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The Fastest and Most Cost-Effective Backup for Oracle Database: What's New in Oracle Secure Backup 10.2

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The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions.
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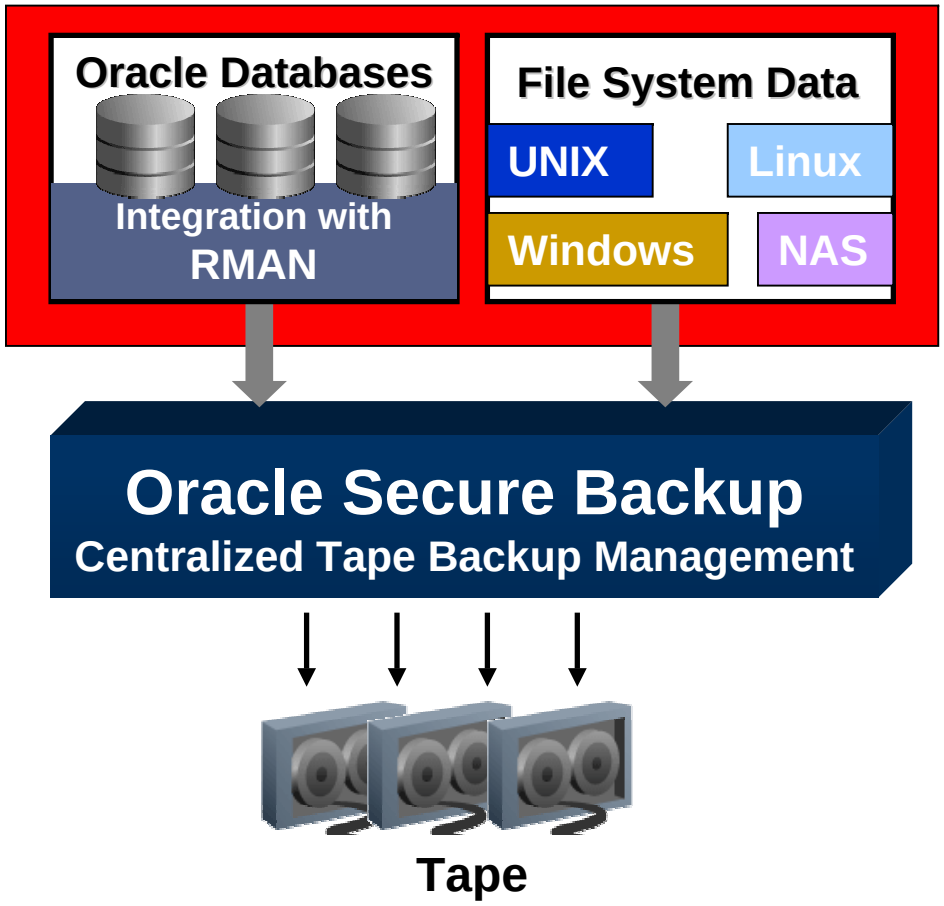
Program Agenda

- Oracle Secure Backup Overview
- New features Oracle Secure Backup 10.2
- Policy Based Backup Management
- How Oracle IT is saving over $1,500,000 with Oracle Secure Backup (OSB)
- Broad and advanced tape device support
- Summary

Oracle Secure Backup

Integrated Tape Backup Management

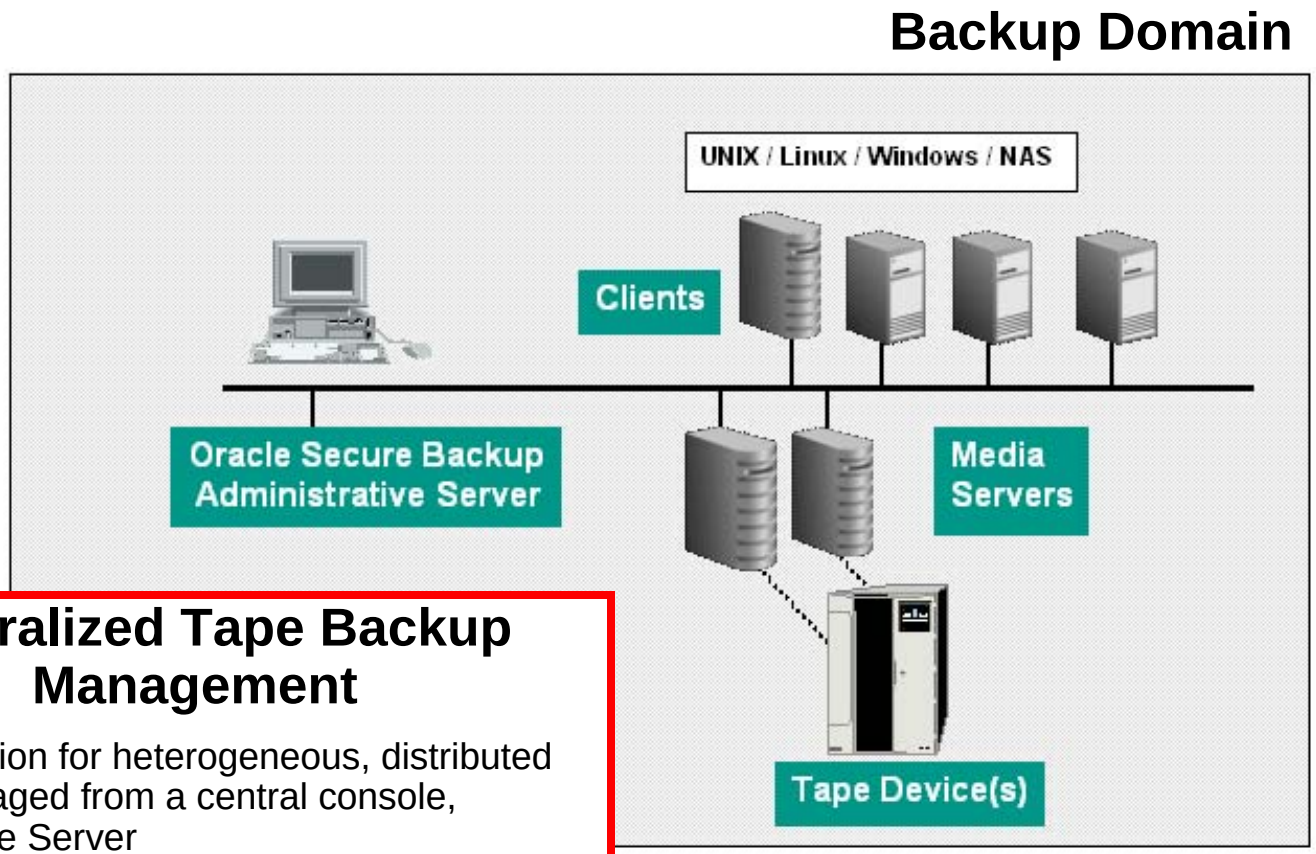
ORACLE SECURE BACKUP



- Protects entire environment
  - Oracle Database 11*g*, Oracle Database 10*g*, Oracle9*i*
  - Application files
- Built-in Oracle integration
- Fastest backup for Oracle
  - 25-40% faster than competition
- Lowest cost
  - $3,000 per tape drive
  - Free Express version bundled with Oracle Database
- Product availability:
  - OSB 10.1 - GA
  - OSB 10.2 - Beta

