Dialog Semiconductor

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ZDLRA combined with ExaCC

…personal
…portable
…connected

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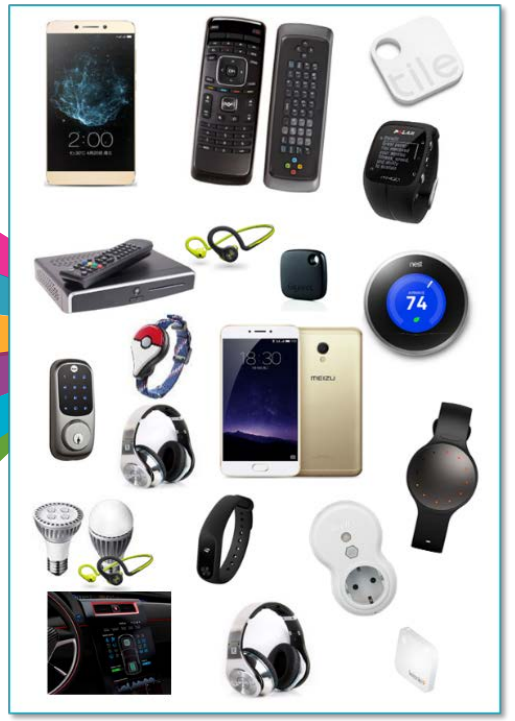
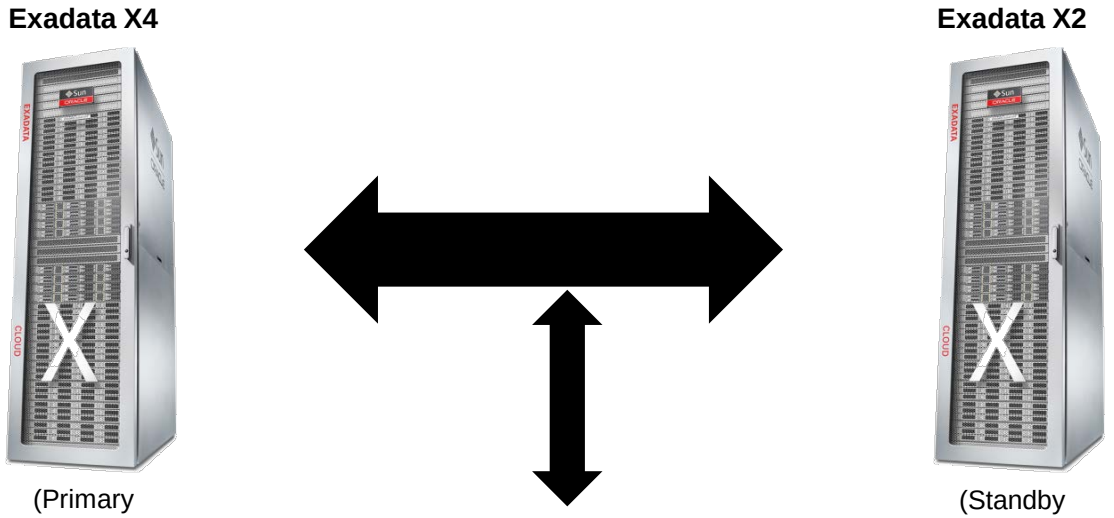
Dialog Technology Leadership

- Leadership portfolio in power savings technologies
- Best-in-class mobile PMIC with broad IP portfolios
  #1 market share for pure play PMIC suppliers
- #2 Bluetooth LE market share. Over 180M units shipped with industry's lowest power
- #1 in RapidCharge (fast charging) market share for smartphone adapters. Leading LED driver solutions.
- Industry's only fully configurable Mixed-signal ICs (CMICs)
- Industry leading RF wireless charging



