Royal Bank Financial Group

Kevin Mercer
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ADSM Server to Server Implementation and Experiences

Presenter

Kevin Mercer
Senior Systems Storage Manager
Royal Bank Systems and Technology
315 Front St. West
Toronto, Ontario Canada M5V 3A4

Tel: (416) 34804493 Fax: (416) 348-4021

E-mail: Kevin.Mercer@Royalbank.com

Agenda

- RBFG: Corporate Information
- Storage Management: Royal Bank
- ADSM: Current Project Status
- Requirements and Reasons for SERVER to SERVER exploitation
- SERVER to SERVER implementation
- SERVER to SERVER experiences
- Future Exploitation

Royal Bank Financial Group

- Canada's Largest Financial Institution measured by market capitalization
- Global Financial Service Group
- Personal and Commercial Banking
- Wealth Management
- Corporate Investment Banking
- 60,000 employees
- 10 Million clients in 30 countries
- 1500 Branches

Systems and Technology

- Central RBFG IT infrastructure
- Storage Management Group, within Information Technology, is responsible for ALL Storage related functions, processes and deployment of technologies
- Concept:

  “We own the physical media, the application owns the data!”

Storage Management Focus

- Enterprise Storage Management disciplines - both OS/390 and Open
- Capacity
- Performance
- Availability

- ADSM vital to all aspects of our Storage focus - It is our Enterprise Solution for Distributed Platforms

RBFG and Storage Management Business Challenges

- Sharpen focus on cost reduction
- push to operate and perform differently without diminishing our ability to provide excellent client and customer service

- ADSM vital to all aspects of our internal Storage cost reduction plans

ADSM at RBFG today: Implementation Statistics

- Managing over 24 TB of distributed data, including offsite protection
- 4 Production ADSM Servers
- 250 active clients registered
- performed many DRP recoveries (primarily for data replication)
- client requirements range from 1 MB backup to 3 TB

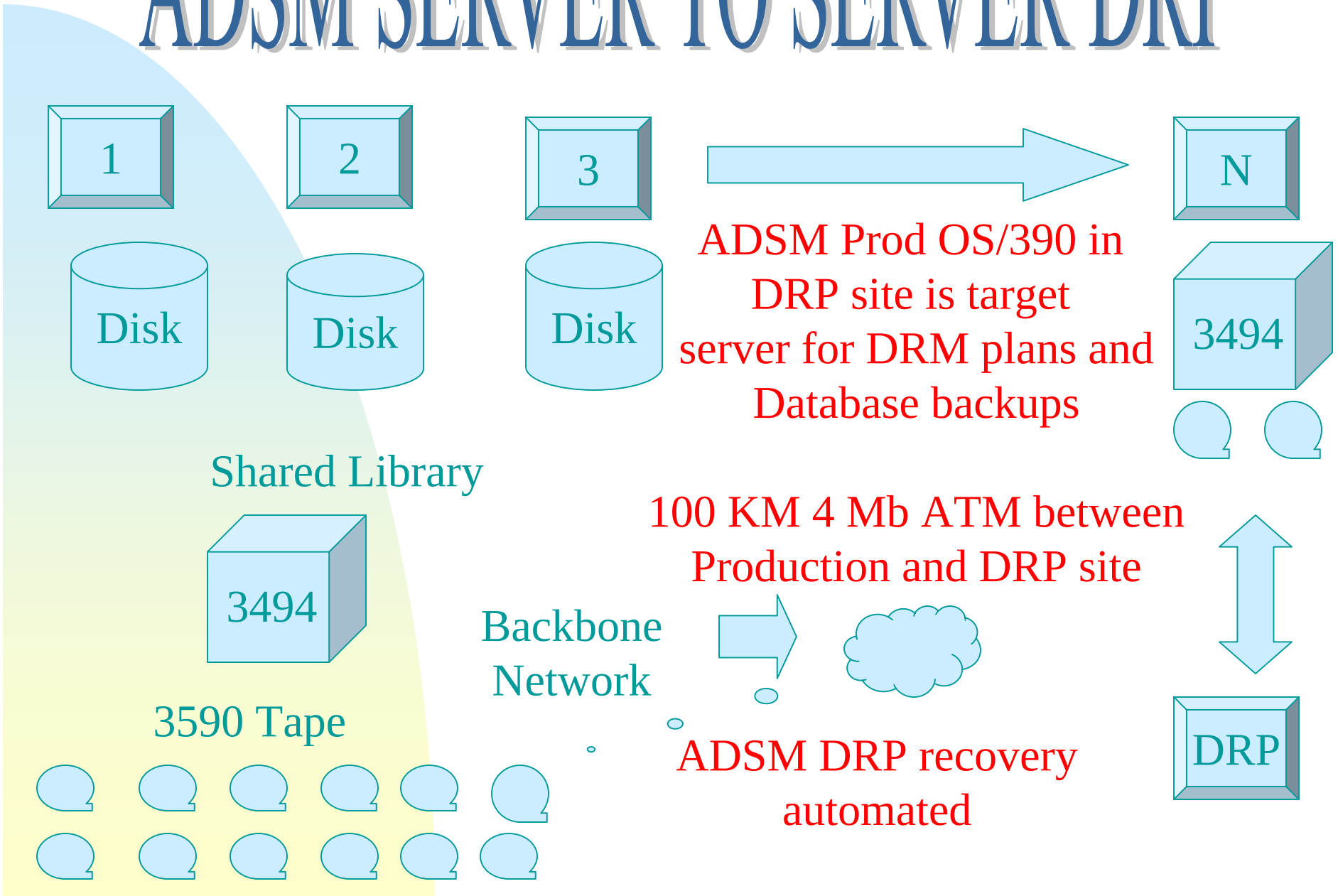
SERVER to SERVER ? WHY?

