



# builds for Red Hat OpenShift 1.0

## Work with Builds

Using Builds



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Using Builds

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## Abstract

This document provides procedural examples for using Builds.

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# CHAPTER 1. RUNNING BUILDS

After installing Builds, you can create a **buildah** or **source-to-image** build for use. You can also delete custom resources that are not required for a build.

## 1.1. CREATING A BUILDDAH BUILD

You can create a **buildah** build and push the created image to the target registry.

### Prerequisites

- You have installed the Builds for Red Hat OpenShift Operator on the OpenShift Container Platform cluster.
- You have created a **ShipwrightBuild** resource.
- You have installed the **oc** CLI.
- Optional: You have installed the **shp** CLI.

### Procedure

1. Create a **Build** resource and apply it to the OpenShift Container Platform cluster by using one of the CLIs:

#### Example: Using oc CLI

```
$ oc apply -f - <<EOF
apiVersion: shipwright.io/v1beta1
kind: Build
metadata:
  name: buildah-golang-build
spec:
  source: ❶
    git:
      url: https://github.com/shipwright-io/sample-go
      contextDir: docker-build
  strategy: ❷
    name: buildah
    kind: ClusterBuildStrategy
  paramValues: ❸
    - name: dockerfile
      value: Dockerfile
  output: ❹
    image: image-registry.openshift-image-registry.svc:5000/buildah-example/sample-go-app
EOF
```

- ❶ The location where the source code is placed.
- ❷ The build strategy that you use to build the container.
- ❸ The parameter defined in the build strategy. To set the value of the **dockerfile** strategy parameter, specify the Dockerfile location required to build the output image.

- 4 The location where the built image is pushed. In this procedural example, the built image is pushed to the OpenShift Container Platform cluster internal registry. **buildah-example** is

### Example: Using shp CLI

```
$ shp build create buildah-golang-build \
--source-url="https://github.com/shipwright-io/sample-go" --source-context-dir="docker-build" \
1
--strategy-name="buildah" 2
--dockerfile="Dockerfile" 3
--output-image="image-registry.openshift-image-registry.svc:5000/buildah-example/go-app"
4
```

- 1 The location where the source code is placed.
  - 2 The build strategy that you use to build the container.
  - 3 The parameter defined in the build strategy. To set the value of the **dockerfile** strategy parameter, specify the Dockerfile location required to build the output image.
  - 4 The location where the built image is pushed. In this procedural example, the built image is pushed to the OpenShift Container Platform cluster internal registry. **buildah-example** is the name of the current project. Ensure that the specified project exists to allow the image push.
2. Check if the **Build** resource is created by using one of the CLIs:

### Example: Using oc CLI

```
$ oc get builds.shipwright.io buildah-golang-build
```

### Example: Using shp CLI

```
$ shp build list
```

3. Create a **BuildRun** resource and apply it to the OpenShift Container Platform cluster by using one of the CLIs:

### Example: Using oc CLI

```
$ oc apply -f - <<EOF
apiVersion: shipwright.io/v1beta1
kind: BuildRun
metadata:
  name: buildah-golang-buildrun
spec:
  build:
    name: buildah-golang-build 1
EOF
```



- 1 The **spec.build.name** field denotes the respective build to run, which is expected to be available in the same namespace.

### Example: Using shp CLI

```
$ shp build run buildah-golang-build --follow 1
```

- 1 Optional: By using the **--follow** flag, you can view the build logs in the output result.

4. Check if the **BuildRun** resource is created by using one of the CLIs:

### Example: Using oc CLI

```
$ oc get buildrun buildah-golang-buildrun
```

### Example: Using shp CLI

```
$ shp buildrun list
```

The **BuildRun** resource creates a **TaskRun** resource, which then creates the pods to execute build strategy steps.

