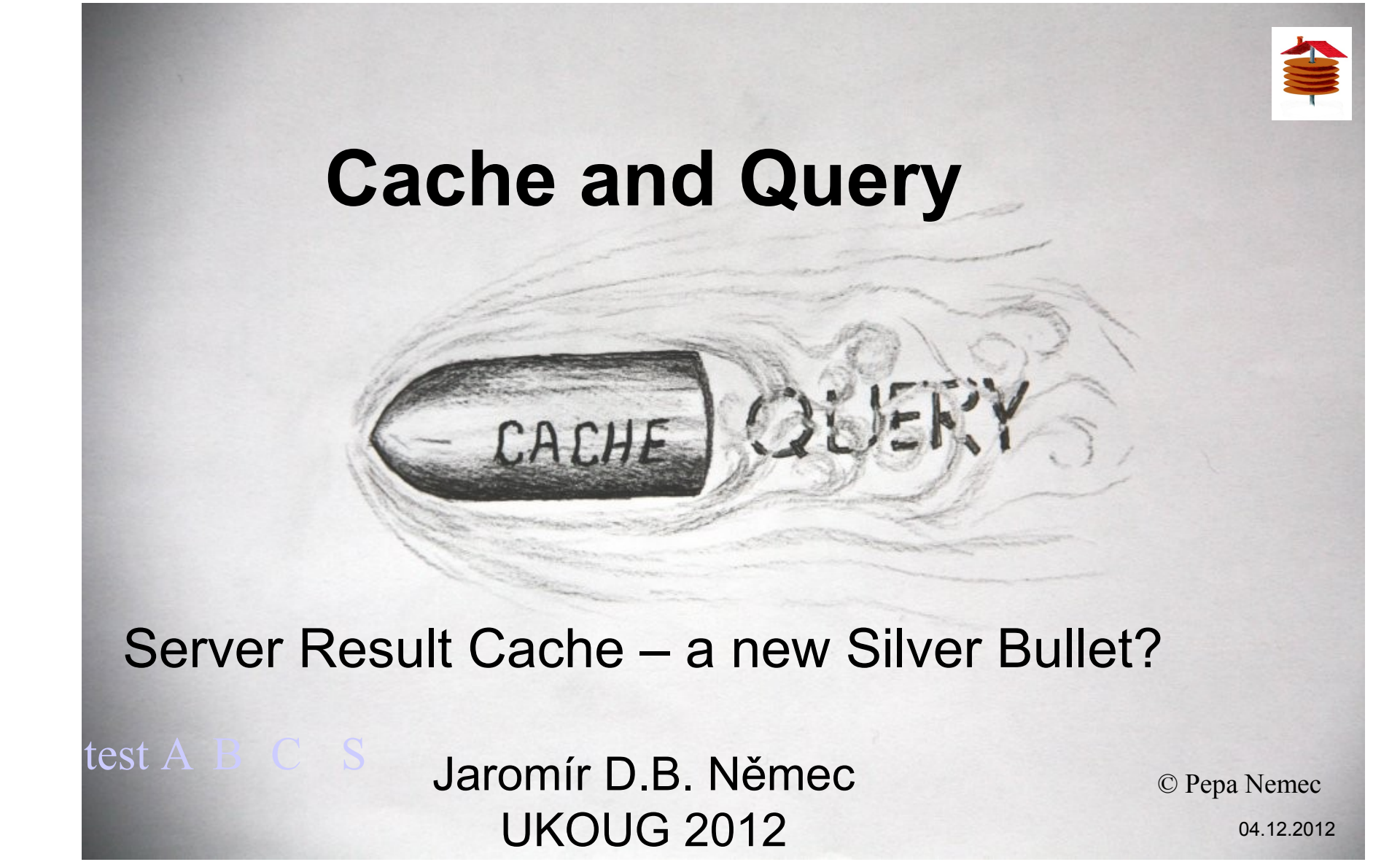

Cache and Query

Server Result Cache – a new Silver Bullet?

