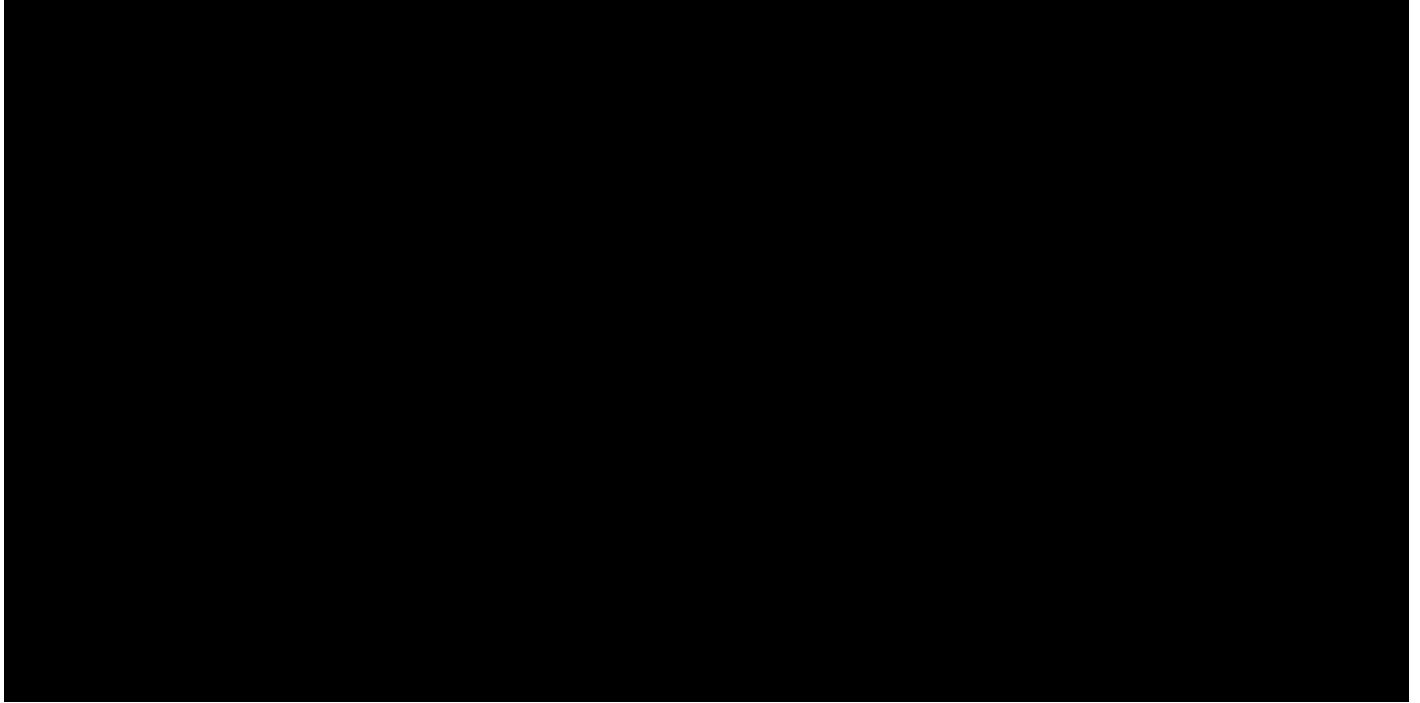


Updating an Application



Objectives

After completing this section, you should be able to update an application deployed on Red Hat OpenShift Container Platform.

Building and Updating Applications

To deploy applications on OpenShift, you must create a *container image*. A container image is a binary package containing an application and all of its dependencies, including the operating system.

In OpenShift, a *build* is the process of creating a runnable container image from application source code. A *BuildConfig* resource defines the entire build process.

OpenShift can create container images from source code without the need for tools such as Docker or Podman. After they are built, application container images are stored and managed from a built-in *container registry* that comes bundled with the OpenShift platform.

OpenShift supports many different ways to build a container image. The most common method is called *Source to Image* (S2I). In an S2I build, application source code is combined with an *S2I builder image*, which is a container image containing the tools, libraries, and frameworks required to run the application.

For example, to run Node.js applications on OpenShift, you will use a Node.js S2I builder image. The Node.js S2I builder image is a container image configured with the Node.js runtime, package management tools (NPM), and other libraries required for running Node.js applications.

OpenShift can automatically detect the type of application, and choose an appropriate S2I builder image to build the final application container image.

For example, if the root of the application source code tree contains a `package.json` file, OpenShift will automatically select the latest Node.js S2I builder image for the build. If desired, you can override this default selection and choose your own S2I builder image for the build process.

Manually Triggering Builds

After an application is deployed on OpenShift, then OpenShift can rebuild and redeploy a new container image anytime the application source code is modified. Use either the `oc` command line client, or the OpenShift web console to trigger a new build of the updated application.

