



Case Study

OSL Cluster Integration

SNW 26th of October 2010

Agenda

OSL Case Study

- Commerzbank overview
- Solaris as a service infrastructure
- OSL cluster integration
- case study

Commerzbank AG

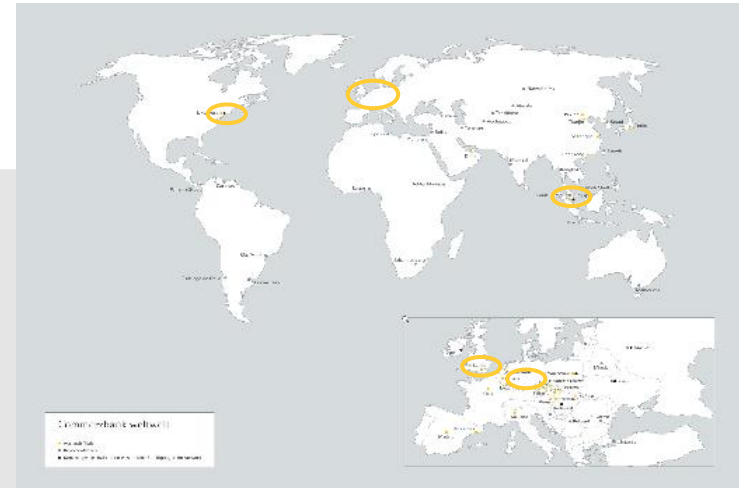
- germany's second-largest bank
- one of the leading banks for private and corporate customers in Germany
- one of the leading banks in Europe
- over 60000 employees
- 14.5 million customers worldwide
- 1200 branches worldwide
- densest branch network of any German private bank
- merging of Dresdner Bank into Commerzbank in late 2008

➔ major IT integration project



Unix Engineering

- operating system scope
 - AIX
 - Red Hat Enterprise
 - Solaris SPARC & x86
- 4th level support
- vendor contact
- global Unix infrastructure
- follow the sun support



Oracle Solaris @ Commerzbank

- 2300 physical nodes
- 4800 total SunOS instances
- portfolio of Sun servers ranging from X4100 to M8000
- data centers Frankfurt/Main, London, Singapore and New York
- support locations in Frankfurt/Main, London, New York, Prague and Singapore



Requirements

- disaster recovery and security
- cost efficiency
- stability and maintainability
- flexibility, scalability and fast provisioning
- high availability



Solaris Infrastructure as a Service

- Solaris x86 and SPARC
- based on industrial standard products
 - Solaris 10 zone virtualisation
 - cluster integration
 - Solaris zone resource management (CPU & Memory)
 - SAN Storage (as as Service)



Solaris as a Service: Technology Stack

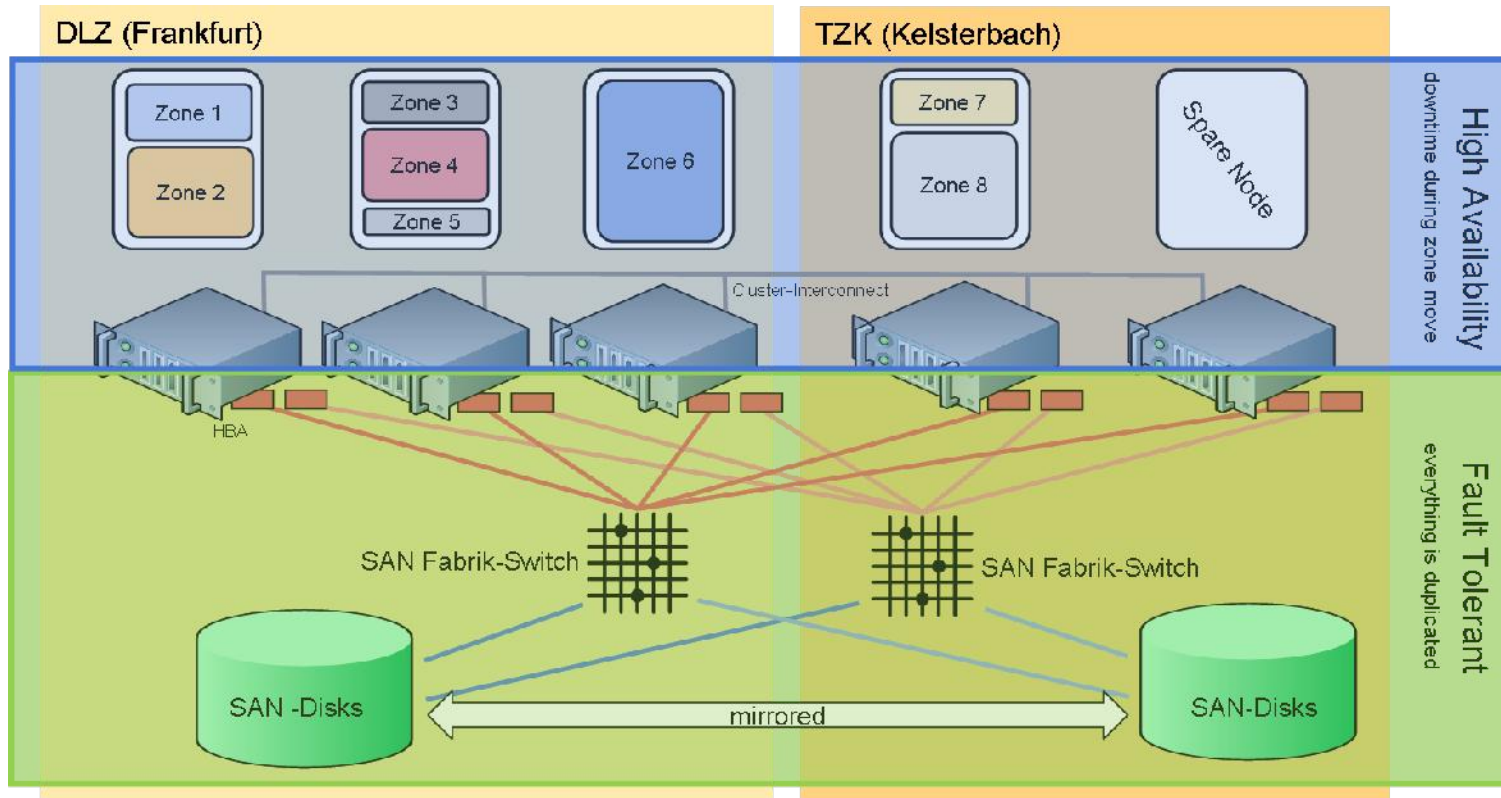
Layer	Product
Application Integration	SMF
Virtualization	Solaris Zones
Resource Management	CPU Fair Share Scheduler & Memory Resource Control
Cluster	Sun Cluster 3.2 or OSL Cluster
Filesystem	ufs, zfs, and qfs
Raw devices	SVM raw or zvol
Volume Manager	zpool Solaris Volume Manager – phase out ongoing
Network	Trunking or Link Aggregation
IO Multipathing	STMS
OS	Solaris 10
Hardware Platform	Sun SPARC and x86 server
SAN & Storage	Enterprise Storage Server

Solaris as a Service: Installations Basis

- 2000+ virtual instances (Solaris Zones)
- 150+ clusters
 - 5 (7 since 2010) node cluster
 - 4 (6 since 2010) primary nodes
 - one spare node
- 500+ physical server



Solaris as a Service: Infrastructure Overview



Solaris as a Service: Hosted Platforms and Applications

- platform as a service approach for
 - Sybase ASE and IQ data base
 - Oracle data base
 - WebSphere
 - SAP
 - ...



Impact of Virtualisation and Consolidation

fast (virtual) server provisioning

- advanced data centre capacity management & planning

consolidation

- LUN count per cluster node & error recovery situations
- storage + server consolidation
= high performance density



SaaS Consolidation Classes and Special Requirements

consolidation class			SaaS
SaaS premium	SaaS OSL	SaaS QFS	add on
SaaS dedicated cluster	<10% cluster		base
SaaS dedicated node	<2% nodes		
SaaS shared node	default		

Why OSL Storage Cluster? (1/2)

- enterprise data centre aware
- virtualisation aware
- robust design
- flexibility of product & company
- competence and know-how



OSL Storage Cluster 3.1 Produktübersicht

Extended Data Management (XDM)

Datenspiegelung
Backup-to-Disk
Online-Datenmigration
Volume Cloning

Application Control Option (ACO)

Hochverfügbarkeit
Clustering
Anwendungsintegration
Adaptive Computing

Basis Packet (Base)

Speichervirtualisierung
Globales Storage Management
Multipathing
Bandbreitensteuerung

Why OSL Storage Cluster? (2/2)

- easy integration into SaaS
- easy transformation

from SaaS base to SaaS OSL

including data mobility



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Case Study: Application Requirements

not covered by SaaS Base

- instant restore
- minimal backup window
- minimal maintenance window
- ease and performance of data sync between production and shadow production with minimum downtime
- application mirroring



