

基于 Helm 的 Apache ShardingSphere-Proxy 云上实践

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主题

Kubernetes : 云原生与部署

Helm : 应用管理与优雅发布

ShardingSphere Chart : 快速、便捷、开箱即用



Kubernetes: 云原生

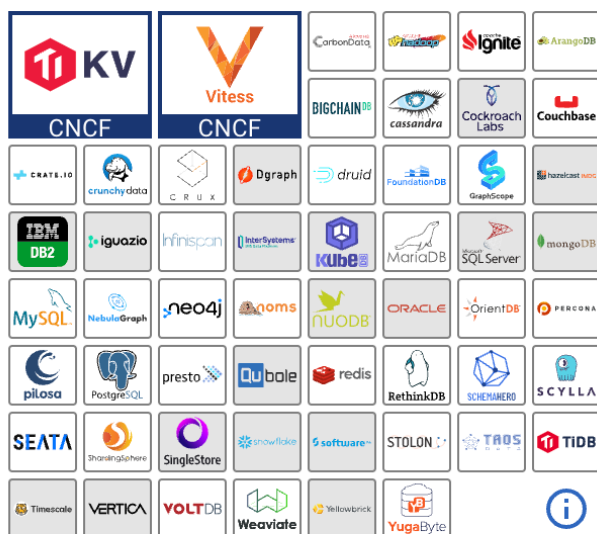


应用程序

application program

Kubernetes: 云原生

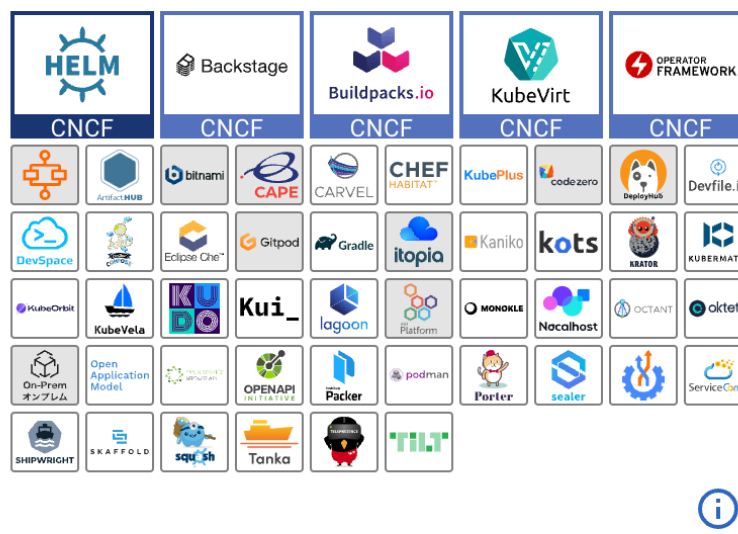
Database



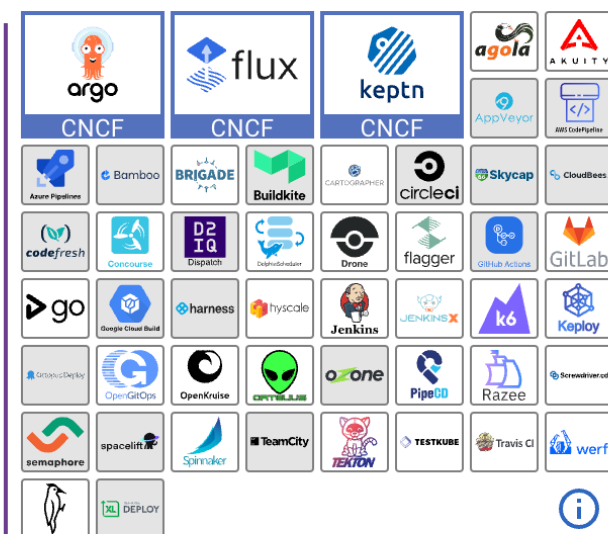
Streaming & Messaging



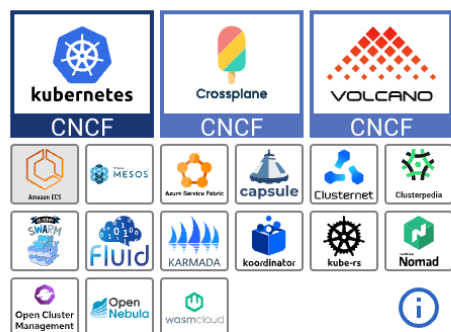
Application Definition & Image Build



Continuous Integration & Delivery



Scheduling & Orchestration



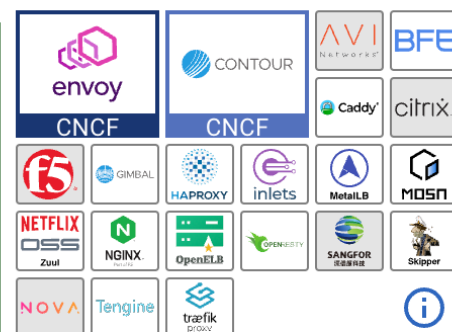
Coordination & Service Discovery



