

Example output

```
Version: version.Version{OpmVersion:"v1.15.4-2-g6183dbb3",
GitCommit:"6183dbb3567397e759f25752011834f86f47a3ea", BuildDate:"2021-02-
13T04:16:08Z", GoOs:"linux", GoArch:"amd64"}
```

6.3. ADDITIONAL RESOURCES

- See Managing custom catalogs for **opm** procedures including creating, updating, and pruning index images.

CHAPTER 7. OPERATOR SDK

7.1. INSTALLING THE OPERATOR SDK CLI

The Operator SDK provides a command-line interface (CLI) tool that Operator developers can use to build, test, and deploy an Operator. You can install the Operator SDK CLI on your workstation so that you are prepared to start authoring your own Operators.

See Developing Operators for full documentation on the Operator SDK.

NOTE

OpenShift Container Platform 4.8 and later supports Operator SDK v1.8.0.

7.1.1. Installing the Operator SDK CLI

You can install the OpenShift SDK CLI tool on Linux.

Prerequisites

- Go v1.16+
- **docker** v17.03+, **podman** v1.9.3+, or **buildah** v1.7+

Procedure

1. Navigate to the OpenShift mirror site.
2. From the **4.8.4** directory, download the latest version of the tarball for Linux.
3. Unpack the archive:

```
$ tar xvf operator-sdk-v1.8.0-ocp-linux-x86_64.tar.gz
```

4. Make the file executable:

```
$ chmod +x operator-sdk
```

5. Move the extracted **operator-sdk** binary to a directory that is on your **PATH**.

   TIP

   To check your **PATH**:

```
$ echo $PATH
```

```
$ sudo mv ./operator-sdk /usr/local/bin/operator-sdk
```

Verification

- After you install the Operator SDK CLI, verify that it is available:

```
$ operator-sdk version
```

Example output

```
operator-sdk version: "v1.8.0-ocp", ...
```

7.2. OPERATOR SDK CLI REFERENCE

The Operator SDK command-line interface (CLI) is a development kit designed to make writing Operators easier.

Operator SDK CLI syntax

```
$ operator-sdk <command> [<subcommand>] [<argument>] [<flags>]
```

Operator authors with cluster administrator access to a Kubernetes-based cluster (such as OpenShift Container Platform) can use the Operator SDK CLI to develop their own Operators based on Go, Ansible, or Helm. Kubebuilder is embedded into the Operator SDK as the scaffolding solution for Go-based Operators, which means existing Kubebuilder projects can be used as is with the Operator SDK and continue to work.

See Developing Operators for full documentation on the Operator SDK.

7.2.1. bundle

The **operator-sdk bundle** command manages Operator bundle metadata.

7.2.1.1. validate

The **bundle validate** subcommand validates an Operator bundle.

Table 7.1. bundle validate flags

Flag	Description
-h, **--help**	Help output for the **bundle validate** subcommand.
--index-builder (string)	Tool to pull and unpack bundle images. Only used when validating a bundle image. Available options are **docker**, which is the default, **podman**, or **none**.
--list-optional	List all optional validators available. When set, no validators are run.
--select-optional (string)	Label selector to select optional validators to run. When run with the **--list-optional** flag, lists available optional validators.

7.2.2. cleanup

The **operator-sdk cleanup** command destroys and removes resources that were created for an Operator that was deployed with the **run** command.

Table 7.2. cleanup flags

Flag	Description
-h, **--help**	Help output for the **run bundle** subcommand.
--kubeconfig (string)	Path to the **kubeconfig** file to use for CLI requests.
n, **--namespace** (string)	If present, namespace in which to run the CLI request.
--timeout <duration>	Time to wait for the command to complete before failing. The default value is **2m0s**.

7.2.3. completion

The **operator-sdk completion** command generates shell completions to make issuing CLI commands quicker and easier.

Table 7.3. completion subcommands

Subcommand	Description
bash	Generate bash completions.
zsh	Generate zsh completions.

Table 7.4. completion flags

Flag	Description
-h, --help	Usage help output.

For example:

```
$ operator-sdk completion bash
```

Example output

```
# bash completion for operator-sdk                  -*- shell-script -*-
...
# ex: ts=4 sw=4 et filetype=sh
```

7.2.4. create

The **operator-sdk create** command is used to create, or *scaffold*, a Kubernetes API.

7.2.4.1. api

The **create api** subcommand scaffolds a Kubernetes API. The subcommand must be run in a project that was initialized with the **init** command.

Table 7.5. **create api** flags

Flag	Description
-h, **--help**	Help output for the **run bundle** subcommand.

7.2.5. generate

The **operator-sdk generate** command invokes a specific generator to generate code or manifests.

7.2.5.1. bundle

The **generate bundle** subcommand generates a set of bundle manifests, metadata, and a **bundle.Dockerfile** file for your Operator project.

NOTE

Typically, you run the **generate kustomize manifests** subcommand first to generate the input Kustomize bases that are used by the **generate bundle** subcommand. However, you can use the **make bundle** command in an initialized project to automate running these commands in sequence.

Table 7.6. **generate bundle** flags

Flag	Description
--channels (string)	Comma-separated list of channels to which the bundle belongs. The default value is **alpha**.
--crds-dir (string)	Root directory for **CustomResoureDefinition** manifests.
--default-channel (string)	The default channel for the bundle.
--deploy-dir (string)	Root directory for Operator manifests, such as deployments and RBAC. This directory is different from the directory passed to the **--input-dir** flag.
-h, **--help**	Help for **generate bundle**
--input-dir (string)	Directory from which to read an existing bundle. This directory is the parent of your bundle **manifests** directory and is different from the**--deploy-dir** directory.
--kustomize-dir (string)	Directory containing Kustomize bases and a **kustomization.yaml** file for bundle manifests. The default path is **config/manifests**.
--manifests	Generate bundle manifests.