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Case Study: Just The Facts

cluster level

- 5 node Sun M8000 cluster
- dedicated node consolidation class
- 34 TB storage
- hosting two top33 applications (A+B)
- co-hosting of PROD and UAT

application level

- > 2 TB (growing to > 4 TB) data base



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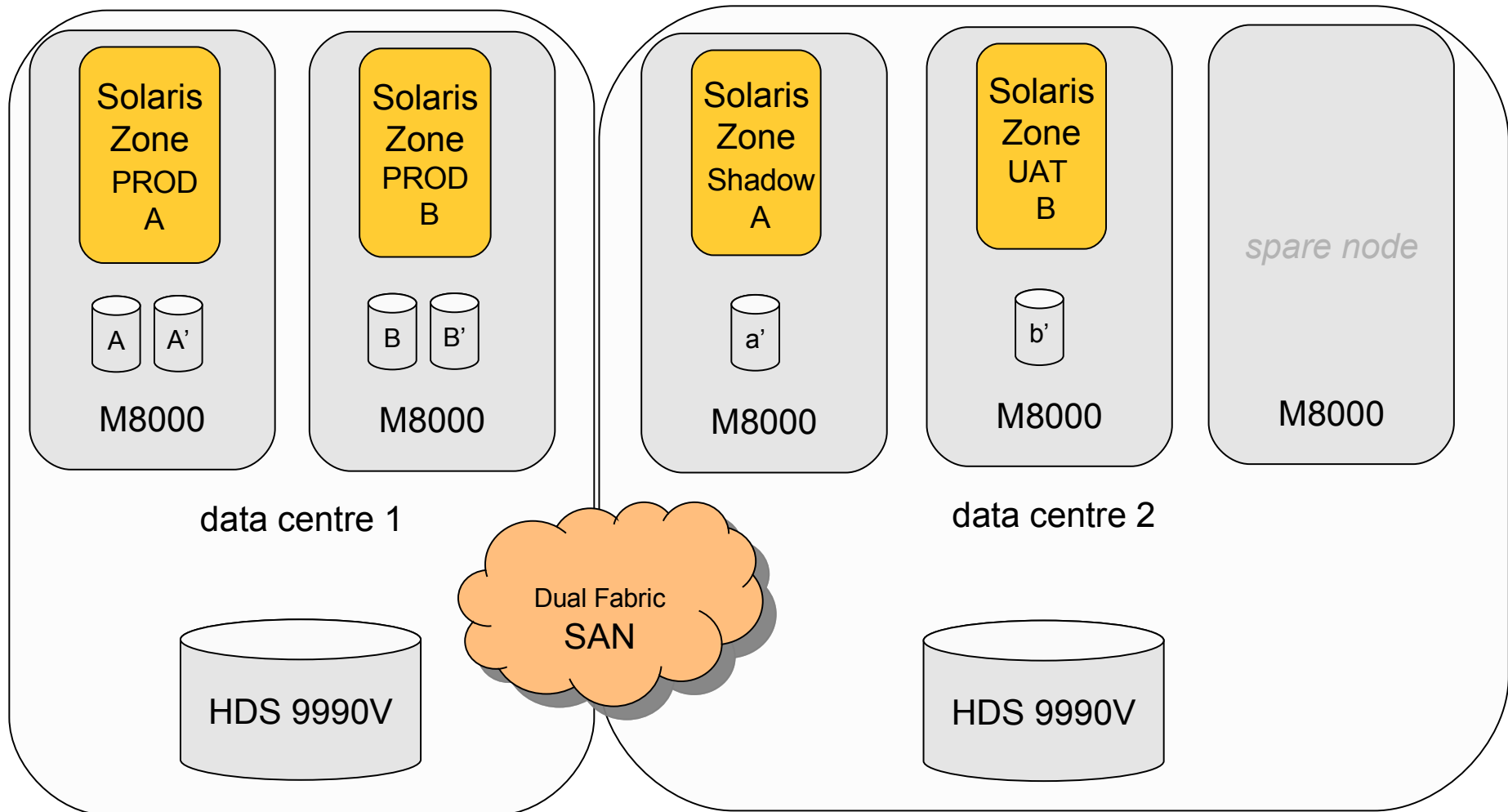
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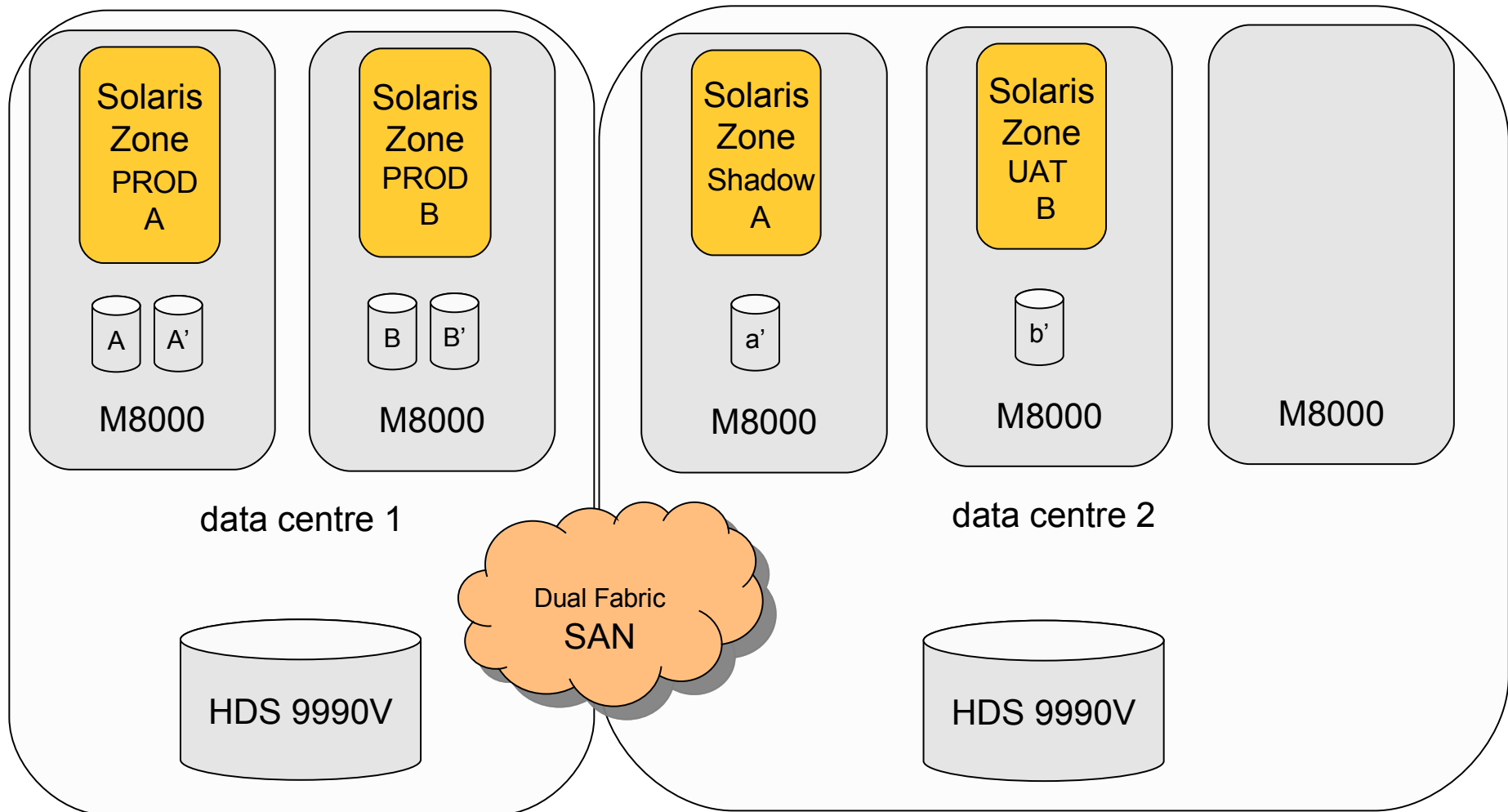
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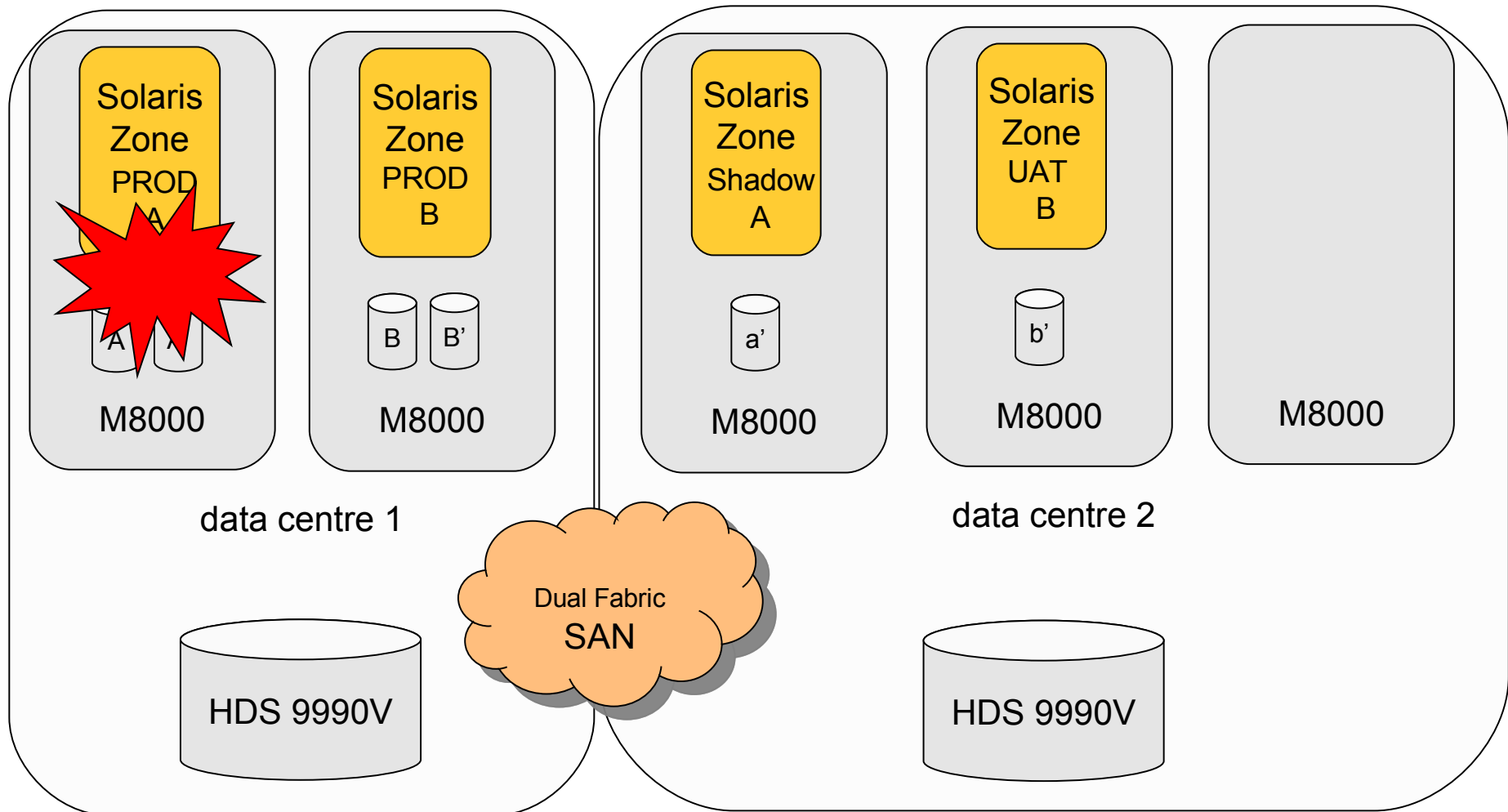
Case Study: SaaS OSL Cluster