The workflow for an application deployed from GitHub when using the manual build process is as follows:

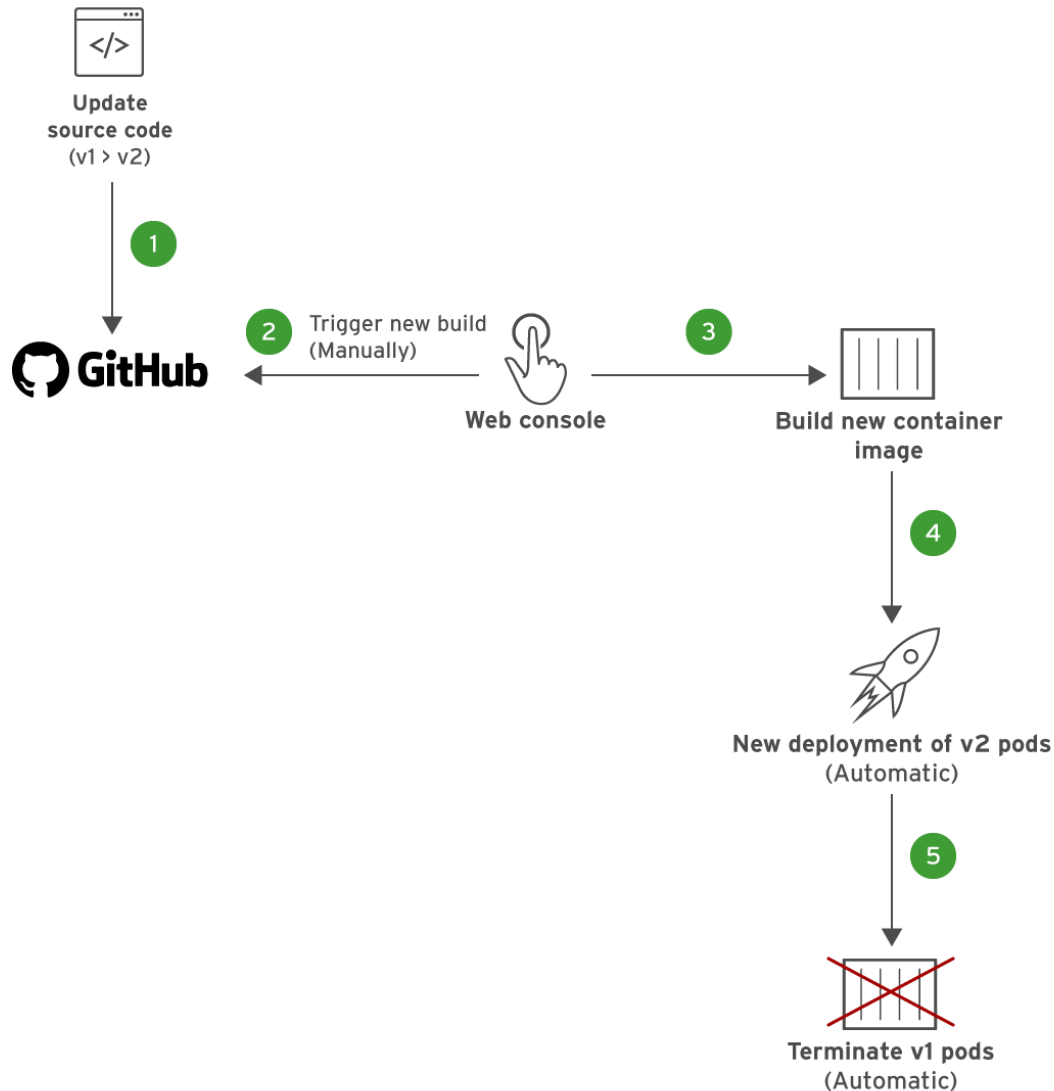


Figure 3.1: Manual Builds

1. Update source code for an existing application, such as from v1 to v2, and then commit the changes to GitHub.
2. Manually trigger a new build using the OpenShift web console, or the OpenShift client command line interface (CLI).
3. OpenShift builds a new container image with updated code.
4. OpenShift rolls out new pods based on the new container image (v2).
5. After the new pods based on v2 are rolled out, OpenShift directs new requests to the new pods, and terminates the pods based on the older version (v1).

Automatic Builds using Webhooks

A *Webhook* is a mechanism to subscribe to events from a source code management system, such as GitHub. OpenShift generates unique webhook URLs for applications that are built from source stored in Git repositories. Webhooks are configured on a Git repository. Based on the webhook configuration, GitHub will send a HTTP POST request to the webhook URL, with details that include the latest commit information.

The OpenShift REST API listens for webhook notifications at this URL, and then triggers a new build automatically. You must configure your webhook to point to this unique URL.

