Role-Based Access Control

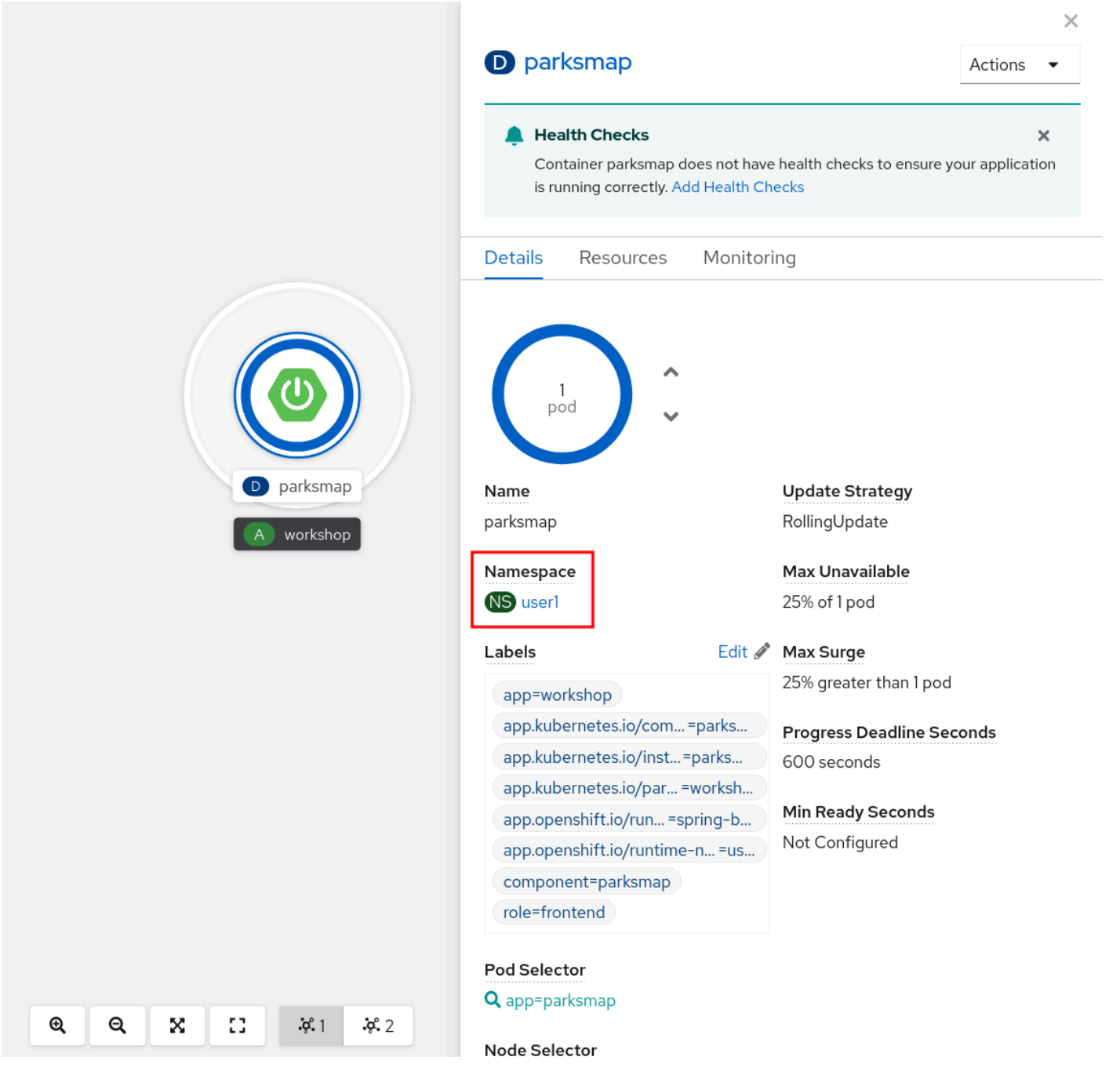
Almost every interaction with an OpenShift environment that you can think of requires going through the OpenShift's control plane API. All API interactions are both authenticated (AuthN - who are you?) and authorized (AuthZ - are you allowed to do what you are asking?).

In the log aggregation lab we saw that there was an error in reference to a **Service Account**.

