

EMC Data Protection for Oracle

Saving Time and Money

EMC Data Domain

Agenda

- Problems many database administrators face
- Overview of Oracle Recovery Manager (RMAN)
functional components
- Impact of deduplication in an Oracle environment
- Summary

Problems Many Database Administrators Face

Too many for this talk so we'll focus on just backup and recovery

- Non-stop growth and proliferation
- Backup windows remain approximately the same
- Recovery is just as important and often overlooked
- Limited online retention
 - Increased frequency of recovery for audits, troubleshooting, updates, etc.
- Archive (aka, ILM) becoming increasingly important
 - Some data must be retained for 5 years, 7 years, forever....

RMAN – What Is It?

For those in the audience that don't already know:

- Oracle's included backup / recovery utility
 - Supports full, incremental, and image backups
 - Retains backup information in the control file and (optionally) a separate database catalog
 - Many configuration options to tailor to users' requirements
 - Automatically eliminates unused data blocks from most backups

Overview of RMAN Functional Components

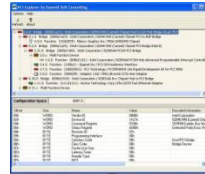
Target Database

RMAN Repository
(Control File)



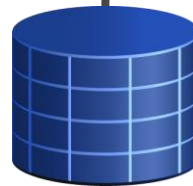
Overview of RMAN Functional Components

RMAN Client

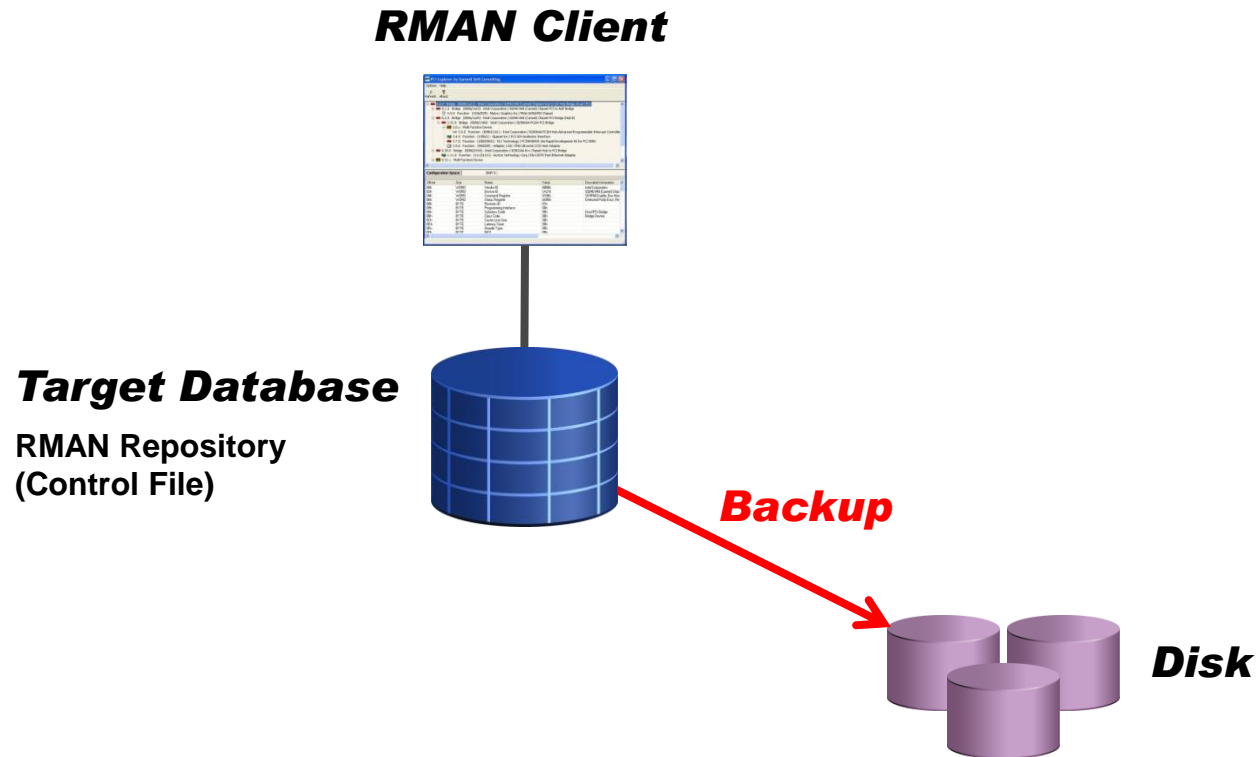


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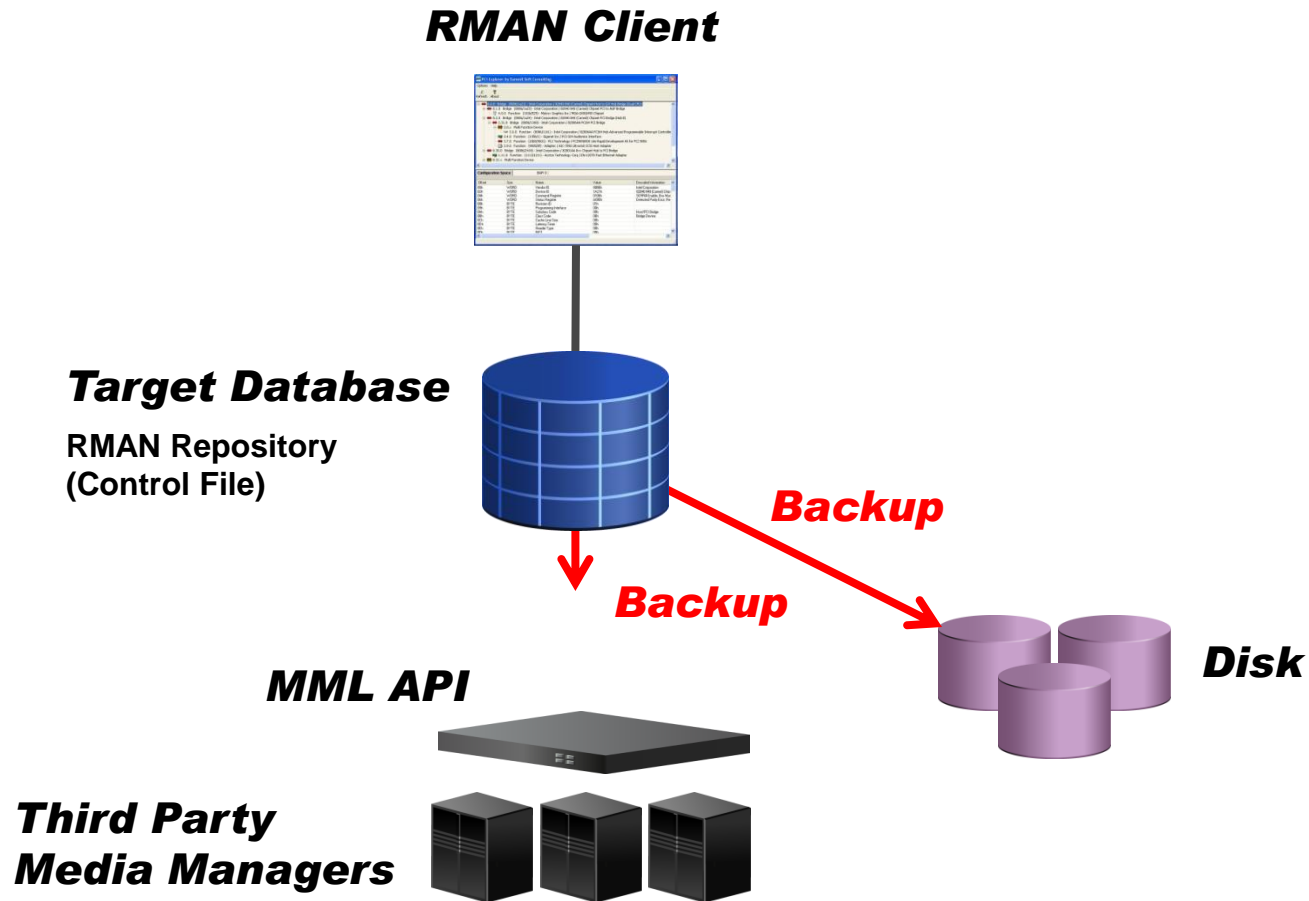
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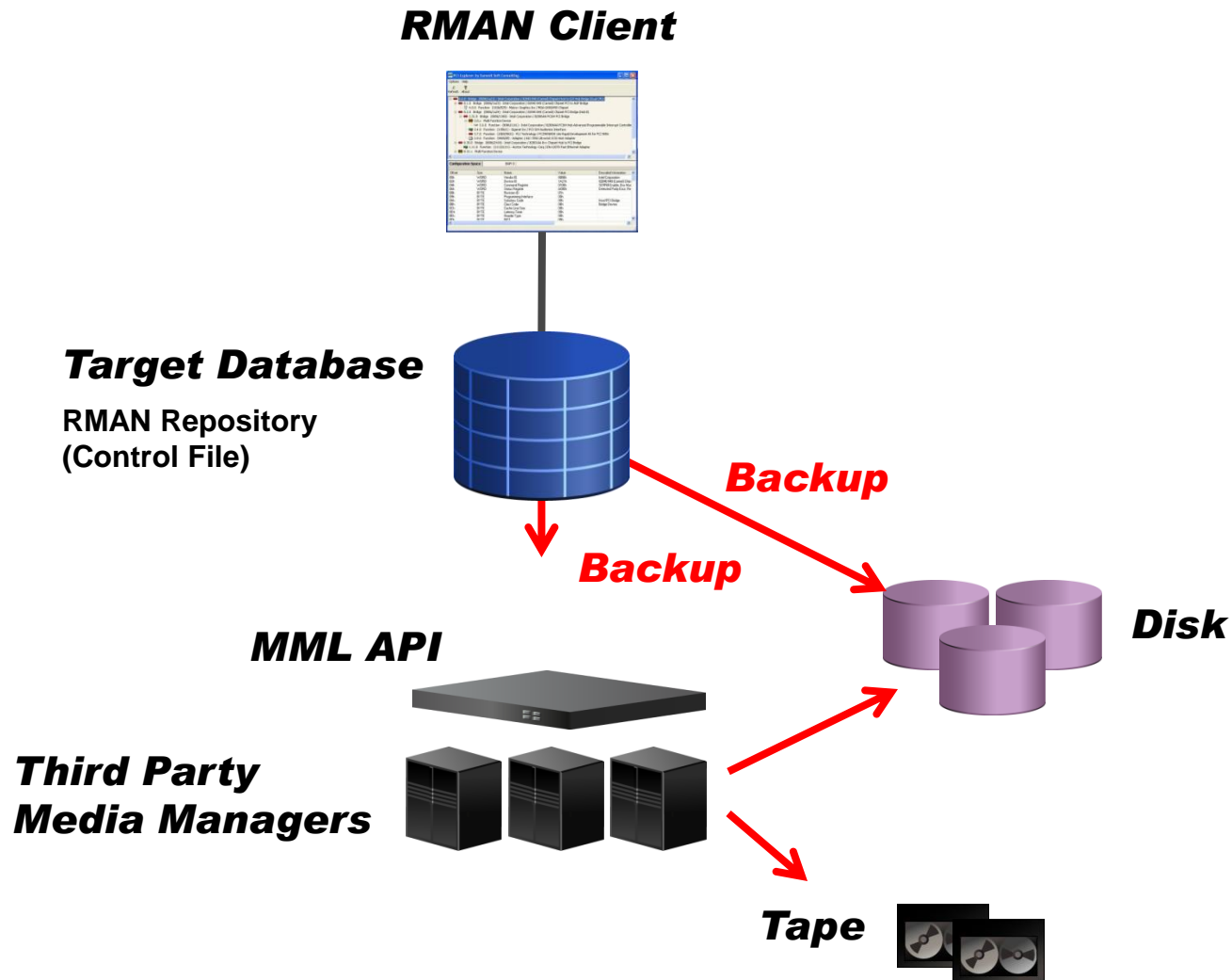
Overview of RMAN Functional Components