Oracle Secure Backup

Client-Server Architecture

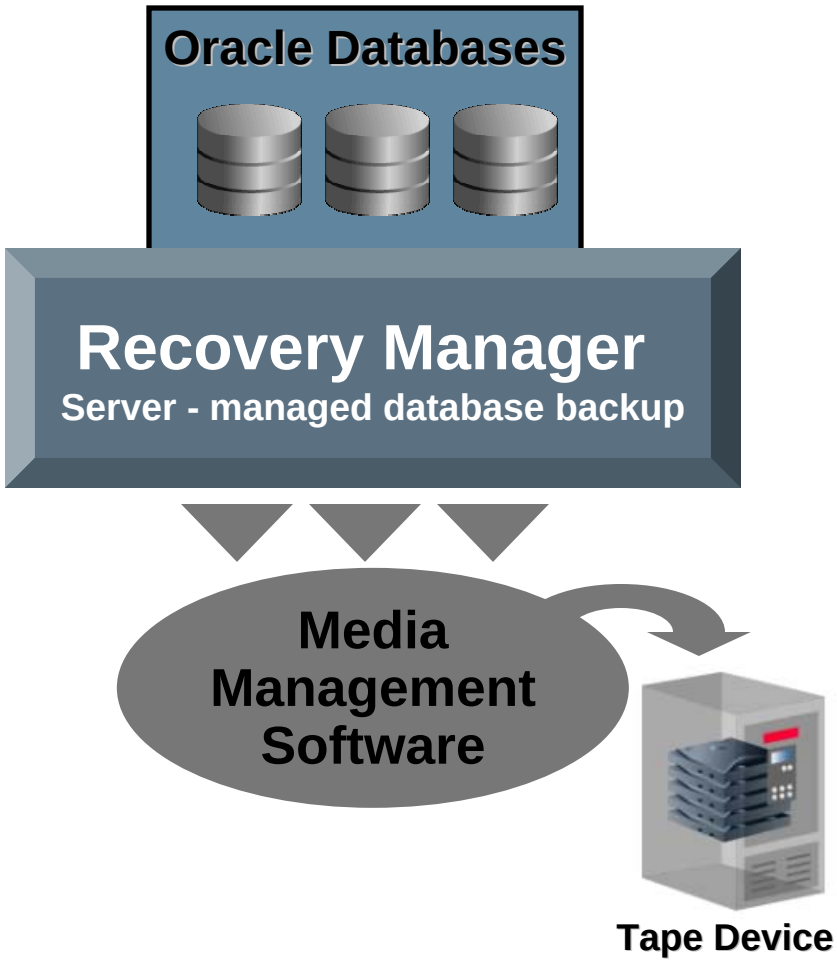


Centralized Tape Backup Management

- Data protection for heterogeneous, distributed servers managed from a central console, Administrative Server
- Oracle database may reside on any server within the backup domain

Oracle Secure Backup

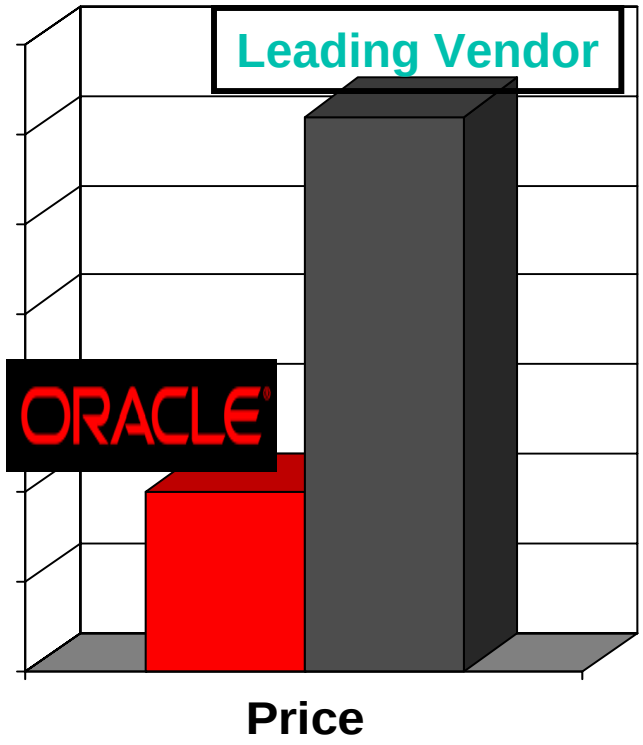
Your Alternative to Expensive Tape Backup



- Recovery Manager (RMAN)
  - **FREE** online, full, incremental database backups to disk
  - Requires media management software for tape backups
- Oracle Secure Backup (OSB)
  - **LOW-COST** media management software
- 3rd Party Media Management Software
  - **EXPENSIVE,** $$ Costs thousands per database server for RMAN integration!
- Single vendor solution
  - Oracle complete solution, RMAN and OSB, reduces complexity

Lowest Price Tape Backup Solution

Increases ROI for Oracle Customers



Feature	Leading Vendor*	Oracle
Tape Drive	$ 3,000	$3,000
Shared drives **(SAN)**	$ 2,000	**Free**
VTL per 1 TB	$ 995	**Free**
Client Host	$ 2,095	**Free**
Media Server	$ 5,000	**Free**
Oracle Agent	$ 1,295	**Free**
Vaulting	$ 10,000	**Free**
*Based on Tier 1 pricing model (Linux)		

- Oracle Secure Backup price is just $3000 per tape drive
  - Backup to virtual tape device (disk) is **Free**
  - **Free** Express edition protecting one database server attached to one tape drive

