Exploring the Existing Namespaces

In this lesson, we will explore and discuss briefly about the existing Namespaces.

WE'LL COVER THE FOLLOWING

Now that we know that our cluster has multiple Namespaces, let's explore them a bit.

Getting the Existing Namespaces

We can list all the Namespaces through the `kubectl get namespaces` command. As with the most of the other Kubernetes objects and resources, we can also use a shortcut `ns` instead of the full name.

```
kubectl get ns
```

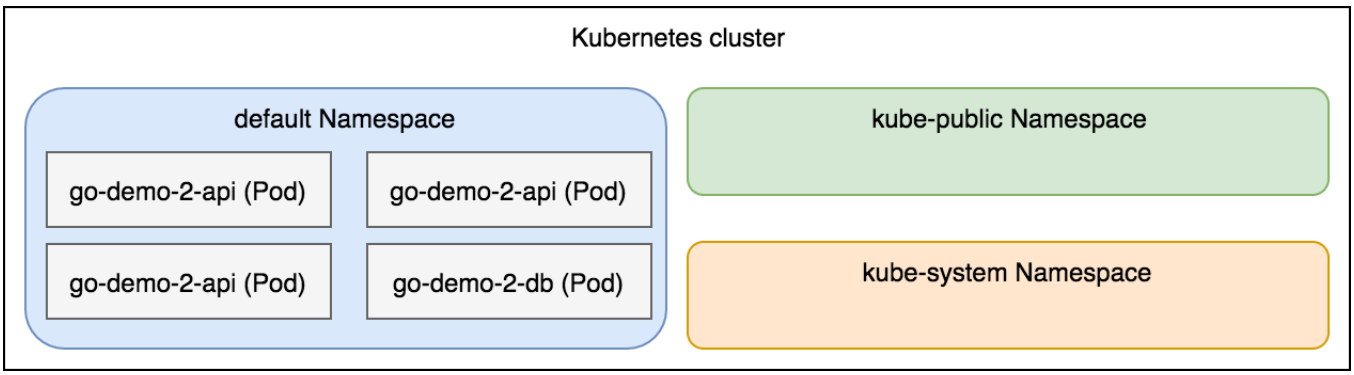
The **output** is as follows.

```
NAME              STATUS   AGE
default           Active   23m
kube-node-lease   Active   23m
kube-public       Active   23m
kube-system       Active   23m
```

We can see that three Namespaces were set up automatically when we created the Minikube cluster.

The default Namespace

The `default` Namespace is the one we used all this time. If we do not specify otherwise, all the `kubectl` commands will operate against the objects in the `default` Namespace. That's where our `go-demo-2` application is running. Even though we were not aware of its existence, we now know that's where the objects we created are placed.



The Namespaces and the go-demo-2 Pods

There are quite a few ways to specify a Namespace. For now, we'll use the `--namespace` argument. It is one of the global options that is available for all `kubectl` commands.

The kube-public Namespace

The command that will retrieve all the objects from the `kube-public` Namespace is as follows.

```
kubectl --namespace kube-public get all
```

The **output** states that `No resources` were `found`. That's disappointing, isn't it? Kubernetes does not use the `kube-public` Namespace for its system-level objects. All the objects we created are in the `default` Namespace.

The `kube-public` Namespace is readable by all users from all Namespaces.

> The primary reason for `kube-public` 's existence is to provide space where we can create objects that should be visible throughout the whole cluster.

A good example is ConfigMaps. When we create one in, let's say, the `default` Namespace, it is accessible only by the other objects in the same Namespace. Those residing somewhere else would be oblivious of its existence. If we'd like such a ConfigMap to be visible to all objects no matter where they are, we'd put it into the `kube-public` Namespace instead. We won't use this Namespace much (if at all).

The kube-system Namespace

The `kube-system` Namespace is critical.

> Almost all the objects and resources Kubernetes needs are running inside `kube-system` Namespace.

We can check that by executing the command that follows.

