

KUBERNETES DR MIGRATION – SOURCE vs DR CLUSTER VALIDATION GUIDE

Objective:

Ensure Source and Disaster Recovery (DR) Kubernetes clusters are identical before and after application migration.

1. WHAT MUST MATCH

- Kubernetes version & APIs
- Node OS, kernel, kubelet, container runtime
- CNI & networking objects
- Storage classes, PVs, PVCs
- RBAC, secrets, security policies
- Application configuration & replicas
- Stateful data

2. CLUSTER METADATA COLLECTION

```
kubecttl cluster-info
kubecttl version --output=yaml
kubecttl api-resources
kubecttl api-versions
```

3. EXPORT FULL CLUSTER STATE

Namespaced objects:

```
kubecttl get all --all-namespaces -o yaml > workloads.yaml
kubecttl get cm,secret,svc,ingress,networkpolicy -A -o yaml > configs.yaml
```

Cluster-wide objects:

```
kubecttl get nodes -o yaml > nodes.yaml
kubecttl get storageclass,pv,pvc -A -o yaml > storage.yaml
kubecttl get crd -o yaml > crds.yaml
kubecttl get clusterrole,clusterrolebinding,role,rolebinding -o yaml > rbac.yaml
```

4. NODE & RUNTIME VALIDATION

```
kubecttl get nodes -o wide
kubecttl describe nodes > node-details.txt
```

On nodes:

```
uname -r
cat /etc/os-release
kubelet --version
containerd --version
```

5. NETWORKING PARITY

```
kubecttl get svc -A
kubecttl get endpoints -A
kubecttl get ingress -A
```

```
kubectrl get networkpolicy -A
```

Check CNI:

```
kubectrl get pods -n kube-system
```

6. STORAGE VALIDATION

```
kubectrl get sc
kubectrl get pvc -A
kubectrl get pv
```

Validate access modes, reclaim policy, CSI driver.

7. APPLICATION PARITY

```
kubectrl get deploy,sts,ds -A
kubectrl rollout status deploy/ -n
```

8. AUTOMATED CSV DIFF

```
kubectrl get deploy -A -o json | jq -r '
.items[] |
[ .kind,
.metadata.namespace,
.metadata.name,
(.spec.replicas // 1),
.spec.template.spec.containers[0].image ] | @csv' > workloads.csv
```

Compare source and DR:

```
diff source/workloads.csv dr/workloads.csv
```

9. DR TOOL (OPTIONAL)

Velero backup & restore supported for cluster and volumes.

10. FINAL VALIDATION CHECKLIST

- ✓ Kubernetes version matched
- ✓ Nodes and runtime matched
- ✓ Networking identical
- ✓ Storage behavior verified
- ✓ RBAC & secrets restored
- ✓ Applications tested successfully

This document can be used as:

- DR Runbook
- Migration Validation Checklist
- Audit Evidence