Remote Procedure Call



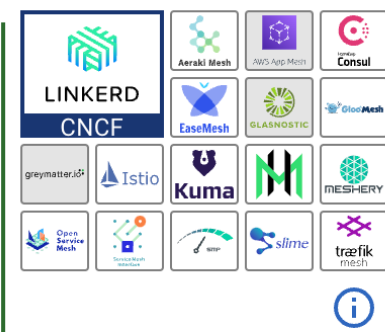
Service Proxy



API Gateway



Service Mesh



App Definition and Development

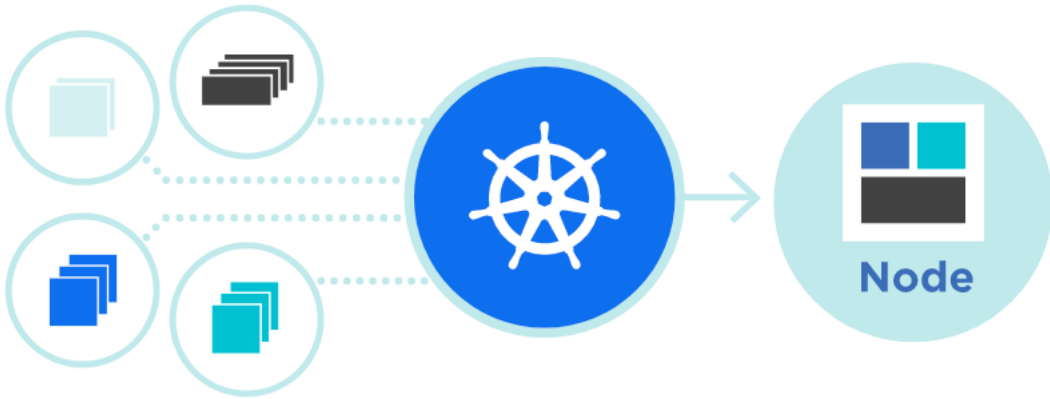
Orchestration & Management

Cloud Native Storage

Container Runtime

Cloud Native Network

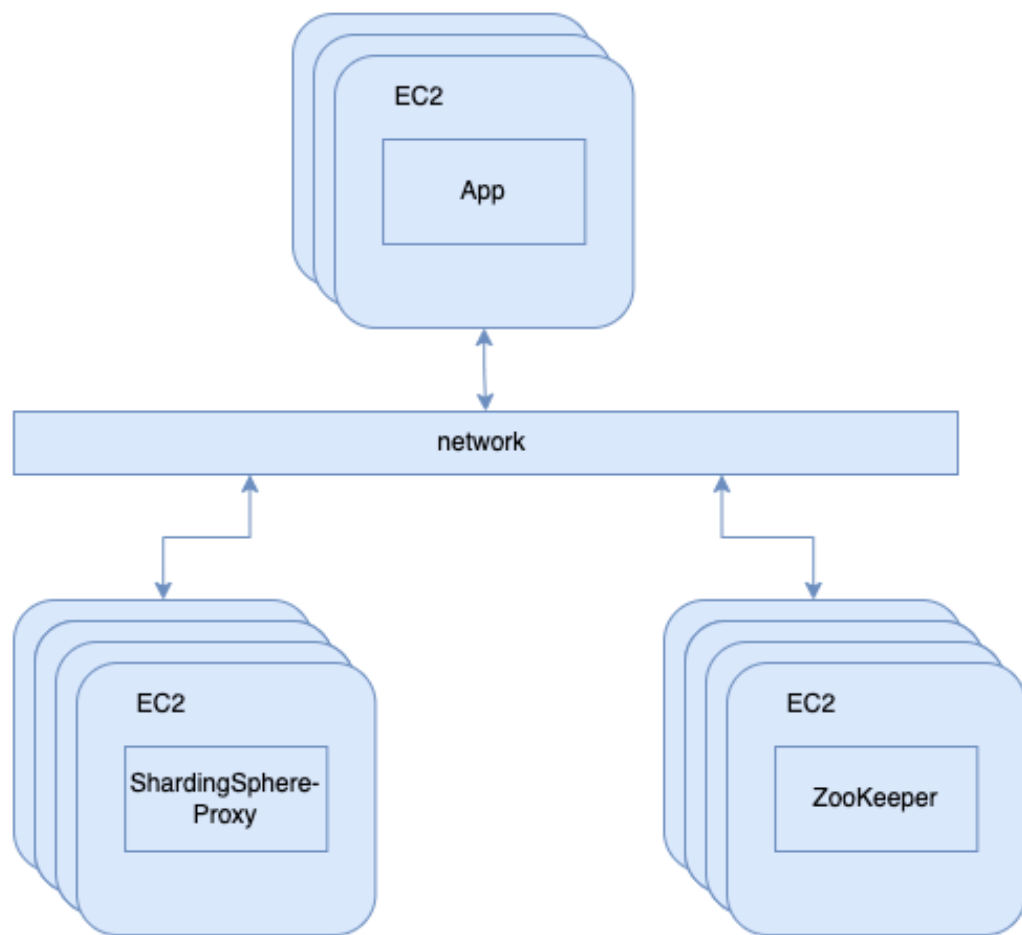
Kubernetes: 云原生



Cloud native technologies empower organizations to build and run scalable applications in modern, dynamic environments such as public, private, and hybrid clouds. **Containers, service meshes, microservices, immutable infrastructure, and declarative APIs** exemplify this approach.