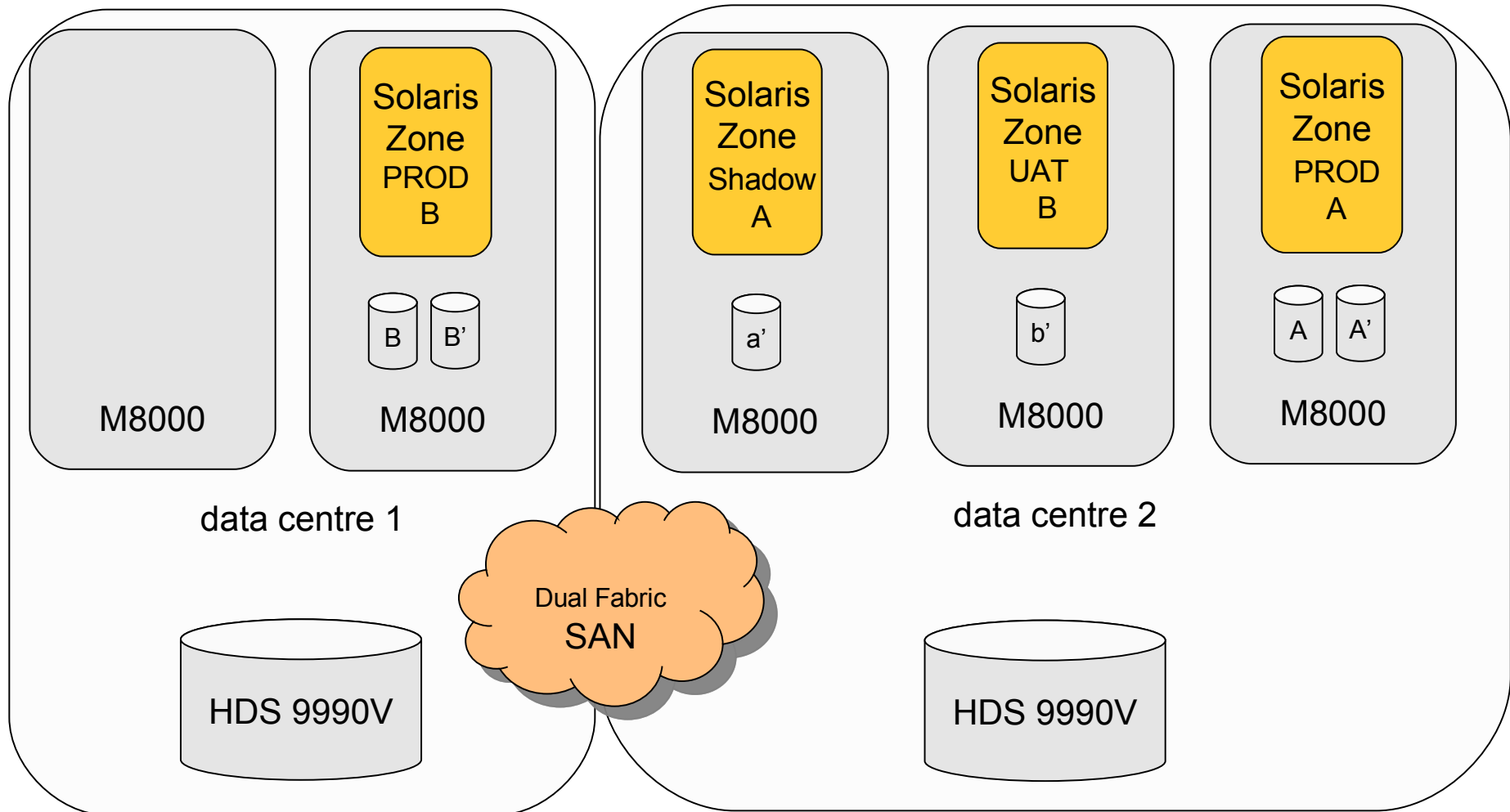
SaaS: High Availability Scenario



SaaS: High Availability Scenario

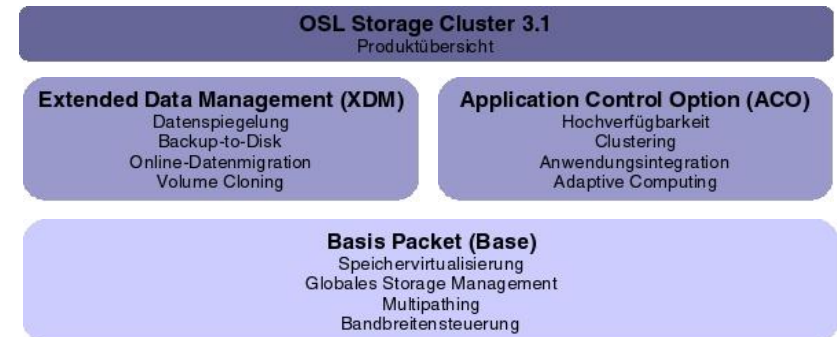


SaaS: High Availability Scenario

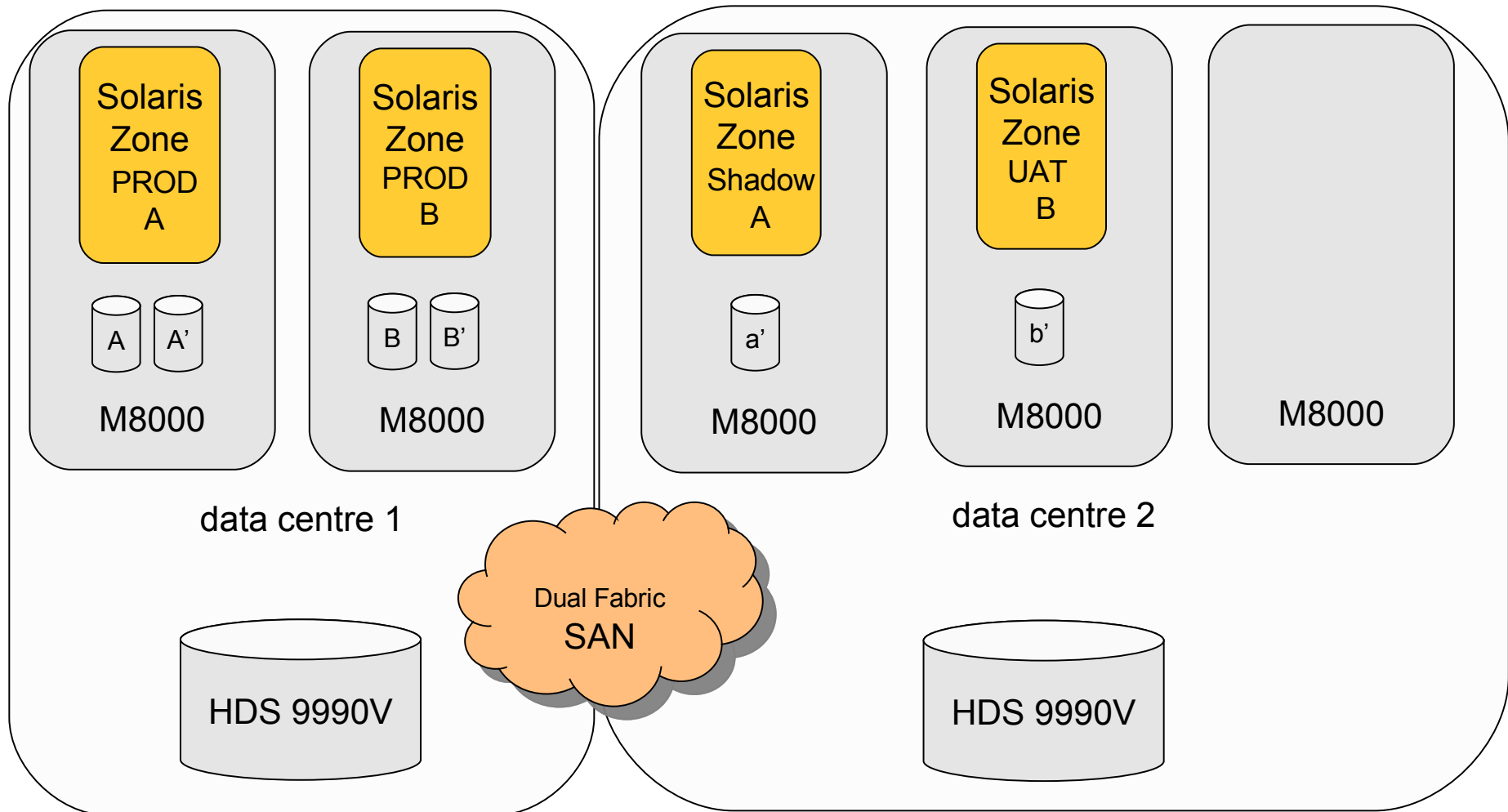


SaaS: High Availability Scenario

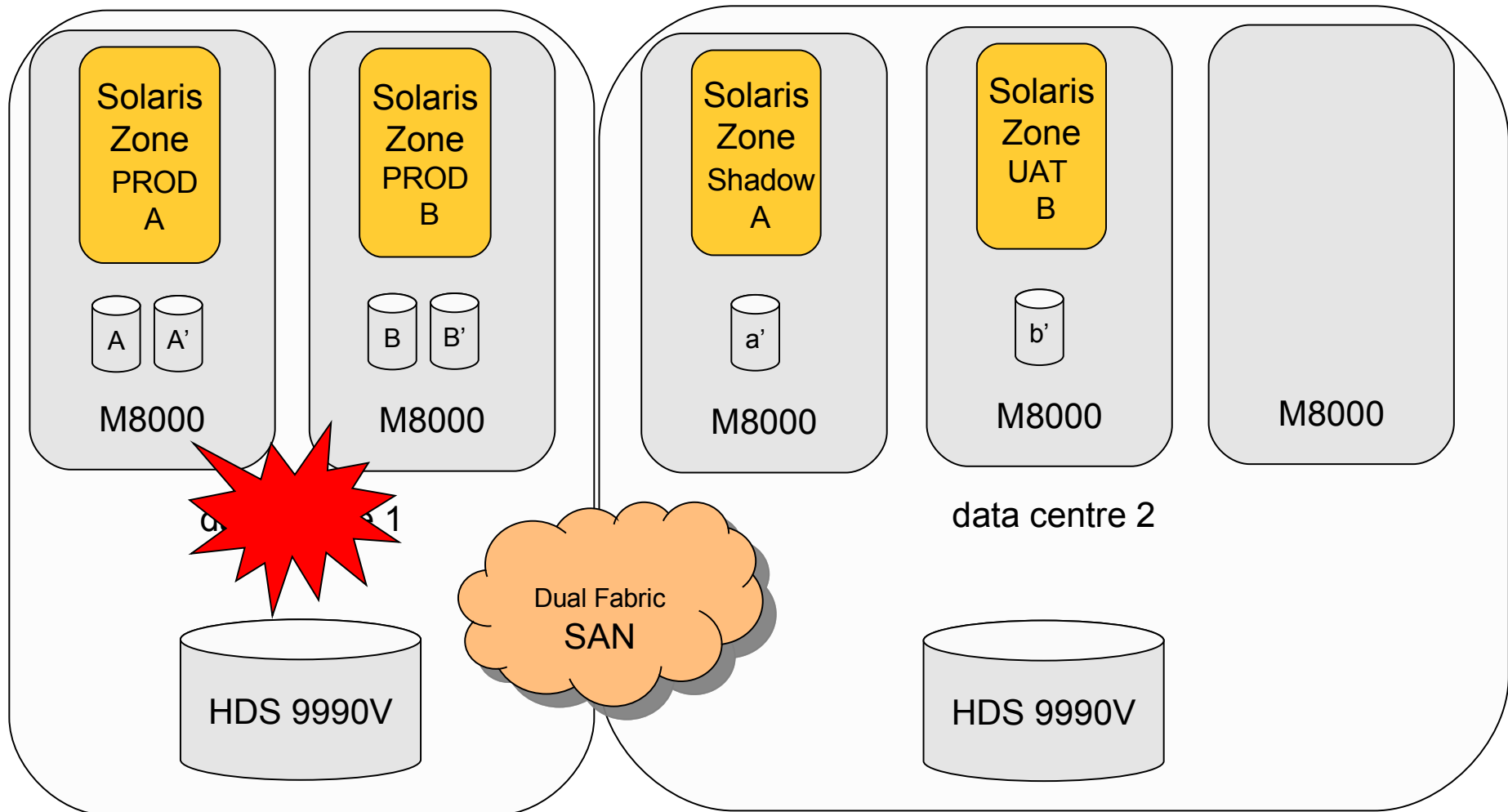
- **node failure** is covered by OSL cluster.
- Only 25% hardware overhead
- additional node failure is covered by shared node concept
 - ➔ administrative intervention
 - ➔ performance reduction