## Verification

1. After all the containers complete their tasks, verify the following:

- Check whether the pod shows the **STATUS** field as **Completed**:

```
$ oc get pods -w
```

### Example output

NAME	READY	STATUS	RESTARTS	AGE
buildah-golang-buildrun-dtrg2-pod	2/2	Running	0	4s
buildah-golang-buildrun-dtrg2-pod	1/2	NotReady	0	7s
buildah-golang-buildrun-dtrg2-pod	0/2	Completed	0	55s

- Check whether the respective **TaskRun** resource shows the **SUCCEEDED** field as **True**:

```
$ oc get tr
```

### Example output

NAME	SUCCEEDED	REASON	STARTTIME	COMPLETIONTIME
buildah-golang-buildrun-dtrg2	True	Succeeded	11m	8m51s

- Check whether the respective **BuildRun** resource shows the **SUCCEEDED** field as **True**:

```
$ oc get br
```

## Example output

NAME	SUCCEEDED	REASON	STARTTIME	COMPLETIONTIME
buildah-golang-buildrun	True	Succeeded	13m	11m

During verification, if a build run fails, you can check the **status.failureDetails** field in your **BuildRun** resource to identify the exact point where the failure happened in the pod or container.



### NOTE

The pod might switch to a **NotReady** state because one of the containers has completed its task. This is an expected behavior.

2. Validate whether the image has been pushed to the registry that is specified in the **build.spec.output.image** field. You can try to pull the image by running the following command from a node that can access the internal registry:

```
$ podman pull image-registry.openshift-image-registry.svc:5000/<project>/<image> 1
```

- 1** The project name and image name used when creating the **Build** resource. For example, you can use **buildah-example** as the project name and **sample-go-app** as the image name.

## 1.2. CREATING A SOURCE-TO-IMAGE BUILD

You can create a **source-to-image** build and push the created image to a custom Quay repository.

### Prerequisites

- You have installed the Builds for Red Hat OpenShift Operator on the OpenShift Container Platform cluster.
- You have created a **ShipwrightBuild** resource.
- You have installed the **oc** CLI.
- Optional: You have installed the **shp** CLI.

### Procedure

1. Create a **Build** resource and apply it to the OpenShift Container Platform cluster by using one of the CLIs:

#### Example: Using oc CLI

```
$ oc apply -f - <<EOF
apiVersion: shipwright.io/v1beta1
kind: Build
metadata:
  name: s2i-nodejs-build
spec:
```

```

source: ❶
  git:
    url: https://github.com/shipwright-io/sample-nodejs
    contextDir: source-build/
strategy: ❷
  name: source-to-image
  kind: ClusterBuildStrategy
paramValues: ❸
- name: builder-image
  value: quay.io/centos7/nodejs-12-centos7
output:
  image: quay.io/<repo>/s2i-nodejs-example ❹
  pushSecret: registry-credential ❺
EOF

```

- ❶ The location where the source code is placed.
- ❷ The build strategy that you use to build the container.
- ❸ The parameter defined in the build strategy. To set the value of the **builder-image** strategy parameter, specify the builder image location required to build the output image.
- ❹ The location where the built image is pushed. You can push the built image to a custom Quay.io repository. Replace **repo** with a valid Quay.io organization or your Quay user name.
- ❺ The secret name that stores the credentials for pushing container images. To generate a secret of the type **docker-registry** for authentication, see "Authentication to container registries".

### Example: Using shp CLI

```

$ shp build create s2i-nodejs-build \
--source-url="https://github.com/shipwright-io/sample-nodejs" --source-context-dir="source-
build" ❶
--strategy-name="source-to-image" ❷
--builder-image="quay.io/centos7/nodejs-12-centos7" ❸
--output-image="quay.io/<repo>/s2i-nodejs-example" ❹
--output-credentials-secret="registry-credential" ❺

```

- ❶ The location where the source code is placed.
- ❷ The build strategy that you use to build the container.
- ❸ The parameter defined in the build strategy. To set the value of the **builder-image** strategy parameter, specify the builder image location required to build the output image.
- ❹ The location where the built image is pushed. You can push the built image to a custom Quay.io repository. Replace **repo** with a valid Quay.io organization or your Quay user name.
- ❺ The secret name that stores the credentials for pushing container images. To generate a secret of the type **docker-registry** for authentication, see "Authentication to container registries".