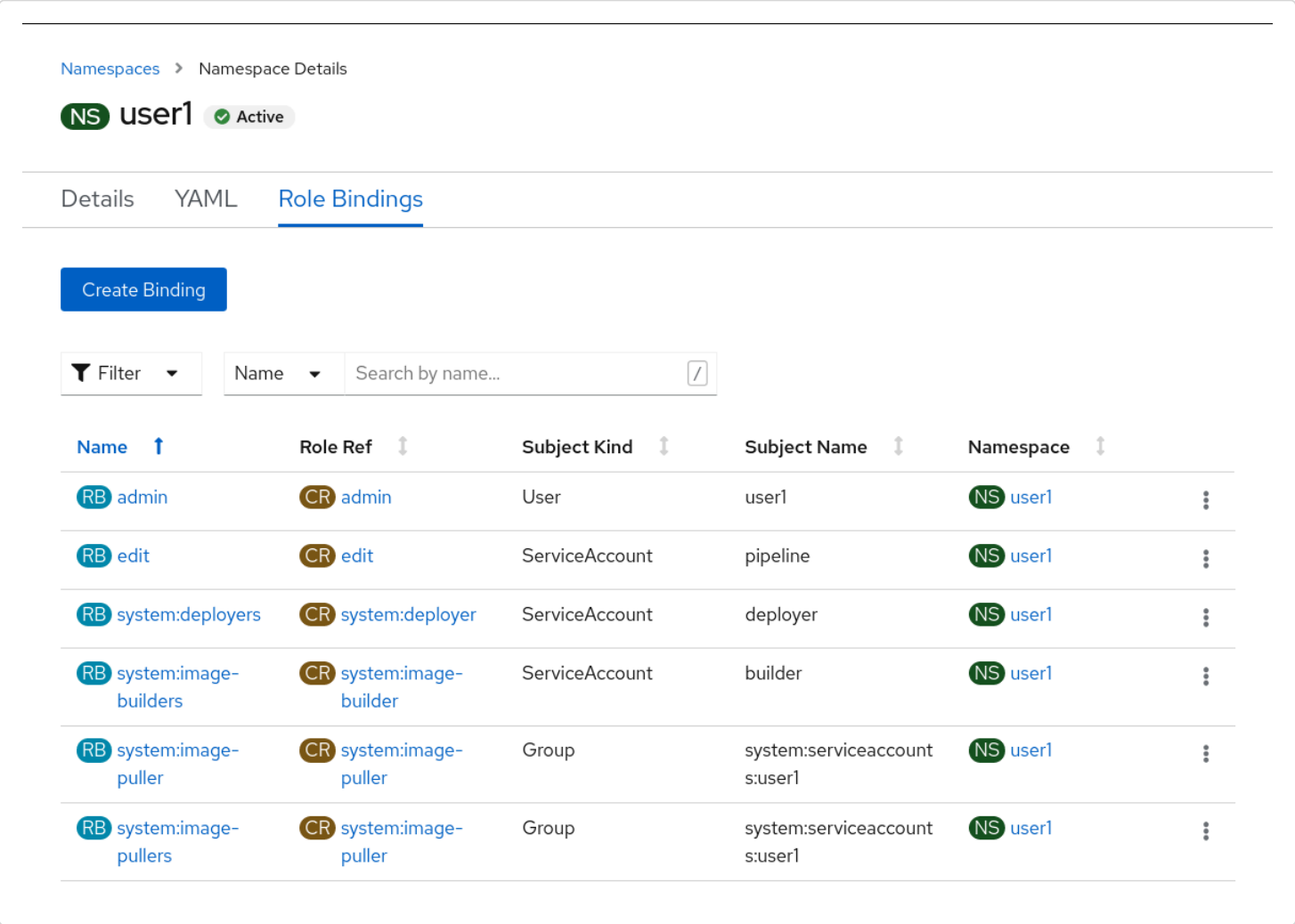
As OpenShift is a declarative platform, some actions will be performed by the platform and not by the end user (when he or she issues a command). These actions are performed using a **Service Account** which is a special type of `user` that the platform will use internally.

OpenShift automatically creates a few special service accounts in every project. The **default** service account is the one taking the responsibility of running the pods, and OpenShift uses and injects this service account into every pod that is launched. By changing the permissions for that service account, we can do interesting things.

You can view current permissions in the web console, go to the Topology view in the Developer Perspective, click the `parksmap` entry, go to the **Details** tab, and then click the **Namespace**.


parksmap
Actions
Health Checks
Container parksmap does not have health checks to ensure your application is running correctly. Add Health Checks
Details
Resources
Monitoring
1
pod
Name
parksmap
Update Strategy
RollingUpdate
Namespace
NS user1
Max Unavailable
25% of 1 pod
Labels
Edit
app=workshop
app.kubernetes.io/com... =parks...
app.kubernetes.io/inst... =parks...
app.kubernetes.io/par... =worksh...
app.openshift.io/run... =spring-b...
app.openshift.io/runtime-n... =us...
component=parksmap
role=frontend
Max Surge
25% greater than 1 pod
Progress Deadline Seconds
600 seconds
Min Ready Seconds
Not Configured
Pod Selector
app=parksmap
Node Selector
D parksmap
A workshop
1
2

Then, click **Role Bindings**.



