



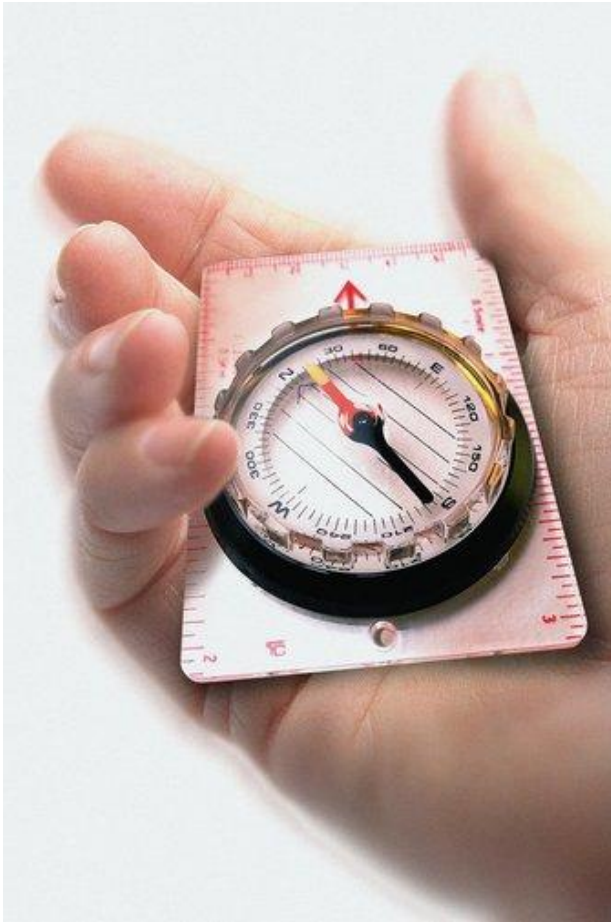
Managing Undo





Course objectives

After completing this lesson, you should be able to do the following:



- **Monitor and administer undo**
- **Configure undo retention**
- **Guarantee undo retention**
- **Use undo advisor**
- **Describe the relationship between undo and transactions**
- **Size the undo tablespace**





Course topics

Course's plan:



- Concepts
- Managing Undo





Concepts



Preview

- Undo Data
- Transactions and Undo Data
- Storing Undo Information





Undo Data

What's Undo data?

- A copy of original, premodification, data
- Captured for every transaction that changes data
- Retained at least until the transaction is ended
- Used to support:
 - Rollback operations
 - Read-consistent
 - Recovery from failed transactions
 - Flashback queries





Undo Data

Undo data and Rollback data

- Before Oracle 9i, “undo data” and “rollback data” were used interchangeably
- With Oracle 9i, Oracle introduced the undo segment as an alternative
- Observe the results of a query against **DBA_SEGMENTS**, there is still **ROLLBACK** segments.

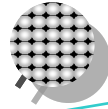
```
SELECT DISTINCT segment_type  
FROM dba_segments;
```

- Still there may not exist an undo tablespace, at creation time, Oracle creates a single old-fashioned rollback segment in the **SYSTEM** tablespace.
- All users transactions will use undo segments, listed in **DBA_SEGMENTS** as segment_type **TYPE2 UNDO**.





Undo Data



If you ask an Oracle
Product Developer

“What is a **TYPE1 UNDO**
segment?”

