Configure liveliness and readiness probes for pods in AKS cluster

Liveness and readiness probes are crucial for ensuring the health and availability of your applications running in Kubernetes, including AKS clusters. They allow Kubernetes to automatically detect unhealthy pods and take corrective actions, such as restarting them.

1. Configuring Probes

Probes are defined within the `spec.containers[].livenessProbe` and `spec.containers[].readinessProbe` sections of Pod definition (YAML).

Pod definition with both liveness and readiness probes:

```
apiVersion: v1
kind: Pod
metadata:
  name: my-app-pod
spec:
  containers:
  - name: my-app-container
    image: your-image:latest
    ports:
    - containerPort: 8080
    livenessProbe:
      httpGet:
        path: /healthz
        port: 8080
      initialDelaySeconds: 15  # Wait 15 seconds after container starts before probing
      periodSeconds: 10       # Probe every 10 seconds
      failureThreshold: 3      # Consider the container unhealthy after 3 consecutive
failures
    readinessProbe:
      httpGet:
        path: /readyz
        port: 8080
      initialDelaySeconds: 5
      periodSeconds: 5
      failureThreshold: 3
```

2. Using Startup Probes

Startup probes are useful for applications that take a while to initialize. They are designed to determine if the application has started before readiness probes are initiated.

YAML file:

```
apiVersion: v1
kind: Pod
metadata:
  name: my-app-pod
spec:
  containers:
  - name: my-app-container
    image: your-image:latest
    ports:
    - containerPort: 8080
    livenessProbe:
      exec:
        command: ["/bin/sh", "-c", "sleep 60"] # Simulate a long startup
      initialDelaySeconds: 30
      periodSeconds: 10
    readinessProbe:
      exec:
        command: ["/bin/sh", "-c", "curl -f http://localhost:8080/readyz"]
      initialDelaySeconds: 10
      periodSeconds: 5
```

3. Applying Probes in AKS

We can apply these configurations using kubectl:

$ kubectl apply -f your-pod-definition.yaml

4. Monitoring Probe Status

We can check the status of probes using `kubectl describe pod <pod-name>`:

$ kubectl describe pod my-app-pod

By properly configuring liveness and readiness probes, we can significantly improve the reliability and availability of our applications running in AKS. This helps ensure that our applications are able to handle traffic and recover from failures gracefully.