

## 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.

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### 1. WHAT MUST MATCH

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- 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

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### 2. CLUSTER METADATA COLLECTION

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

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### 3. EXPORT FULL CLUSTER STATE

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#### Namespaced objects:

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

#### Cluster-wide objects:

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

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### 4. NODE & RUNTIME VALIDATION

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

#### On nodes:

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

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### 5. NETWORKING PARITY

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```
kubectl get svc -A  
kubectl get endpoints -A  
kubectl get ingress -A
```

```
kubectl get networkpolicy -A
```

Check CNI:

```
kubectl get pods -n kube-system
```

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## 6. STORAGE VALIDATION

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```
kubectl get sc
```

```
kubectl get pvc -A
```

```
kubectl get pv
```

Validate access modes, reclaim policy, CSI driver.

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## 7. APPLICATION PARITY

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```
kubectl get deploy,sts,ds -A
```

```
kubectl rollout status deploy/ -n
```

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## 8. AUTOMATED CSV DIFF

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```
kubectl 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
```

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## 9. DR TOOL (OPTIONAL)

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Velero backup & restore supported for cluster and volumes.

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## 10. FINAL VALIDATION CHECKLIST

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

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This document can be used as:

- DR Runbook
- Migration Validation Checklist
- Audit Evidence