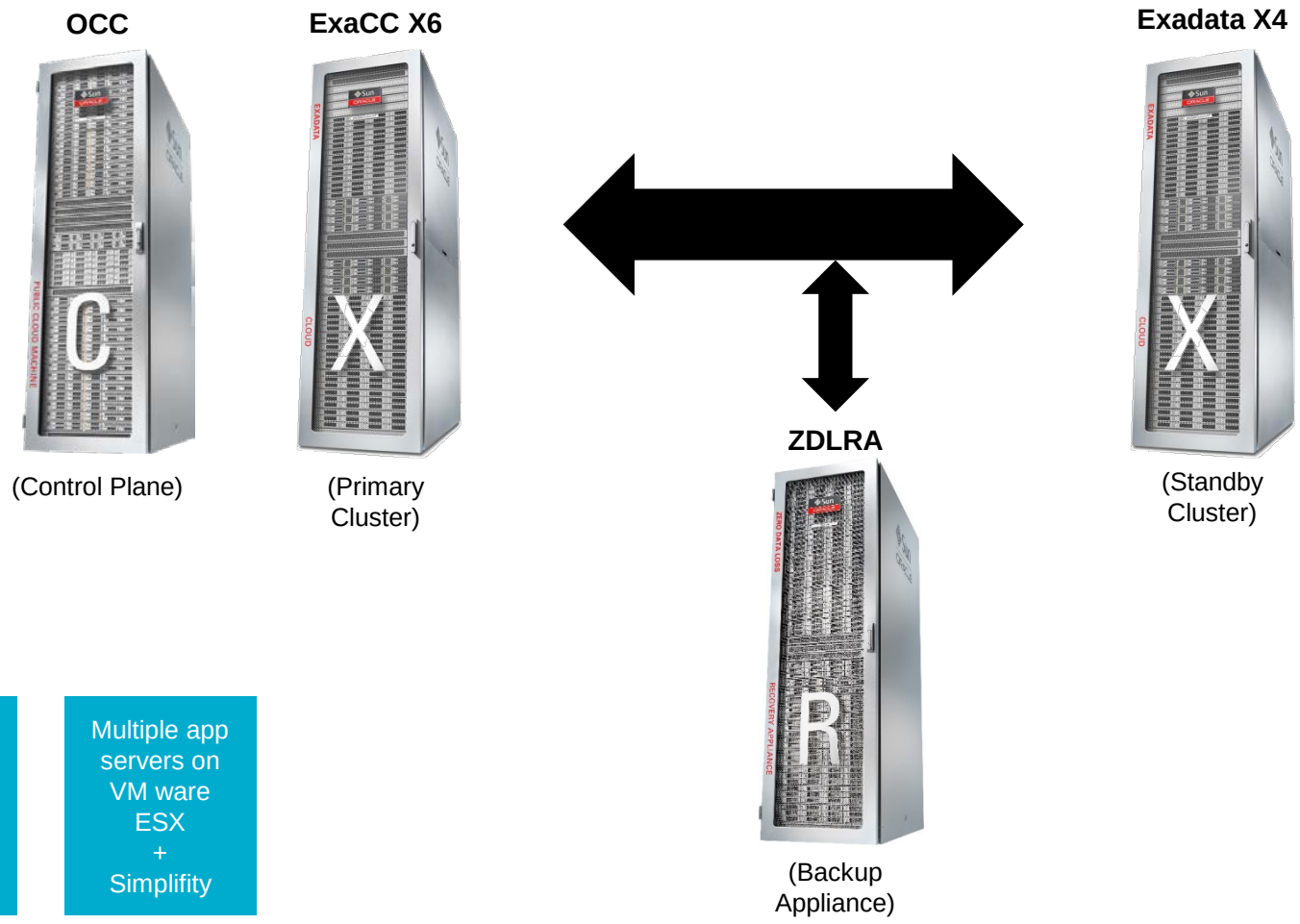
Where we came from

2017:



Engineered Systems today

Setup today:



NFS file systems

Multiple app servers on VM ware ESX + Simplifity

Where we are working on

Goal: all services will run in the cloud (at customer)