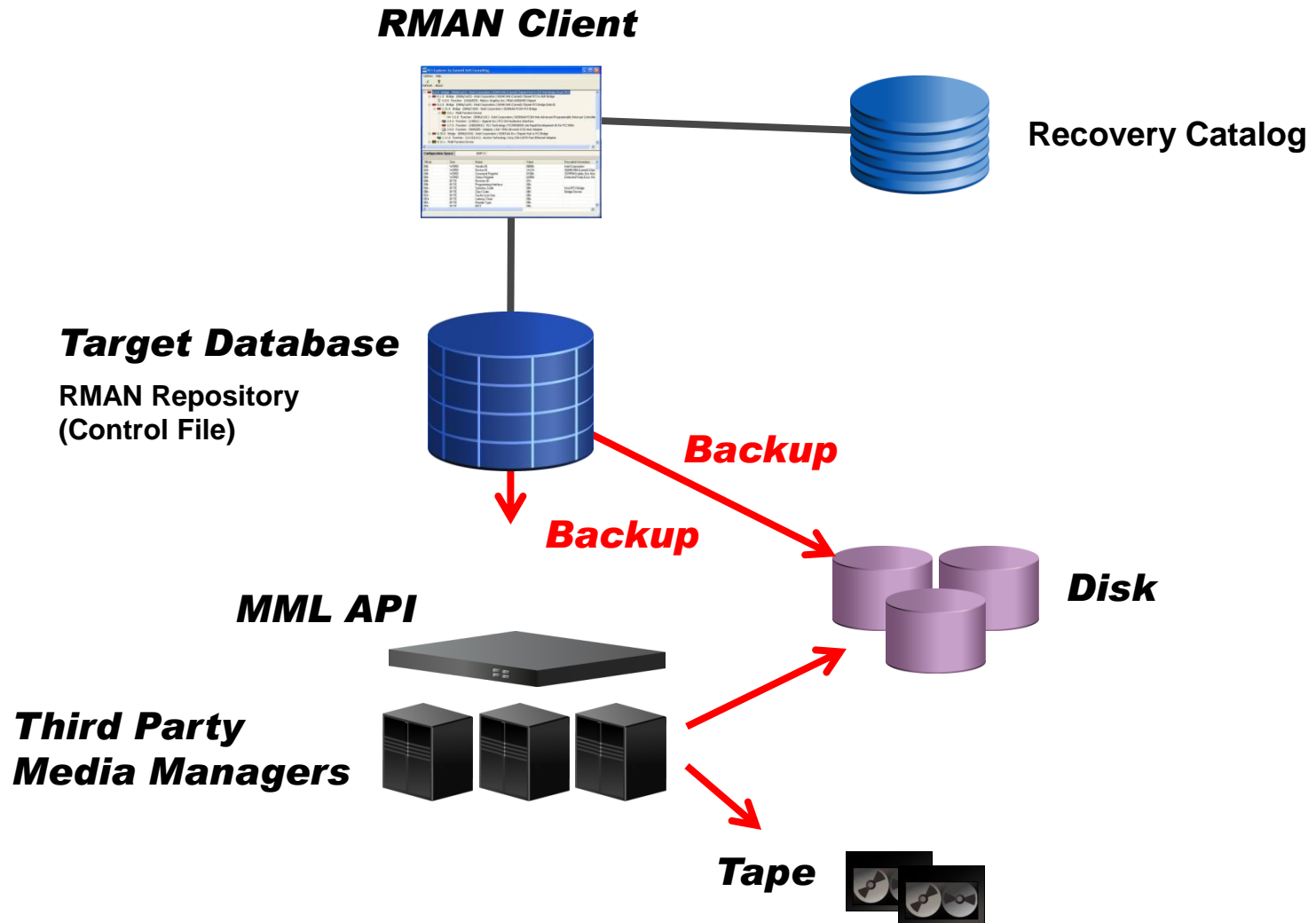
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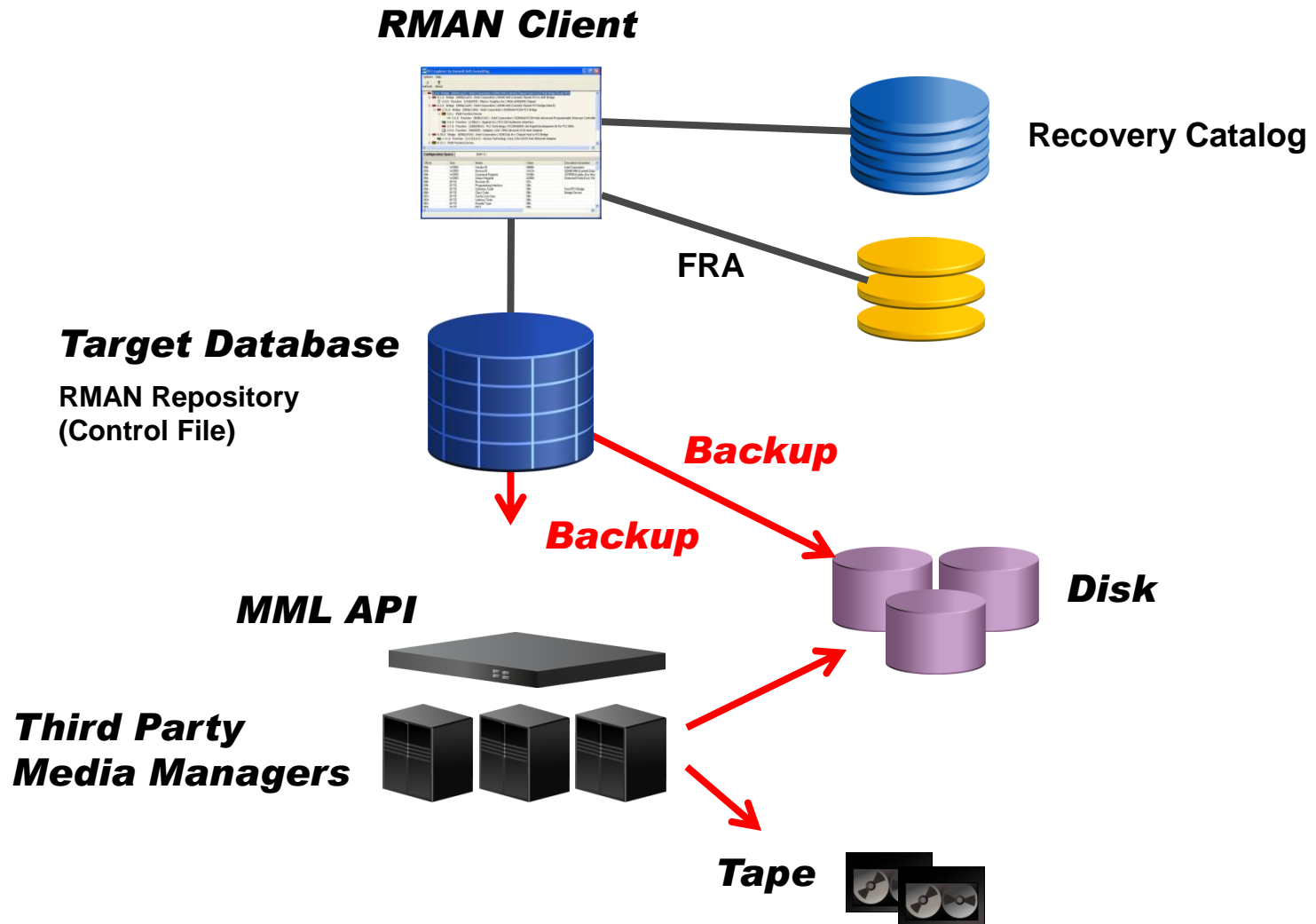
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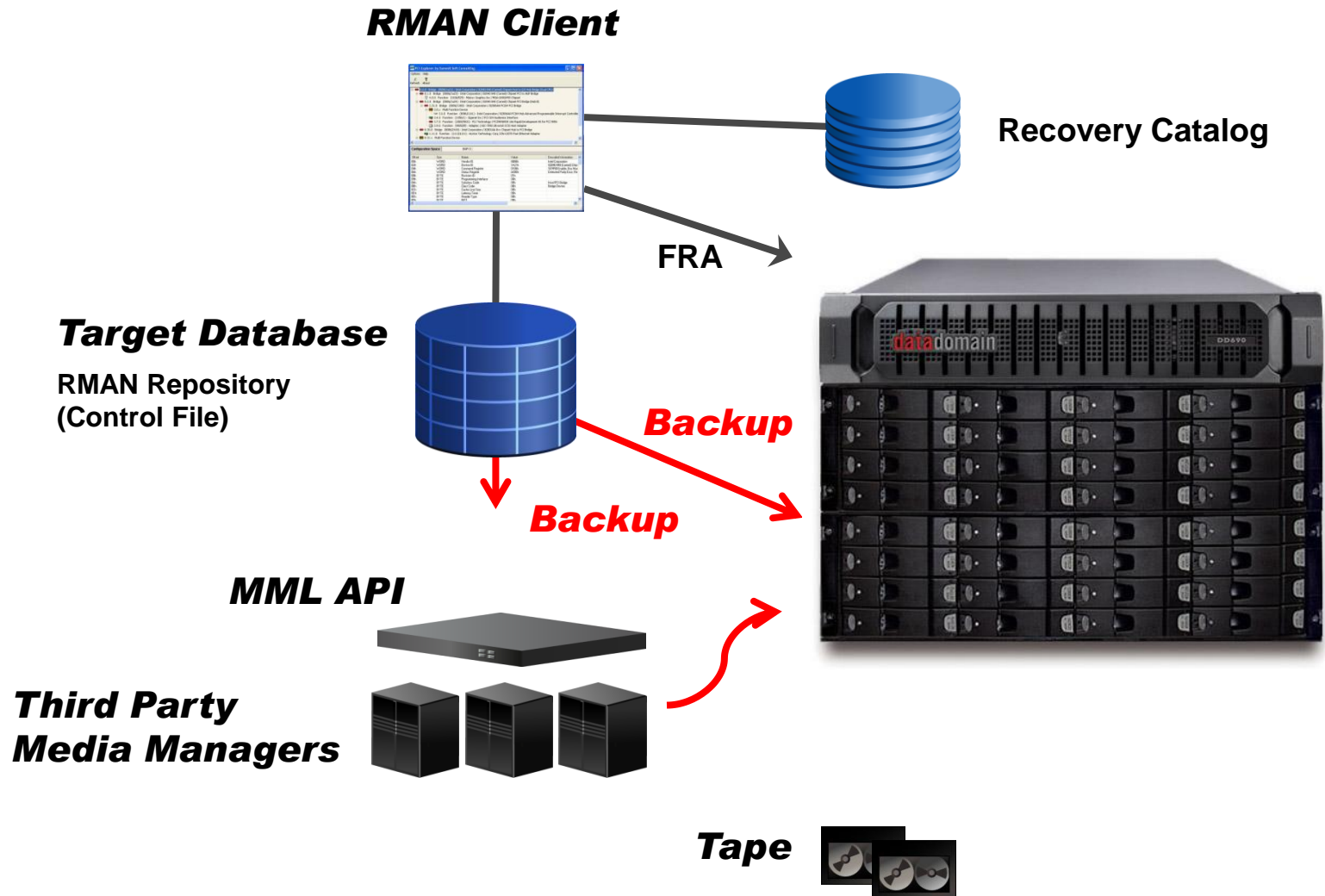