Two Editions

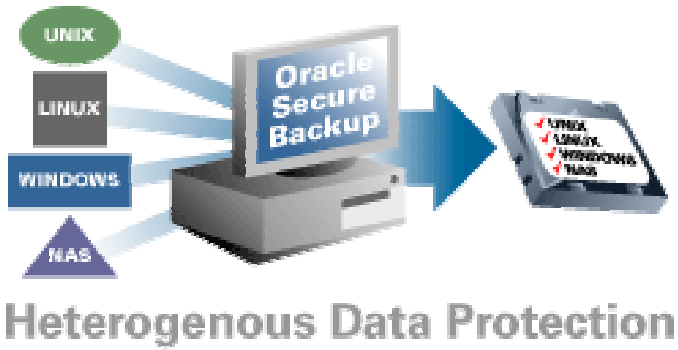
Protecting all Oracle Database Editions

Feature	Oracle Secure Backup	Oracle Secure Backup Express
Integration with RMAN	✓	✓
File system backups	✓	✓
Networked backups	✓	No
Multiple tape drives or servers	✓	No
Backup encryption	✓	No
Vaulting	✓	No
Tape duplication	✓	No
Free, bundled with Oracle	No	✓

Oracle Secure Backup 10.2

Enhancements

- **Increased Security for data and backup domain**
  - Backup encryption for file systems and Oracle database
  - Hardening of security architecture between client and media server
- **Advanced media management**
  - Vaulting
  - Tape duplication
  - StorageTek ACSLS support
- **Improved Manageability**
  - Automated backup of OSB catalog
  - Policy-based migration from VTL to tape
- **Improved Performance**
  - Tighter integration with the Oracle Database reduces data movement overhead
  - Eliminates backup (and reads) of committed undo



Advanced Functionality at NO Extra Cost!

Peak Backup Performance

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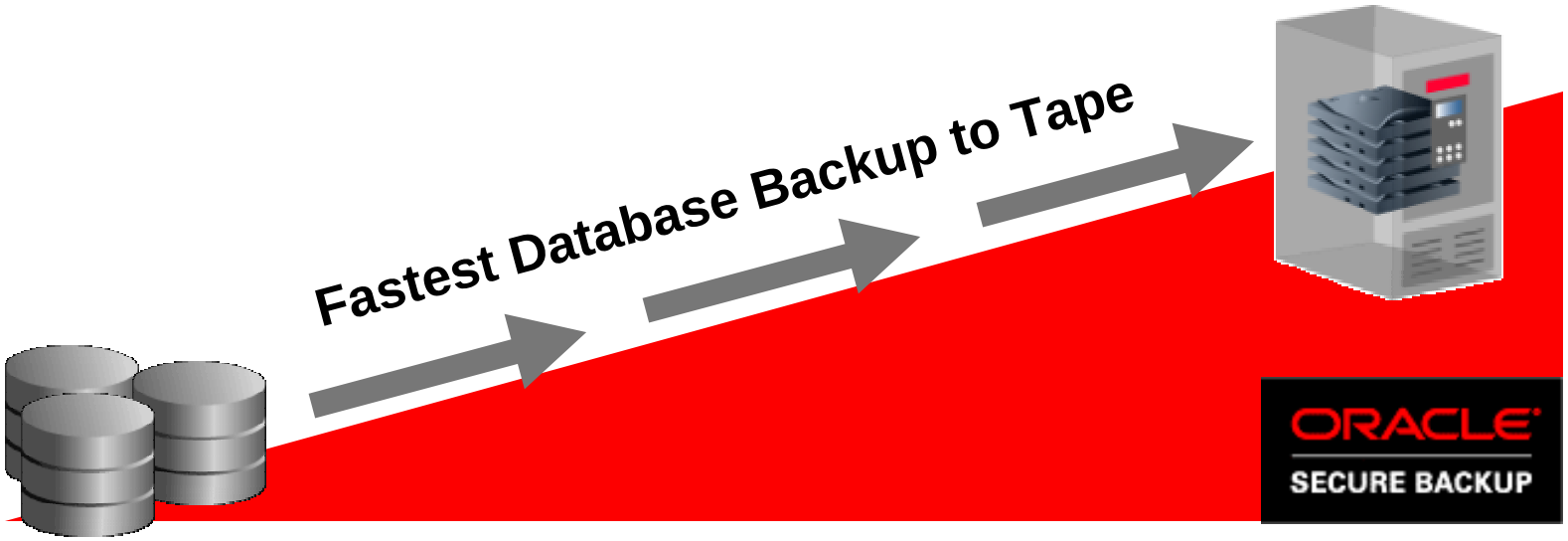

- Oracle Secure Backup and Recovery Manager (RMAN) provide exclusive integration points
- Fastest and most efficient tape backup for the Oracle Database:
  - Oracle Secure Backup 10.1- available now
    - Backup only currently used blocks
  - Oracle Secure Backup 10.2 – upcoming release
    - Eliminates backup of committed undo
    - Optimization of SBT-allocation buffers

ORACLE DATABASE 11g

Multi-Faceted Security

Security: Data and Backup Domain

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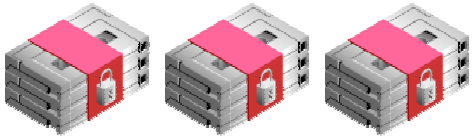
Policy-based management



- **Securing backup data on tape**
  - Backup encryption protects data on tape while onsite, offsite or lost
  - User-defined encryption algorithms AES128, AES192 or AES256
  - Backup encryption policies at backup, host or domain level

- **Guarding access to the backup domain**
  - User-level access control
  - Direct access to tape devices restricted to "Trusted" hosts

  - Embedded SSL technology provides secure transport of backup data and messages between two-way authenticated servers

Backup Encryption
Host Policies and Key Management

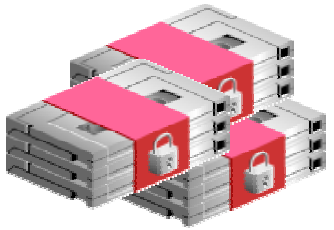
ORACLE SECURE BACKUP

- Backup encryption policies defined at host level or use global defaults
- Scheduled or “Backup Now” encryption leverages host encryption settings

Backup Encryption Policies

Encryption Key Policies

Host obe11g	
IP interface name(s):	obe11g.us.oracle.com
Status:	in service
Roles:	client, admin, mediaserver
Access method:	ob
Encryption:	required / allowed
Algorithm:	aes128 / aes192 / aes256
Rekey frequency:	duration 1 month / never / system default / per backup
Key type:	transparent / use passphrase / verify passphrase
TCP/IP buffer size:	bytes
Key store:	Add a key to the keystore without making it active
Certificate key size (in bits):	1024
	Suppress communication with host



Managing Encrypted Backups

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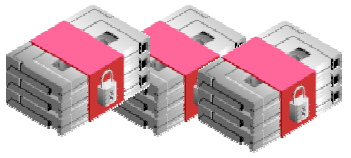
- Protecting backup encryption keys is critical
  - OSB Administrative Server manages and stores encryption keys for backup domain
    - Regularly backup the OSB catalog
  - Keys used for transparent mode RMAN encryption are stored in Oracle Wallet not OSB key stores
    - Oracle Wallet may be backed up to tape using OSB
- Transparent restoration of OSB encrypted backups within same domain
- Transient encryption option for restore at alternate location