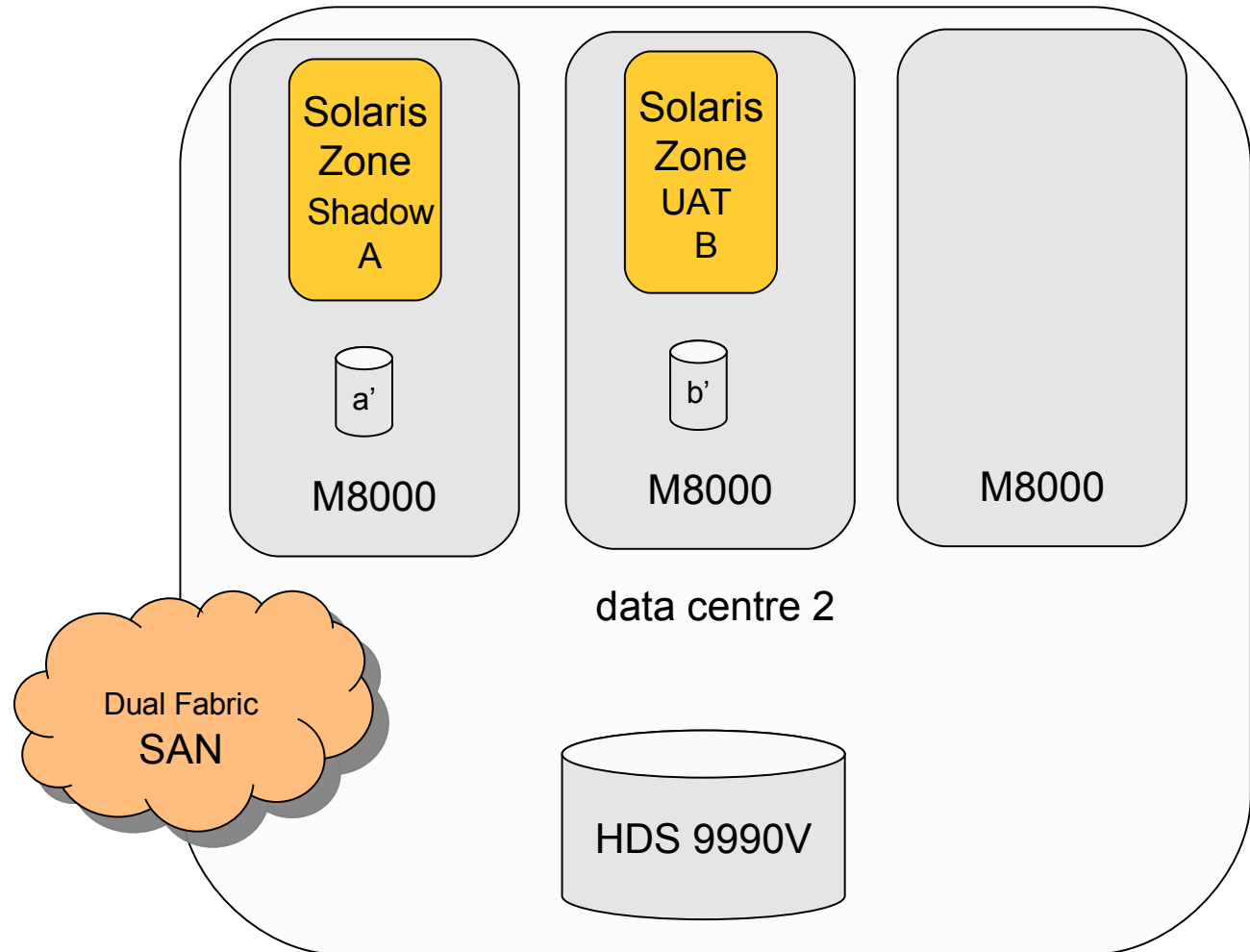
SaaS: Disaster Recovery Scenario



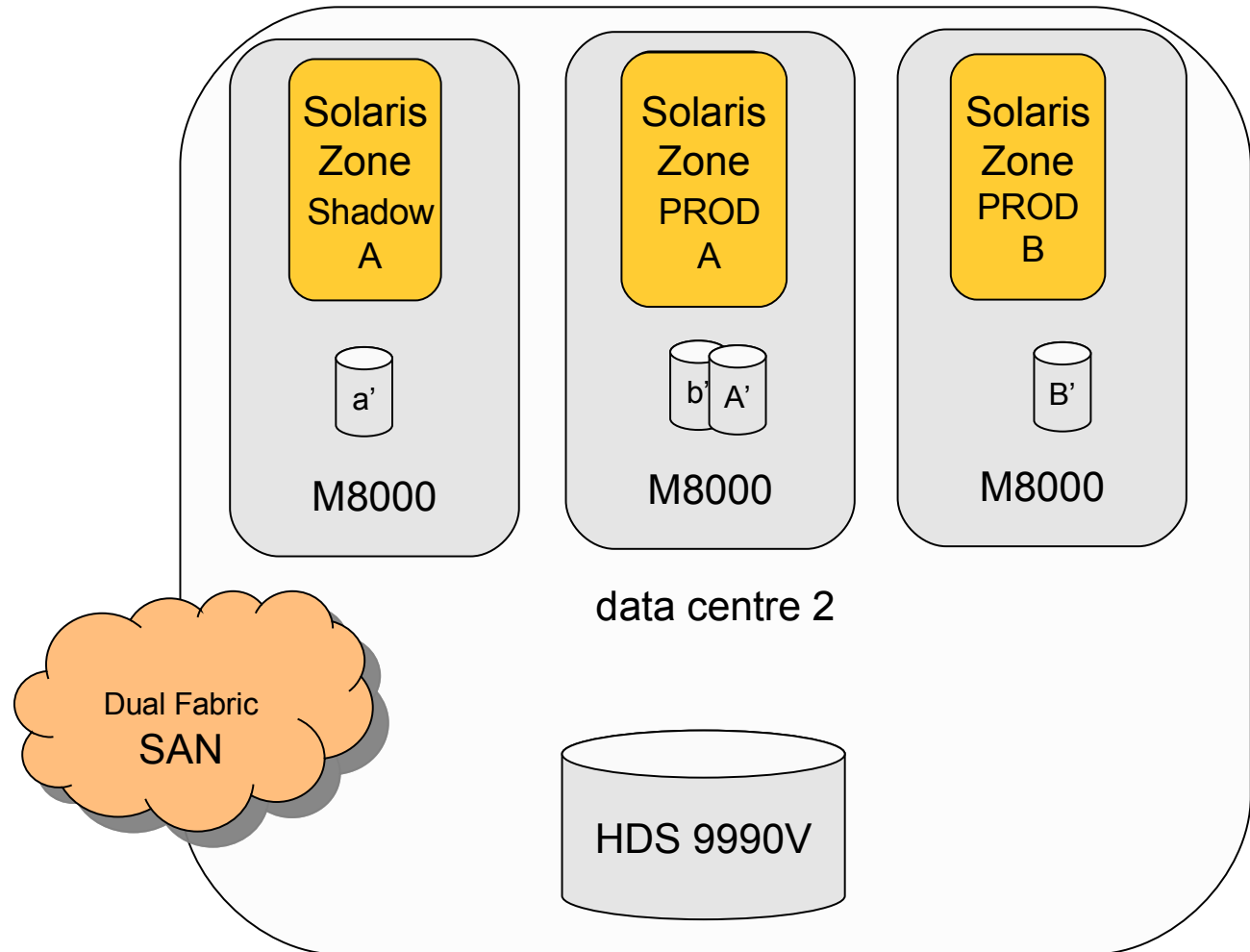
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SaaS: Disaster Recovery Scenario

DR resource planning conditions

- PROD + UAT Resources are co-hosted on the same cluster
- no spare node (HA) during DR case
- QA: performance monitoring & management



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OSL Terminology

OSL application

- application resource description