Overview of RMAN Functional Components



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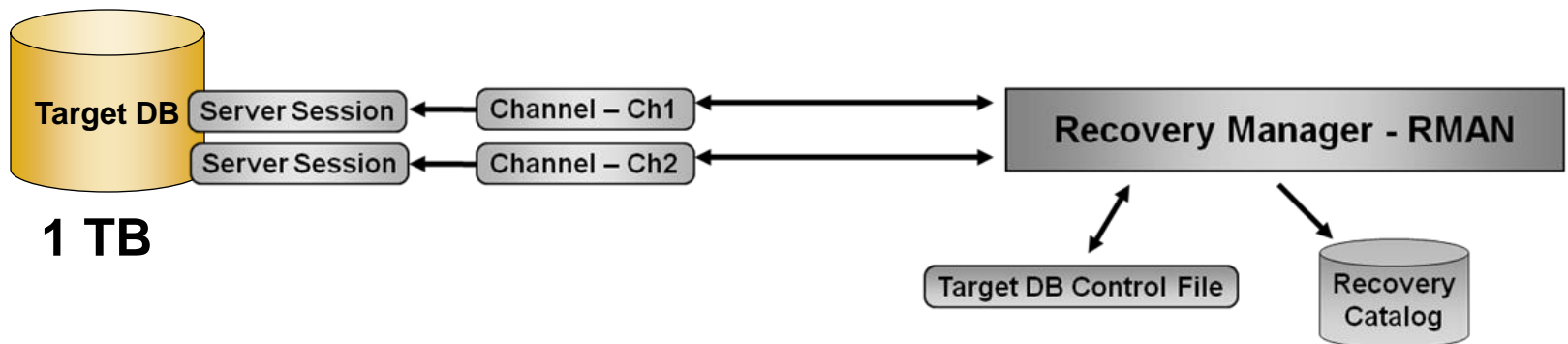
Overview of RMAN Functional Components



Weekly Full Backup

Weekly: Full image backups (nightly would be preferred!)