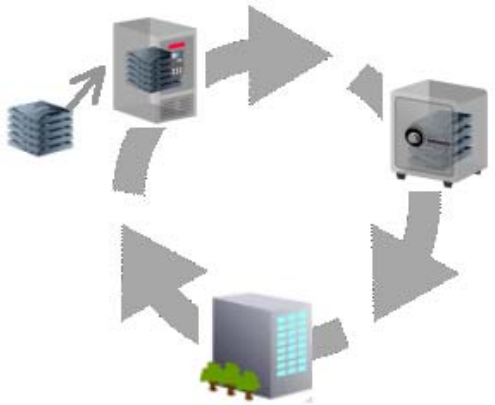


Advanced Media Management

The Life of Backup Tapes

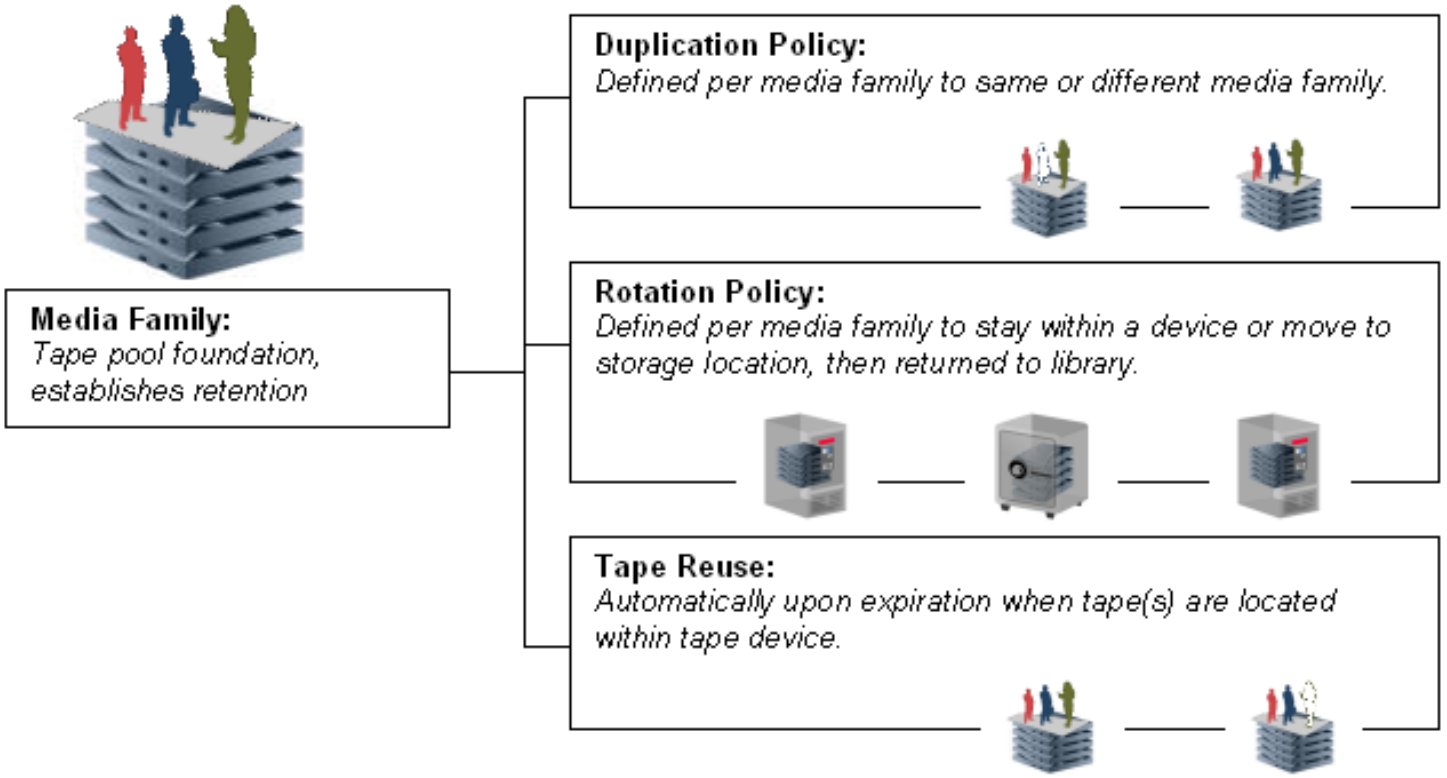
Media Lifecycle Management

- First backup written to tape begins retention clock
- Tape appended for “x” amount of time or until full
- Are duplicate tapes required?
  - If yes, where should original and duplicate be stored during retention period
  - One onsite, one offsite?
  - Should duplicate have different retention than original?
- Backup tape remains in tape library or moved to alternate location(s)
- Tape returned to original location (data center) upon expiration
- Tape reused (overwritten) upon expiration
- Process begins again



Media Management: Retention, Duplication and Vaulting

ORACLE SECURE BACKUP



- Tapes managed from first write to reuse based on user-defined media families, duplication and rotation policies