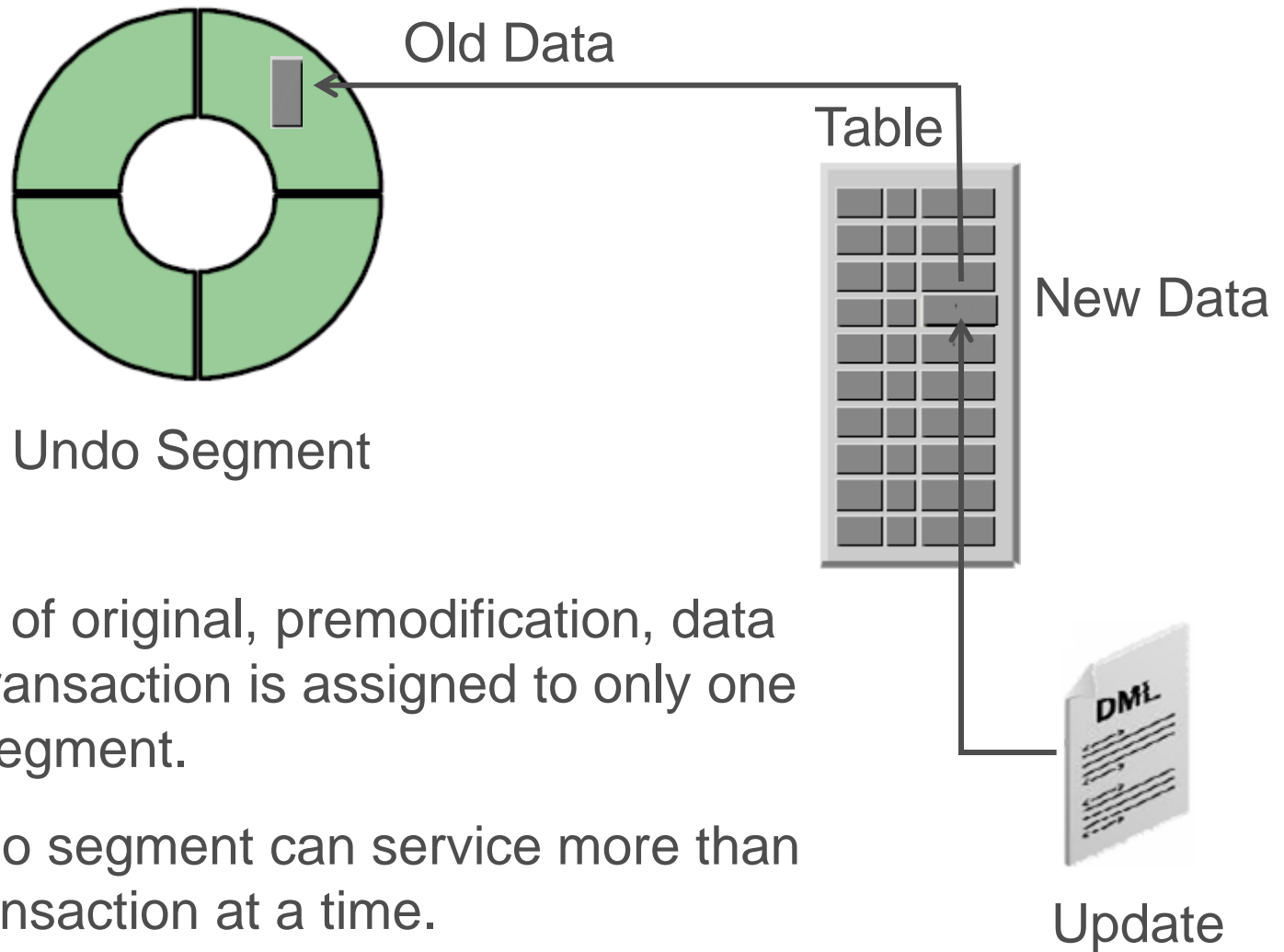
the reply will be,

“That’s a **ROLLBACK**
segment.”





Transactions and Undo Data



- A copy of original, premodification, data
Each transaction is assigned to only one undo segment.
- An undo segment can service more than one transaction at a time.





Storing Undo Information

Undo Information Storage

Undo information is stored in undo segments, which are in turn stored in an undo tablespace. Undo tablespaces:

- Are only used for undo segments
- Have special recovery considerations
- May only be associated with a single instance, and an instance can only have one active undo tablespace at a time

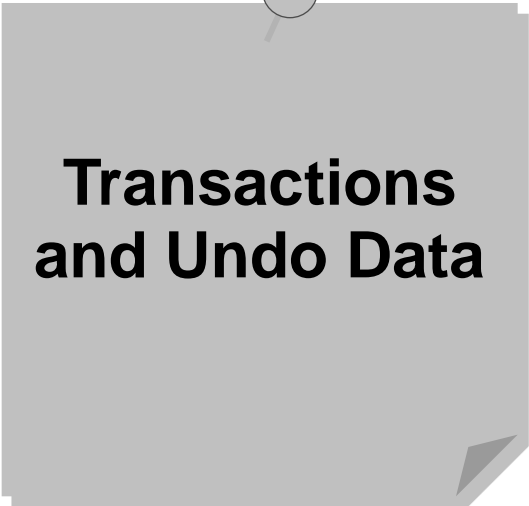




Part 1 Summary



Undo Data



**Transactions
and Undo Data**



**Storing Undo
Information**





Part 1 Stop-and-think

Do you have any questions ?





Managing Undo



Managing Undo Preview

- Administering Undo
- Undo Retention
- Undo Tablespaces





Administering Undo

Undo usually requires little management. Areas to monitor include:

- Undo tablespace free space
- “Snapshot too old” errors





Administering Undo

Prevention on administration of undo

- Undo tablespace space errors
 - Size the undo tablespace properly
 - Ensure large transactions commit periodically
- “Snapshot too old” errors
 - Configure an appropriate undo retention interval
 - Size the undo tablespace properly
 - Consider guaranteeing undo retention

```
UNDO _MANAGEMENT=AUTO  
UNDO _TABLESPACE=UNDOTBS1
```





Undo Retention

Configuring Undo Retention

Undo retention specifies (in seconds) the amount of already committed undo information to retain.