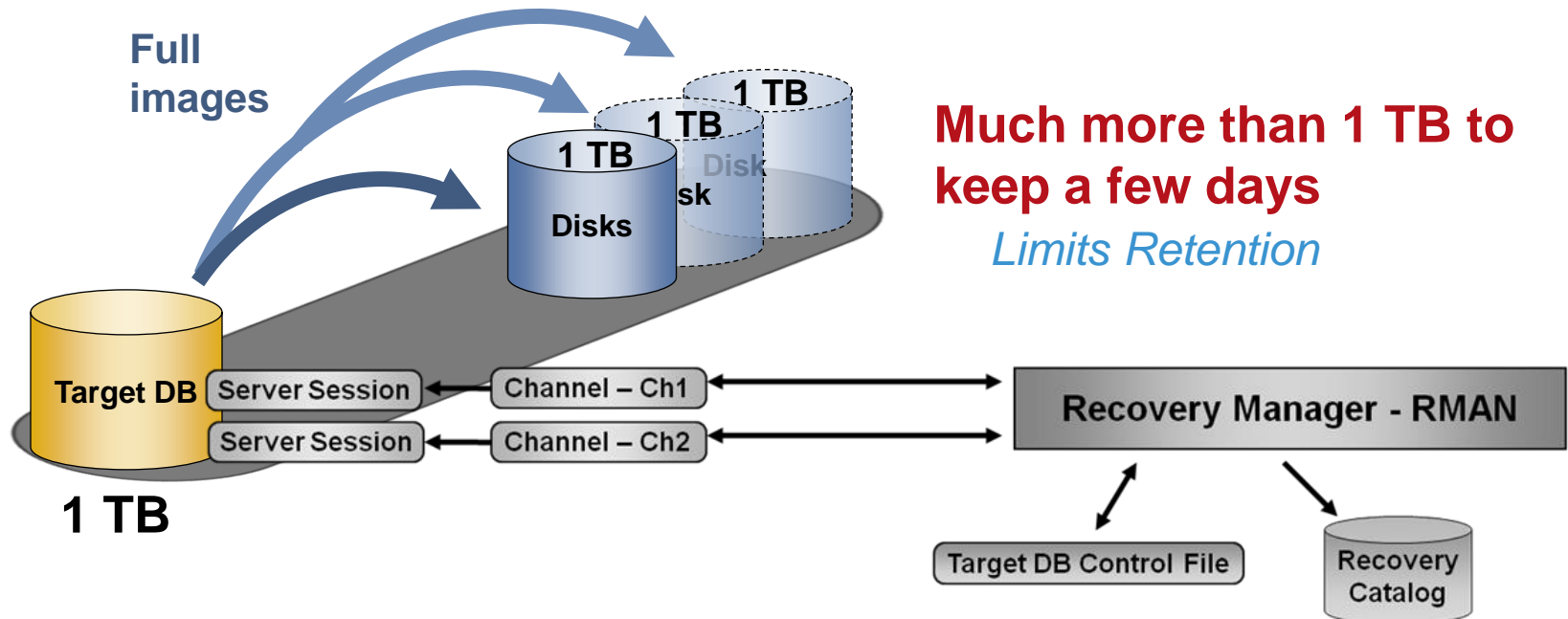
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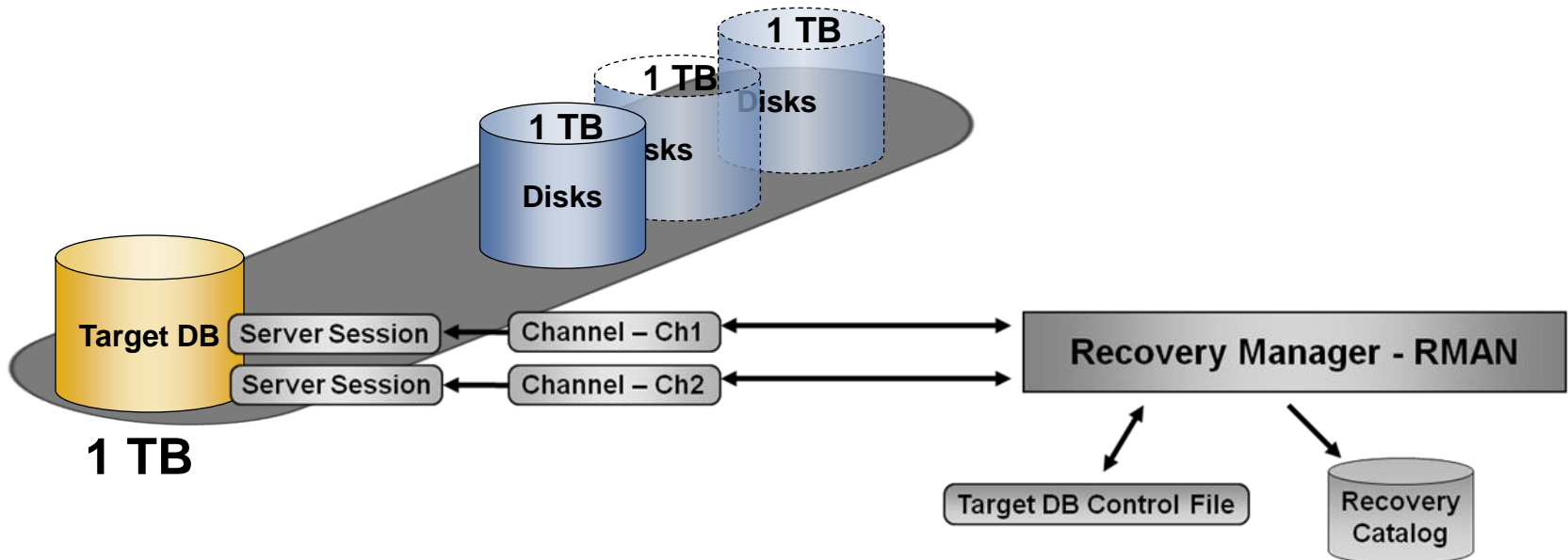


