Day 3 Storage challenge

Proxmox HA
Storage Challenge

Eliminate Single Points of Failure

Storage Replication Solutions

ZFS Scheduled Replication

- ✓ Snapshot-based
- ✓ Scheduled sync
- ✓ Simple setup
- ✓ Cross-node copies
- ⚠ Manual failover needed

ZFS Architecture:

[Node1-VM] → [Node2]
↓ ↓
[Primary] [Backup]
↓ ↓
[Node3-Backup]

Scheduled Replication
(15 min intervals)

Ceph Distributed Storage

- ✓ Real-time Replication
- ✓ Self-healing
- ✓ Scalable
- ✓ No Single Point of Failure
- ✓ Instant failover

Ceph Architecture:

[Node1] ← → [Node2]
↕ ↕
[Node3] ← → [Pool]

Unified Storage Cluster
VM can run on any node

Decision Matrix

Feature	Ceph	ZFS Replication
Setup Complexity	High	Low
Failover Time	Instant	Manual
Data Loss Risk	None	Possible
Resource Usage	Higher	Lower
Scalability	Excellent	Good

Implementation Steps

Common Preparation:
1. Plan network topology
2. Configure cluster networking
3. Set up shared storage

For Ceph:
1. Install Ceph packages
2. Create monitors & OSDs
3. Configure pool & placement

For ZFS:
1. Create ZFS datasets
2. Set up replication jobs
3. Configure failover procedures

Considerations:
- Network bandwidth
- Storage capacity
- Backup strategies
- Monitoring setup