test A B C S

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UKOUG 2012

04.12.2012

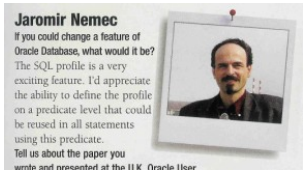
Who am I

www.db-nemec.com

- 15 years Oracle experiences
- 10g Oracle Certified Associate
- both OLTP and DWH
- Oracle conference speaker
- Oracle Magazine Peer 09/2006
- Oracle Beta-Tester

ORACLE

10*g* Certified Associate



Overview

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- Performance Problems
- Server Result Cache
- Materialized View
- Database Change Notification
- New Refresh Mode of MV

The Result Cache Dilemma

The Result Cache Dilemma

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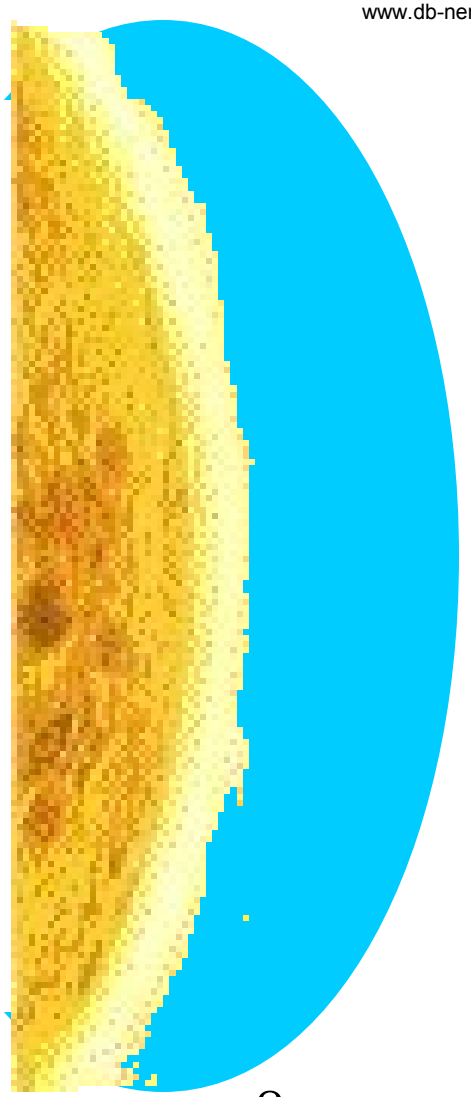