- Primary focus to enhance DRP
- Growth requirements:
  Need to access additional tape resources for the most active ADSM server in production
- Under-utilized tape resources on 8 of 12 3590 drives
- Cost reduction: new tape $$$$

DRP Enhancements SERVER:SERVER

- DRM Plan to offsite DRP location
- Database backups to DRP location
- DRM Plan via server to server combined with database backups allowed us to fully automate server recovery
- No need to manually locate latest backup tape for DB restore

ADSM SERVER TO SERVER DRP



Growth and additional Tape Resource requirements SERVER:SERVER

- ADSM3 server busy 7 X 24 hours
- ADSM1/2 server busy 2 days of 31
- 8 drives allocated to ADSM1/2 to meet 3 TB backup monthly
  - ADSM UNIX V3 unable to dynamically ‘SHARE’ tape
- SERVER to SERVER virtual volumes between ADSM3 > 1/2

ADSM RBFG

ADSM1/2
8 3590 drives

ADSM3
4 3590 drives

ADSM3
300 + GB each night

Share... Please!

1

2

3

Disk

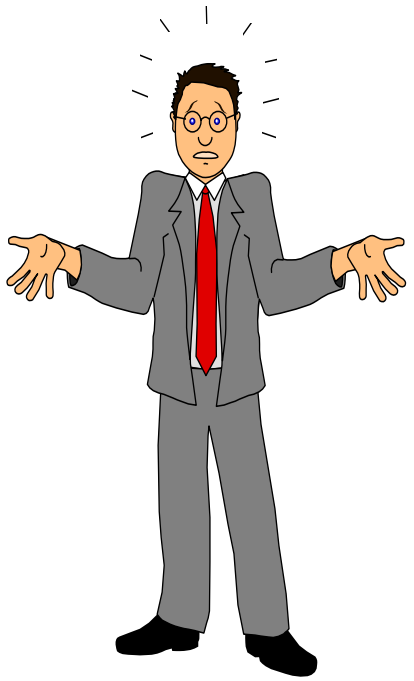
Disk

Disk

Shared Library

3494

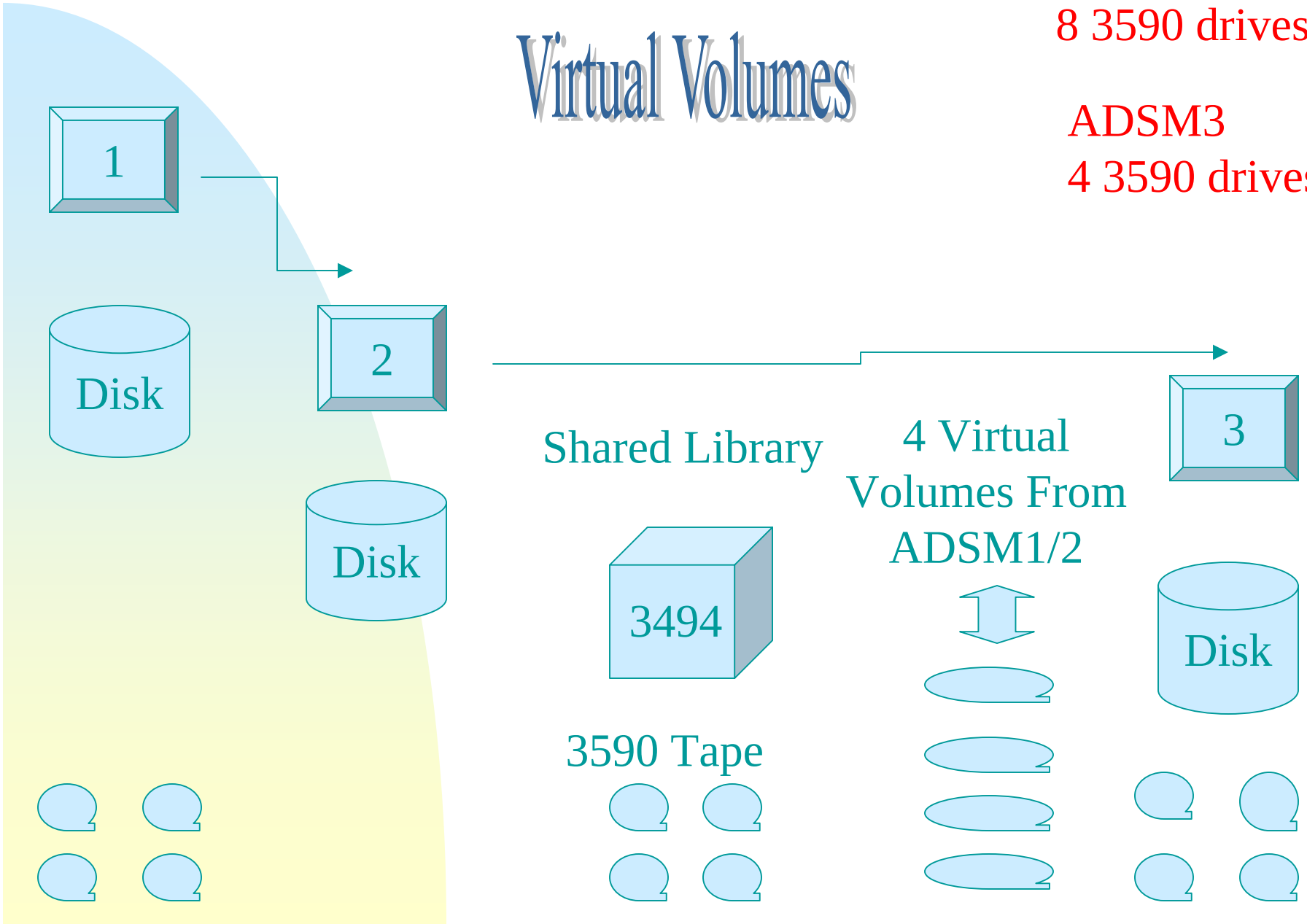
3590 Tape



ADSM RBFG:
Virtual Volumes

ADSM1/2
8 3590 drives

ADSM3
4 3590 drives



Results of new Virtual Volume Implementation

- Allowed additional growth on ADSM3 server