Daily Incremental Backup

Daily: Incremental backup after weekly full

```
RMAN> ALLOCATE CHANNEL CH1 DEVICE TYPE DISK FORMAT '/backup/ora.weekly/%U';  
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Weekly Fulls



Daily Incremental Backup

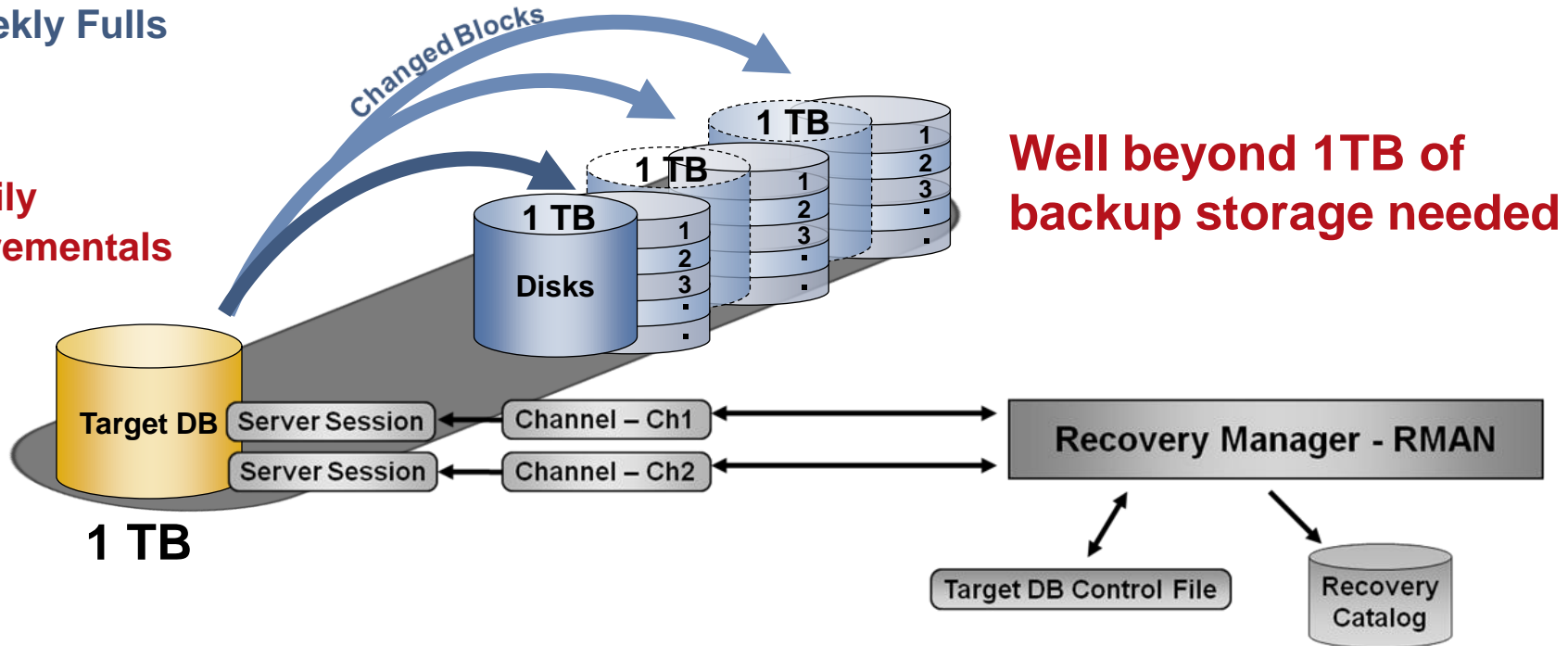
Daily: Incremental backup with update

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Weekly Fulls

+

Daily
Incrementals



Before Deduplication...

18 Cabinets of IBM Tape



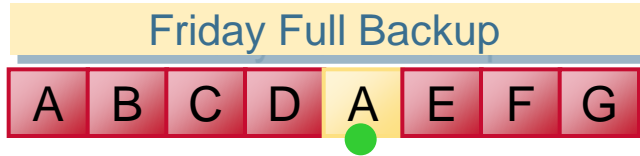
After Deduplication...

1 DD690 and 2 Expansion Shelves



Data Deduplication: Under The Hood

Store more backups in a smaller footprint



BACKUP DATA

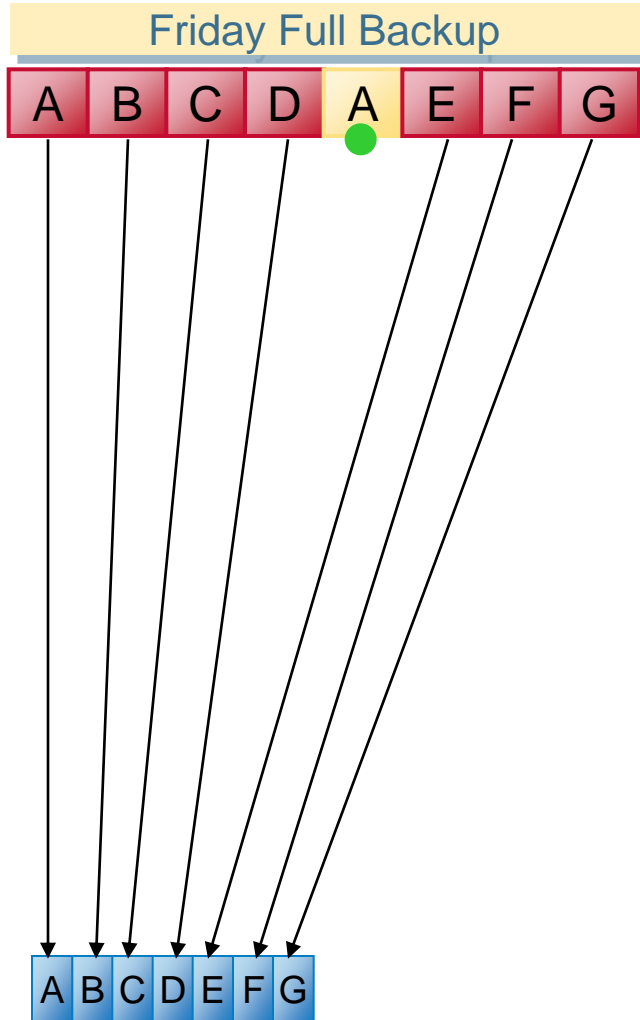
LOGICAL

ESTIMATED
REDUCTION

PHYSICAL

Data Deduplication: Under The Hood

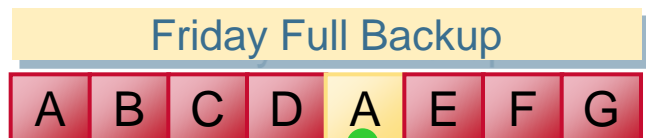