Vaulting

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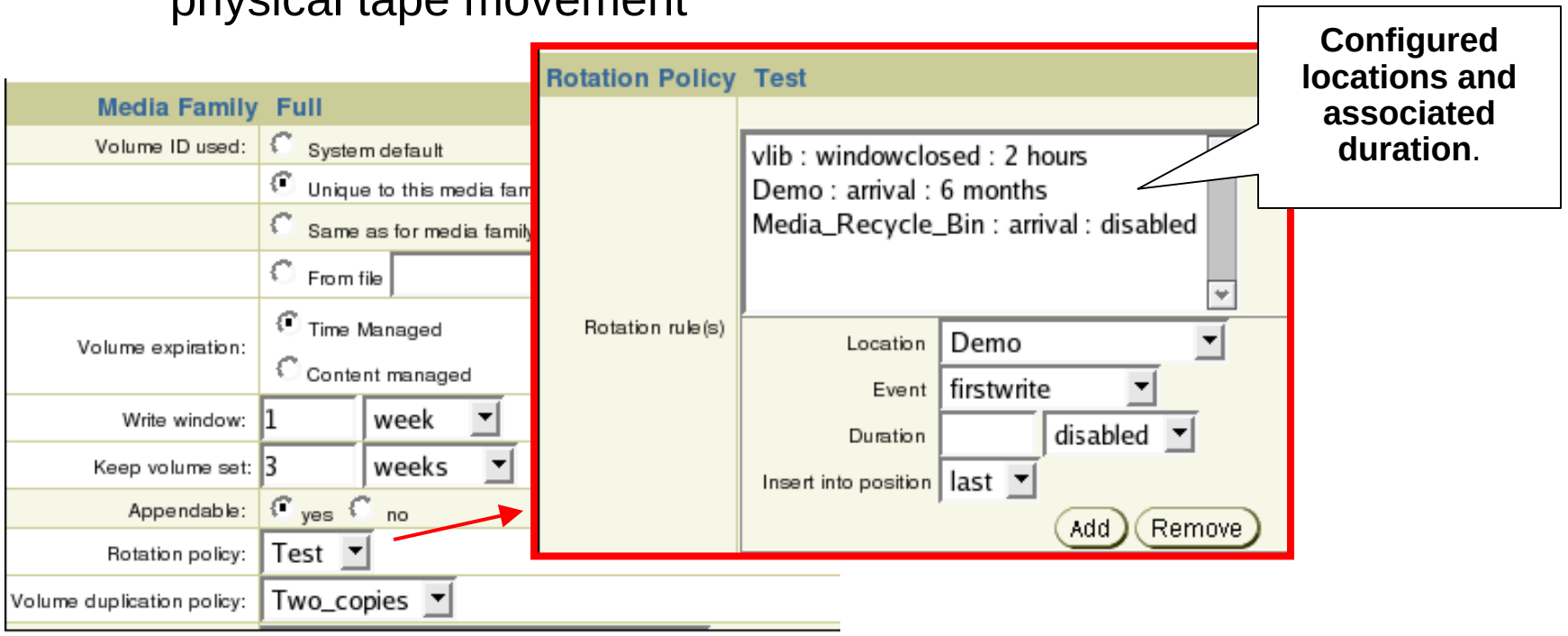
Automates Rotation of Tapes Between Locations

- Rotation policy is associated with a media family
  - Tapes are moved between locations based on rotation policy
  - Rotation reports including pick and distribution list assist with physical tape movement



Automated Tape Duplication

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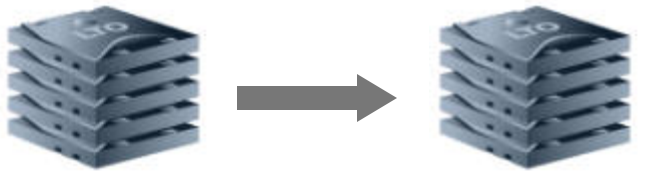
- Duplication policy associated one or more media families
- Tape duplication may be scheduled or on-demand
- Vaulting (rotation policy) operation automatically checks duplication policies to determine if duplication is required prior to tape movement



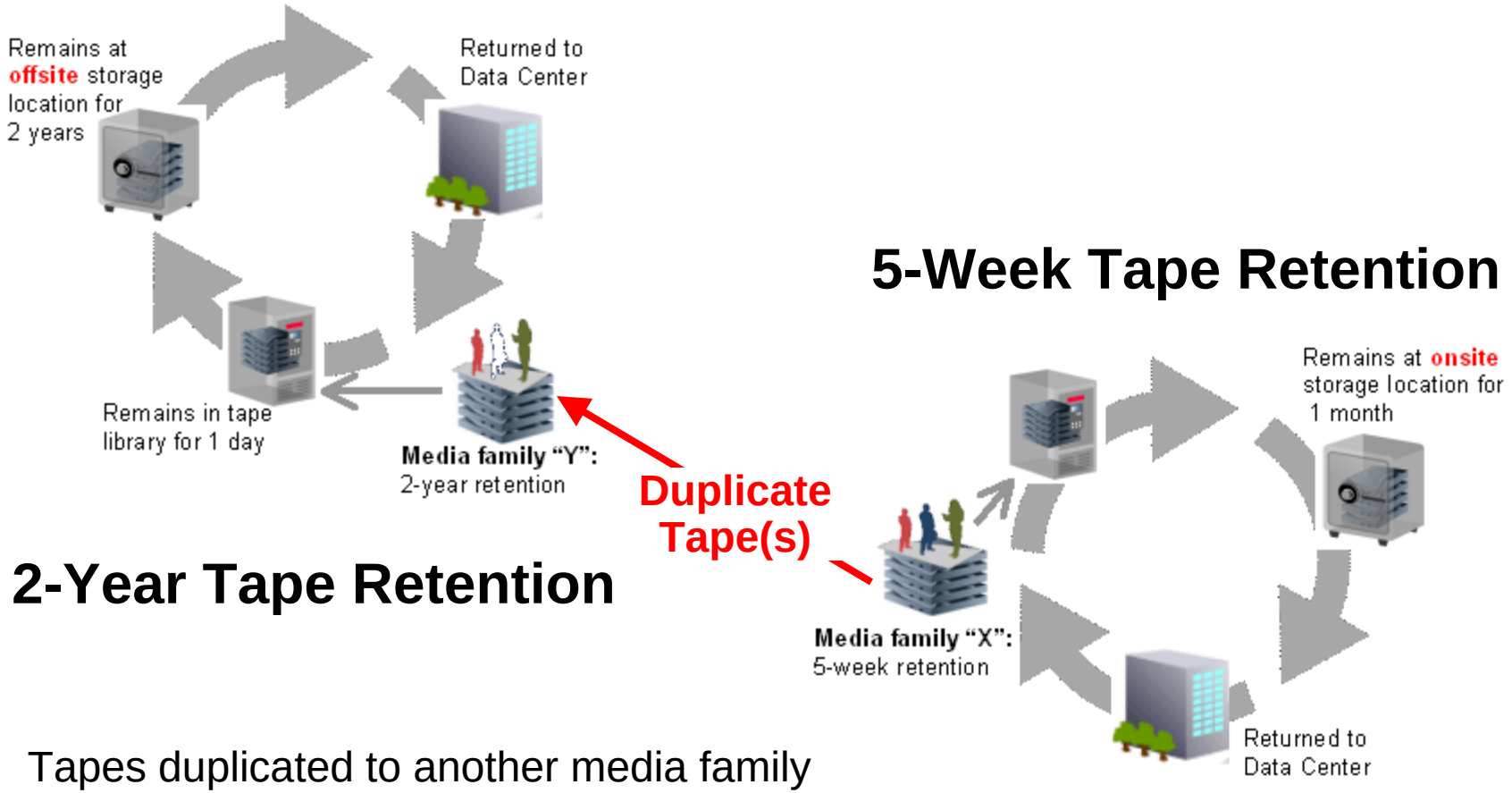
Original **Duplicate**

- Seamlessly restore from original or duplicate
- Duplicate copy may have different retention policy
- Migration from physical tape to Virtual Tape Library (VTL)