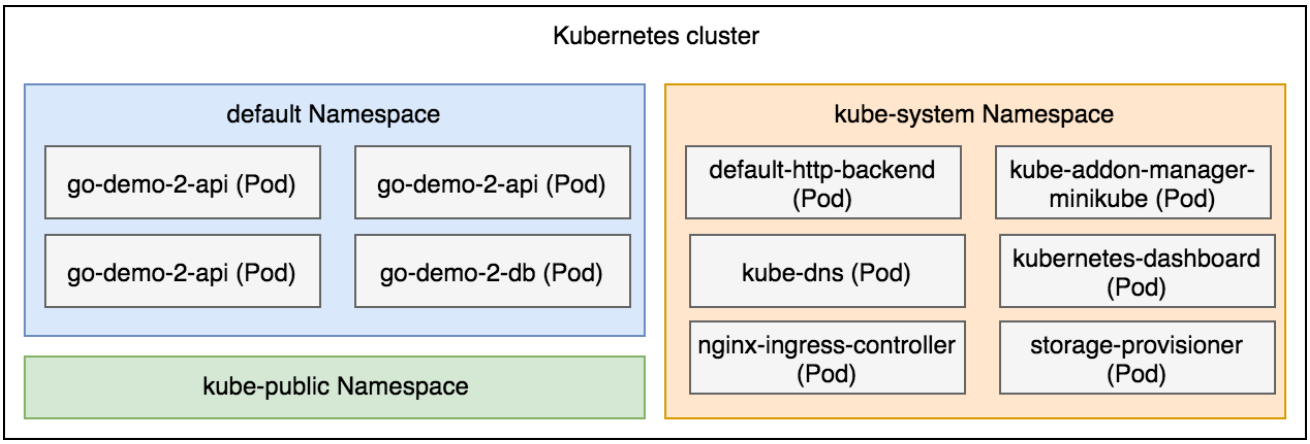
```
kubectl --namespace kube-system get all
```

We retrieved all the objects and resources running inside the `kube-system` Namespace. The **output** is as follows.

```
NAME                                        READY   STATUS    RESTARTS   AGE
pod/coredns-fb8b8dccf-54ppw                 1/1     Running   1          4h32m
pod/coredns-fb8b8dccf-vgxjk                 1/1     Running   1          4h32m
pod/default-http-backend-6864bbb7db-7mtdc   1/1     Running   0          4h32m
pod/etcd-minikube                           1/1     Running   0          4h31m
pod/kube-addon-manager-minikube             1/1     Running   0          4h31m
pod/kube-apiserver-minikube                 1/1     Running   0          4h31m
pod/kube-controller-manager-minikube        1/1     Running   0          4h31m
pod/kube-proxy-6w4xt                        1/1     Running   0          4h32m
pod/kube-scheduler-minikube                 1/1     Running   0          4h31m
pod/kubernetes-dashboard-79dd6bfc48-ztpd6   1/1     Running   4          4h32m
pod/nginx-ingress-controller-586cdc477c-r9b2m   1/1     Running   0          4h32m
pod/storage-provisioner                     1/1     Running   0          4h32m

NAME                           TYPE        CLUSTER-IP      EXTERNAL-IP   PORT(S)
service/default-http-backend   NodePort    10.102.50.182   <none>        80:30001/TCP
service/kube-dns               ClusterIP   10.96.0.10      <none>        53/UDP,53/TCP,9153/T
service/kubernetes-dashboard   ClusterIP   10.102.236.69   <none>        80/TCP

NAME                        DESIRED   CURRENT   READY   UP-TO-DATE   AVAILABLE   NODE SELECTO
daemonset.apps/kube-proxy   1         1         1       1            1           <none>

NAME                                   READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/coredns                2/2     2            2           4h32m
deployment.apps/default-http-backend   1/1     1            1           4h32m
deployment.apps/kubernetes-dashboard   1/1     1            1           4h32m
```

```
deployment.apps/nginx-ingress-controller   1/1     1            1           4h32m

NAME                                                 DESIRED   CURRENT   READY   AGE
replicaset.apps/coredns-fb8b8dccf                    2         2         2       4h32m
replicaset.apps/default-http-backend-6864bbb7db      1         1         1       4h32m
replicaset.apps/kubernetes-dashboard-79dd6bfc48      1         1         1       4h32m
replicaset.apps/nginx-ingress-controller-586cdc477c  1         1         1       4h32m
```

As we can see, quite a few things are running inside the `kube-system` Namespace. For example, we knew that there is an nginx Ingress controller, but this is the first time we saw its objects. It consists of a Replication Controller `nginx-ingress-controller`, and the Pod it created, `nginx-ingress-controller-fxrhn`.



The Namespaces and the Pods

As long as the system works as expected, there isn't much need to do anything inside the `kube-system` Namespace. The real fun starts when we create new Namespaces.

In the next lesson, we will create a Namespace and deploy to it.