—— Cloud Native Computing Foundation

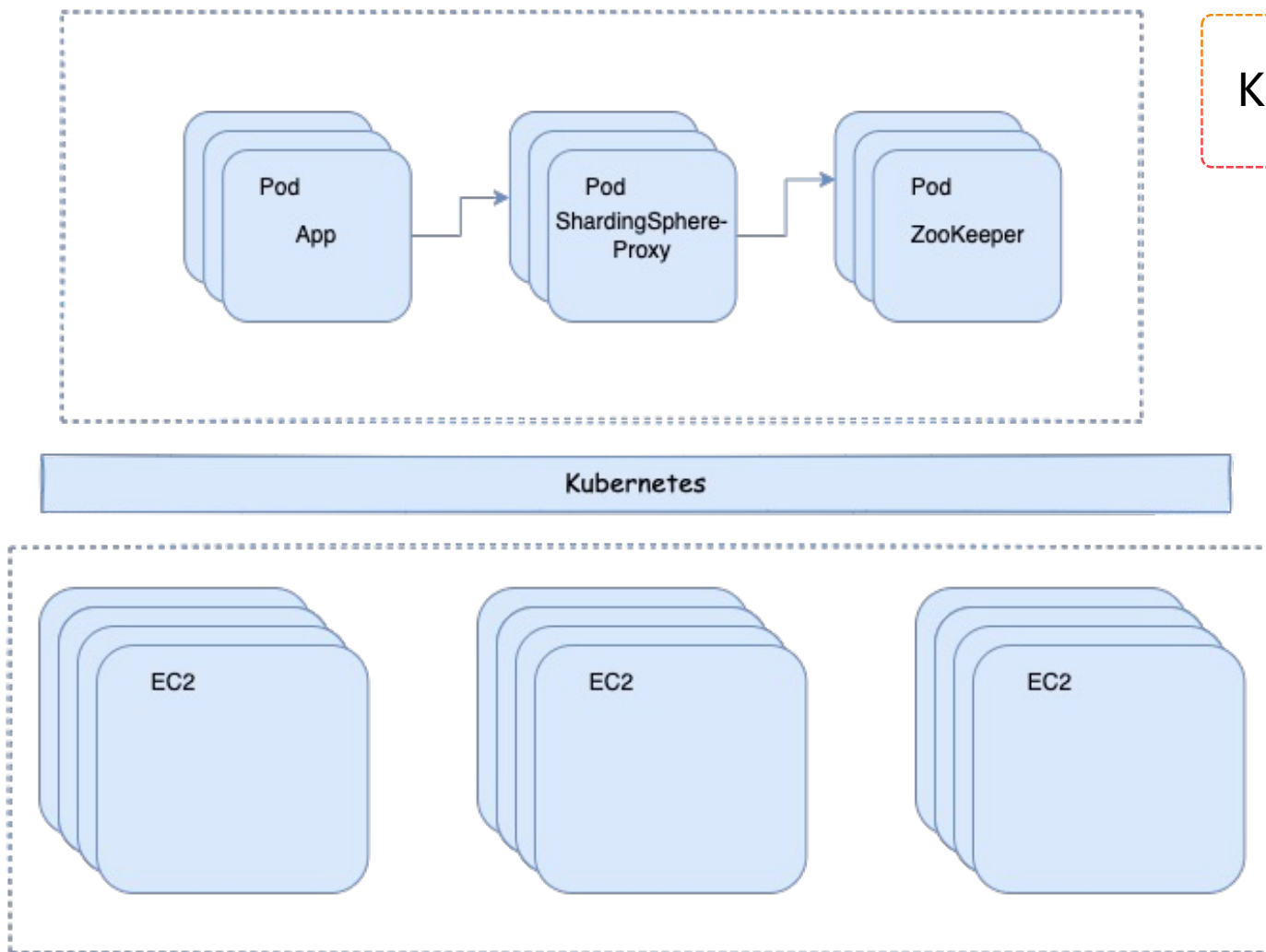
Kubernetes: 云原生



传统 ShardingSphere-Proxy 部署形态

Kubernetes: 云原生

Kubernetes 中 ShardingSphere-Proxy 部署形态



A

```
apiVersion: apps/v1
kind: Deployment
metadata:
  labels:
    app: sharding
    name: sharding
spec:
  replicas: 3
  containers:
    - image: "ghcr.io/apache/shardingsphere-proxy:6dd46d24"
      imagePullPolicy: IfNotPresent
      name: shardingsphere-proxy
      startupProbe:
        tcpSocket:
          port: 3307
      volumeMounts:
        - name: config
          mountPath: /opt/shardingsphere-proxy/conf
        - name: mysql-connect-jar
          mountPath: /opt/shardingsphere-proxy/ext-lib
      imagePullSecrets:
        []
      volumes:
        - name: config
          configMap:
            name: shardingsphere-proxy-configuration
        - name: mysql-connect-jar
          emptyDir: { }
        - name: start-port
          containerPort: 3307
      resources:
        limits: {}
        requests: {}
```

利用 Kubernetes 资源 对象部署 ShardingSphere-Proxy

ShardingSphere-Proxy 部分

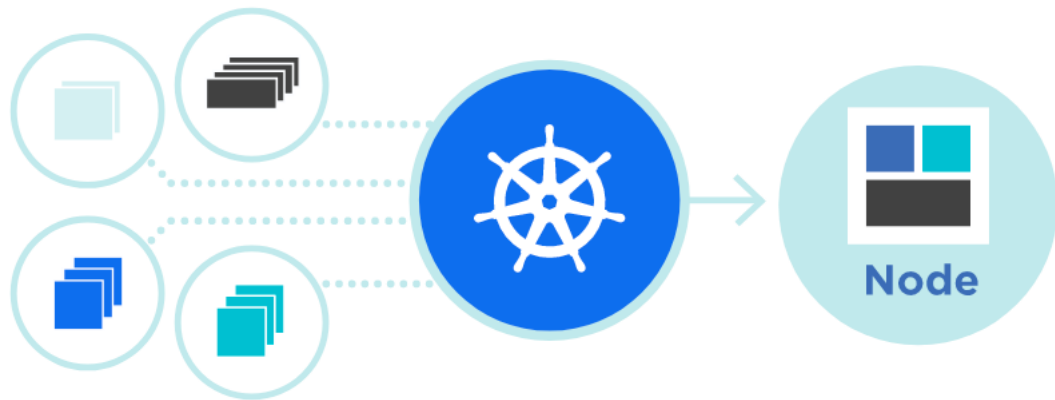
Apache ShardingSphere

```
# Source
apiVersion: v1
kind: Service
metadata:
  name: sharding-sphere-proxy
  labels:
    app: sharding-sphere-proxy
    helix: sharding-sphere-proxy
spec:
  selector:
    app: sharding-sphere-proxy
  ports:
    - name: client
      containerPort: 2181
    - name: follower
      containerPort: 2888
    - name: election
      containerPort: 3888
  livenessProbe:
    failureThreshold: 6
    initialDelaySeconds: 30
    periodSeconds: 10
    successThreshold: 1
    timeoutSeconds: 5
    exec:
      command: ['/bin/bash', '-c', 'echo "ruok" | timeout 5s nc -w 5 127.0.0.1 2181']
  readinessProbe:
    failureThreshold: 6
    initialDelaySeconds: 5
    periodSeconds: 10
    successThreshold: 1
    timeoutSeconds: 5
    exec:
      command: ['/bin/bash', '-c', 'echo "ruok" | timeout 5s nc -w 5 127.0.0.1 2181']
  volumeMounts:
    - name: scripts
      mountPath: /scripts/setup.sh
      subPath: setup.sh
    - name: data
      mountPath: /bitnami/zookeeper
  affinity:
    podAffinity:
      preferred:
        - podAffinityTerm:
            labelSelector:
              matchLabels:
                app: sharding-sphere-proxy
            weight: 1
    nodeAffinity:
      required:
        nodeSelectorTerms:
          - matchExpressions:
              - key: kubernetes.io/hostname
                operator: In
                values:
                  - sharding-sphere-proxy
  securityContext:
    fsGroup: 1000
  initContainers:
    - name: zookeeper
      image: bitnami/zookeeper:3.7.0
      imagePullPolicy: Always
      securityContext:
        runAsUser: 1000
        runAsGroup: 1000
      command:
        - /scripts/setup.sh
  resources:
    requests:
      cpu: 100m
      memory: 128Mi
    limits:
      cpu: 100m
      memory: 128Mi
  app.kubernetes.io/component: zookeeper
```

利用 Kubernetes 资源 对象部署 ShardingSphere-Proxy

Zookeeper 部分

Kubernetes: 云原生



Kubernetes

部署复杂，如何管理？

Helm、Helm Chart



Helm

Helm 是查找、分享和使用软件构建 Kubernetes 的最优方式。

Helm、Helm Chart



Helm

Chart

Release

Repository

Helm、Helm Chart



```
$ helm create myapp
```

```
myapp
```

```
├── Chart.yaml
```

```
├── charts
```

```
├── templates
```

```
│   ├── NOTES.txt
```

```
│   ├── _helpers.tpl
```

```
│   ├── deployment.yaml
```

```
│   ├── hpa.yaml
```

```
│   ├── ingress.yaml
```

```
│   ├── service.yaml
```

```
│   └── serviceaccount.yaml
```

```
└── values.yaml
```