Policy-Based Media Management

…In Action

ORACLE SECURE BACKUP



- Tapes duplicated to another media family may have different retention and rotation schedule than original tape

Oracle IT Migrating to OSB

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Sean McKeown
IT Director, Data Center Operations

Oracle Datacenter Operations

Global IT Organization

ORACLE SECURE BACKUP

- Two organizations within Oracle Global IT (GIT) working with OSB
  - Architecture team determines hardware and software infrastructure
  - System administration provides day-to-day management
  - Backup core competency (CC) team includes both organizations
- IT Director, Sean McKeown, at Rocky Mountain Datacenter (Co. Springs)
  - Manages 27 system administrators and Backup CC team
  - Responsible for backup of 1.5 PB of data
  - Specializes in backup/recovery, disaster recovery and storage

Oracle Data Center

ORACLE SECURE BACKUP

Oracle Secure Backup Deployments

- Oracle IT uses OSB in production
  - Migrating from 3rd party tape backup software
  - Over **80TB+** protected by OSB 10.1
  - Over **3PB+** planned deployments of OSB 10.2 in next 12 months
- Benefits obtained
  - 25% faster NAS backups
  - Better tape drive utilization in SAN environments

Over $1.5 Million Savings!

Savings over $1,500,000

Migration to Oracle Secure Backup

ORACLE SECURE BACKUP

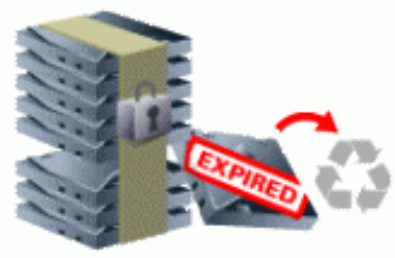
	OSB 10.1	OSB 10.2	OSB
Oracle Global IT (GIT)	**Savings: Achieved**	**Savings: Planned 2008 Migrations**	**Total Savings by Year-End 2008**
Initial licensing purchases	$370,375	TBD	$370,375
Annual maintenance costs	$139,400	$700,000	$839,400
Oracle Server Technologies IT (ST-IT)			
License purchases and maintenance	$300,000		$300,000
Total Savings	**$809,775**	**$700,000**	**$1,509,775**

Migrating to OSB

Changing Tape Backup Vendors

ORACLE SECURE BACKUP

- Motivation to migrate from one vendor to another
  - Driving force for our migration was substantial cost savings of over $1.5 million
- System administration considerations prior to and during migration
  - Status quo configuration / scripts revised to leverage capabilities of new software
  - Review architecture to achieve possible hardware advantages
  - Restore from legacy tapes



Oracle Global Mail

ORACLE SECURE BACKUP

IT Environment and Recovery Objectives

- Global Mail: Manages email for over 70,000 Oracle employees
- Recovery and email retention
  - Recovery Time Objective (RTO) = 15 minutes
  - Recovery Point Objective (RPO) = Less than 1 minute
  - Backup retention = 1 month offsite tape storage
- Global Mail Environment
  - Oracle Database 10.2.0.5 approximately 9 TB
  - Flash Recovery Area approximately 27 TB
  - Oracle Secure Backup 10.1.0.3.1
  - 8-node RAC
  - Data Guard physical standby: local and remote

Global Mail Environment

OSB Deployment Example

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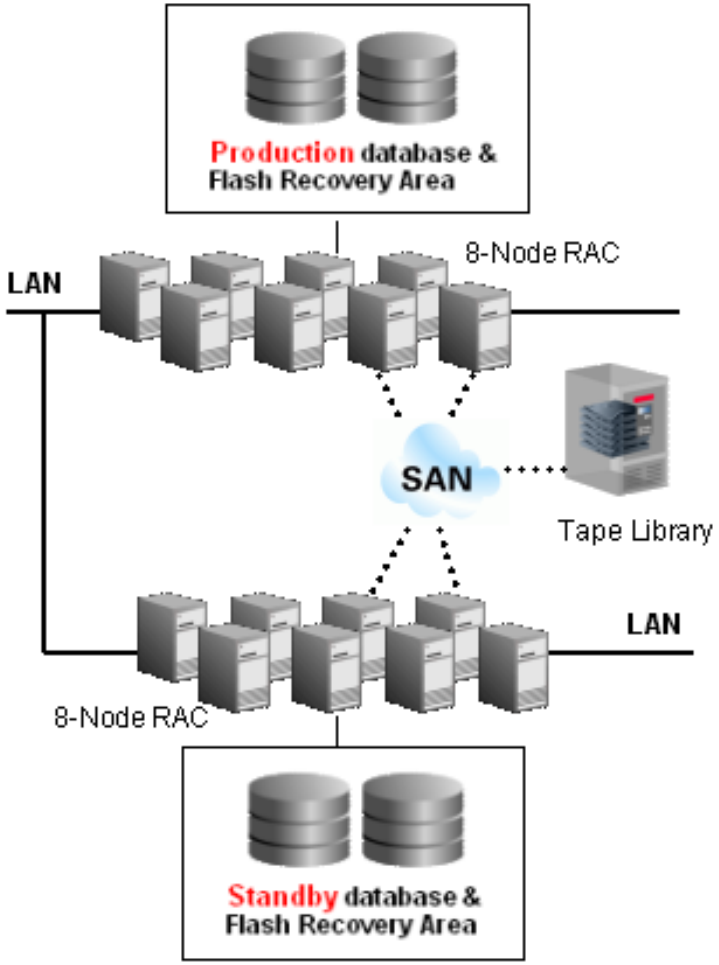


Architectural Strategies

- Disk backup
  - Incremental only strategy to Flash Recovery Area
- Tape backup
  - Backup Flash Recovery Area
  - Production and local Data Guard Standby SAN attached to devices
- High availability
  - Data Guard physical standby: local and remote

