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# **Near Zero Downtime Oracle Database Migration to Dell PowerEdge 12<sup>th</sup> Generation Servers and Dell Compellent Storage Systems**



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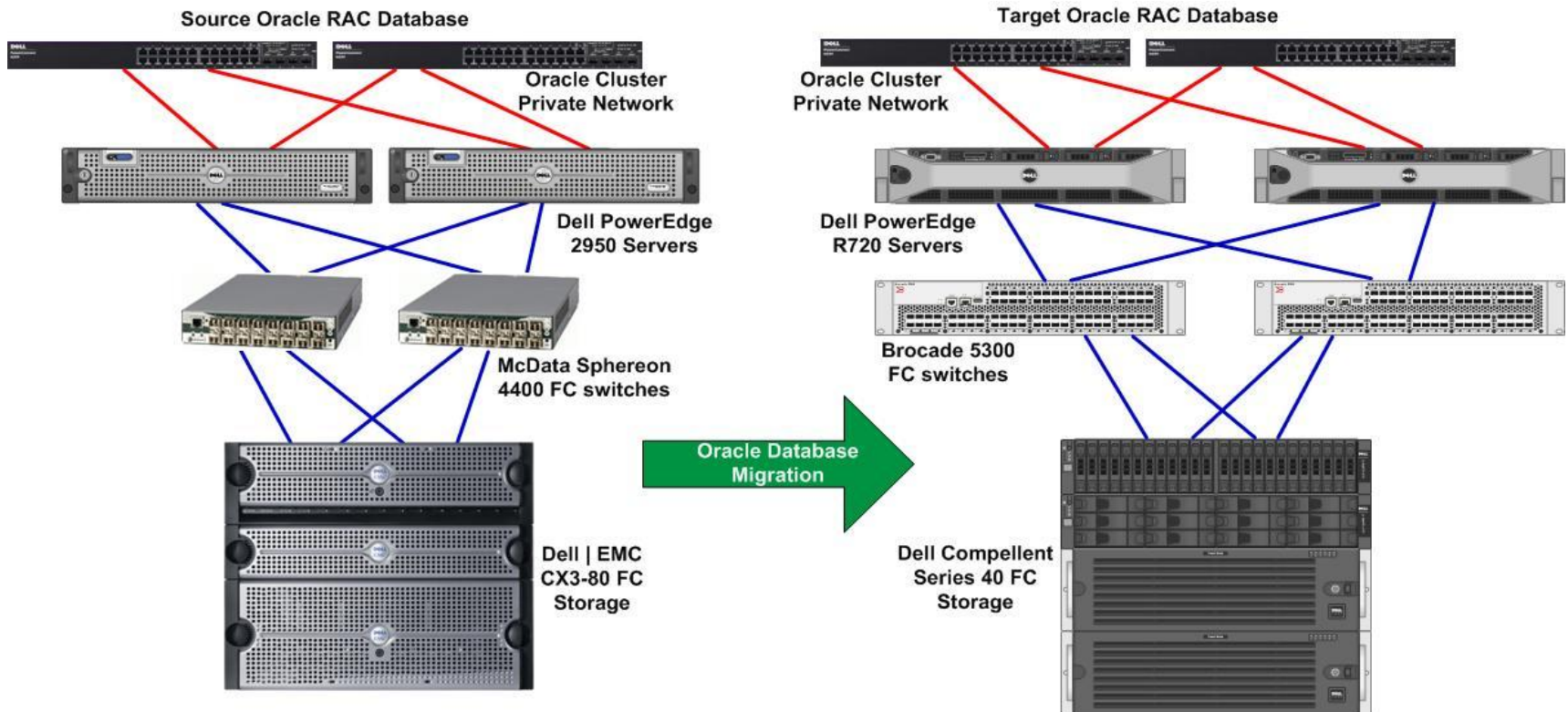
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# Oracle Database Migration Challenges

- A routine operation in most IT organizations
  - Modernization, consolidation and platform migration
- Migration delivers improved computing power, faster performance, new functions and features, and lower cost of ownership
- Invites a lot of risks and long operational outages
- Challenges for IT administrators: complexity, data integrity requirements, 24x7 availability requirements of critical applications