Helm、Helm Chart

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: {{ include "myapp.fullname" . }}
  labels:
    {{- include "myapp.labels" . | nindent 4 }}
spec:
  {{- if not .Values.autoscaling.enabled }}
  replicas: {{ .Values.replicaCount }}
  {{- end }}
  selector:
    matchLabels:
      {{- include "myapp.selectorLabels" . | nindent 6 }}
  template:
    metadata:
      {{- with .Values.podAnnotations }}
      annotations:
        {{- toYaml . | nindent 8 }}
      {{- end }}
      labels:
        {{- include "myapp.selectorLabels" . | nindent 8 }}
    spec:
      {{- with .Values.imagePullSecrets }}
      imagePullSecrets:
        {{- toYaml . | nindent 8 }}
      {{- end }}
      serviceAccountName: {{ include "myapp.serviceAccountName" . }}
      securityContext:
        {{- toYaml .Values.podSecurityContext | nindent 8 }}
      containers:
        - name: {{ .Chart.Name }}
          securityContext:
            {{- toYaml .Values.securityContext | nindent 12 }}
          image: "{{ .Values.image.repository }}:{{ .Values.image.tag | default .Chart.AppVersion }}"
          imagePullPolicy: {{ .Values.image.pullPolicy }}
          ports:
            - name: http
              containerPort: 80
              protocol: TCP
          livenessProbe:
            httpGet:
              path: /
              port: http
          readinessProbe:
            httpGet:
              path: /
              port: http
      resources:
```

Helm

Deployment.yaml

Helm、Helm Chart



```
$ helm lint myapp
```

```
= => Linting myapp  
[INFO] Chart.yaml: icon is recommended
```

```
1 chart(s) linted, 0 chart(s) failed
```

```
$ helm package myapp
```

Helm、Helm Chart

! index.yaml ×

release > ! index.yaml

```
1  apiVersion: v1
2  entries:
3    myapp:
4      - apiVersion: v2
5        appVersion: 1.16.0
6        created: "2022-06-08T19:55:08.458763+08:00"
7        description: A Helm chart for Kubernetes
8        digest: c2ff1b98742441578c01dbfedfa32705b9837
9        name: myapp
10       type: application
11       urls:
12         - https://demo.sphere-ex.com/myapp-0.1.0.tgz
13         version: 0.1.0
14 generated: "2022-06-08T19:55:08.457913+08:00"
15
```

Helm 远端仓库

release

└─ index.yaml

└─ myapp-0.1.0.tgz

\$ mkdir release && mv myapp-0.1.0.tgz release

\$ helm repo index release \
--url <https://demo.sphere-ex.com>



Helm 应用中心

Helm

Apache ShardingSphere

kubernetes



kubernetes



Apache ShardingSphere

```
apiVersion: apps/v1
kind: Deployment
metadata:
  labels:
    app: {{ template "common.names.fullname" . }}
    name: {{ template "common.names.fullname" . }}
spec:
  replicas: {{ .Values.compute.replicas | default 1 }}
  selector:
    matchLabels:
      app: {{ template "common.names.fullname" . }}
  strategy:
    rollingUpdate:
      maxSurge: 25%
      maxUnavailable: 25%
    type: RollingUpdate
```

ShardingSphere Chart

Deployment.yaml (1)

Apache ShardingSphere

```
apiVersion: apps/v1
kind: Deployment
metadata:
  labels:
    app: {{ template "common.names.fullname" . }}
    name: {{ template "common.names.fullname" . }}
spec:
  replicas: {{ .Values.compute.replicas | default 1 }}
  selector:
    matchLabels:
      app: {{ template "common.names.fullname" . }}
  strategy:
    rollingUpdate:
      maxSurge: 25%
      maxUnavailable: 25%
    type: RollingUpdate
```

ShardingSphere Chart

Deployment.yaml (1)

Apache ShardingSphere

```
{{- if .Values.compute.mysqlConnector.version }}
initContainers:
  - name: download-mysql-jar
    image: busybox:1.35.0
    command: ["sh", "-c", "wget https://repo1.maven.org/maven2/mysql/mysql-connector-java/5.1.49/mysql-connector-java-5.1.49.jar;
    wget https://repo1.maven.org/maven2/mysql/mysql-connector-java/5.1.49/mysql-connector-java-5.1.49.jar.md5;
    if [ $(md5sum /mysql-connector-java-5.1.49.jar | cut -d ' ' -f1) = $(cat /mysql-connector-java-5.1.49.jar.md5) ];
    then echo success;
    else echo failed;exit 1;fi;mv /mysql-connector-java-5.1.49.jar /opt/shardingsphere-proxy/ext-lib"]
    volumeMounts:
      - name: mysql-connect-jar
        mountPath: /opt/shardingsphere-proxy/ext-lib
{{- end }}
```

ShardingSphere Chart

Deployment.yaml (2)

Apache ShardingSphere

```
containers:
- image: "apache/shardingsphere-proxy:{{ 5.1.2 | default 5.1.2 }}"
  imagePullPolicy: IfNotPresent
  name: shardingsphere-proxy
  startupProbe:
    tcpSocket:
      port: 3307
    failureThreshold: 6
    periodSeconds: 10
  livenessProbe:
    periodSeconds: 5
    tcpSocket:
      port: 3307
  readinessProbe:
    periodSeconds: 5
    tcpSocket:
      port: 3307
  env:
    - PORT =
  ports:
    - name: start-port
      containerPort: 3307
  {{- if .Values.compute.resources }}
  resources: {{- toYaml .Values.compute.resources | nindent 12 }}
  {{- end }}
  volumeMounts:
    - name: config
      mountPath: /opt/shardingsphere-proxy/conf
      {{- if 5.1.49 }}
    - name: mysql-connect-jar
      mountPath: /opt/shardingsphere-proxy/ext-lib
      {{- end }}
```

ShardingSphere Chart

Deployment.yaml (3)

Apache ShardingSphere

```
imagePullSecrets:
{{- toYaml .Values.compute.imagePullSecrets | nindent 8 }}
volumes:
  - name: config
    configMap:
      name: {{ printf "%s-configuration" (include "common.names.fullname" .) }}
{{- if 5.1.49 }}
  - name: mysql-connect-jar
    emptyDir: { }
{{- end }}
```

ShardingSphere Chart

Deployment.yaml (4)

Apache ShardingSphere

```
apiVersion: v1
kind: ConfigMap
metadata:
  name: {{ printf "%s-configuration" (include "common.names.fullname" .) }}
data:
  server.yaml: |-
    {{- include "common.tplvalues.render" (dict "value" "" "context" $) | nindent 4 }}
```

ShardingSphere Chart

Configmap.yaml

Apache ShardingSphere

```
apiVersion: v1
kind: Service
metadata:
  labels:
    app: {{ template "common.names.fullname" . }}
    name: {{ template "common.names.fullname" . }}
spec:
  ports:
    - name: tcp
      targetPort: 3307
      port: 3307
      protocol: TCP
  selector:
    app: {{ template "common.names.fullname" . }}
  type: ClusterIP
```

ShardingSphere Chart

Service.yaml

使用 Helm 快速拉起一个 ShardingSphere-Proxy 集群

Apache ShardingSphere

