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Learn How to Mount a Local Drive in a Pod in Minikube (2021)

#tutorial #kubernetes #docker #containerization



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In the following article, we're using Minikube (v1.14.2) with Kubectl (1.19) running on Ubuntu 20.04.1 LTS.

The Problem

The background to this problem is as follows:

You're using Minikube and you want to mount a local drive in a pod and that's it.

This should be fairly straightforward however it's *not exactly*. We'll cover a fully working example here.

The real issue is that we need to mount a local directory to a directory in Minikube and *then* mount that directory to a directory in the pod itself.

If we just follow an example for mounting a local directory in a pod in Kubernetes, when we have shell access to the pod and check the path, the directory will exist however *it will be empty*.

Reference #1 (Shahriar, specifically) explains the solution pretty closely however a fully working example is not provided.

The following pod configuration file should work but, as we'll see in a moment, it doesn't.

```
1  apiVersion: v1
2  kind: Pod
3  metadata:
4    creationTimestamp: null
5    labels:
6      run: nginx-minimounted
7    name: nginx-minimounted
8    namespace: myns
9  spec:
10   volumes:
11   - name: minimounted
12     hostPath:
13       path: /minimounted/
14       type: DirectoryOrCreate
15   containers:
16   - image: nginx
17     name: nginx-minimounted
18     resources: {}
19     volumeMounts:
20     - mountPath: /etc/minimounted
21       name: minimounted
22   dnsPolicy: ClusterFirst
23   restartPolicy: Never
24   status: {}
```

nginx-with-minimount-directory-mounted.yaml hosted with ❤ by GitHub

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Here's an example of what the minikube start script might look like --- we need to change this in order to fix this issue.

```
minikube start --hyperv-virtual-switch "My Virtual Switch" --v=4
```

The following image demonstrates the problem inside the pod --- note the `/etc/minimounted/` directory *is empty* whereas we're expecting the `hello.txt` file to be there.

```
thospfuller@LV-426 ~/k8s-study$ ls -la /etc/minimount/hello.txt
-rw-r--r-- 1 root root 7 Dec  9 16:52 /etc/minimount/hello.txt
thospfuller@LV-426 ~/k8s-study$ cat /etc/minimount/hello.txt
world!
thospfuller@LV-426 ~/k8s-study$ kubectl apply -f ./nginx-minimounted.yaml
pod/nginx-minimounted created
thospfuller@LV-426 ~/k8s-study$ kubectl exec nginx-minimounted -n myns -it -- /bin/sh
# ls -la /etc/minimounted/
total 8
drwxr-xr-x 2 root root 40 Dec  9 22:17 .
drwxr-xr-x 1 root root 4096 Dec  9 22:22 ..
#
```

Now let's take a look at a solution.

The Solution

In order to make this work, we need to start Minikube with the following mount and mount-string options set:

```
ly Virtual Switch" --v=4 --mount --mount-string="/etc/minimount:/minimounted/"
```

We have /etc/minimount/ mounted as /minimount/ in Minikube and when we run the nginx-minimounted pod the /minimount/ directory will be mounted as /etc/minimounted/ in the pod; we can see the directory contents in the image below.

```
thospfuller@LV-426 ~/k8s-study$ kubectl exec nginx-minimounted -n myns -it -- /bin/sh
# ls -la /etc/minimounted
total 1
-rw-r--r-- 1 1000 1000 7 Dec  9 21:52 hello.txt
# cat /etc/minimounted/hello.txt
world!
#
```

And that's it for this article.

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Hat Tip

[Q McCallum](#)

References

1. [Mount local directory into pod in minikube](#)
2. [MountVolume.SetUp failed for volume "mongo" : hostPath type check failed: /mongo/data is not a directory](#)
3. [hostpath : MountVolume.SetUp failed for volume "test-volume" : hostPath type check failed: /data is not a directory](#)
4. [Invalid Error: .container.volumes: hostPath type check failed: "not a directory"](#)

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