CS571
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(19526)
Week12

Exploring the Kubernetes REST API

```
mansishah@macbookpro downward % kubectl cluster-info
Kubernetes master is running at https://192.168.64.5:8443
KubeDNS is running at https://192.168.64.5:8443/api/v1/namespaces/kube-system/services/kube-dns:dns/proxy

To further debug and diagnose cluster problems, use 'kubectl cluster-info dump'.
mansishah@macbookpro downward % curl https://192.168.64.5:8443 -k
{
  "kind": "Status",
  "apiVersion": "v1",
  "metadata": {
  ,
  status": "Failure",
  message": "forbidden: User \"system:anonymous\" cannot get path \"/\"",
  reason": "Forbidden",
  details": {
  },
  "code": 403
}
mansishah@macbookpro downward %
```

Accessing the API server through kubectl proxy

```
mansishah@macbookpro downward % kubectl proxy
Starting to serve on 127.0.0.1:8001
```

Exploring the Kubernetes API through the kubectl proxy

```
mansishah@macbookpro ~ % curl http://localhost:8001
{
  "paths": [
    "/api",
    "/api/v1",
    "/apis",
    "/apis/",
    "/apis/admissionregistration.k8s.io",
    "/apis/admissionregistration.k8s.io/v1",
    "/apis/admissionregistration.k8s.io/v1beta1",
    "/apis/apiextensions.k8s.io",
    "/apis/apiextensions.k8s.io/v1",
    "/apis/apiextensions.k8s.io/v1beta1",
    "/apis/apiregistration.k8s.io",
    "/apis/apiregistration.k8s.io/v1",
    "/apis/apiregistration.k8s.io/v1beta1",
    "/apis/apps",
    "/apis/apps/v1",
    "/apis/authentication.k8s.io",
    "/apis/authentication.k8s.io/v1",
    "/apis/authentication.k8s.io/v1beta1",
    "/apis/authorization.k8s.io",
    "/apis/authorization.k8s.io/v1",
    "/apis/authorization.k8s.io/v1beta1",
    "/apis/autoscaling",
    "/apis/autoscaling/v1",
    "/apis/autoscaling/v2beta1",
    "/apis/autoscaling/v2beta2",
    "/apis/batch",
```

Exploring the batch API group's REST endpoint

```
mansishah@macbookpro ~ % curl http://localhost:8001/apis/batch
{
  "kind": "APIGroup",
  "apiVersion": "v1",
  "name": "batch",
  "versions": [
    {
      "groupVersion": "batch/v1",
      "version": "v1"
    },
    {
      "groupVersion": "batch/v1beta1",
      "version": "v1beta1"
    }
  ],
  "preferredVersion": {
    "groupVersion": "batch/v1",
    "version": "v1"
  }
}
mansishah@macbookpro ~ % []
```

```
mansishah@macbookpro ~ % curl http://localhost:8001/apis/batch/v1
{
  "kind": "APIResourceList",
  "apiVersion": "v1",
  "groupVersion": "batch/v1",
  "resources": [
    {
      "name": "jobs",
      "singularName": "",
      "namespaced": true,
      "kind": "Job",
      "verbs": [
        "create",
        "delete",
        "deletecollection",
        "get",
        "list",
        "patch",
        "update",
        "watch"
      ],
      "categories": [
        "all"
      ],
      "storageVersionHash": "mudhfqk/qZY="
    },
    {
      "name": "jobs/status",
      "singularName": "",
      "namespaced": true,
      "kind": "Job",
      "verbs": [
        "get",
        "patch",
        "update"
      ]
    }
  ]
}
```

You probably have no Job resources deployed in your cluster, so the items array will be empty. You can try deploying the Job in Chapter08/my-job.yaml and hitting the REST endpoint again to get the same output in a item array .

```
mansishah@macbookpro downward % vim my-job.yaml
mansishah@macbookpro downward % cat my-job.yaml
apiVersion: batch/v1
kind: Job
metadata:
  name: my-job
spec:
  template:
    metadata:
      labels:
        app: batch-job
    spec:
      restartPolicy: OnFailure
      containers:
      - name: main
        image: mansi2210/shahm888:batchjob
```

here you have to create my -job.yaml file

```
mansishah@macbookpro downward % kubectl create -f my-job.yaml
job.batch/my-job created
mansishah@macbookpro downward % kubectl get jobs
NAME      COMPLETIONS   DURATION   AGE
my-job    0/1           15s        15s
```