2. Check if the **Build** resource is created by using one of the CLIs:

#### Example: Using oc CLI

```
$ oc get builds.shipwright.io s2i-nodejs-build
```

#### Example: Using shp CLI

```
$ shp build list
```

3. Create a **BuildRun** resource and apply it to the OpenShift Container Platform cluster by using one of the CLIs:

#### Example: Using oc CLI

```
$ oc apply -f - <<EOF
apiVersion: shipwright.io/v1beta1
kind: BuildRun
metadata:
  name: s2i-nodejs-buildrun
spec:
  build:
    name: s2i-nodejs-build 1
EOF
```

- 1** The **spec.build.name** field denotes the respective build to run, which is expected to be available in the same namespace.

#### Example: Using shp CLI

```
$ shp build run s2i-nodejs-build --follow 1
```

- 1** Optional: By using the **--follow** flag, you can view the build logs in the output result.

4. Check if the **BuildRun** resource is created by using one of the CLIs:

#### Example: Using oc CLI

```
$ oc get buildrun s2i-nodejs-buildrun
```

#### Example: Using shp CLI

```
$ shp buildrun list
```

The **BuildRun** resource creates a **TaskRun** resource, which then creates the pods to execute build strategy steps.

## Verification

1. After all the containers complete their tasks, verify the following:

- Check whether the pod shows the **STATUS** field as **Completed**:

```
$ oc get pods -w
```

#### Example output

NAME	READY	STATUS	RESTARTS	AGE
s2i-nodejs-buildrun-phxxm-pod	2/2	Running	0	10s
s2i-nodejs-buildrun-phxxm-pod	1/2	NotReady	0	14s
s2i-nodejs-buildrun-phxxm-pod	0/2	Completed	0	2m

- Check whether the respective **TaskRun** resource shows the **SUCCEEDED** field as **True**:

```
$ oc get tr
```

#### Example output

NAME	SUCCEEDED	REASON	STARTTIME	COMPLETIONTIME
s2i-nodejs-buildrun-phxxm	True	Succeeded	2m39s	13s

- Check whether the respective **BuildRun** resource shows the **SUCCEEDED** field as **True**:

```
$ oc get br
```

#### Example output

NAME	SUCCEEDED	REASON	STARTTIME	COMPLETIONTIME
s2i-nodejs-buildrun	True	Succeeded	2m41s	15s

During verification, if a build run fails, you can check the **status.failureDetails** field in your **BuildRun** resource to identify the exact point where the failure happened in the pod or container.



#### NOTE

The pod might switch to a **NotReady** state because one of the containers has completed its task. This is an expected behavior.

2. Validate whether the image has been pushed to the registry that is specified in the **build.spec.output.image** field. You can try to pull the image by running the following command after logging in to the registry:

```
$ podman pull quay.io/<repo>/<image> 1
```

- 1** The repository name and image name used when creating the **Build** resource. For example, you can use **s2i-nodejs-example** as the image name.

#### Additional resources

- [Authentication to container registries](#)

## 1.3. VIEWING LOGS

You can view the logs of a build run to identify any runtime errors and to resolve them.

### Prerequisites

- You have installed the **oc** CLI.
- Optional: You have installed the **shp** CLI.

### Procedure

- View logs of a build run by using one of the CLIs:

#### Using **oc** CLI

```
$ oc logs <buildrun_resource_name>
```

#### Using **shp** CLI

```
$ shp buildrun logs <buildrun_resource_name>
```

## 1.4. DELETING A RESOURCE

You can delete a **Build**, **BuildRun**, or **BuildStrategy** resource if it is not required in your project.

### Prerequisites

- You have installed the **oc** CLI.
- Optional: You have installed the **shp** CLI.

### Procedure

- Delete a **Build** resource by using one of the CLIs:

#### Using **oc** CLI

```
$ oc delete builds.shipwright.io <build_resource_name>
```

#### Using **shp** CLI

```
$ shp build delete <build_resource_name>
```

- Delete a **BuildRun** resource by using one of the CLIs:

#### Using **oc** CLI

```
$ oc delete buildrun <buildrun_resource_name>
```

#### Using **shp** CLI

```
$ shp buildrun delete <buildrun_resource_name>
```

- Delete a **BuildStrategy** resource by running the following command:

#### Using oc CLI

```
$ oc delete buildstrategies <buildstrategy_resource_name>
```

## 1.5. ADDITIONAL RESOURCES

- [Authentication to container registries](#)
- [Creating a ShipwrightBuild resource by using the web console](#)