```
governance:
  enabled: true
  ## @section Governance-Node ZooKeeper parameters
  zookeeper:
    ## @param governance.zookeeper.enabled Switch to enable
    ##
    enabled: true
    ## @param governance.zookeeper.replicaCount Number of
    ##
    replicaCount: 1
    ## ZooKeeper Persistence parameters
    ## ref: https://kubernetes.io/docs/user-guide/persistent-volume-storage
    ## @param governance.zookeeper.persistence.enabled Enable
    ## @param governance.zookeeper.persistence.storageClass
    ## @param governance.zookeeper.persistence.accessModes
    ## @param governance.zookeeper.persistence.size Persistent
    ##
    persistence:
      enabled: false
      storageClass: ""
      accessModes:
        - ReadWriteOnce
      size: 8Gi
    ## ZooKeeper's resource requests and limits
    ## ref: https://kubernetes.io/docs/user-guide/compute-resources
    ## @param governance.zookeeper.resources.limits The resource
    ## @param governance.zookeeper.resources.requests.memory
    ## @param governance.zookeeper.resources.requests.cpu
    ##
    resources:
      limits: {}
      requests:
        memory: 256Mi
        cpu: 250m
```

ShardingSphere Chart

Values.yaml (1)

Apache ShardingSphere

```
compute:
  ## @section Compute-Node ShardingSphere-Proxy parameters
  ## ref: https://kubernetes.io/docs/concepts/containers/images/
  ## @param compute.image.repository Image name of ShardingSphere-Proxy.
  ## @param compute.image.pullPolicy The policy for pulling ShardingSphere-Proxy image
  ## @param compute.image.tag ShardingSphere-Proxy image tag
  ##
  image:
    repository: "apache/shardingsphere-proxy"
    pullPolicy: IfNotPresent
    ## Overrides the image tag whose default is the chart appVersion.
    ##
    tag: "5.1.2"
  ## @param compute.imagePullSecrets Specify docker-registry secret names as an array
  ## e.g:
  ## imagePullSecrets:
  ##   - name: myRegistryKeySecretName
  ##
  imagePullSecrets: []
  ## ShardingSphere-Proxy resource requests and limits
  ## ref: https://kubernetes.io/docs/concepts/configuration/manage-resources-containers/
  ## @param compute.resources.limits The resources limits for the ShardingSphere-Proxy containers
  ## @param compute.resources.requests.memory The requested memory for the ShardingSphere-Proxy container
  ## @param compute.resources.requests.cpu The requested cpu for the ShardingSphere-Proxy container
  ##
  resources:
    limits: {}
    requests:
      memory: 2Gi
      cpu: 200m
  ## ShardingSphere-Proxy Deployment Configuration
  ## ref: https://kubernetes.io/docs/concepts/workloads/controllers/deployment/
  ## ref: https://kubernetes.io/docs/concepts/services-networking/service/
  ## @param compute.replicas Number of cluster replicas
  ##
  replicas: 3
```

ShardingSphere Chart

Values.yaml (2)

Apache ShardingSphere

```
mysqlConnector:
  version: "5.1.49"

## @param compute.startPort ShardingSphere-Proxy start port
## ShardingSphere-Proxy start port
## ref: https://shardingsphere.apache.org/document/current/en/user-manual/shardingsphere-proxy/start
##
startPort: 3307
## @param compute.serverConfig ServerConfiguration file for ShardingSphere-Proxy
## NOTE: If you use the sub-charts to deploy Zookeeper, the server-lists field must be "{{ printf \"\
## otherwise please fill in the correct zookeeper address
## The server.yaml is auto-generated based on this parameter.
## If it is empty, the server.yaml is also empty.
## ref: https://shardingsphere.apache.org/document/current/en/user-manual/shardingsphere-jdbc/yaml-c
## ref: https://shardingsphere.apache.org/document/current/cn/user-manual/shardingsphere-jdbc/builti
## e.g:
## serverConfig:
##   authority:
##     privilege:
##       type: ALL_PRIVILEGES_PERMITTED
##     users:
##       - password: root
##       user: root@%
##   mode:
##     overwrite: true
##     repository:
##       props:
##         maxRetries: 3
##         namespace: governance_ds
##         operationTimeoutMilliseconds: 5000
##         retryIntervalMilliseconds: 500
##         server-lists: "{{ printf \"%s-zookeeper.%s:2181\" .Release.Name .Release.Namespace }}"
##         timeToLiveSeconds: 600
##       type: ZooKeeper
##     type: Cluster

serverConfig: ""
```

ShardingSphere Chart

Values.yaml (3)

已添加到剪贴板

部署 Apache ShardingSphere-Proxy

```
→ shardingsphere-charts (log) ✕ helm package shardingsphere-proxy
Successfully packaged chart and saved it to: /Users/lizhuo/IdeaProjects/shardingsphere-ghoul/shardingsphere-charts/shardingsphere-proxy-1.1.0.tgz
→ shardingsphere-charts (log) ✕
```

```
→ shardingsphere-charts (log) ✕ helm install shardingsphere-proxy shardingsphere-proxy-1.1.0.tgz -n sstest
NAME: shardingsphere-proxy
LAST DEPLOYED: Wed Jun  8 21:23:18 2022
NAMESPACE: sstest
STATUS: deployed
REVISION: 1
TEST SUITE: None
→ shardingsphere-charts (log) ✕
```

部署 Apache ShardingSphere-Proxy

```
→ shardingsphere-charts (log) ✕ kubectl get pod -n sstest
```

NAME	READY	STATUS	RESTARTS	AGE
shardingsphere-proxy-5dd945dc7d-p66bm	0/1	Init:0/1	0	31s
shardingsphere-proxy-5dd945dc7d-t4z46	0/1	Init:0/1	0	31s
shardingsphere-proxy-5dd945dc7d-vhbxv	0/1	Init:0/1	0	31s
shardingsphere-proxy-zookeeper-0	1/1	Running	0	26s

部署 Apache ShardingSphere-Proxy

```
→ shardingsphere-charts (log) x kubectl logs -f -n sstest shardingsphere-proxy-5dd945dc7d-p66bm -c download-mysql-jar
Connecting to repo1.maven.org (151.101.52.209:443)
wget: note: TLS certificate validation not implemented
saving to 'mysql-connector-java-5.1.49.jar'
mysql-connector-java 0% | | 4113 0:04:03 ETA
mysql-connector-java 1% | | 19953 0:01:38 ETA
mysql-connector-java 2% | | 28179 0:01:44 ETA
mysql-connector-java 4% |* | 44563 0:01:26 ETA
mysql-connector-java 5% |* | 51350 0:01:33 ETA
mysql-connector-java 5% |* | 58205 0:01:37 ETA
mysql-connector-java 6% |** | 64992 0:01:41 ETA
mysql-connector-java 8% |** | 81376 0:01:30 ETA
```