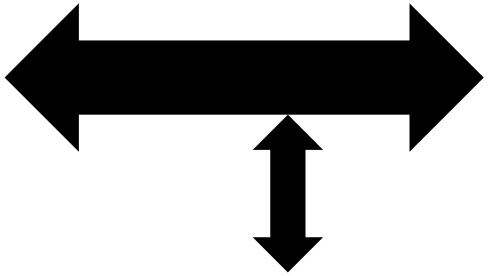
...as a next step into the Oracle public cloud

OCC

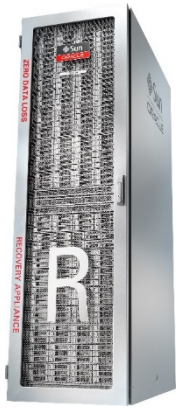
(Control Plane
+
virtual machines)

ExaCC X6

(Primary
Cluster)



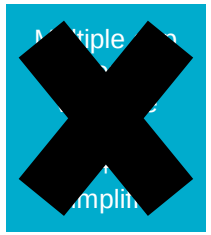
ZDLRA



(Backup
Appliance)

Exadata X4

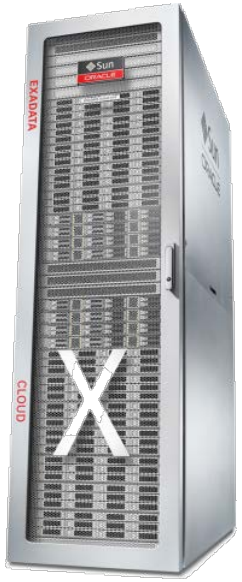
(Standby
Cluster)



ZDLRA_12.2.1.1.1.201803

Backup architecture

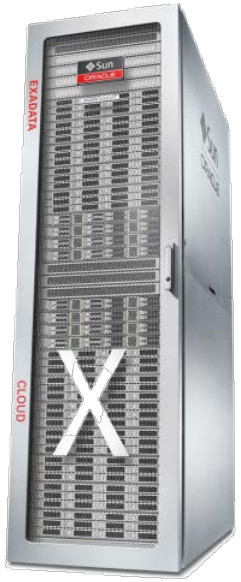
ExaCC Primary



Cloud at Customer

Online Redo shipment only to standby using Redo Routes

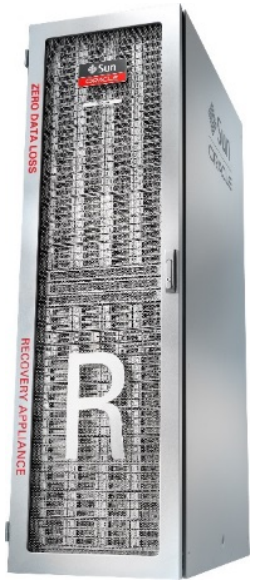
Exadata X4 - Standby



On-prem

Online Redo shipment to ZDLRA from standby

ZDLRA



On-prem

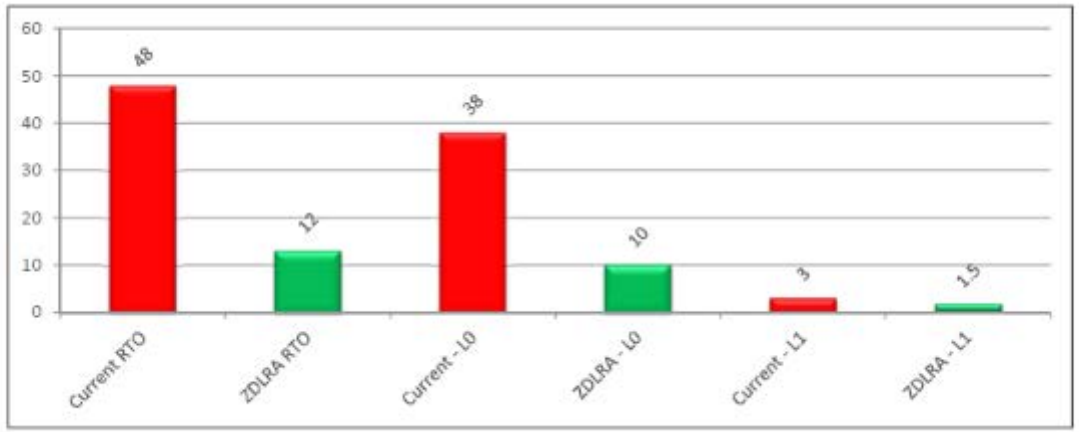
- No backup load on Primary
- Real time redo log shipping is enabled from Standby using redo routes

Changes to RTO?