- No requirement for additional 3590
- Able to meet ‘copy’ pool window
- easy implementation

Issues and concerns: Virtual Volumes

- Watch for CPU cycle usage. Benchmarked native MOVEVOL versus virtual volume MOVEVOL. Results: 2.5 X cycles for virtual vol.
- MAXCAPACITY parm: ensure setting is high to limit number of VIRTUAL volumes
- Performance: on fastest network connection, 20% lost due to overhead

Issues and concerns: Virtual Volumes - Continued

- password expiration granularity between clients. Fixed in .40
- use for ‘migration’ of disk pools. I.E: the second tier.
- Setup native tape pool as 2nd overflow storage group
- Do not use for ‘direct’ to tape clients if performance is key

Unplanned Benefits:

- able to mix 128 track and 256 track between ADSM1/2 and ADSM3
- file stacking for database full and incremental backups
- ADSM OS/390 capacity reporting simplicity, pulling information from 3 X ADSM/UNIX servers via Enterprise Administration to OS/390 platform

Future Exploitation

- Minimize client data recovery loss
- Focus on large database clients, such as EXCHANGE,UDB,ORACLE, SYSBASE
- Copy Pool ‘LOG’ data to DRP site via server to server
- Remote mirroring of ADSM Database and Log

Questions ?????