# Migration Configuration



- Target Oracle RAC database environment contains newer releases of both hardware and software
  - Latest servers, storage systems, and SAN switches
  - Newer operating systems releases on the database servers
  - Oracle database versions remain unchanged

# Dell 12<sup>th</sup> Generation PowerEdge Servers

- Dell 12<sup>th</sup> Generation PowerEdge Servers
  - Newest addition to the Dell PowerEdge server family
  - Feature the latest Intel processors

 NEW Intel servers  
 Intel servers  
 AMD servers

Small  
business

Remote and  
branch offices

Small  
datacenters

Medium to large  
datacenters

Hyper-scale  
datacenters



T110 II



T320, T420

SMB 1S and 2S  
Tower servers



T620

Scalable 2S



M420, M520, M620, M820, M915  
Dense 2S to scalable 4S  
Blade servers



M1000e

Modular servers

## Rack servers



R520, R515  
SMB and Storage  
Optimized



R720, R715,  
R820, R815  
Scalable 2S and 4S/2U



R620, R420, R415  
Dense 2S/1U



C6220  
Cloud storage and  
multi-node optimized



R210II, R320  
SMB 1S (1U)



R910  
Highly scalable 4S/4U



R720xd  
Storage optimized 2S

# Dell Compellent Storage Systems

## Controller: SC8000

- Built-in intelligence, agility and automation
- No fork-lift upgrade and perpetual licensing
- FC, iSCSI and FCoE front-end interconnects

## Enclosures: SC200, SC220

- Transition to 12th generation Dell hardware
- SSD, SAS and FC drive technologies



## NAS: FS8600

- Resilient Dell hardware built specifically for FluidFS
- Scale-out file solution that easily grows to accommodate changing storage needs
- Single platform for both file and block, unifying the scalability of FluidFS with Compellent's efficiency

# Automated, intelligent software built on the Fluid Data architecture

Highly optimized 64-bit storage platform

Enhanced efficiency and agility through built-in intelligence

Automated tiered storage

Automatically move data based on how it's used

Advanced thin provisioning

Use space only when data is written

Dynamic storage migration

Shift volumes between systems for high availability and continuous access to data

True storage virtualization

Create a dynamic pool of shared storage available to all servers

Continuous snapshots and thin replication

Space-efficient Replays save disk space and speed recovery

# Ideal Platform for Oracle Workloads

- Dell 12<sup>th</sup> Generation PowerEdge servers and Dell Compellent storage systems for Oracle databases
  - Faster performance
  - Lower Total Cost of Ownership
- Oracle Validated Configurations (OVC) configuration
  - <http://www.oracle.com/technetwork/topics/linux/validated-configurations-085828.html>
- Dell Oracle Tested and Validated configuration
  - [http://en.community.dell.com/techcenter/enterprise-solutions/w/oracle\\_solutions/1429.current-release.aspx](http://en.community.dell.com/techcenter/enterprise-solutions/w/oracle_solutions/1429.current-release.aspx)