Exercise: Grant Service Account View Permissions

The parksmap application wants to talk to the OpenShift API to learn about other **Pods**, **Services**, and resources within the **Project**. You'll soon learn why!

```
oc project user4
```

Then:

```
oc policy add-role-to-user view -z default
```

The `oc policy` command above is giving a defined *role* (`view`) to a user. But we are using a special flag, `-z`. What does this flag do? From the `-h` output:

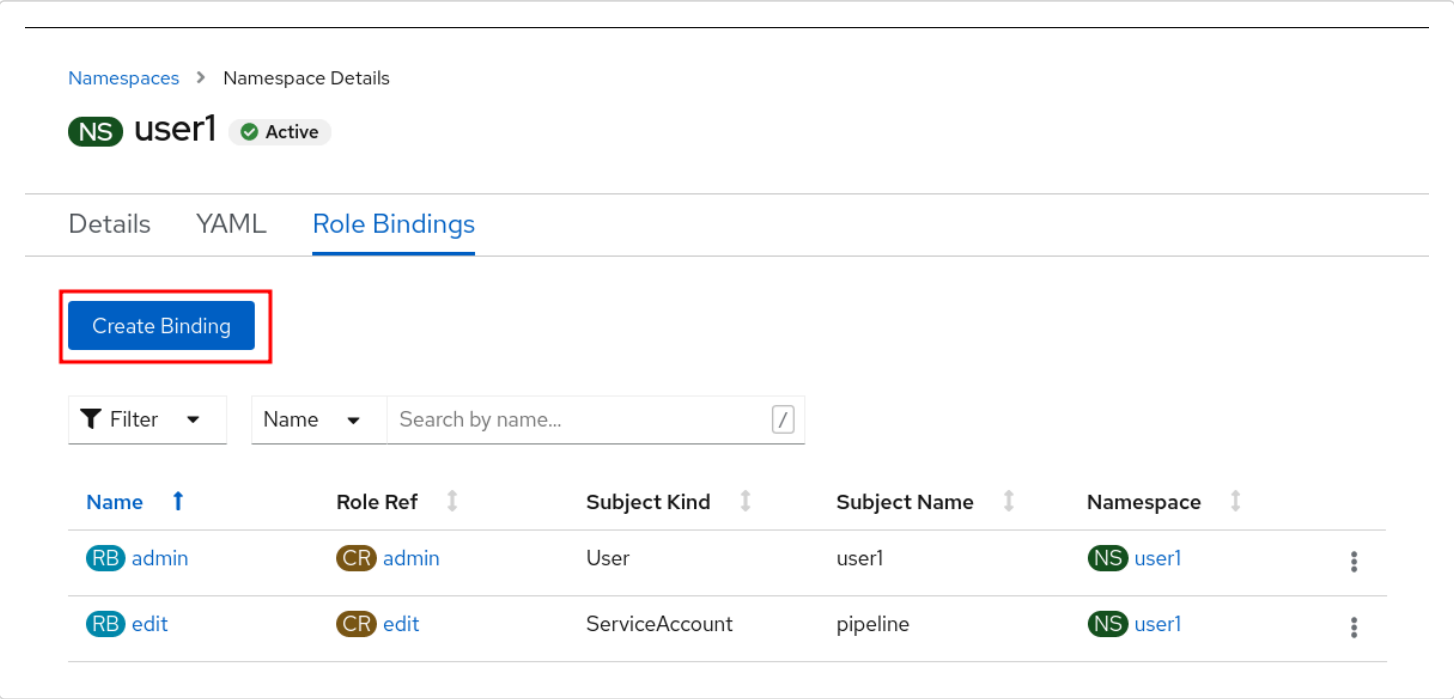
```
-z, --serviceaccount=[]: service account in the current namespace to use as a user
```

The `-z` syntax is a special one that saves us from having to type out the entire string, which, in this case, is `system:serviceaccount:user4:default`. It's a nifty shortcut.

> The `-z` flag will only work for service accounts in the **current** project. If you're referring to a service account in a different project, use the `-n <project>`switch.

Now that the `default` **Service Account** now has **view** access, so now it can query the API to see what resources are within the **Project**. This also has the added benefit of suppressing the error message! Although, in reality, we fixed the application.