```
mysql-connector-java 100% |*****| 983k 0:00:00 ETA
'mysql-connector-java-5.1.49.jar' saved
Connecting to repo1.maven.org (151.101.52.209:443)
wget: note: TLS certificate validation not implemented
saving to 'mysql-connector-java-5.1.49.jar.md5'
mysql-connector-java 100% |*****| 33 0:00:00 ETA
'mysql-connector-java-5.1.49.jar.md5' saved
success
```

部署 Apache ShardingSphere-Proxy

```
+ shardingSphere-charts (log) * kubectl logs -f -n sstest shardingsphere-proxy-zookeeper-0
zookeeper 13:23:29.28
zookeeper 13:23:29.29 Welcome to the Bitnami zookeeper container
zookeeper 13:23:29.29 Subscribe to project updates by watching https://github.com/bitnami/bitnami-docker-zookeeper
zookeeper 13:23:29.29 Submit issues and feature requests at https://github.com/bitnami/bitnami-docker-zookeeper/issues
zookeeper 13:23:29.29
zookeeper 13:23:29.29 INFO ==> ** Starting ZooKeeper setup **
zookeeper 13:23:29.31 WARN ==> You have set the environment variable ALLOW_ANONYMOUS_LOGIN=yes. For safety reasons, do not use this flag in a production environment.
zookeeper 13:23:29.32 INFO ==> Initializing ZooKeeper...
zookeeper 13:23:29.33 INFO ==> No injected configuration file found, creating default config files...
grep: /opt/bitnami/zookeeper/conf/log4j.properties: No such file or directory
zookeeper 13:23:29.36 INFO ==> No additional servers were specified. ZooKeeper will run in standalone mode...
zookeeper 13:23:29.37 INFO ==> Deploying ZooKeeper from scratch...

zookeeper 13:23:29.37 INFO ==> ** ZooKeeper setup finished! **
zookeeper 13:23:29.39 INFO ==> ** Starting ZooKeeper **
/opt/bitnami/java/bin/java
ZooKeeper JMX enabled by default
Using config: /opt/bitnami/zookeeper/bin/./conf/zoo.cfg
2022-06-08 13:23:29,880 [myid:] - INFO [main:o.a.z.s.q.QuorumPeerConfig@177] - Reading configuration from: /opt/bitnami/zookeeper/bin/./conf/zoo.cfg
2022-06-08 13:23:29,889 [myid:] - INFO [main:o.a.z.s.q.QuorumPeerConfig@440] - clientPortAddress is 0.0.0.0:2181
2022-06-08 13:23:29,890 [myid:] - INFO [main:o.a.z.s.q.QuorumPeerConfig@444] - secureClientPort is not set
2022-06-08 13:23:29,890 [myid:] - INFO [main:o.a.z.s.q.QuorumPeerConfig@460] - observerMasterPort is not set
2022-06-08 13:23:29,890 [myid:] - INFO [main:o.a.z.s.q.QuorumPeerConfig@477] - metricsProvider.className is org.apache.zookeeper.metrics.impl.DefaultMetricsProvider
2022-06-08 13:23:29,892 [myid:1] - INFO [main:o.a.z.s.DatadirCleanupManager@78] - autopurge.snapRetainCount set to 3
2022-06-08 13:23:29,892 [myid:1] - INFO [main:o.a.z.s.DatadirCleanupManager@79] - autopurge.purgeInterval set to 0
2022-06-08 13:23:29,893 [myid:1] - INFO [main:o.a.z.s.DatadirCleanupManager@101] - Purge task is not scheduled.
2022-06-08 13:23:29,893 [myid:1] - WARN [main:o.a.z.s.q.QuorumPeerMain@139] - Either no config or no quorum defined in config, running in standalone mode
2022-06-08 13:23:29,894 [myid:1] - INFO [main:o.a.z.j.ManagedUtil@46] - Log4j 1.2 jmx support not found; jmx disabled.
2022-06-08 13:23:29,895 [myid:1] - INFO [main:o.a.z.s.q.QuorumPeerConfig@177] - Reading configuration from: /opt/bitnami/zookeeper/bin/./conf/zoo.cfg
2022-06-08 13:23:29,895 [myid:1] - INFO [main:o.a.z.s.q.QuorumPeerConfig@440] - clientPortAddress is 0.0.0.0:2181
2022-06-08 13:23:29,895 [myid:1] - INFO [main:o.a.z.s.q.QuorumPeerConfig@444] - secureClientPort is not set
2022-06-08 13:23:29,895 [myid:1] - INFO [main:o.a.z.s.q.QuorumPeerConfig@460] - observerMasterPort is not set
2022-06-08 13:23:29,895 [myid:1] - INFO [main:o.a.z.s.q.QuorumPeerConfig@477] - metricsProvider.className is org.apache.zookeeper.metrics.impl.DefaultMetricsProvider
2022-06-08 13:23:29,896 [myid:1] - INFO [main:o.a.z.s.ZooKeeperServerMain@123] - Starting server
2022-06-08 13:23:29,907 [myid:1] - INFO [main:o.a.z.s.ServerMetrics@64] - ServerMetrics initialized with provider org.apache.zookeeper.metrics.impl.DefaultMetricsProvider@19932c16
2022-06-08 13:23:29,909 [myid:1] - INFO [main:o.a.z.s.a.DigestAuthenticationProvider@47] - ACL digest algorithm is: SHA1
2022-06-08 13:23:29,910 [myid:1] - INFO [main:o.a.z.s.a.DigestAuthenticationProvider@61] - zookeeper.DigestAuthenticationProvider.enabled = true
2022-06-08 13:23:29,912 [myid:1] - INFO [main:o.a.z.s.p.FileTxnSnapLog@124] - zookeeper.snapshot.trust.empty : false
2022-06-08 13:23:29,921 [myid:1] - INFO [main:o.a.z.ZookeeperBanner@42] -
2022-06-08 13:23:29,922 [myid:1] - INFO [main:o.a.z.ZookeeperBanner@42] -
2022-06-08 13:23:29,922 [myid:1] - INFO [main:o.a.z.ZookeeperBanner@42] - |__ /
2022-06-08 13:23:29,922 [myid:1] - INFO [main:o.a.z.ZookeeperBanner@42] - //
2022-06-08 13:23:29,922 [myid:1] - INFO [main:o.a.z.ZookeeperBanner@42] - // /_ \ /_ \ | / / /_ \ /_ \ | ' \ /_ \ | ' \
2022-06-08 13:23:29,922 [myid:1] - INFO [main:o.a.z.ZookeeperBanner@42] - // / | ( ) | ( ) | | < | / | / | | |
2022-06-08 13:23:29,922 [myid:1] - INFO [main:o.a.z.ZookeeperBanner@42] - /___| \_ / \_ / | \ \ \_ / \_ / | . / \_ / |
2022-06-08 13:23:29,922 [myid:1] - INFO [main:o.a.z.ZookeeperBanner@42] - | |
```

部署 Apache ShardingSphere-Proxy

