

# Safaricom



## Leading Communications Provider in Kenya

- Safaricom provides converged communication solutions addressing evolving voice, video and data requirements:
  - Enterprise mobility, fixed data connectivity, Telepresence
  - Wholesale bandwidth capacity solutions for national, regional and international market segments
- The Safaricom managed services division provides tailor-made solutions for SMB and the enterprise such as:
  - Cloud computing, domain / hosted services, conferencing and more
- Known for customer service and community involvement, Safaricom is the leading provider of consumer mobile, high-speed internet in the region

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## Uses Exadata for Critical Databases

- Safaricom leverages Exadata for its critical databases requiring high availability and optimal performance such as:
  - Business Intelligence (BI) data warehouse system for reporting and analytics – 15TB database
  - Fraud management database along with other OLTP high-priority systems
- Exadata delivers great performance with built-in storage intelligence which is ideal for Safaricom systems
  - Exadata uses the best available storage (Flash to SATA) based on how frequently the data is accessed

# Exadata Data Protection

## Safaricom Chose an Oracle Solution

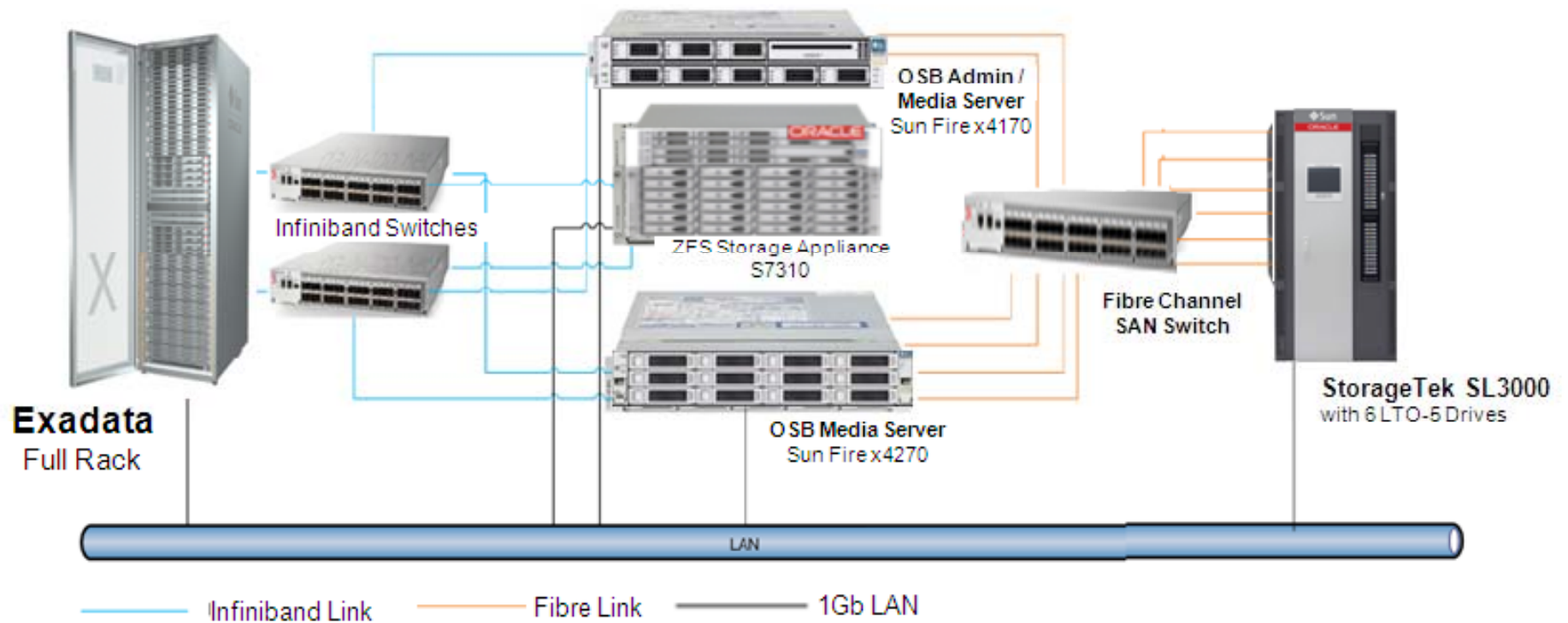


- Exadata data protection strategy includes a complete Oracle solution:
  - Oracle Secure Backup
  - Sun ZFS Storage Appliance
  - StorageTek SL3000 with 6 LTO-5 tape drives
- Safaricom leverages a D2D2T backup strategy:
  - Exadata backup to disk on the ZFSSA
  - Backup the RMAN disk backup to tape using OSB
    - RMAN command BACKUP BACKUPSET;

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## Exadata Backup Solution: OSB, ZFSSA, StorageTek



# Oracle Secure Backup

## Configuration



- Oracle Secure Backup 10.3.0.3
  - Administrative and Media Server – Sun Fire x4170
    - Zoned to manage robot and 2 of the 6 tape drives
    - One six-core processor and 16GB of RAM, two 4Gb/s FC ports and two IB ports
  - Media Server – Sun Fire X4270
    - Zoned for access to 4 of 6 tape drives
    - Two six-core processor and 24GB of RAM, four 4Gb/s FC ports and two IB ports
- Network interfaces to OSB media servers are bonded for high availability
- Backup of the OSB catalog to tape daily

# Backup Performance to Tape



## OSB Delivers...

- Tape backup performance using OSB is very good
  - Backup to tape of the 15TB BI database takes about 6 hours
    - Tremendous improvement over the previous solution which took about 5 days
- Backup architecture designed for optimal performance
  - Infiniband (IB) connectivity from Exadata to the OSB media servers and ZFSSA
  - OSB media servers are FC connected to the StorageTek SL3000
- One RMAN channel allocated per tape drive
  - The six RMAN channels are spread across four RAC nodes on the Exadata

“Safaricom chose a complete Oracle backup solution (OSB, ZFSSA and StorageTek) for an integrated disk and tape data protection strategy for Exadata.”

**Donald Twesiga**

Head of Information Technology, Safaricom



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