Flag	Description
--metadata	Generate bundle metadata and Dockerfile.
--output-dir (string)	Directory to write the bundle to.
--overwrite	Overwrite the bundle metadata and Dockerfile if they exist. The default value is **true**.
--package (string)	Package name for the bundle.
-q, **--quiet**	Run in quiet mode.
--stdout	Write bundle manifest to standard out.
--version (string)	Semantic version of the Operator in the generated bundle. Set only when creating a new bundle or upgrading the Operator.

Additional resources

- See Bundling an Operator and deploying with Operator Lifecycle Manager for a full procedure that includes using the **make bundle** command to call the **generate bundle** subcommand.

7.2.5.2. kustomize

The **generate kustomize** subcommand contains subcommands that generate Kustomize data for the Operator.

7.2.5.2.1. manifests

The **generate kustomize manifests** subcommand generates or regenerates Kustomize bases and a **kustomization.yaml** file in the **config/manifests** directory, which are used to build bundle manifests by other Operator SDK commands. This command interactively asks for UI metadata, an important component of manifest bases, by default unless a base already exists or you set the **--interactive=false** flag.

Table 7.7. **generate kustomize manifests** flags

Flag	Description
--apis-dir (string)	Root directory for API type definitions.
-h, **--help**	Help for **generate kustomize manifests**.
--input-dir (string)	Directory containing existing Kustomize files.
--interactive	When set to **false**, if no Kustomize base exists, an interactive command prompt is presented to accept custom metadata.

Flag	Description
--output-dir (string)	Directory where to write Kustomize files.
--package (string)	Package name.
-q, **--quiet**	Run in quiet mode.

7.2.6. init

The **operator-sdk init** command initializes an Operator project and generates, or *scaffolds*, a default project directory layout for the given plugin.

This command writes the following files:

- Boilerplate license file
- **PROJECT** file with the domain and repository
- **Makefile** to build the project
- **go.mod** file with project dependencies
- **kustomization.yaml** file for customizing manifests
- Patch file for customizing images for manager manifests
- Patch file for enabling Prometheus metrics
- **main.go** file to run

Table 7.8. init flags

Flag	Description
--help, -h	Help output for the **init** command.
--plugins (string)	Name and optionally version of the plugin to initialize the project with. Available plugins are **ansible.sdk.operatorframework.io/v1**, **go.kubebuilder.io/v2**, **go.kubebuilder.io/v3**, and **helm.sdk.operatorframework.io/v1**.
--project-version	Project version. Available values are **2** and **3-alpha**, which is the default.

7.2.7. run

The **operator-sdk run** command provides options that can launch the Operator in various environments.

7.2.7.1. bundle

The **run bundle** subcommand deploys an Operator in the bundle format with Operator Lifecycle Manager (OLM).

Table 7.9. **run bundle** flags

Flag	Description
--index-image (string)	Index image in which to inject a bundle. The default image is **quay.io/operator-framework/upstream-opm-builder:latest**.
--install-mode <install_mode_value>	Install mode supported by the cluster service version (CSV) of the Operator, for example **AllNamespaces** or **SingleNamespace**.
--timeout <duration>	Install timeout. The default value is **2m0s**.
--kubeconfig (string)	Path to the **kubeconfig** file to use for CLI requests.
n, **--namespace** (string)	If present, namespace in which to run the CLI request.
-h, **--help**	Help output for the **run bundle** subcommand.

Additional resources

- See Operator group membership for details on possible install modes.

7.2.7.2. bundle-upgrade

The **run bundle-upgrade** subcommand upgrades an Operator that was previously installed in the bundle format with Operator Lifecycle Manager (OLM).

Table 7.10. **run bundle-upgrade** flags

Flag	Description
--timeout <duration>	Upgrade timeout. The default value is **2m0s**.
--kubeconfig (string)	Path to the **kubeconfig** file to use for CLI requests.
n, **--namespace** (string)	If present, namespace in which to run the CLI request.
-h, **--help**	Help output for the **run bundle** subcommand.

7.2.8. scorecard

The **operator-sdk scorecard** command runs the scorecard tool to validate an Operator bundle and provide suggestions for improvements. The command takes one argument, either a bundle image or directory containing manifests and metadata. If the argument holds an image tag, the image must be

present remotely.

Table 7.11. **scorecard** flags

Flag	Description
-c, **--config** (string)	Path to scorecard configuration file. The default path is **bundle/tests/scorecard/config.yaml**.
-h, **--help**	Help output for the **scorecard** command.
--kubeconfig (string)	Path to **kubeconfig** file.
-L, **--list**	List which tests are available to run.
-n, --namespace (string)	Namespace in which to run the test images.
-o, **--output** (string)	Output format for results. Available values are **text**, which is the default, and **json**.
-l, **--selector** (string)	Label selector to determine which tests are run.
-s, **--service-account** (string)	Service account to use for tests. The default value is **default**.
-x, **--skip-cleanup**	Disable resource cleanup after tests are run.
-w, **--wait-time <duration>**	Seconds to wait for tests to complete, for example **35s**. The default value is **30s**.

Additional resources

- See Validating Operators using the scorecard tool for details about running the scorecard tool.