```
→ shardingsphere-charts (log) ✕ kubectl get pod -n sstest
```

NAME	READY	STATUS	RESTARTS	AGE
shardingsphere-proxy-bd57d7f97-62k9t	1/1	Running	0	2m18s
shardingsphere-proxy-bd57d7f97-b2q48	1/1	Running	0	2m18s
shardingsphere-proxy-bd57d7f97-xrq9p	1/1	Running	0	2m18s
shardingsphere-proxy-zookeeper-0	1/1	Running	0	2m18s

部署 Apache ShardingSphere-Proxy

```
→ shardingsphere-charts (log) x kubectl logs -f -n sstest shardingsphere-proxy-bd57d7f97-62k9t
we find java version: java17, full_version=17.0.2
Starting the ShardingSphere-Proxy ...
The port is 3307
The classpath is /opt/shardingsphere-proxy/conf:./opt/shardingsphere-proxy/lib/*:/opt/shardingsphere-proxy/ext-lib/*
Please check the STDOUT file: /opt/shardingsphere-proxy/logs/stdout.log
[INFO ] 2022-06-08 13:30:31.452 [main] o.apache.zookeeper.ClientCnxnSocket - jute.maxbuffer value is 1048575 Bytes
[INFO ] 2022-06-08 13:30:31.457 [main] org.apache.zookeeper.ClientCnxn - zookeeper.request.timeout value is 0. feature enabled=false
[INFO ] 2022-06-08 13:30:31.464 [main] o.a.c.f.imps.CuratorFrameworkImpl - Default schema
[INFO ] 2022-06-08 13:30:31.466 [main-SendThread(shardingsphere-proxy-zookeeper.sstest:2181)] org.apache.zookeeper.ClientCnxn - Opening socket connection to server shardingsphere-proxy-zookeeper.sstest/172.17.38.63:2181.
[INFO ] 2022-06-08 13:30:31.466 [main-SendThread(shardingsphere-proxy-zookeeper.sstest:2181)] org.apache.zookeeper.ClientCnxn - SASL config not provided, skipping SASL setup
[INFO ] 2022-06-08 13:30:31.474 [main-SendThread(shardingsphere-proxy-zookeeper.sstest:2181)] org.apache.zookeeper.ClientCnxn - Socket connection established
[INFO ] 2022-06-08 13:30:31.497 [main-SendThread(shardingsphere-proxy-zookeeper.sstest:2181)] org.apache.zookeeper.ClientCnxn - Session established for shardingsphere-proxy-zookeeper.sstest/172.17.38.63:2181, session id = 0x1002b5f99f20000, negotiated timeout = 40000
[INFO ] 2022-06-08 13:30:31.503 [main-EventThread] o.a.c.f.state.ConnectionStateManager - State change: CONNECTED
[INFO ] 2022-06-08 13:30:31.523 [main-EventThread] o.a.c.framework.imps.EnsembleTracker - New config event received: {}
[INFO ] 2022-06-08 13:30:31.523 [main-EventThread] o.a.c.framework.imps.EnsembleTracker - New config event received: {}
Thanks for using Atomikos! This installation is not registered yet.
REGISTER FOR FREE at http://www.atomikos.com/Main/RegisterYourDownload and receive:
- tips & advice
- working demos
- access to the full documentation
- special exclusive bonus offers not available to others
- everything you need to get the most out of using Atomikos!
[INFO ] 2022-06-08 13:30:33.041 [main] o.apache.curator.utils.Compatibility - Using org.apache.zookeeper.server.quorum.MultipleAddresses
```


部署 Apache ShardingSphere-Proxy

```
→ shardingsphere-charts (log) x kubectl exec -ti mysql-clinet-deployment-c98f4cbf4-h4gq9 -- sh
/ #
/ #
/ #
/ # mysql -h shardingsphere-proxy.sstest -P3307 -uroot -proot
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 82
Server version: 5.7.22-ShardingSphere-Proxy 5.1.2-SNAPSHOT-6dd46d2

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MySQL [(none)]>
MySQL [(none)]>
MySQL [(none)]>
MySQL [(none)]> CREATE DATABASE foo_db;
Query OK, 0 rows affected (0.143 sec)

MySQL [(none)]> USE foo_db;
Database changed
MySQL [foo_db]> ADD RESOURCE ds_0 (HOST=172.17.184.242,PORT=3306,DB=ss1,USER=root,PASSWORD=root);
Query OK, 0 rows affected (0.445 sec)

MySQL [foo_db]>
MySQL [foo_db]> ADD RESOURCE ds_1 (HOST=172.17.184.242,PORT=3306,DB=ss2,USER=root,PASSWORD=root);
Query OK, 0 rows affected (0.086 sec)

MySQL [foo_db]> 
```

部署 Apache ShardingSphere-Proxy

```
MySQL [foo_db]>
MySQL [foo_db]> CREATE SHARDING TABLE RULE t_order(
-> RESOURCES(ds_0,ds_1),
-> SHARDING_COLUMN=order_id,
-> TYPE(NAME=hash_mod,PROPERTIES("sharding-count"=4)),
-> KEY_GENERATE_STRATEGY(COLUMN=order_id,TYPE(NAME=snowflake))
-> );
```

Query OK, 0 rows affected (1.896 sec)

```
MySQL [foo_db]>
MySQL [foo_db]>
MySQL [foo_db]> CREATE TABLE `t_order` (
-> `order_id` int NOT NULL,
-> `user_id` int NOT NULL,
-> `status` varchar(45) DEFAULT NULL,
-> PRIMARY KEY (`order_id`)
-> ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;
```

Query OK, 0 rows affected (0.438 sec)

部署 Apache ShardingSphere-Proxy

```
MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (2,1,true);
Query OK, 1 row affected (0.008 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (3,1,true);
Query OK, 1 row affected (0.006 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (4,1,true);
Query OK, 1 row affected (0.009 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (5,1,true);
Query OK, 1 row affected (0.008 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (6,1,true);
Query OK, 1 row affected (0.007 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (7,1,true);
Query OK, 1 row affected (0.008 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (8,2,true);
Query OK, 1 row affected (0.008 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (9,3,true);
Query OK, 1 row affected (0.007 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (10,4,true);
Query OK, 1 row affected (0.025 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (11,5,true);
Query OK, 1 row affected (0.013 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (12,6,true);
Query OK, 1 row affected (0.007 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (13,7,true);
Query OK, 1 row affected (0.006 sec)
```

```
MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (15,1,false);
Query OK, 1 row affected (0.009 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (16,1,false);
Query OK, 1 row affected (0.008 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (17,1,false);
Query OK, 1 row affected (0.007 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (18,1,false);
Query OK, 1 row affected (0.008 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (19,1,false);
Query OK, 1 row affected (0.022 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (20,1,false);
Query OK, 1 row affected (0.021 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (21,1,false);
Query OK, 1 row affected (0.007 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (22,2,false);
Query OK, 1 row affected (0.007 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (23,3,false);
Query OK, 1 row affected (0.007 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (24,4,false);
Query OK, 1 row affected (0.006 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (25,5,false);
Query OK, 1 row affected (0.007 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (26,6,false);
Query OK, 1 row affected (0.005 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (27,7,false);
Query OK, 1 row affected (0.005 sec)