Store more backups in a smaller footprint



BACKUP DATA	LOGICAL	ESTIMATED REDUCTION	PHYSICAL
WEEKEND FULL	1 TB	2- 4x	250 GB

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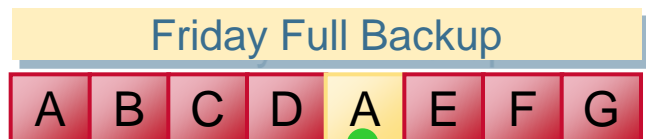
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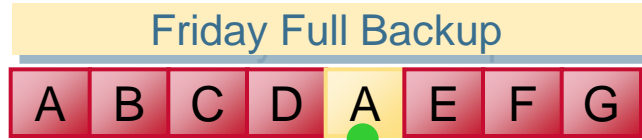
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Store more backups in a smaller footprint

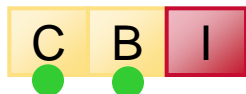
Friday Full Backup



Mon Incr



Tues Incr



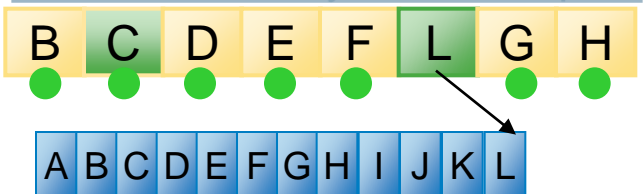
Weds Incr



Thurs Incr



Second Friday Full Backup



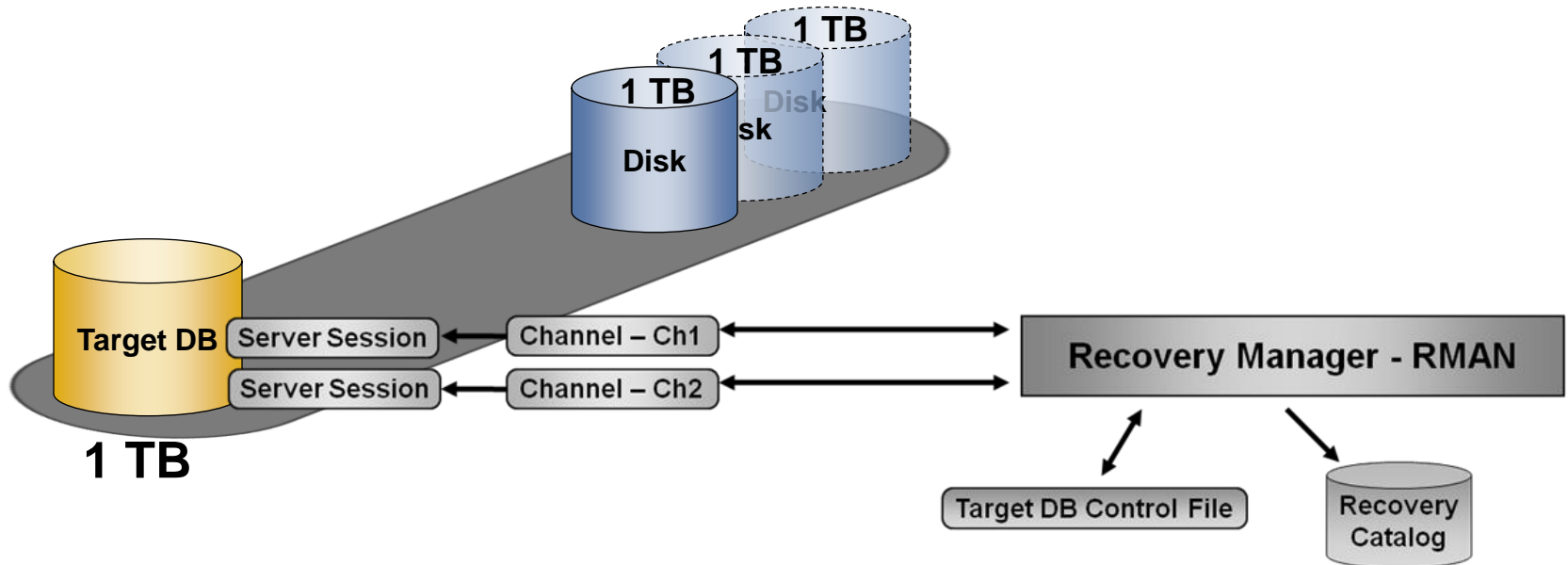
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Thursday Incr	100 GB	7-10x	10 GB
2 nd WEEKEND FULL	1 TB	50-60x	18 GB
TOTAL	2.4 TB	7.8x	308 GB