- Oracle DB in Solaris zone

OSL Universe

- a data mirror
- (application aware) atomic split

OSL Application coning

- application resource description and
- application aware volume manager



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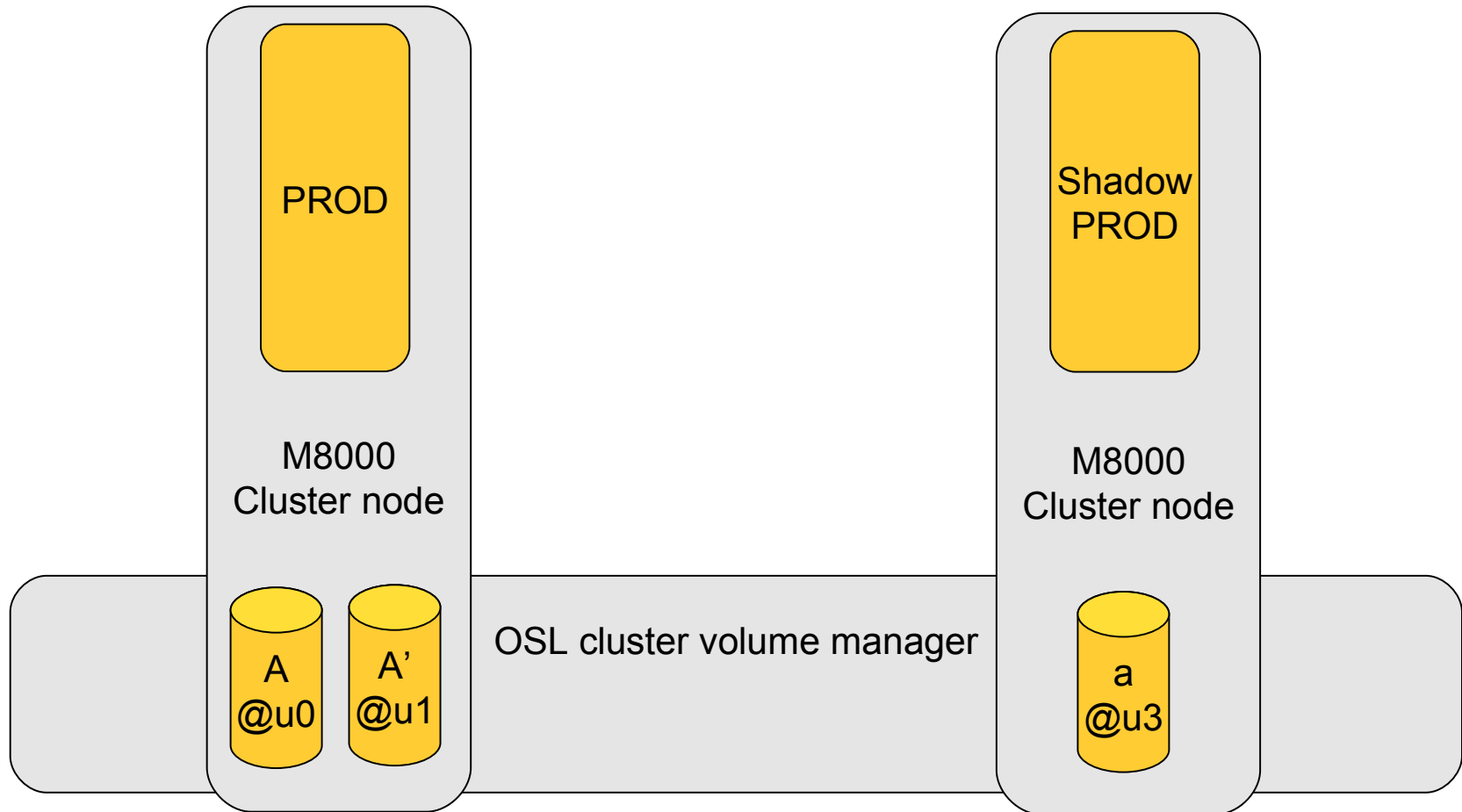
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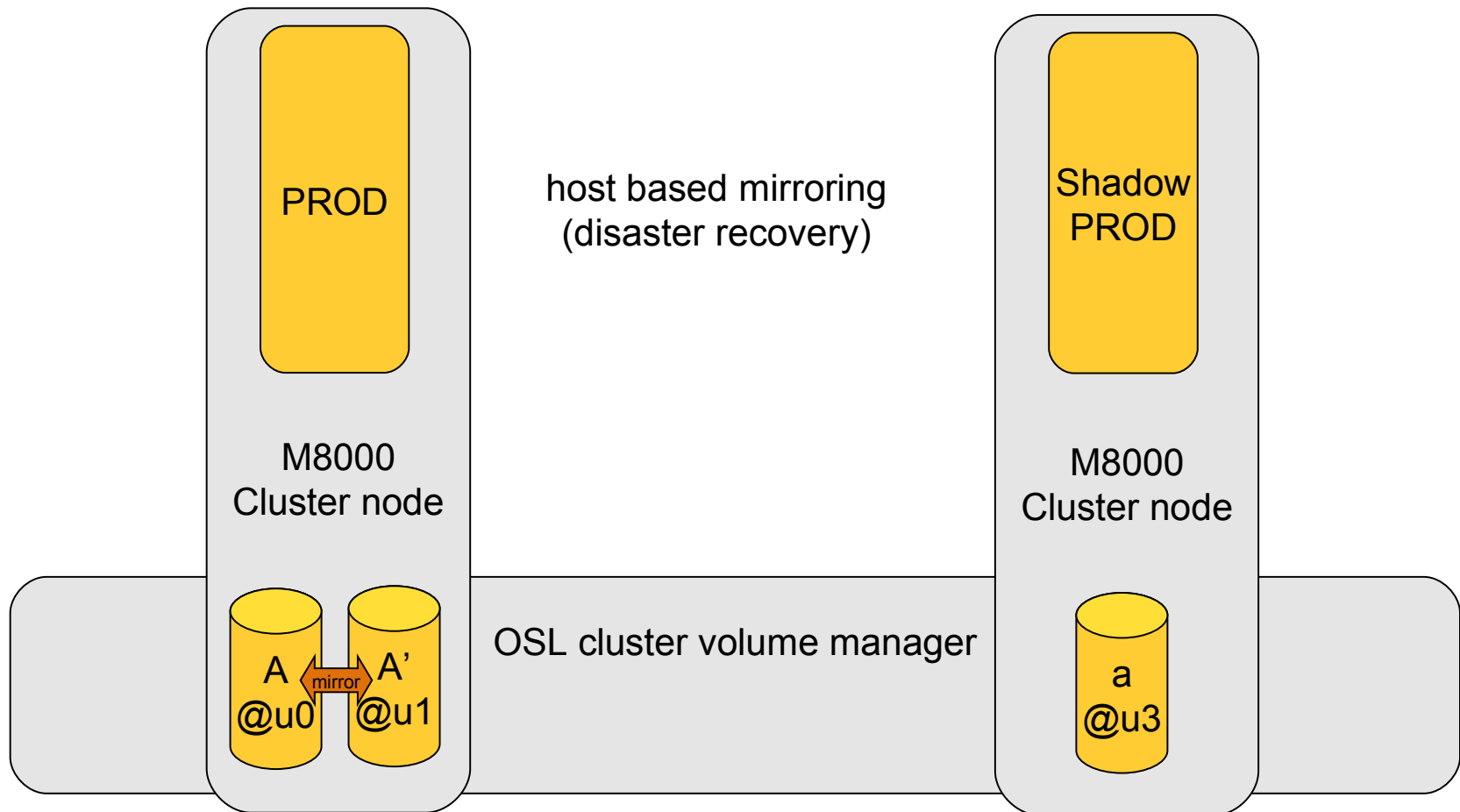
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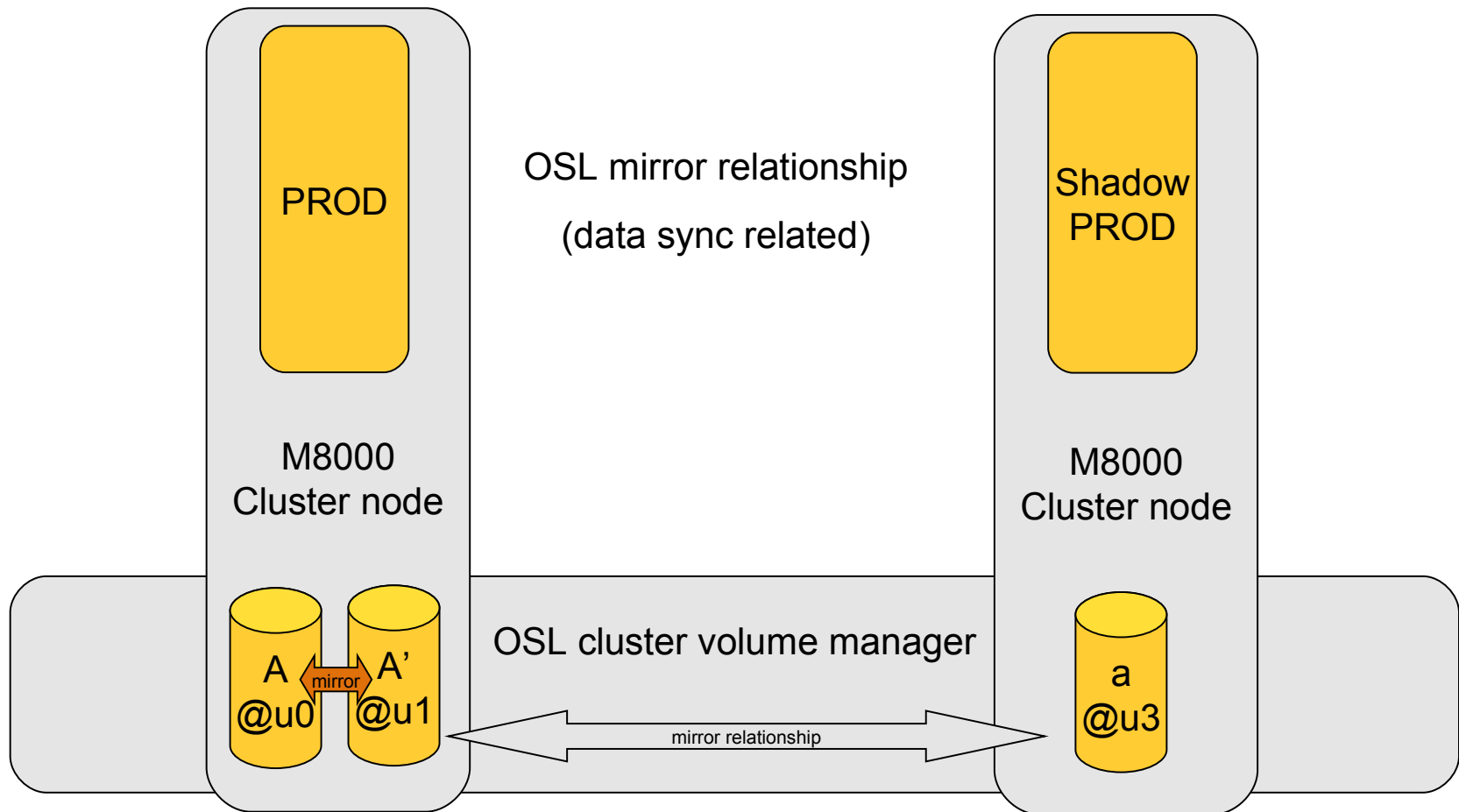
SaaS OSL Advanced Cluster Data Management