Another way you could have done the same is by using the OpenShift console. Once you're on the **Workloads** → **Deployments** page, click on the **Namespace**, then **Role Bindings** and then the **Create Binding** button.



Select **view** for the Role Binding Name **user4** for the Namespace, **view** for the Role Name, **Service Account** for the Subject, **user4** for the Subject Namespace, and **default** for the Subject Name.

Create Role Binding

Associate a user/group to the selected role to define the type of access and resources that are allowed.

Role Binding

Name *

view

Namespace *

PR user1

Role

Role Name *

CR view

Subject

- User
- Group
- Service Account

Subject Namespace *

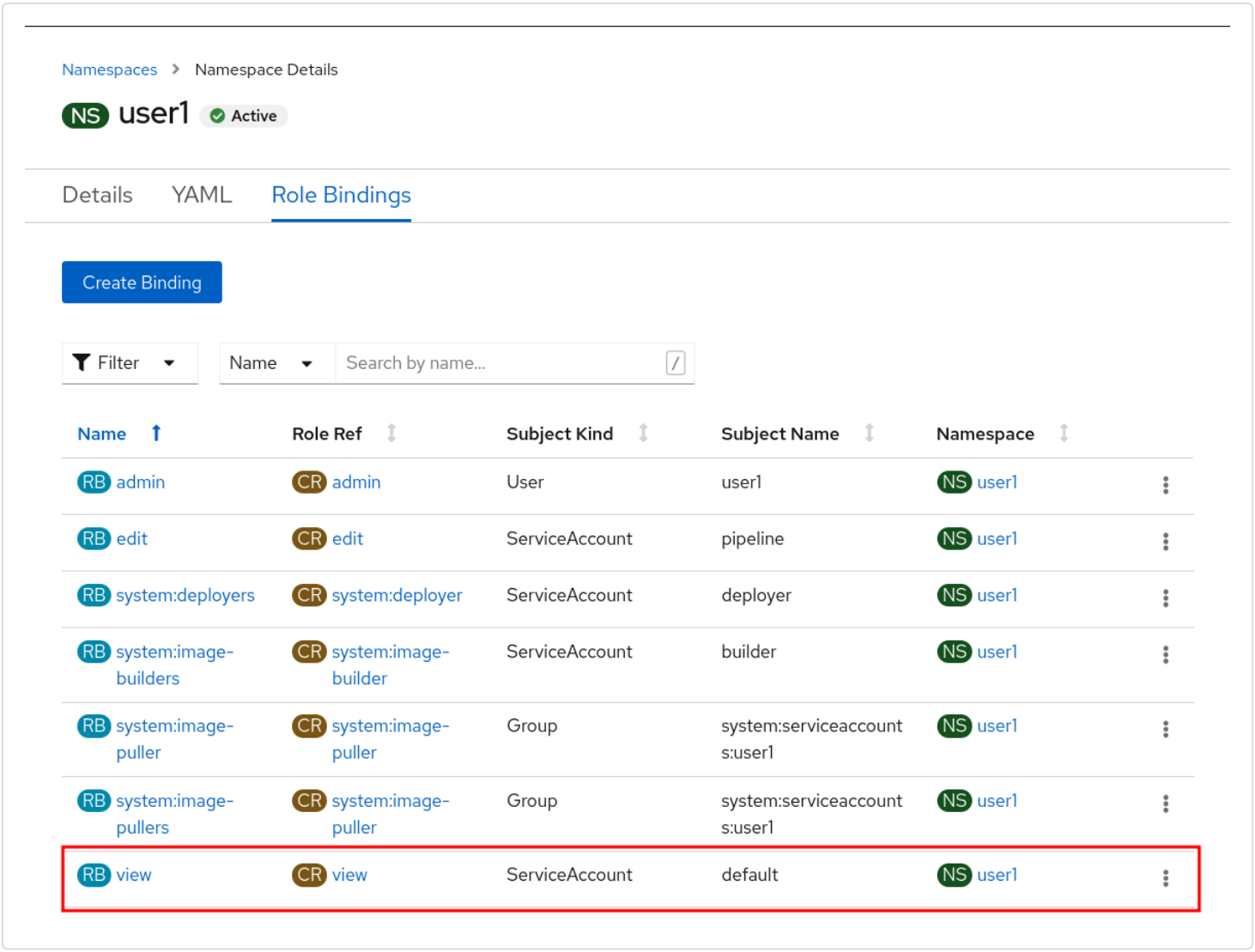
PR user1

Subject Name *

default

Create Cancel

Once you're finished editing permissions, click on the **Create** button.