Oracle GIT Deployment Plans

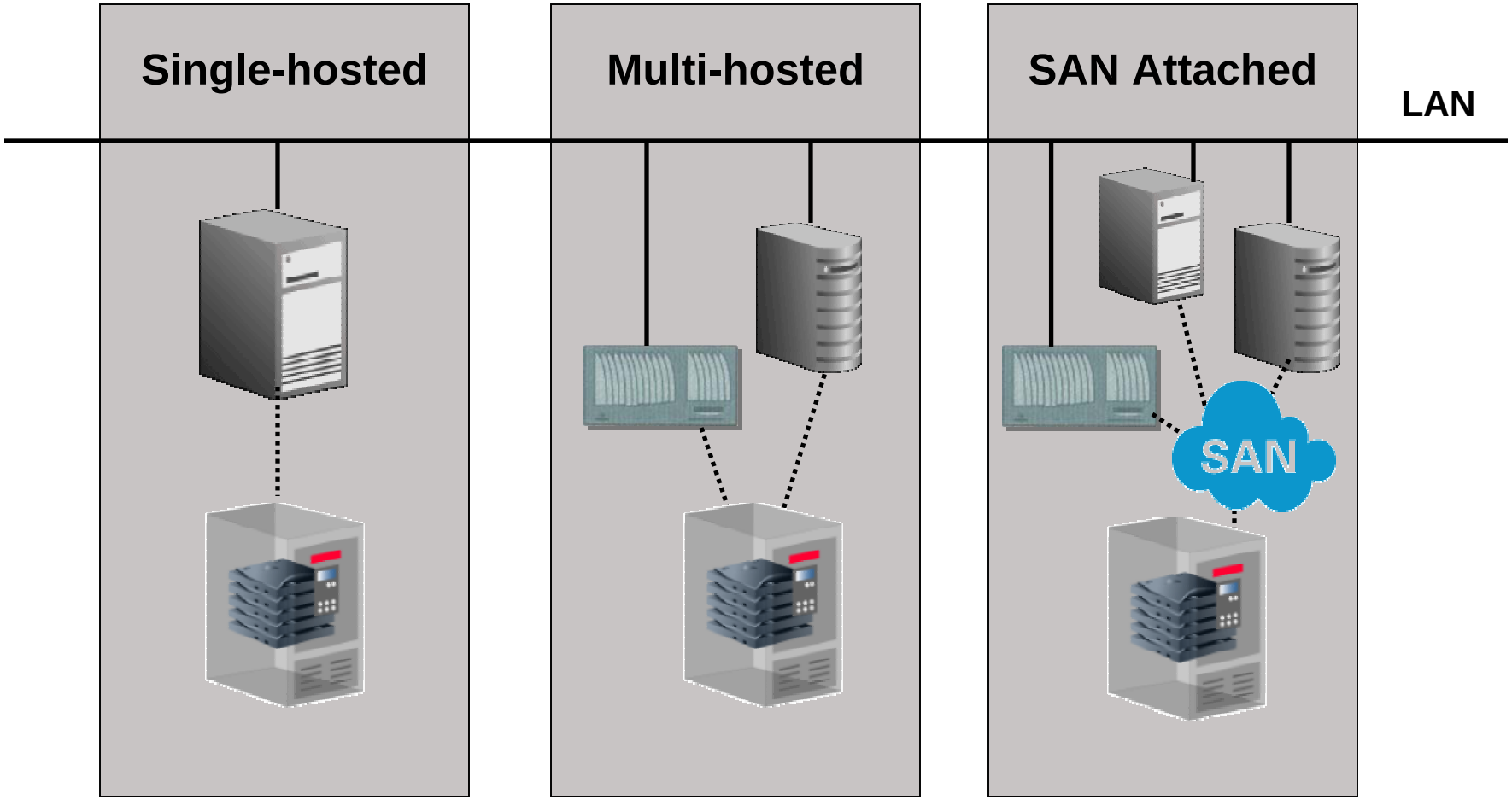
Oracle Secure Backup 10.2

ORACLE SECURE BACKUP

- Oracle OnDemand environment will begin migration to OSB 10.2 immediately upon GA release
  - OnDemand environment provides customer hosting services managing 2 PB of data
  - Successfully completed POC testing with OSB 10.1 and OSB 10.2 beta
- Existing OSB 10.1 environments planned for upgrade to OSB 10.2
- Oracle Secure Backup 10.2 will replace existing tape backup software within GIT
  - Migration expected to be completed in majority of environments by end of 2008

Tape Devices

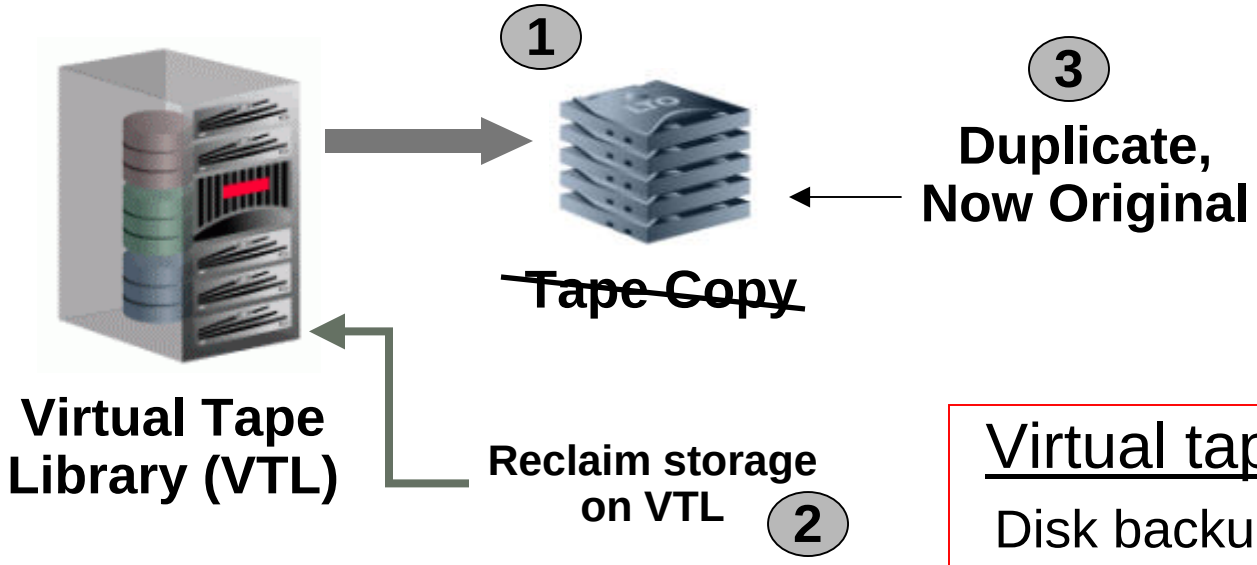
Flexible Tape Device Configuration



Migration From VTL to Tape

ORACLE SECURE BACKUP

- Backup to disk then migrate to tape
- User-defined policies retain backups in VTL for "X" time then migrate to physical tape



Virtual tape libraries

Disk backup appliances that emulate tape drives

ACSLS Support of Tape Silo(s)

ORACLE SECURE BACKUP

- OSB supports SUN / StorageTek ACSLS
- ACSLS provides access to large scale enterprise tape silos such as:
  - Sun StorageTek L8500, scales up to 300,000 tape slots

ACSLS = Automated Cartridge System Library Software

Richard Doogan
Manager ST-IT, Oracle

"From a system administrative perspective, an incredible advantage of Oracle Secure Backup is drive sharing across all hosts and probably the biggest win of migrating so far".