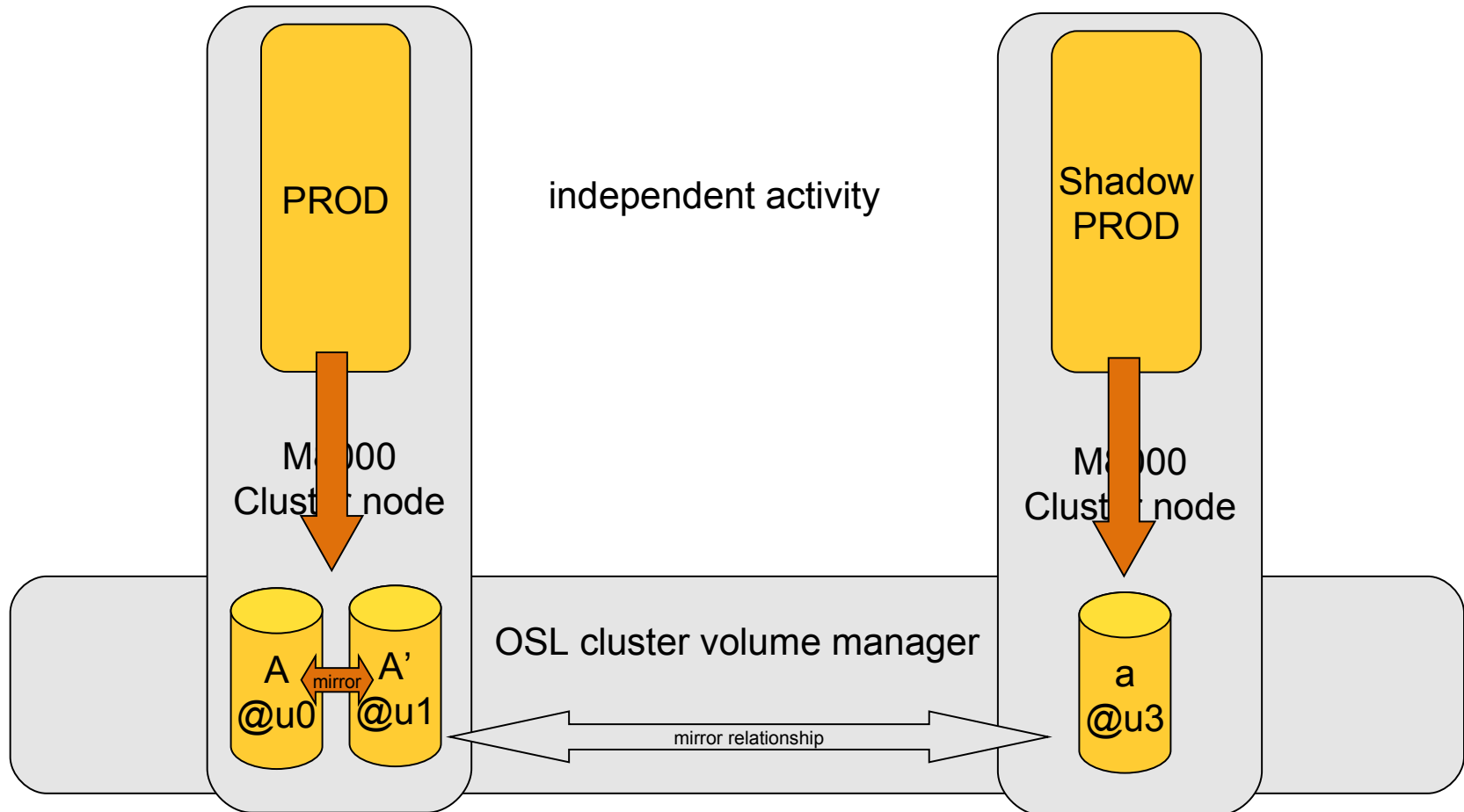
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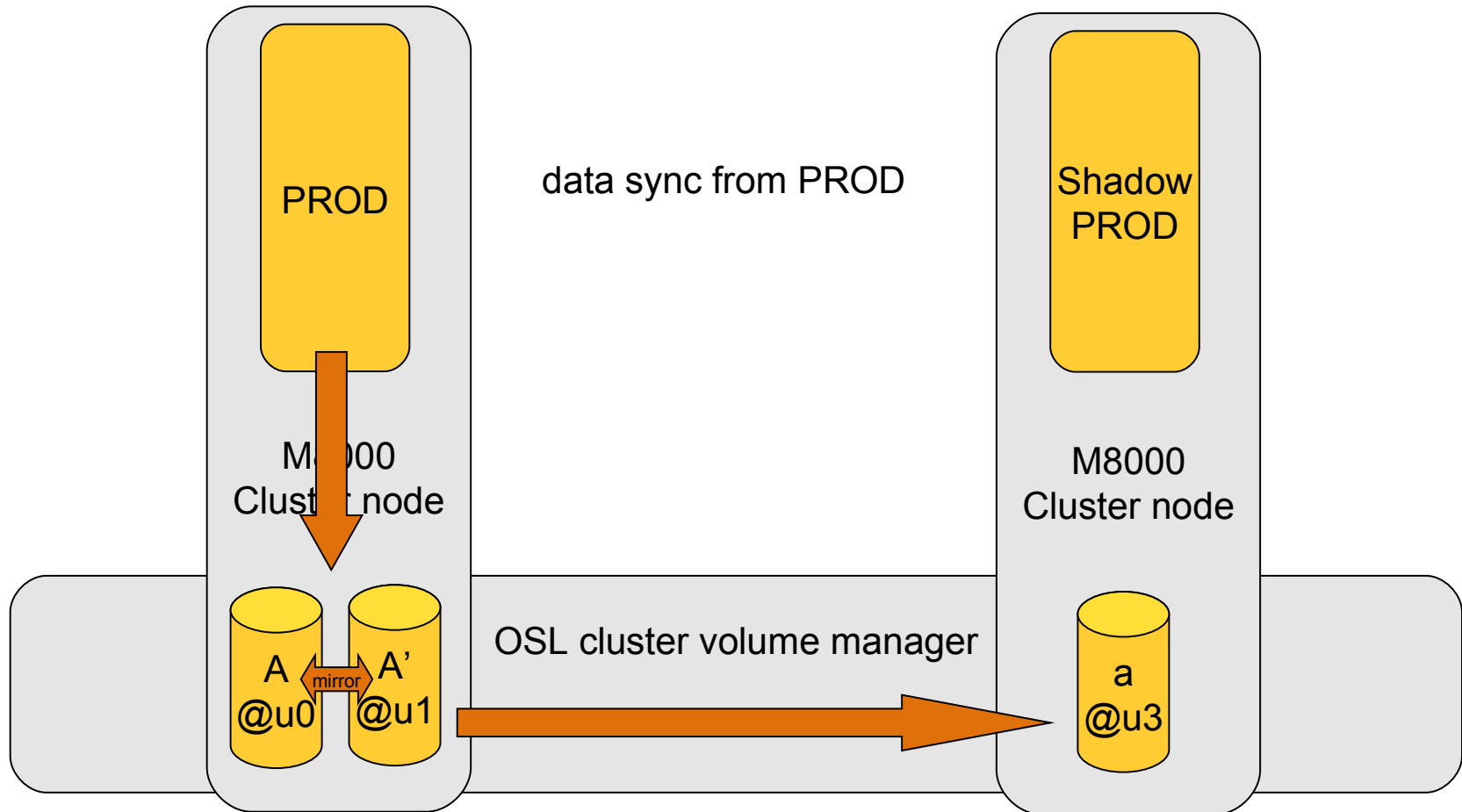
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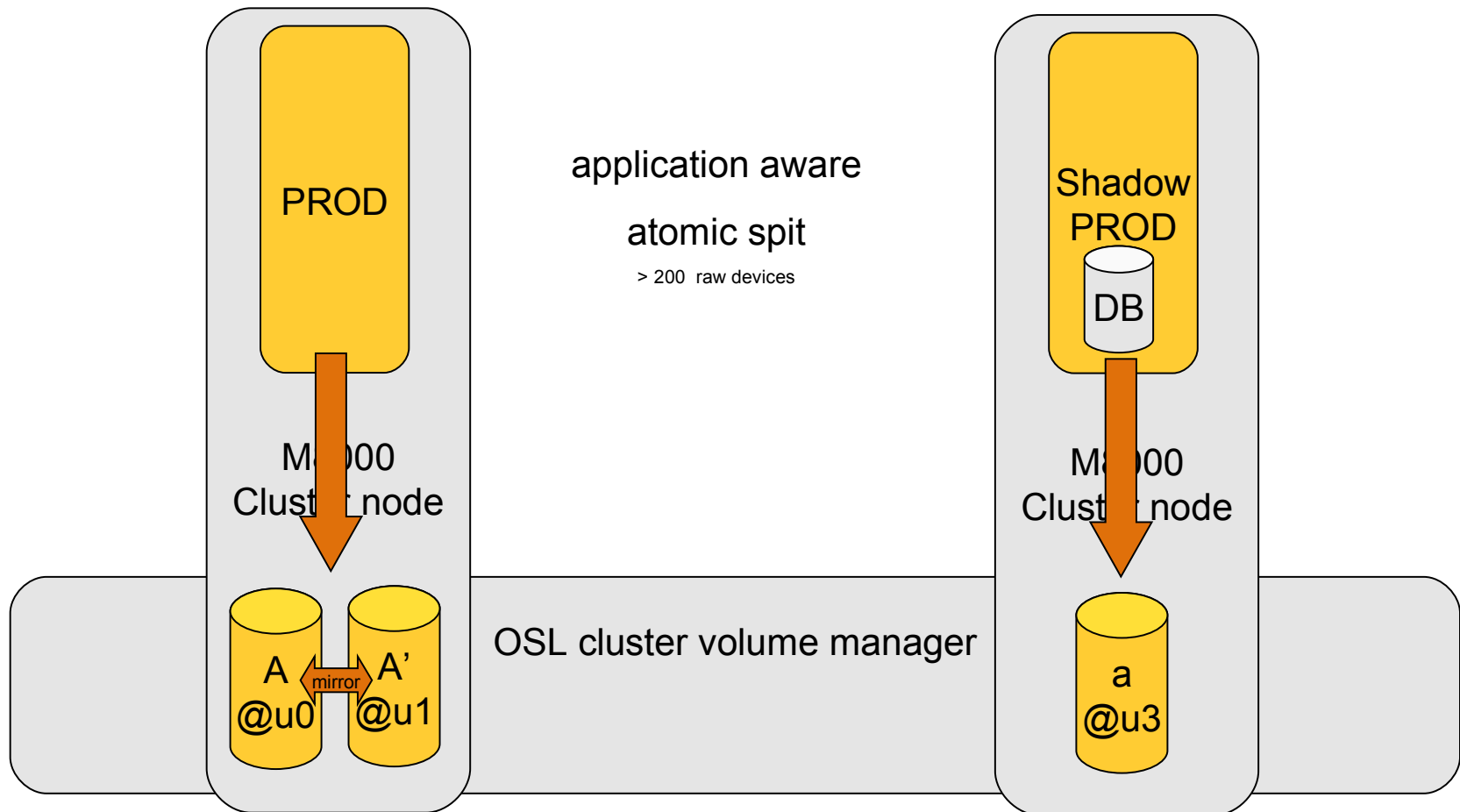
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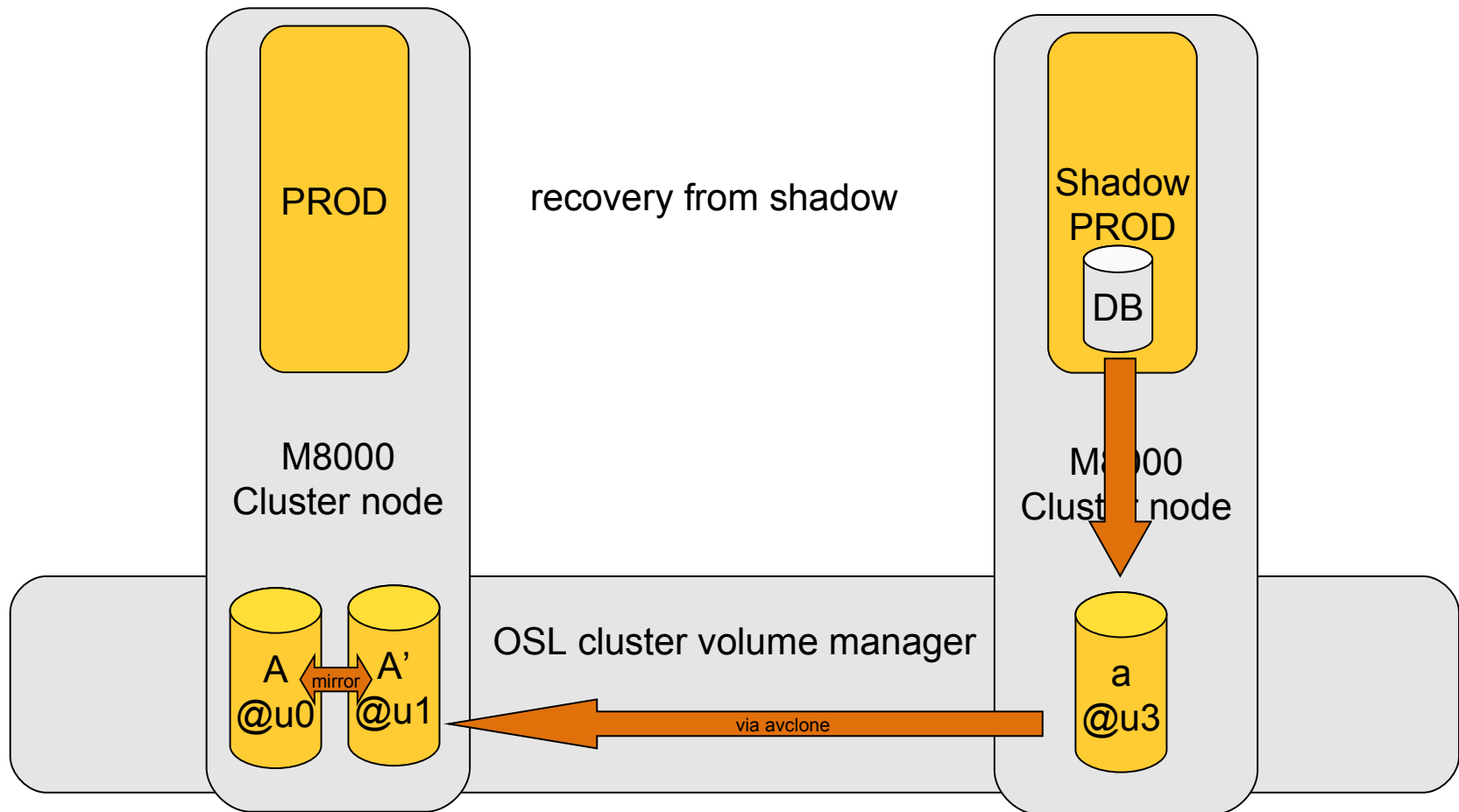
