The Tested Solution: Velero Setup YAML

This four-part setup ensures your entire cluster—metadata and persistent data—is backed up externally.

1. Velero Deployment (`velero-backup-setup.yaml`)

The server that orchestrates the backups. Note the critical use of ***`--features=EnableCSI`*** *for reliable PV backups.*

```yaml
# 1. velero-backup-setup.yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: velero
  namespace: velero-system
spec:
  replicas: 1
  selector:
    matchLabels:
      app: velero
  template:
    metadata:
      labels:
        app: velero
    spec:
      containers:
      - name: velero
        image: velero/velero:v1.12.0
        command:
        - /velero
        args:
        - server
        - --features=EnableCSI # Highly searched feature for PV snapshots!
        env:
        #  Cloud Provider Configuration (Credentials must be in a Secret
        - name: AWS_ACCESS_KEY_ID
          valueFrom:
            secretKeyRef:
              name: velero-credentials
              key: aws-access-key-id
        - name: AWS_SECRET_ACCESS_KEY
          valueFrom:
            secretKeyRef:
              name: velero-credentials
              key: aws-secret-access-key
        - name: AWS_REGION
          value: "us-east-1"
        volumeMounts:
        - name: plugins
          mountPath: /plugins
        - name: scratch
          mountPath: /scratch
        - name: certs
          mountPath: /certs
          readOnly: true
      volumes:
      - name: plugins
        emptyDir: {}
      - name: scratch
        emptyDir: {}
      - name: certs
        hostPath:
          path: /etc/ssl/certs
```

2. Backup Storage Location (`BackupStorageLocation`)

*This points Velero to your secure **AWS S3** bucket (the **Backup Storage**).*

BackupStorageLocation

```yaml
# 2. Backup Location (points Velero to your S3 bucket)
apiVersion: velero.io/v1
kind: BackupStorageLocation
metadata:
  name: aws-backup-location
  namespace: velero-system
spec:
  provider: aws
  objectStorage:
    bucket: my-kubernetes-backups
    prefix: cluster-backups
  config:
    region: us-east-1
    s3ForcePathStyle: "false"
```

3. Daily Schedule (`Schedule`)

*The **Scheduled Kubernetes Backup** manifest. It runs daily and defines a 30-day retention (`ttl`).*

```yaml
# 3. Backup Schedule (Daily at 2 AM)
apiVersion: velero.io/v1
kind: Schedule
metadata:
  name: daily-backup
  namespace: velero-system
spec:
  schedule: "0 2 * * *"  # Daily at 2 AM
  template:
    includedNamespaces:
    - production
    - database
    excludedResources:
    - nodes
    - events
    - backups.velero.io
    - restores.velero.io
    ttl: 720h0m0s  #  Keep backups for 30 days
    storageLocation: aws-backup-location
```

4. Restore Example (`Restore`)

*The **Restore Test** manifest. This is the definition of a successful **K8s DR** plan. You use this to bring the whole environment back.*

```yaml
# 4. Restore Example (The key to quick recovery!)
apiVersion: velero.io/v1
kind: Restore
metadata:
  name: production-restore-2024
  namespace: velero-system
spec:
  #  Change this to the specific backup name you need to restore from
  backupName: daily-backup-20241201-020000
  includedNamespaces:
  - production
  excludedResources:
  - storageclasses.storage.k8s.io
  restorePVs: true #  Ensures your persistent data is restored!
```