Oracle ST-IT Deployment

SAN Environment

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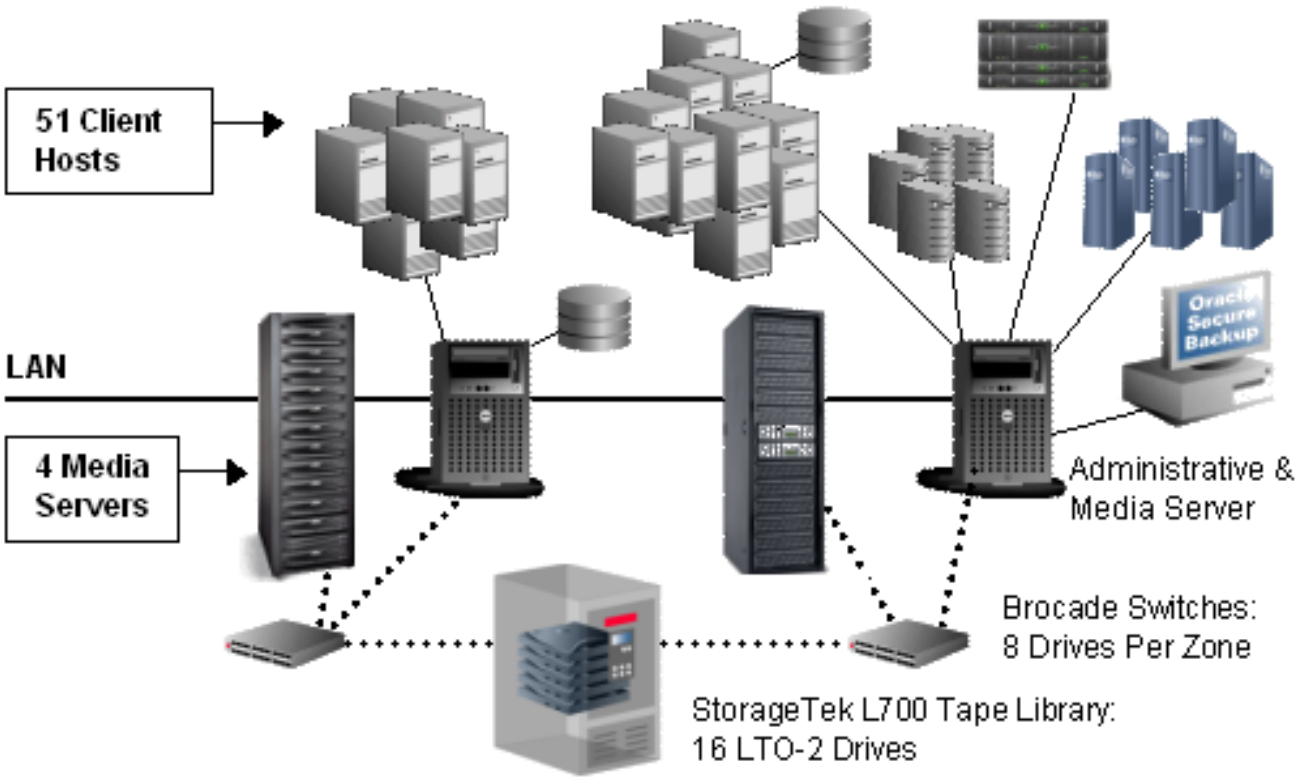

- Oracle Secure Backup dynamically shares tape drives
- Heterogeneous environment: NAS, Windows, Linux and Solaris
- Saved over $300,000 by migrating to Oracle Secure Backup

Partners:

Physical and Virtual Tape Vendors

Summary

Why Oracle Secure Backup? — Top 5 Reasons

ORACLE SECURE BACKUP

1. Reliable, built-in integration with Oracle
2. Fastest database backup to tape
3. Policy-based backup management
4. Single vendor solution
5. Lowest-cost enterprise tape backup solution

Database HA Sessions From Oracle Development

Monday, Nov 12

- S291483 - The Fastest and the Most Cost-Effective Backup for Oracle Database: What's New in Oracle Secure Backup 10.2, 11:00 am - 12:00 pm, Moscone South 304
- S291492 - Oracle Database 11*g*: Next-Generation High Availability, 12:30 - 1:30 pm, Moscone South 103
- S291923 - Implementing Oracle Maximum Availability Architecture (MAA) at Allstate Insurance Using Oracle 10*g* RAC, ASM, Oracle Data Guard and Oracle Grid Control, 3:15 - 4:15 pm, Moscone South 304
- S291484 - Oracle Database 11*g* Data Repair Technologies: Comprehensive, Intelligent Recovery, 4:45 - 5:45 pm, Moscone South 304

Tuesday, Nov 13

- S290710 - Maximum Availability Architecture Best Practices: Oracle E-Business Suite 12, 12:15 - 1:15 pm, Marriott Salon 10 & 11

Wednesday, Nov 14

- S291915 - What's New in Oracle Data Guard 11*g*: Revolutionizing Data Protection and Availability, 9:45 - 10:45 am, Moscone South 304

Database HA Sessions From Oracle Development

Wednesday, Nov 14

- S291487 - Backup and Recovery Best Practices for Very Large Databases (VLDB), 11:15 am - 12:15 pm, Moscone South 304
- S291920 - Oracle Active Data Guard: How to Utilize Your Standby Databases for Production Workload - What They Didn't Print in the Manuals, 3:00 - 4:00 pm, Moscone South 304
- S291917 - Oracle Data Guard Tips and Tricks: Direct From Oracle Development, 4:30 - 5:30 pm, Moscone South 102

Thursday, Nov 15

- S291495 - Oracle Streams Replication and Advanced Queuing (AQ): What's New in Oracle Database 11*g*, 8:30 - 9:30 am, Moscone South 304
- S291499 - Best Practices for Implementing Replication with Oracle Streams in Oracle Database 10*g* and 11*g*, 10:00 - 11:00 am, Moscone South 304
- S291525 - Maximum Availability Architecture (MAA) Best Practices: Online Patching, Rolling Upgrades and Planned Maintenance with Minimal Downtime with Oracle Database, 11:30 am - 12:30 pm, Moscone South 104
- S290542 - Maximum Availability Architecture (MAA) Best Practices for Siebel 8.0, 2:30 pm - 3:30 pm, Marriott Salon 10 & 11

Database HA Demos From Oracle Development

Monday, Nov 12 – Thursday, Nov 15
Oracle DEMOgrounds, Moscone West

Oracle Active Data Guard

Oracle Streams: Replication and Advanced Queuing

Oracle Secure Backup

Recovery Manager (RMAN) and Flashback Technologies

Maximum Availability Architecture

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