MySQL [foo_db]> INSERT INTO t_order (order_id,user_id,status) VALUES (28,8,false);
Query OK, 1 row affected (0.008 sec)
```

部署 Apache ShardingSphere-Proxy

```
mysql> use ss1;  
Reading table information for completion of table and column names  
You can turn off this feature to get a quicker startup with -A
```

Database changed

```
mysql>
```

```
mysql>
```

```
mysql> show tables;
```

```
+-----+
```

```
| Tables_in_ss1 |
```

```
+-----+
```

```
| t_order_0 |
```

```
| t_order_2 |
```

```
+-----+
```

```
2 rows in set (0.00 sec)
```

```
mysql>
```

```
mysql> select * from t_order_0;
```

```
+-----+-----+-----+
```

```
| order_id | user_id | status |
```

```
+-----+-----+-----+
```

```
| 4 | 1 | 1 |
```

```
| 8 | 2 | 1 |
```

```
| 12 | 6 | 1 |
```

```
| 16 | 1 | 0 |
```

```
| 20 | 1 | 0 |
```

```
| 24 | 4 | 0 |
```

```
| 28 | 8 | 0 |
```

```
+-----+-----+-----+
```

```
7 rows in set (0.00 sec)
```

部署 Apache ShardingSphere-Proxy

```
MySQL [foo_db]> DROP TABLE t_order;  
Query OK, 0 rows affected (0.088 sec)
```

```
MySQL [foo_db]> DROP SHARDING TABLE RULE t_order;  
Query OK, 0 rows affected (0.064 sec)
```

```
MySQL [foo_db]> DROP RESOURCE ds_0, ds_1;  
Query OK, 0 rows affected (0.018 sec)
```

```
MySQL [foo_db]> DROP DATABASE foo_db;  
Query OK, 0 rows affected (0.042 sec)
```

```
mysql> select * from t_order_0;  
ERROR 1146 (42S02): Table 'ss1.t_order_0' doesn't exist
```

```
mysql> show tables;  
Empty set (0.00 sec)
```

```
mysql>
```

升级 Apache ShardingSphere-Proxy

```
→ shardingsphere-charts (master) ✖ helm list -n sstest
```

NAME	NAMESPACE	REVISION	UPDATED	STATUS	CHART	APP VERSION
shardingsphere-proxy	sstest	1	2022-06-08 21:29:12.227283 +0800 CST	deployed	shardingsphere-proxy-1.1.0	5.1.2

```
→ shardingsphere-charts (master) ✖ helm upgrade shardingsphere-proxy shardingsphere-proxy -n sstest
```

Release "shardingsphere-proxy" has been upgraded. Happy Helming!

NAME: shardingsphere-proxy

LAST DEPLOYED: Fri Jun 10 10:54:47 2022

NAMESPACE: sstest

STATUS: deployed

REVISION: 2

TEST SUITE: None

升级 Apache ShardingSphere-Proxy

```
→ shardingsphere-charts (master) x helm list -n sstest
```

NAME	NAMESPACE	REVISION	UPDATED	STATUS	CHART	APP VERSION
shardingsphere-proxy	sstest	2	2022-06-10 10:54:47.871689 +0800 CST	deployed	shardingsphere-proxy-1.1.0	5.1.2

```
→ shardingsphere-charts (master) x kubectl get pod -n sstest
```

NAME	READY	STATUS	RESTARTS	AGE
shardingsphere-proxy-bd57d7f97-62k9t	1/1	Running	0	37h
shardingsphere-proxy-bd57d7f97-b2q48	1/1	Running	0	37h
shardingsphere-proxy-bd57d7f97-xrq9p	1/1	Running	0	37h
shardingsphere-proxy-zookeeper-0	1/1	Running	0	51s
shardingsphere-proxy-zookeeper-1	0/1	Running	0	3s
shardingsphere-proxy-zookeeper-2	0/1	Running	0	3s

回滚 Apache ShardingSphere-Proxy

```
→ shardingsphere-charts (master) x helm rollback shardingsphere-proxy -n sstest
Rollback was a success! Happy Helming!
```

```
→ shardingsphere-charts (master) x helm list -n sstest
```

NAME	NAMESPACE	REVISION	UPDATED	STATUS	CHART	APP VERSION
shardingsphere-proxy	sstest	3	2022-06-10 11:00:50.936187 +0800 CST	deployed	shardingsphere-proxy-1.1.0	5.1.2

```
→ shardingsphere-charts (master) x
```

```
→ shardingsphere-charts (master) x kubectl get pod -n sstest
```

NAME	READY	STATUS	RESTARTS	AGE
shardingsphere-proxy-bd57d7f97-62k9t	1/1	Running	0	37h
shardingsphere-proxy-bd57d7f97-b2q48	1/1	Running	0	37h
shardingsphere-proxy-bd57d7f97-xrq9p	1/1	Running	0	37h
shardingsphere-proxy-zookeeper-0	1/1	Running	0	19s

清理 Apache ShardingSphere-Proxy

```
→ shardingsphere-charts (master) ✕ helm uninstall shardingsphere-proxy -n sstest
release "shardingsphere-proxy" uninstalled
```

```
→ shardingsphere-charts (master) ✕ kubectl get pod -n sstest
```

NAME	READY	STATUS	RESTARTS	AGE
shardingsphere-proxy-bd57d7f97-42vmz	1/1	Terminating	0	2m38s
shardingsphere-proxy-bd57d7f97-hg4zw	1/1	Terminating	0	2m38s
shardingsphere-proxy-bd57d7f97-qqc8	1/1	Terminating	0	2m38s

总结

原始 Kubernetes 资源对象

- 配置：海量配置文件、需要对 Kubernetes 资源对象较为精通
- 版本管理：没有整体的应用版本管理，部分资源不能回滚
- 资源管理：清理时需要对每一个资源进行手动清理

Helm

- 配置：只需要配置一个 values 文件，屏蔽了底层的 Kubernetes 配置细节，只需要根据文档操作即可
- 版本管理：能够整体进行回滚，可以回滚所有的资源
- 资源管理：能够一键进行环境清理，支持多环境的快速复制

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SphereEx 官网 : <https://sphere-ex.com>

Apache ShardingSphere Website : <https://shardingsphere.apache.org>

Apache ShardingSphere GitHub : <https://github.com/apache/shardingsphere>

Apache ShardingSphere Slack Channel : <https://apacheshardingsphere.slack.com>

谢谢观看