The Result Cache Dilemma

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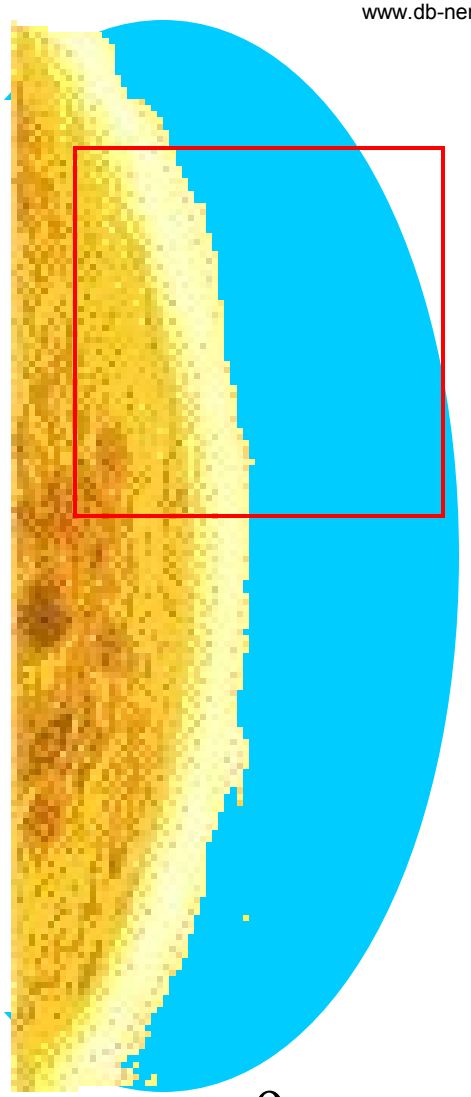
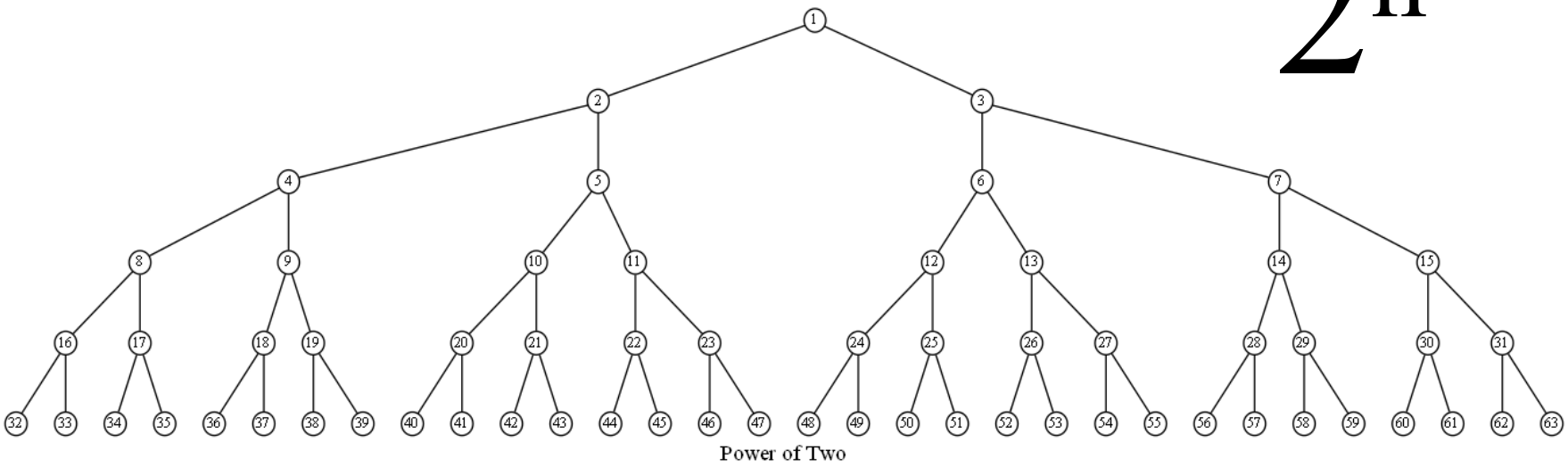