- RTO was 48 hours
- With ZDLRA as of April 13th, we are down to 12 hours (~4X faster)

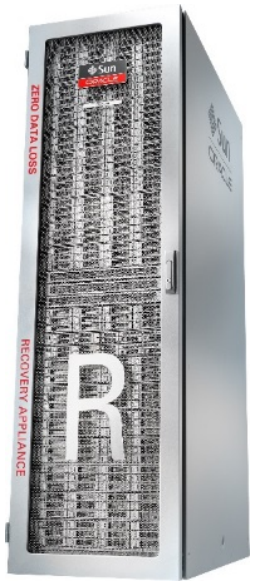
- Weekly L0 duration was 38 hours
- With ZDLRA the first L0 was around 10 hours (~4X) and no more L0 of primary being required as ZDLRA will create its own virtual L0 backups

- Earlier, INCR L1 backup + archive log backup duration was 3+ hours
- With ZDLRA, the INCR L1 backup taking around 1.5 hours (~2X faster) along with Real Time Redo Log shipping enabled



ZDLRA for data migration?

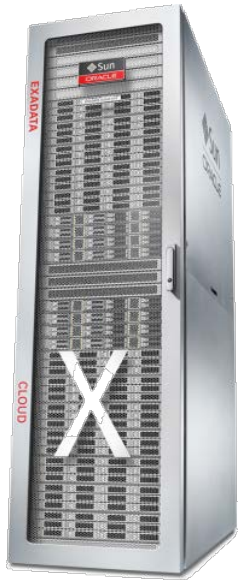
ZDLRA



On-prem

RMAN duplication from DomU nodes of ExaCC to restore ~52 TB of production database from ZDLRA

ExaCC Primary



Cloud at Customer

- ZDLRA together with DG can nicely be used for migrations to new environments:
  - Backup the database to ZDLRA + redo log shipping enabled
  - Restore at any point in time a (virtual) full backup to the new environment
  - Add the restored DB as a standby
  - DG switch over to the restored DB on new environment took <5 minutes
    → migration with no load at primary and at higher speed compared to standard backup

Initial challenges with the ZDLRA

- Restore timeout issue experienced during RMAN duplication:
  - Network switch port failure. This was an internal issue but was identified by Oracle Support and fixed by us
  - Restore of a Bigfile datafile (around 12 TB) timed out at client side. The timeout was related to an issue with the restore servlet which was resolved by changing an internal parameter on the ZDLRA
  - ZDLRA development was directly involved with daily follow-up calls. This issue is fixed in a later release of ZDLRA software
- our findings as early adaptor are now part of the todays SW version
- Multiple executions of manual restore / recover and RMAN duplication scenarios were tested with ExaCC by recovering the production database of 52 TB from ZDLRA. This testing was done with different RMAN attributes and RMAN channel tunings related to RA to make sure maximum possible speed of restore / recover got achieved with no failures in the process of duplication or restore.

Wrap up

- Low RTO: Forever INCR1 backup to ZDLRA and logical INCR0 backup is available all time for restore. Nearly ~ 4X faster for restoration of multi-terabyte database incase of failure

- Low RPO: Real time redo shipping is enabled which leads to RPO <1sec

- No special monitoring / maintenance on ZDLRA because it is an appliance managed by Oracle (ASRs, Platinum patching, integrates into existing EM13 monitoring)

- BI reports are available to check the status of backup / internal jobs / commands executed on RA next to EM13 monitoring

- Higher performance compared to the previous legacy backup

Powering the Smart Connected Future

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