Environment Variables & Multi-Container Pods

Pod

nginx

Volumes

localhost

sidecar

Logging/
output
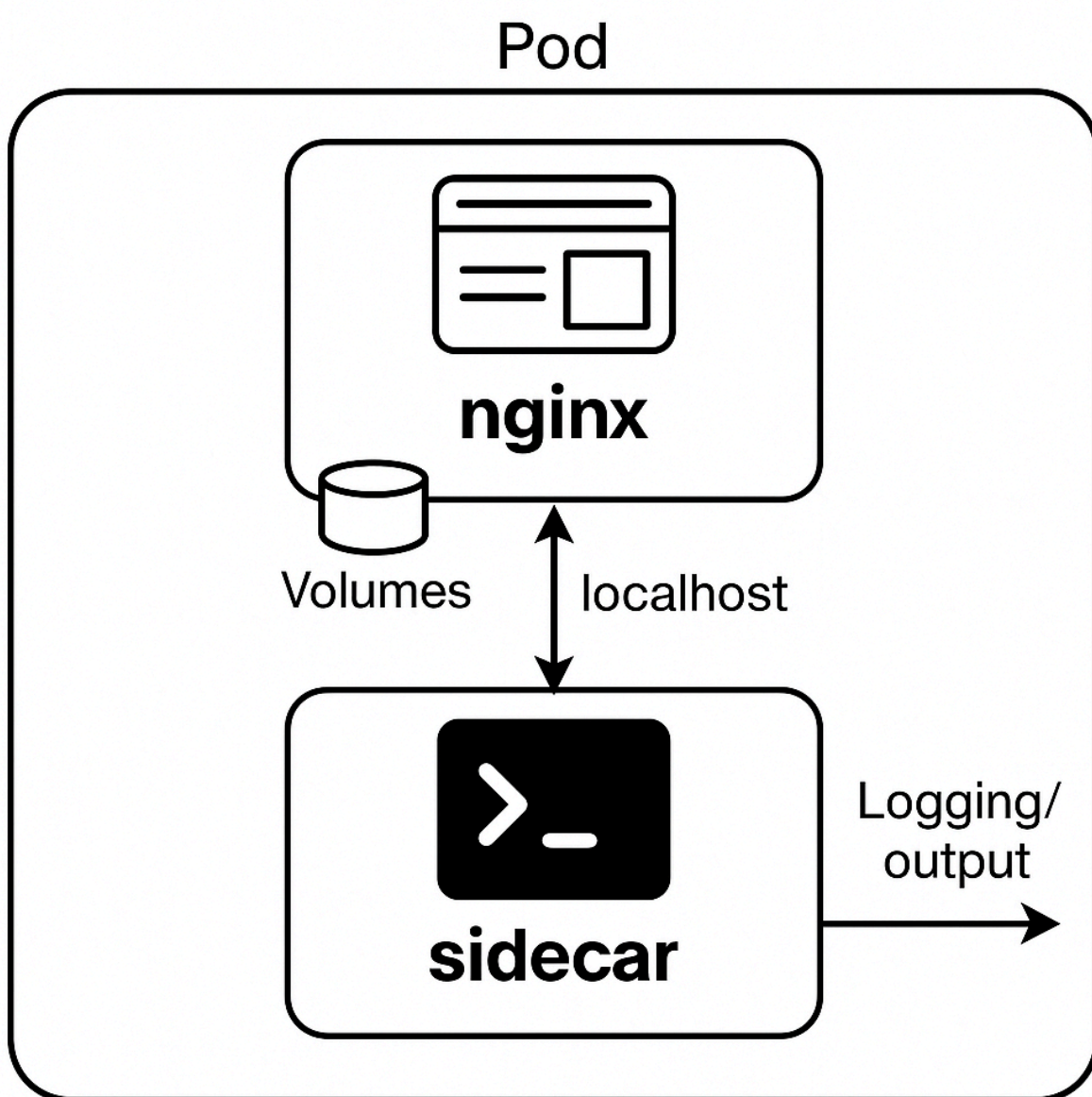
What are Multi-Container Pods?

Multi-container pods are Kubernetes pods that contain more than one container. They share the same network and storage space, allowing for tightly coupled application components to run side-by-side.

Why Use Sidecar Containers?
The Sidecar Pattern helps split responsibilities. For example:
- Main container serves the application (nginx).
- Sidecar handles logging or data syncing (busybox logging).

How Inter-Container Communication Works
All containers in the same pod:
- Share the same network namespace.
- Can access each other via `localhost`.
- Can communicate through shared volumes if needed.

```
controlplane ~ ➜ vi multi-container-pod.yaml
```

```
controlplane ~ ➜ cat multi-container-pod.yaml
apiVersion: v1
kind: Pod
metadata:
  name: multi-container-demo
  labels:
    app: multi-demo
spec:
  containers:
  - name: nginx
    image: nginx:latest
    ports:
    - containerPort: 80
    env:
    - name: MY_ENV
      value: "HelloK8s"              # just to show env injection
  - name: sidecar
    image: busybox:latest
    command:
    - sh
    - -c
    - |
      while true; do
        echo "$(date -u +"%Y-%m-%dT%H:%M:%SZ")  $MY_ENV  - Hello from sidecar";
        sleep 10;
      done
    env:
    - name: MY_ENV
      value: "HelloK8s"              # same var, same pod namespace
```

```
controlplane ~ ✖ kubectl apply -f  multi-container-pod.yaml
pod/multi-container-demo created
```

```
2025-07-29T04:36:53Z   HelloK8s  - Hello from sidecar
2025-07-29T04:37:03Z   HelloK8s  - Hello from sidecar
2025-07-29T04:37:13Z   HelloK8s  - Hello from sidecar
2025-07-29T04:37:23Z   HelloK8s  - Hello from sidecar
2025-07-29T04:37:33Z   HelloK8s  - Hello from sidecar
2025-07-29T04:37:43Z   HelloK8s  - Hello from sidecar
2025-07-29T04:37:53Z   HelloK8s  - Hello from sidecar
2025-07-29T04:38:03Z   HelloK8s  - Hello from sidecar
2025-07-29T04:38:13Z   HelloK8s  - Hello from sidecar
2025-07-29T04:38:23Z   HelloK8s  - Hello from sidecar
2025-07-29T04:38:33Z   HelloK8s  - Hello from sidecar
2025-07-29T04:38:43Z   HelloK8s  - Hello from sidecar
2025-07-29T04:38:53Z   HelloK8s  - Hello from sidecar
2025-07-29T04:39:03Z   HelloK8s  - Hello from sidecar
```