Power Of Two

2^n



Power Of Two Query

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```
select /*+ RESULT_CACHE */   id, boss_id,
                        encode_privs(priv, .005) privs
from priv_table a
start with id = 512
connect by prior id =   boss_id
```

queryA

Rule 1 – Half Fetch – No Cache

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Only fully fetched queries can be cached

queryB

Rule 2 – Result Set must Fit the Cache

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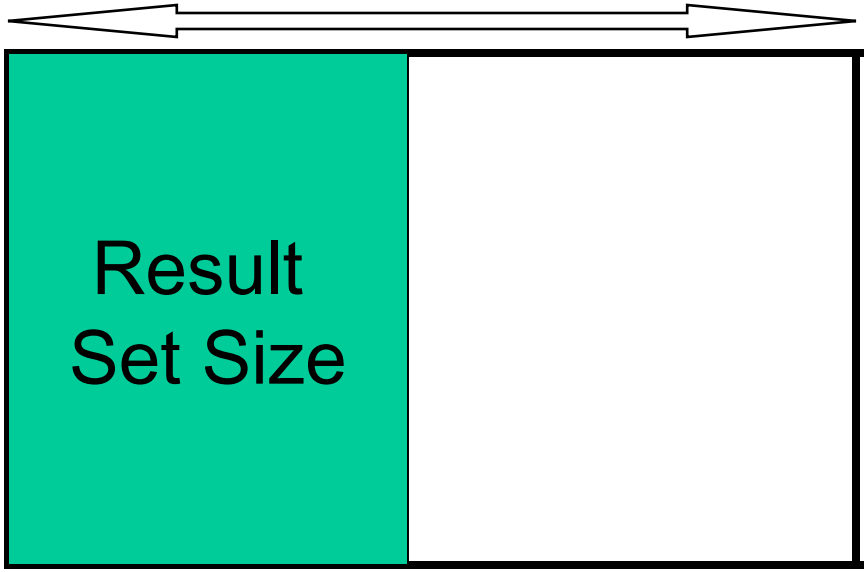
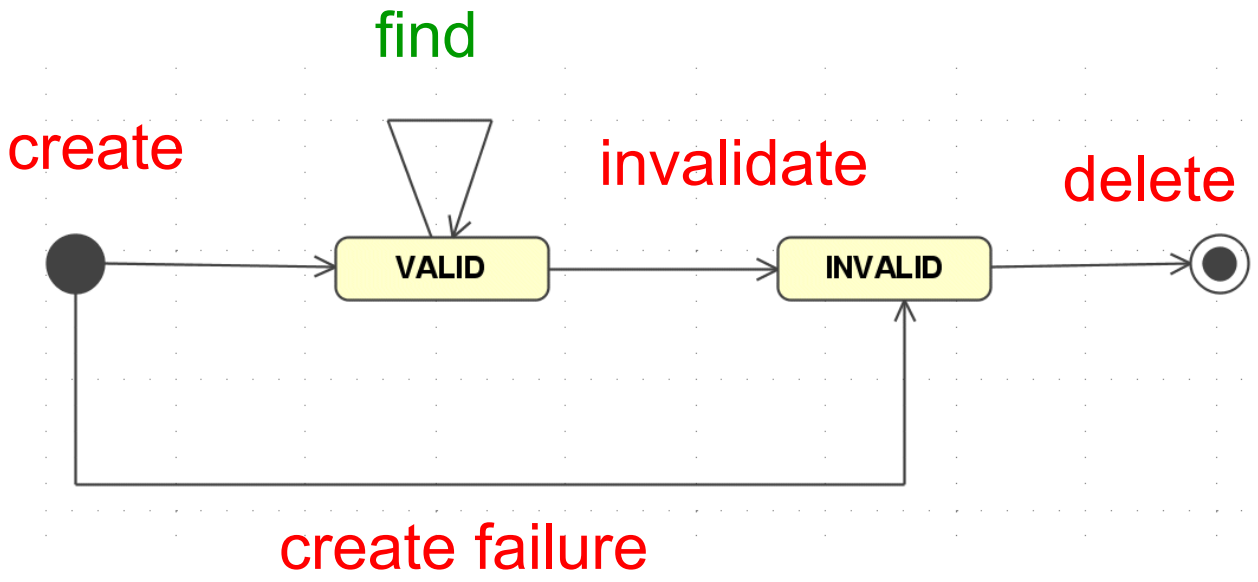