Weekly Full Backup – With Deduplication

Weekly: Full image backups

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Before: Without deduplication

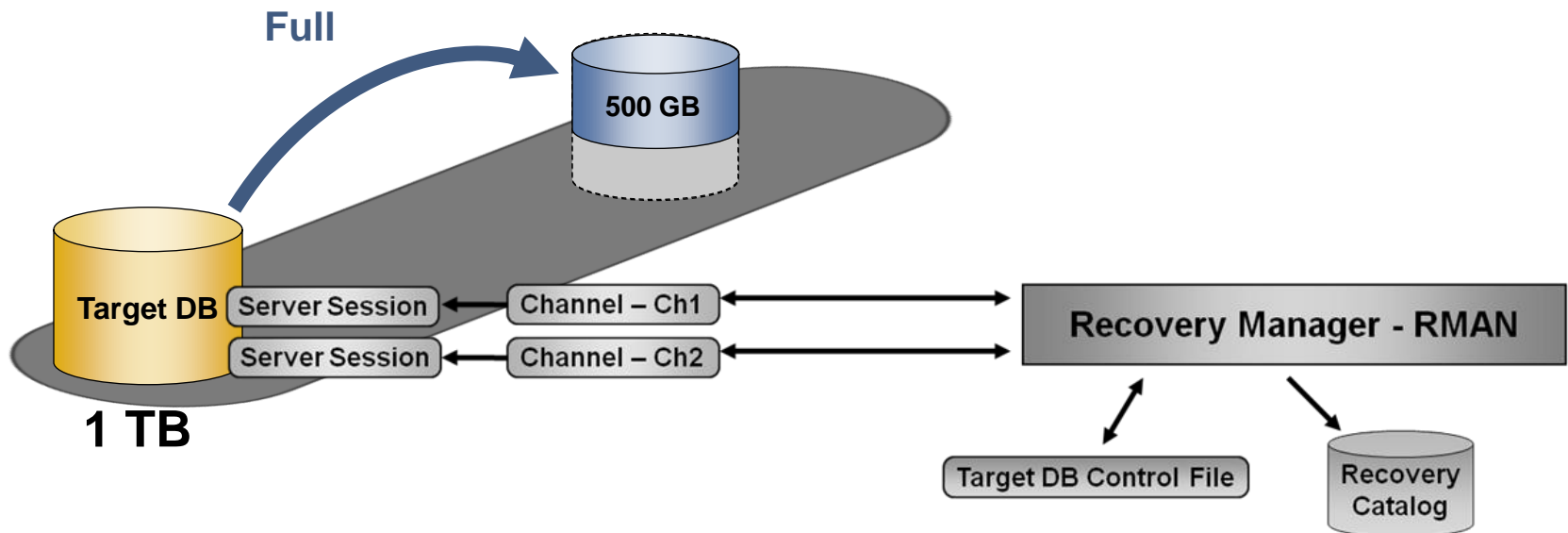


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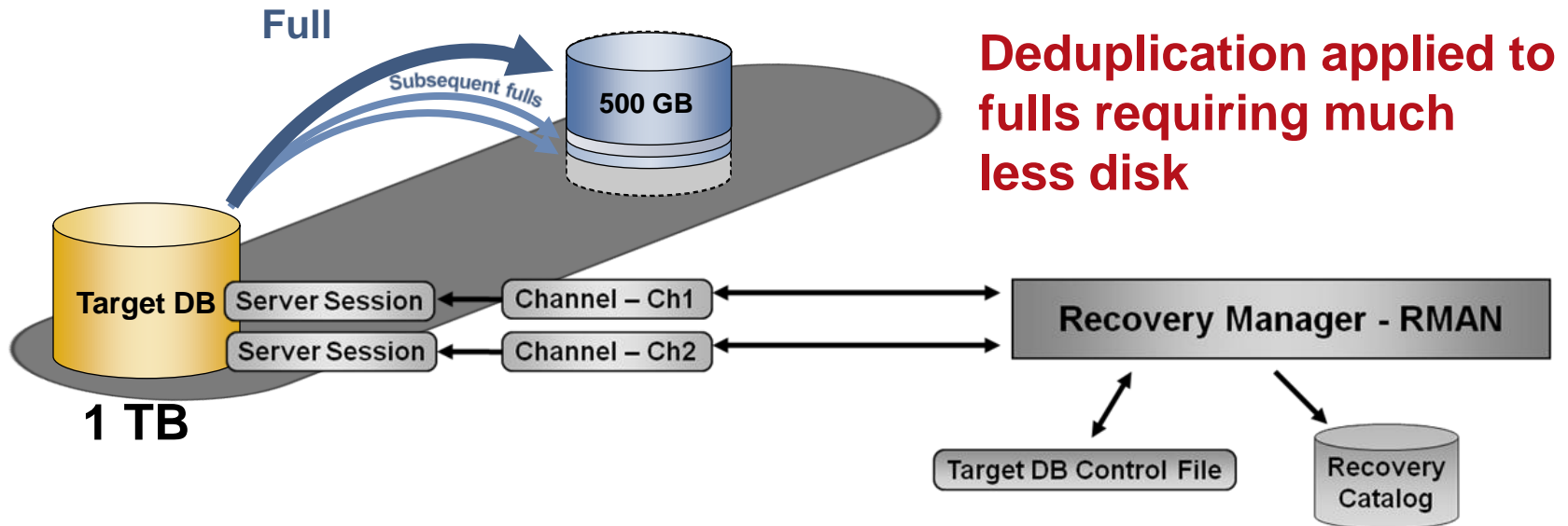


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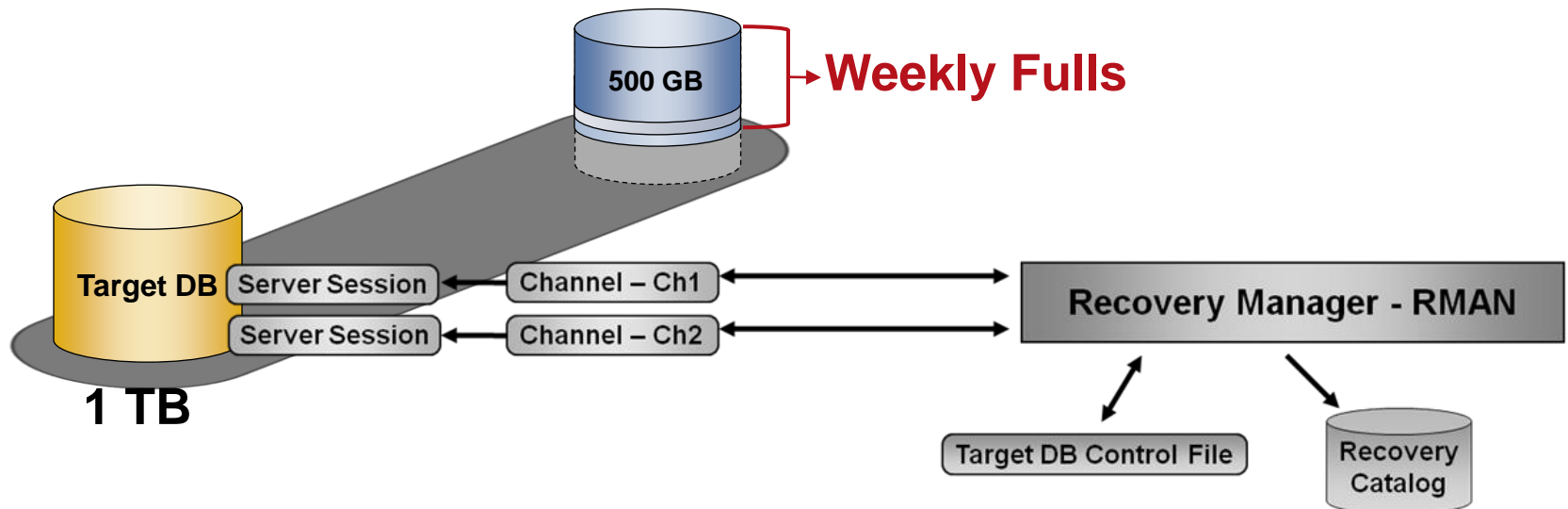


Daily Incremental Backup – With Deduplication

Daily: Incremental backup with update

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Incrementals after deduplication

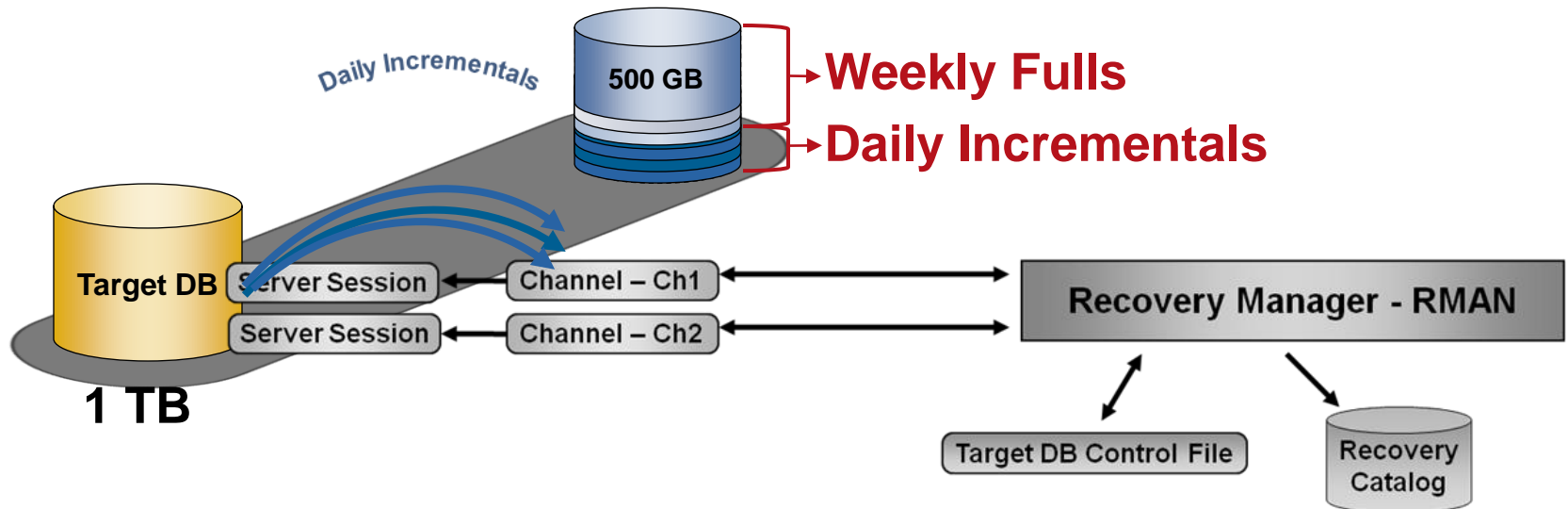


Daily Incremental Backup – With Deduplication

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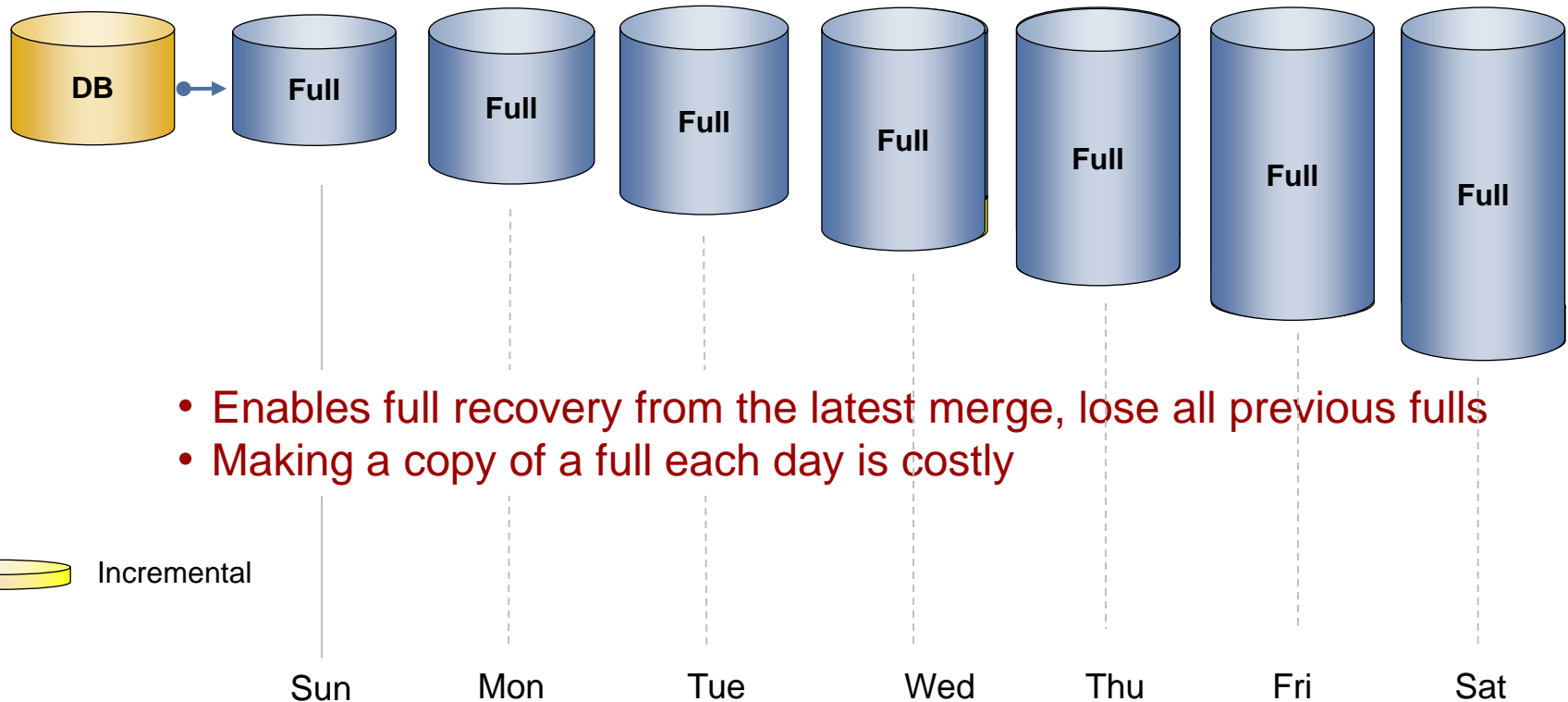
Incrementals after deduplication



Benefits of Using Inline Deduplication