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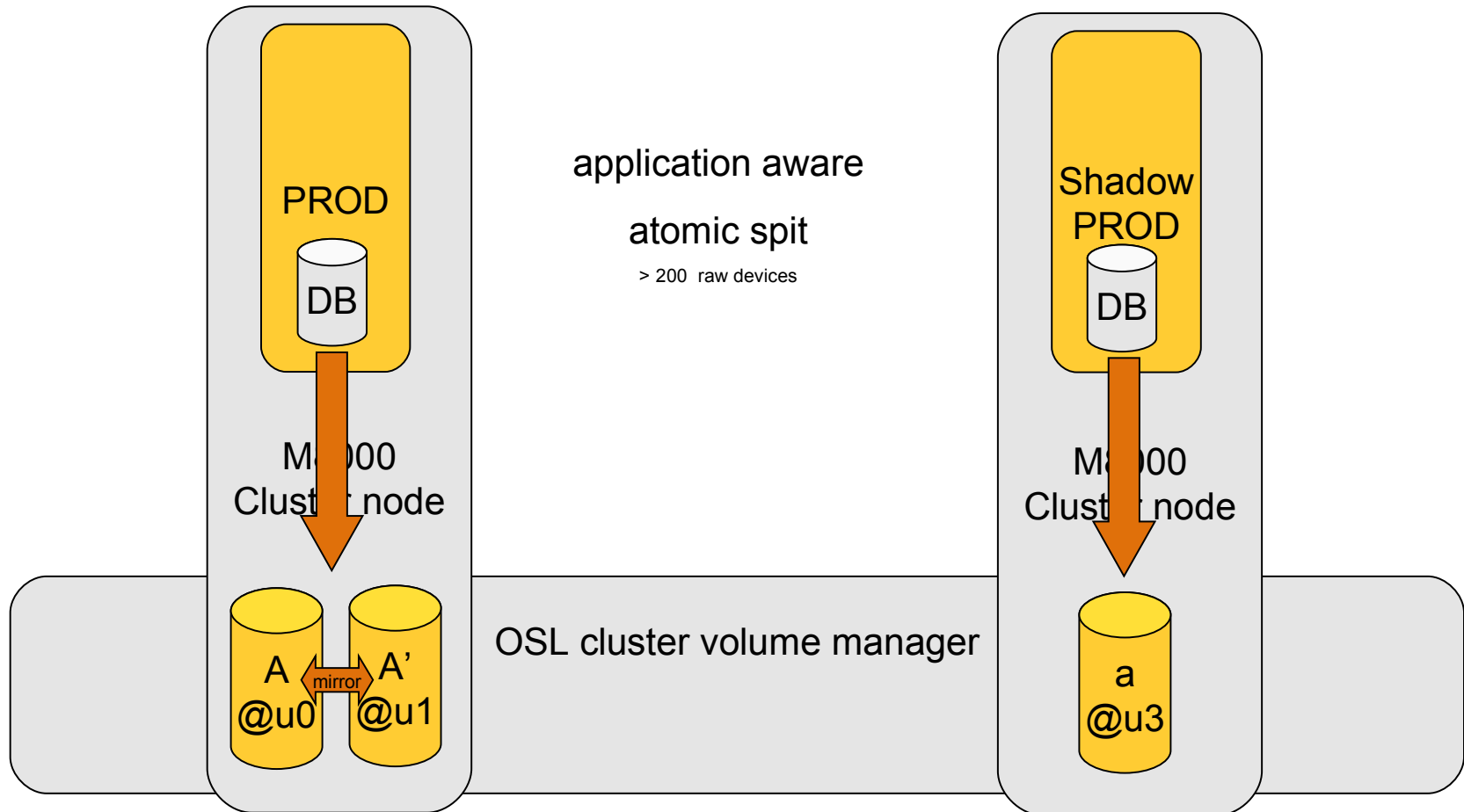
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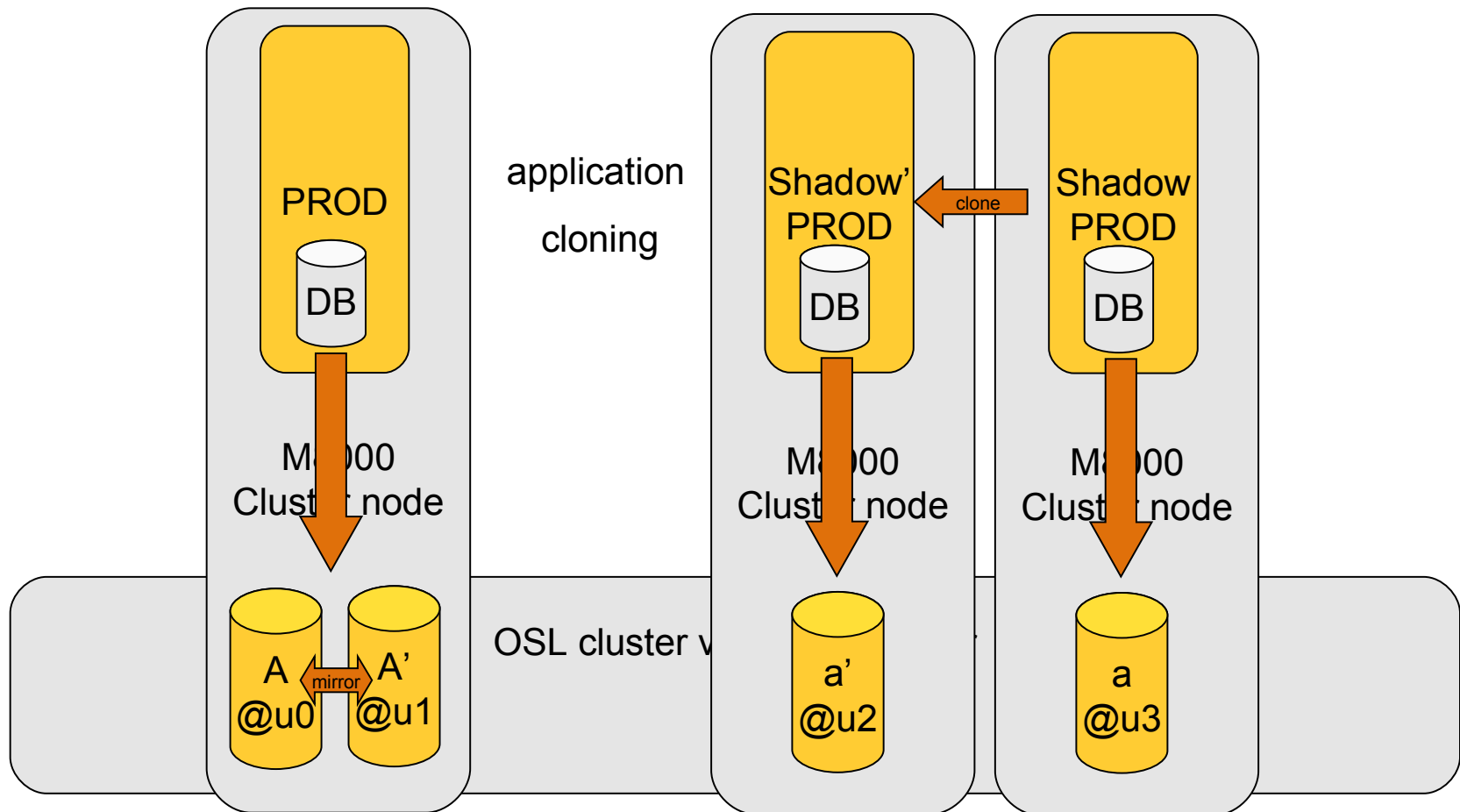
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SaaS OSL Use Cases And Integration

OSL Universe use cases

- immediate restore

‘shadow PROD’ use cases

- application level HA
- parallel run & roll back
- backup from spare node

job scheduling integration



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Conclusion

OSL is

- 'data centre' aware
- data centre disaster recovery aware



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