Listing all Job instances in the cluster

```
mansishah@macbookpro downward % curl http://localhost:8001/apis/batch/v1/namespaces/default/jobs
{
  "kind": "JobList",
  "apiVersion": "batch/v1",
  "metadata": {
    "selfLink": "/apis/batch/v1/namespaces/default/jobs",
    "resourceVersion": "260960"
  },
  "items": [
    {
      "metadata": {
        "name": "my-job",
        "namespace": "default",
        "selfLink": "/apis/batch/v1/namespaces/default/jobs/my-job",
        "uid": "1b4c0c96-b5c6-4550-8c4e-dfad10b2b3ba",
        "resourceVersion": "260887",
        "creationTimestamp": "2020-04-05T08:24:34Z",
        "labels": {
          "app": "batch-job",
          "controller-uid": "1b4c0c96-b5c6-4550-8c4e-dfad10b2b3ba",
          "job-name": "my-job"
        }
      },
      "spec": {
        "parallelism": 1,
        "completions": 1,
        "backoffLimit": 6,
        "selector": {
          "matchLabels": {
            "controller-uid": "1b4c0c96-b5c6-4550-8c4e-dfad10b2b3ba"
          }
        },
        "template": {
          "metadata": {
            "creationTimestamp": null,
            "labels": {
              "app": "batch-job",
              "controller-uid": "1b4c0c96-b5c6-4550-8c4e-dfad10b2b3ba",
              "job-name": "my-job"
            }
          },
          "spec": {
```

Retrieving a specific Job instance by name

```
mansishah@macbookpro downward % curl http://localhost:8001/apis/batch/v1/namespaces/default/jobs/my-job
{
  "kind": "Job",
  "apiVersion": "batch/v1",
  "metadata": {
    "name": "my-job",
    "namespace": "default",
    "selfLink": "/apis/batch/v1/namespaces/default/jobs/my-job",
    "uid": "1b4c0c96-b5c6-4550-8c4e-dfad10b2b3ba",
    "resourceVersion": "261165",
    "creationTimestamp": "2020-04-05T08:24:34Z",
    "labels": {
      "app": "batch-job",
      "controller-uid": "1b4c0c96-b5c6-4550-8c4e-dfad10b2b3ba",
      "job-name": "my-job"
    }
  },
  "spec": {
    "parallelism": 1,
    "completions": 1,
    "backoffLimit": 6,
    "selector": {
      "matchLabels": {
        "controller-uid": "1b4c0c96-b5c6-4550-8c4e-dfad10b2b3ba"
      }
    },
    "template": {
      "metadata": {
        "creationTimestamp": null,
        "labels": {
          "app": "batch-job",
          "controller-uid": "1b4c0c96-b5c6-4550-8c4e-dfad10b2b3ba",
          "job-name": "my-job"
        }
      },
      "spec": {
        "containers": [
          {
            "name": "main",
            "image": "mansi2210/shahm888:batchjob",
            "resources": {
```

```
mansishah@macbookpro downward % kubectl get job my-job -o json
{
    "apiVersion": "batch/v1",
    "kind": "Job",
    "metadata": {
        "creationTimestamp": "2020-04-05T08:24:34Z",
        "labels": {
            "app": "batch-job",
            "controller-uid": "1b4c0c96-b5c6-4550-8c4e-dfad10b2b3ba",
            "job-name": "my-job"
        },
        "name": "my-job",
        "namespace": "default",
        "resourceVersion": "261165",
        "selfLink": "/apis/batch/v1/namespaces/default/jobs/my-job",
        "uid": "1b4c0c96-b5c6-4550-8c4e-dfad10b2b3ba"
    },
    "spec": {
        "backoffLimit": 6,
        "completions": 1,
        "parallelism": 1,
        "selector": {
            "matchLabels": {
                "controller-uid": "1b4c0c96-b5c6-4550-8c4e-dfad10b2b3ba"
            }
        },
        "template": {
            "metadata": {
                "creationTimestamp": null,
                "labels": {
                    "app": "batch-job",
                    "controller-uid": "1b4c0c96-b5c6-4550-8c4e-dfad10b2b3ba",
                    "job-name": "my-job"
                }
            },
            "spec": {
                "containers": [
                    {
                        "image": "mansi2210/shahm888:batchjob",
```