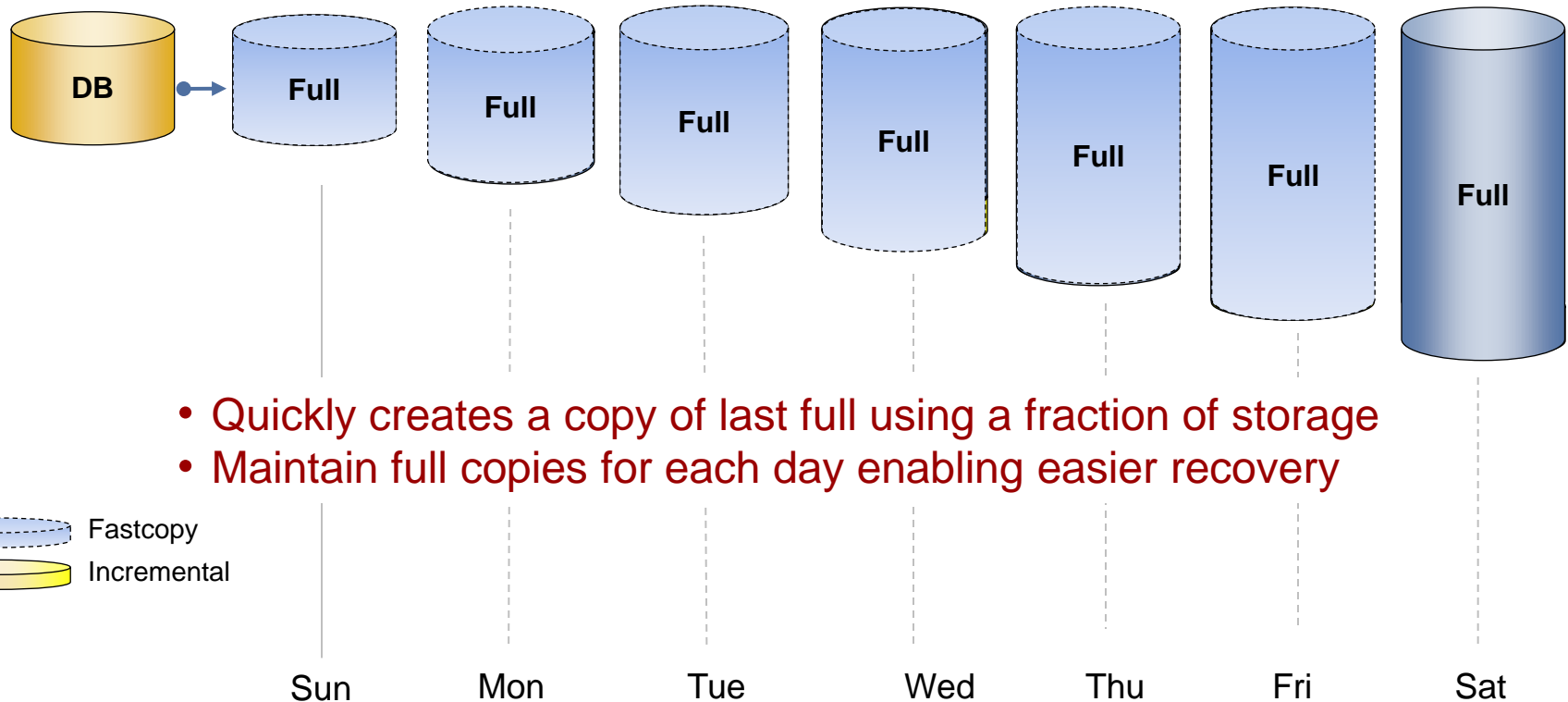
- Daily fulls instead of incrementals
- Longer online retention of full backup images
- Non disruptive introduction into RMAN process
- Realized efficiency enables replication over WAN without increasing pipe size
- Ideal location for Flashback Recovery Area
- Incrementally updated backups

RMAN Incremental Merge



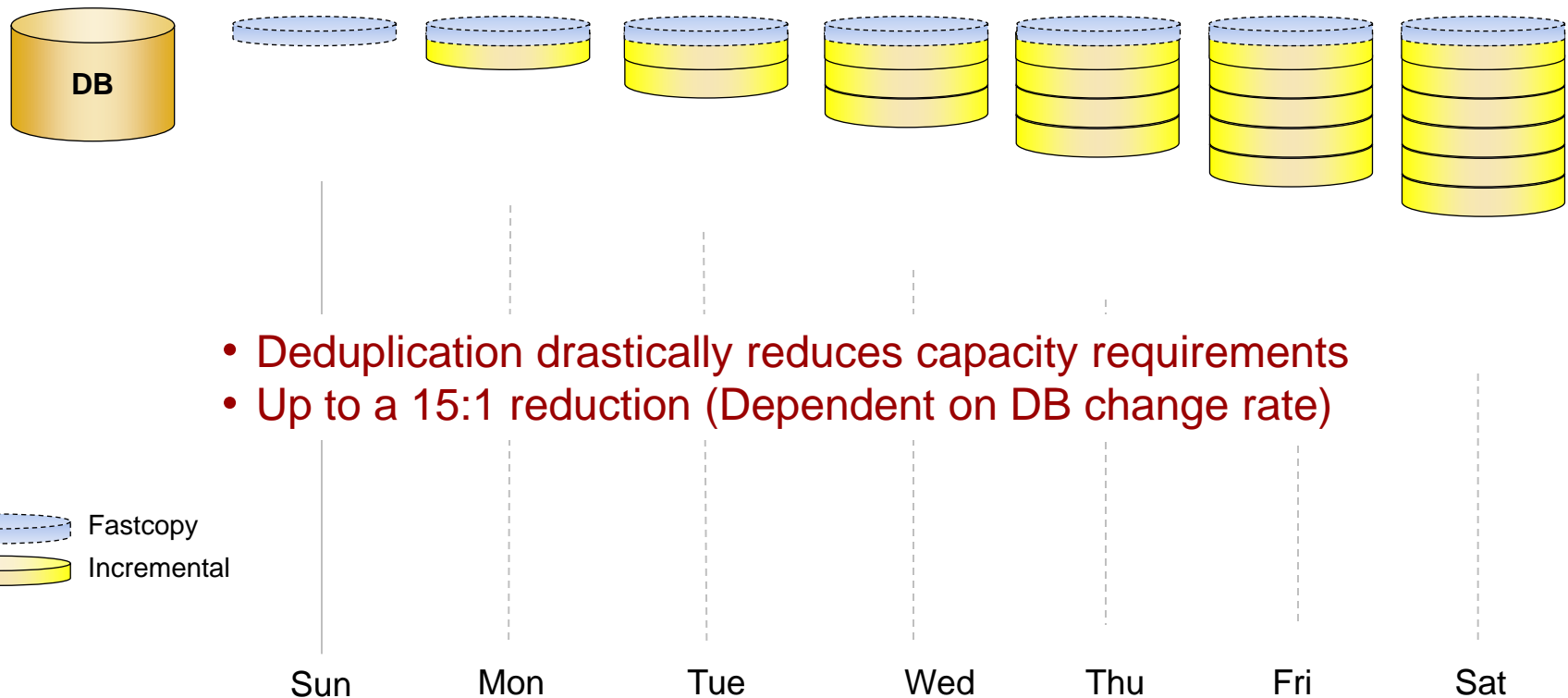
RMAN Incremental Merge

Impact of EMC Data Domain Fastcopy



RMAN Incremental Merge

Impact of EMC Data Domain deduplication



Summary

- How deduplication benefits Oracle/RMAN backups
- Simplification
- Savings

More Information...

- For more information on EMC Data Domain and Oracle, visit

<http://www.datadomain.com/solutions/oracle.html>

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