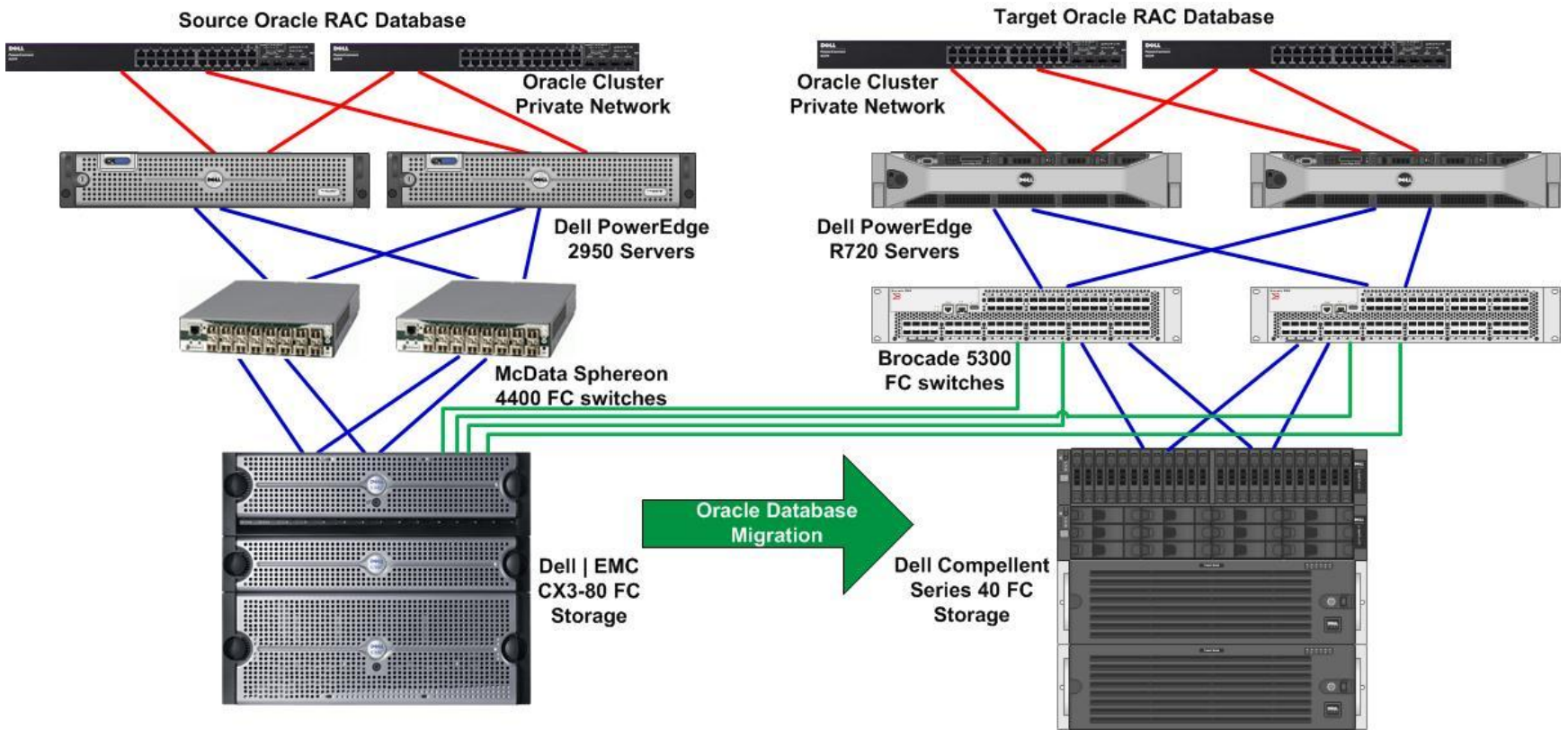
# Oracle Automatic Storage Management (ASM)

- Volume manager and file system for Oracle database files
- Oracle's recommended storage management solution
- Disk rebalance feature
  - Disks added or removed while database continues to access files
  - Automatically redistributes file contents
  - Eliminates downtime while redistributing contents



# Near Zero Downtime Oracle Database Migration

- Dell migration strategy for Oracle databases
- Tested by Dell Oracle solution engineering team
- Reliable and repeatable with the adoption by Dell IT



# Near Zero Downtime Oracle Database Migration

- Preparing the target system
  - Create database volumes
  - Install Oracle database software
  - Deploy Oracle ASM instance
- Presenting source database volumes to target servers
  - Establish connection between source storage and target servers
- Starting up database on target servers
  - Shutdown database on source servers
  - Start up database on target servers
- Application switch over to target database
- Migrating data to target volumes
- Post migration tasks



# Dell IT Case Study

- Successfully migrated 500 Oracle databases and 200 SQL Server databases
- New infrastructure with 700TB storage space on Dell Compellent storage
- Less storage provision upfront by leveraging the Dell Compellent thin provisioning
- Allocate additional storage space using Oracle ASM rebalance



# Key Benefits of the Dell Migration Strategy for Oracle Databases

- Near zero downtime migration, typically less than one minute
- Utilize native Oracle database feature without incurring license cost to purchase migration tools
- Applicable to Oracle ASM file system – Oracle's recommended file system
- Simple to implement
- Moves Oracle database to the latest Dell hardware



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Thank you