The workflow for an automatic rebuild triggered by webhooks is as follows:

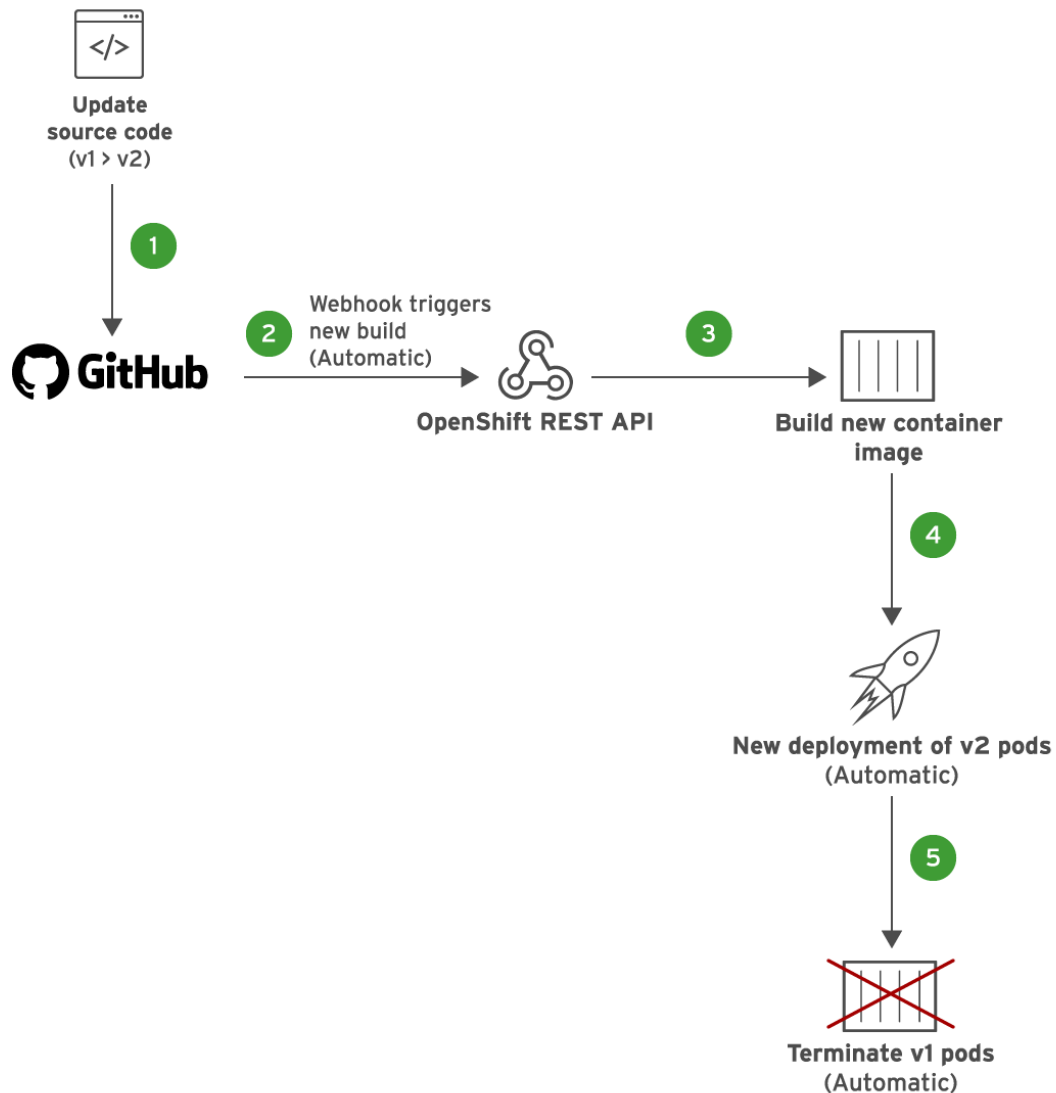


Figure 3.2: Automatic builds using Webhooks

1. Update source code for an existing application (from v1 to v2) and commit the changes to GitHub.
2. The GitHub webhook sends an event notification to the OpenShift REST API.
3. OpenShift builds a new container image with the updated code.
4. OpenShift rolls out new pods based on the new container image (v2).
5. After the new pods based on v2 are rolled out, OpenShift directs new requests to the new pods, and terminates the pods based on the older v1.

REFERENCES

For more information on OpenShift builds, refer to the *Builds* chapter in the Product Documentation for Red Hat OpenShift Container Platform at <https://docs.openshift.com/container-platform/4.1/welcome/index.html> (<https://docs.openshift.com/container-platform/4.1/welcome/index.html>)

Build Triggers (<https://docs.openshift.com/container-platform/4.1/builds/triggering-builds-build-hooks.html>)

Creating GitHub Webhooks (<https://developer.github.com/webhooks/creating/>)

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