Result Size Maximum (Blocks)



State Diagram



Cache Efficiency I – Cache Hit Ratio

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CacheHitRatio (CHR) =

$$\frac{\text{Queries returned from the Cache}}{\text{Total Number of Queries}}$$

Cache Efficiency II – Cache Hit Ratio

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CacheHitRatio (CHR) =

$$\frac{\text{Find Count}}{\text{Find Count + Create Count (Success + } \textit{Failure)}}$$

Cache Efficiency III – Cache Allocation

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Allocation Percentage (Alloc) =

$$\frac{\text{Valid Blocks Allocated}}{\text{Total Cache Size}}$$

Case Study – Cache Efficiency

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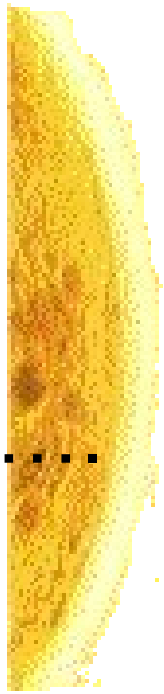
Start with …...

1,1,1,1,1,1,1,1,1,1,1,1,…..

1,2,1,2,1,2,1,2,1,2,1,2,….

1,2,3,1,2,3,1,2,3,1,2,3,…



Scale to ……

Snap

runQuery

Cache Invalidation

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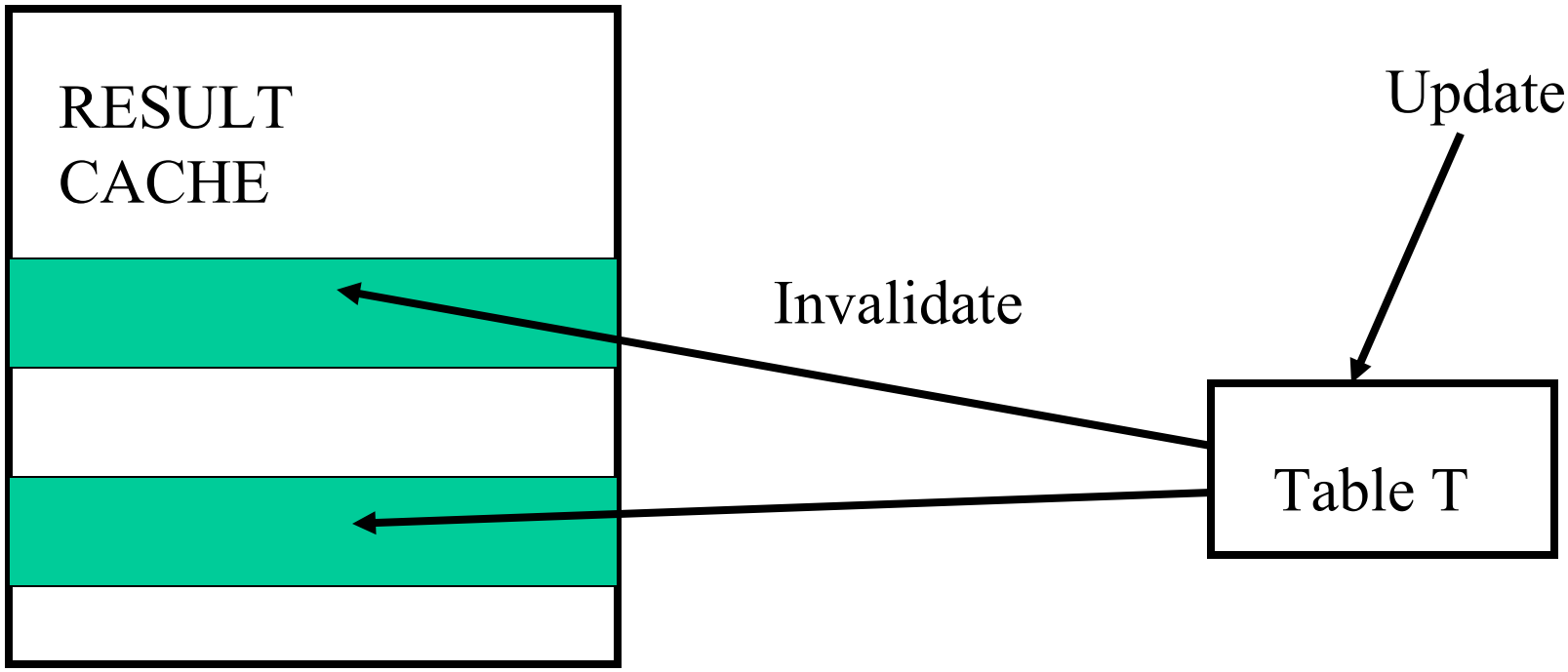


Snap

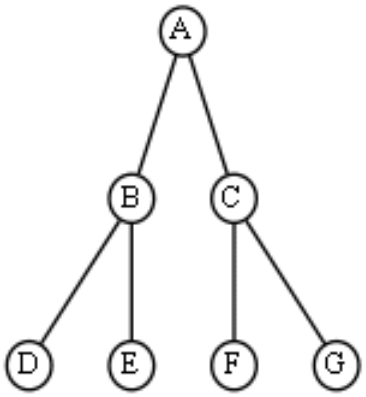
runQueryU

Server Result Cache Summary

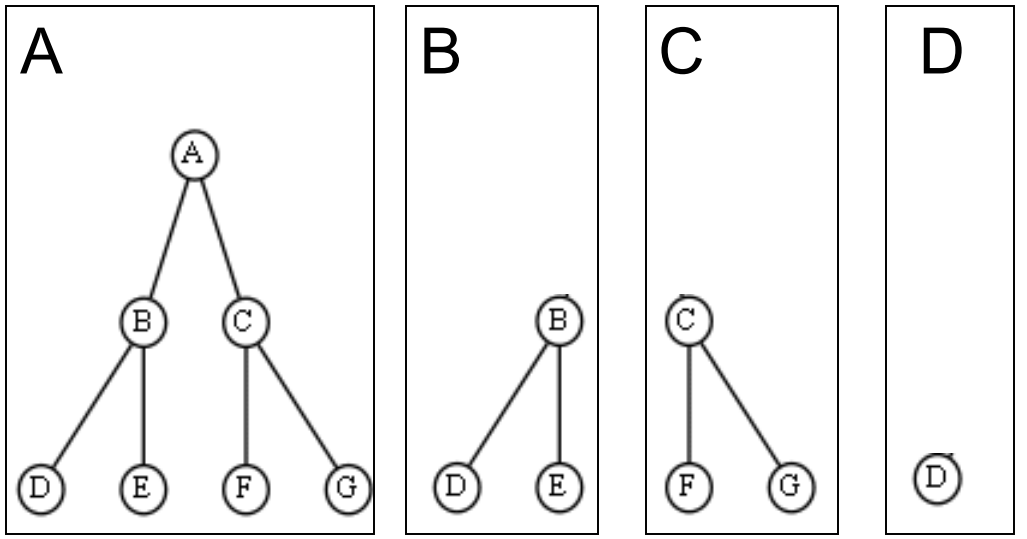
- Hint statements for caching