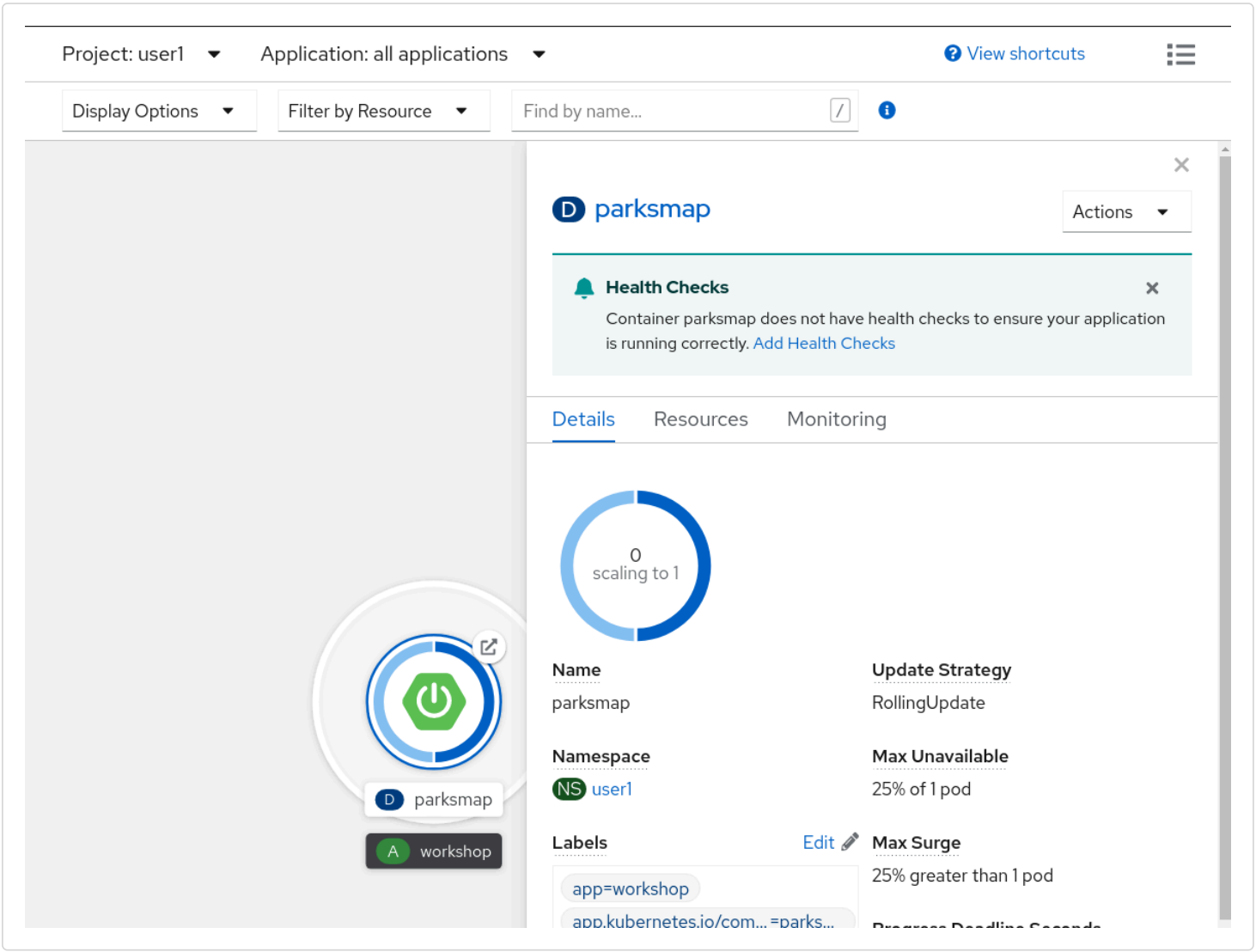


Exercise: Redeploy Application

One more step is required. We need to re-deploy the `parksmap` application because it's given up trying to query the API.

```
oc rollout restart deployment/parksmap
```

A new deployment is immediately started. Return to Topology view and click the `parksmap` entry again to watch it happen. You might not be fast enough! But it will be reflected in the **ReplicaSet** number.



If you look at the logs for the application now, you should see no errors. That's great.

(Optional) Exercise: Grant User View Permissions

If you create a project, you are that project's administrator. This means that you can grant access to other users, too. If you like, give your neighbor view access to your project using the following command:

> In the following command(s), replace `user4` with the user name of the person to whom you want to grant access.

```
oc policy add-role-to-user view user4
```

Have them go to the project view by clicking the **Projects** button and verify that they can see your project and its resources. This type of arrangement (view but not edit) might be ideal for a developer getting visibility into a production application's project.

Continue