- Adjust cache parameters
- Expect excellent results for applications repeatedly accessing the same data

Materialized View

Original data



MV Parameter:



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Database Change Notification

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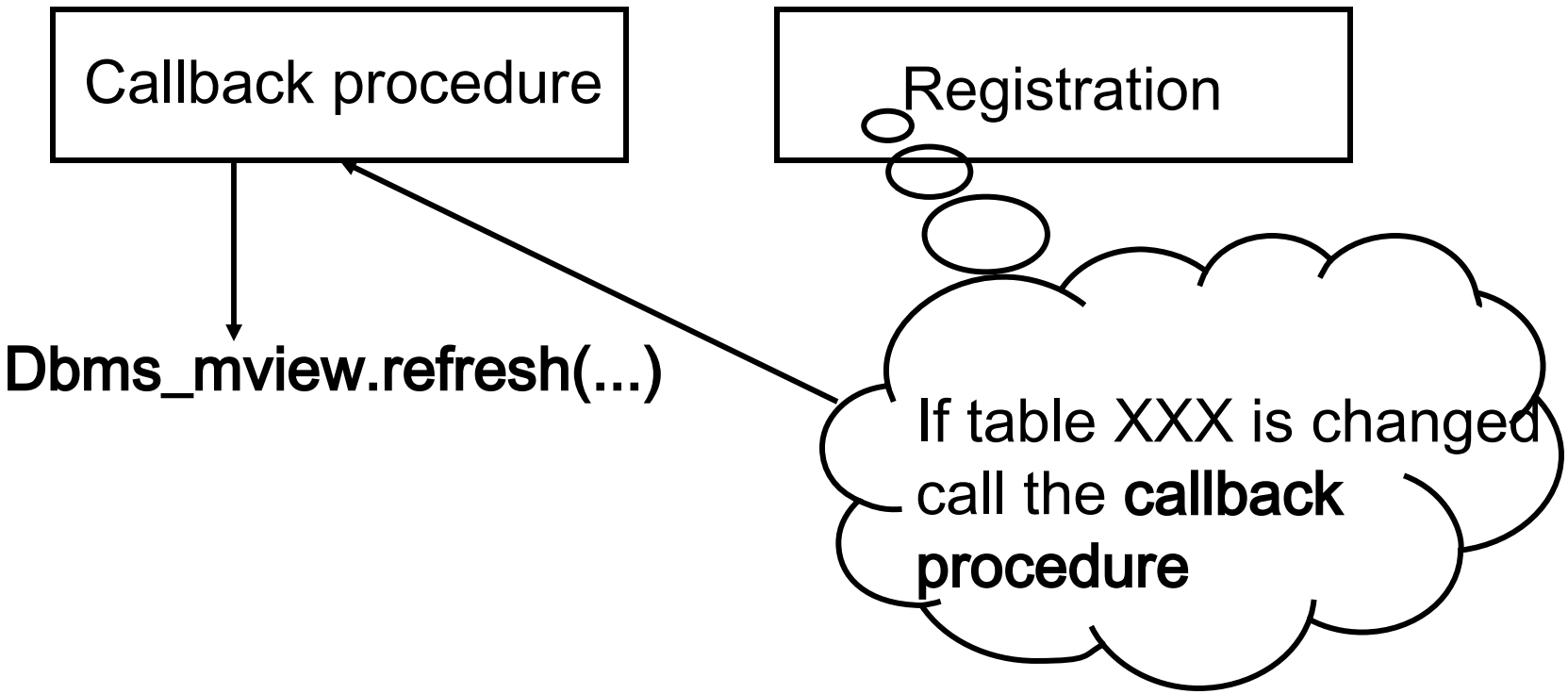

Big Picture

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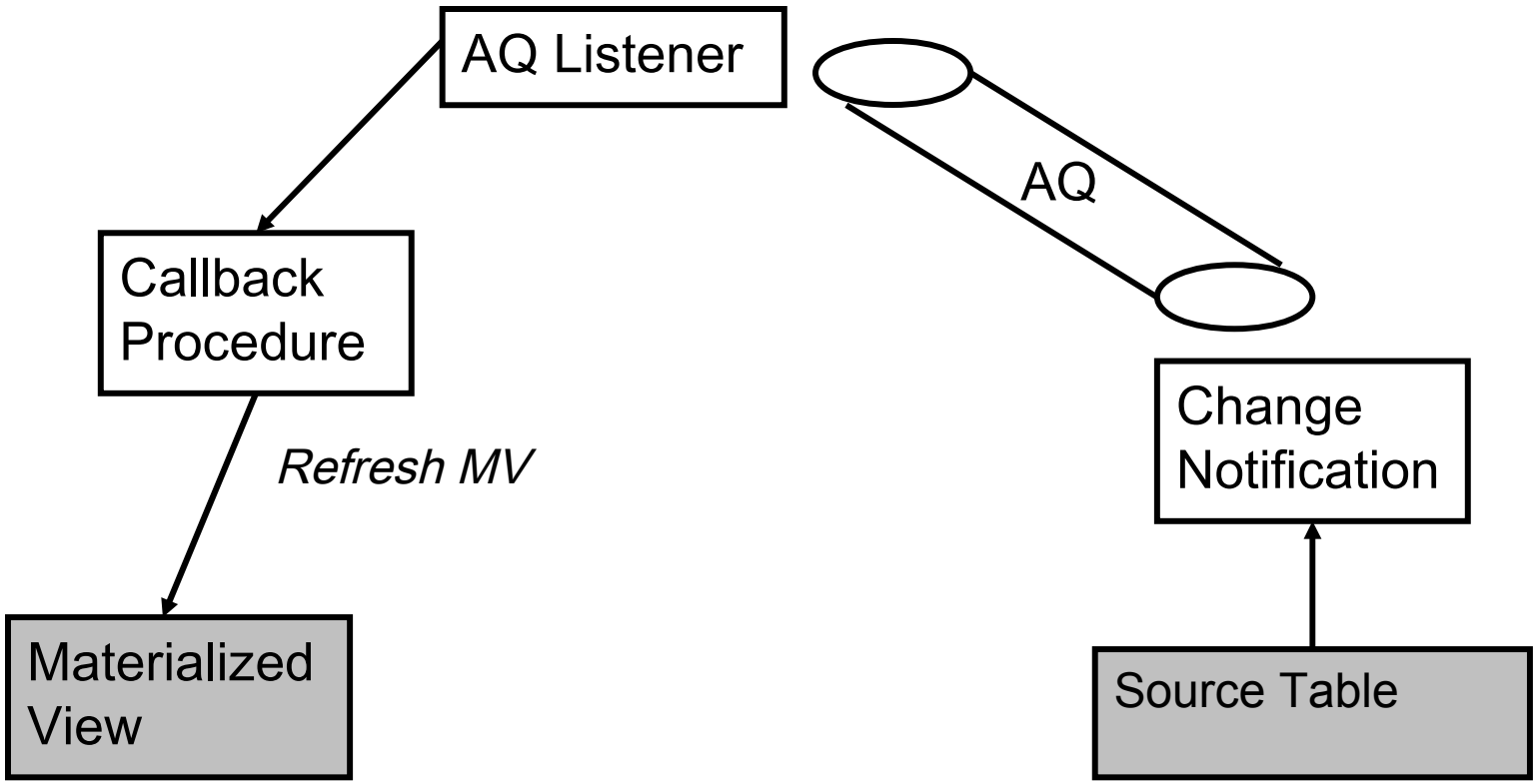
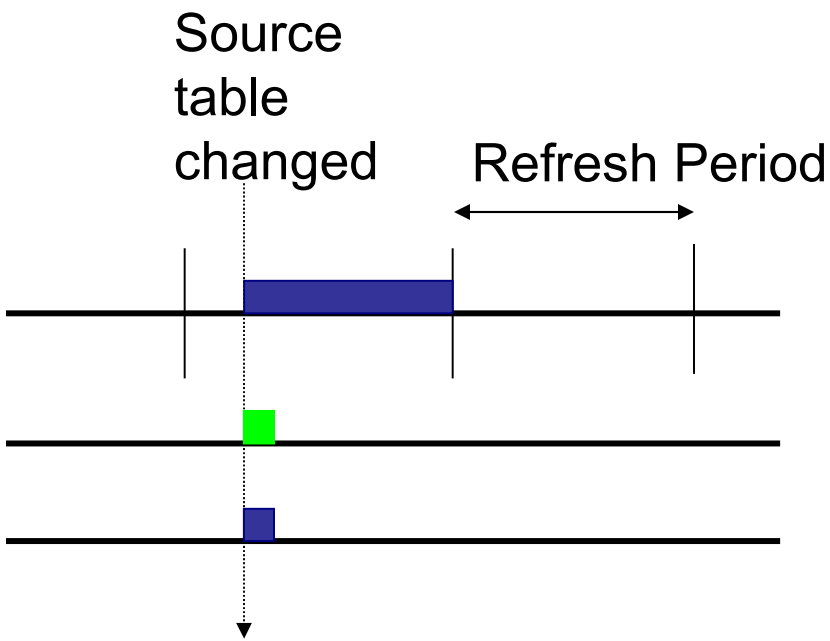

AQ Listener
AQ
Callback Procedure
Refresh MV
Change Notification
Materialized View
Source Table

MV Refresh Comparison



ON DEMAND Periodical

ON COMMIT

ON SOURCE CHANGE
(On Commit Async.)

Legend

- Commit delayed due to refresh of MV
- MV stale

Summary

- Use result cache wisely
- MV to optimize hierarchical queries
- Alternative MV refresh method (on commit async.)

White paper
http://www.db-nemec.com/cq/cache-n-query.html

Q & A

Backup – Script Support

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1) CQ_Support.sql queryA and update statement to inval. Cache
2) queryA2.sql script
3) queryB2.sql script

4) RunQuery.groovy + ShowCacheStatistics.groovy

5) RunQueryforUpdate.groovy