- Default value is 0 (automatic).
- Maximum value is 2^{32} seconds (more than 132 years).
- A setting of 0 indicates automatic undo retention mode.

```
UNDO_RETENTION=0
```





Undo Retention

Guaranteeing Undo Retention

Committed undo information will be overwritten rather than cause transactions to fail for lack of undo space unless undo retention is “guaranteed.”

```
SQL> ALTER TABLESPACE undotbs1 RETENTION  
GUARANTEE;
```

Tablespace altered.

```
SQL> SELECT contents, retention  
2 FROM dba_tablespaces  
3 WHERE TABLESPACE_NAME='UNDOTBS1';
```

CONTENTS	RETENTION
UNDO	GUARANTEE





Undo Tablespaces

Sizing an undo tablespace

Undo Management

Undo Advisor

Configuration

Automatic Undo Retention	Enabled	Undo Tablespace	<u>UNDOTBS1</u>	Change Tablespace
Undo Retention	<u>Automatic</u>	Size (MB)	485	Current Tablespace Size
Undo Retention Guarantee	No	Auto-Extensible	Yes	

Recommendations

Choose the time period that best represents the system activity to get the recommendations for undo retention length and undo tablespace size.

[Edit Undo Tablespace](#)

Analysis Time Period	<div>Last One Hour</div>	Update Analysis
Selected Analysis Time Period	11/23/03 11:00 AM - 11/23/03 12:00 PM	
Potential Problems	No Problem Found	
Recommendations	No Recommendation	

System Activity and Tablespace Usage

The recommendations are based on system activity and undo tablespace usage for the selected analysis time period.

Longest Running Query (seconds)	2	Undo Consumption Rate
Average Undo Generation Rate (KB/minute)	29.0	
Maximum Undo Generation Rate (KB/minute)	50.0	





Undo Tablespaces

Using the Undo Advisor

Advisor

* New Undo Retention 3 days

Analysis Time Period Last Seven Days

Choose the time period that best represents system activity

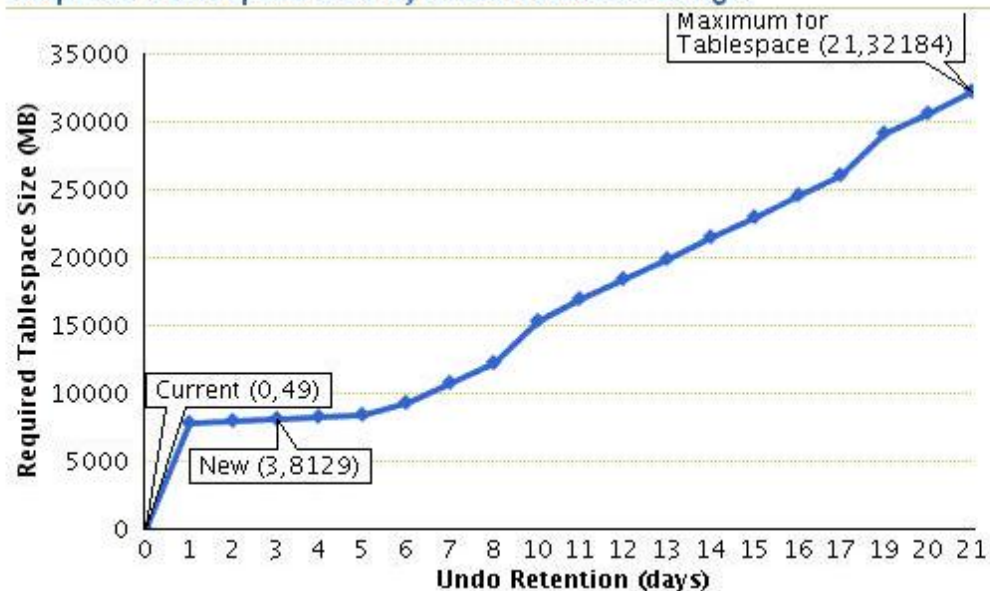
Update Analysis and Graph

Selected Analysis Time Period 11/17/03 1:00 PM - 11/24/03 1:00 PM

Analysis

Required Tablespace Size for New Undo Retention (MB) 8129
Required Tablespace Size for Current Undo Retention (MB) 49
Undo Retention to Prevent Snapshot Too Old Error (days) 0
Maximum Undo Retention for Current Tablespace (days) 21

Required Tablespace Size by Undo Retention Length





Part 2 Summary



**Administering
Undo**



**Undo
Retention**



Undo Tablespaces





Part 2 Stop-and-think

Do you have any questions ?

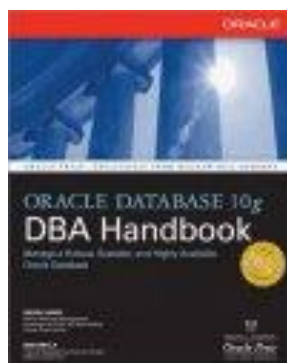
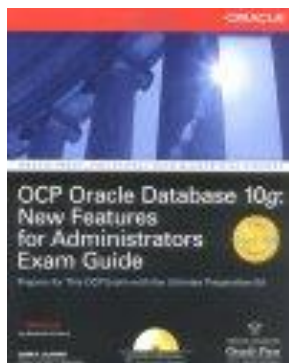




For more

If you want to go into these subjects more deeply, ...

Publications



<http://www.oracle.../bookstore/>

Web sites

<http://www.labo-oracle.com>

<http://www.oracle.com>

<http://otn.oracle.com>

Courses

Cursus: Merise & SQL

Cursus: PL/SQL

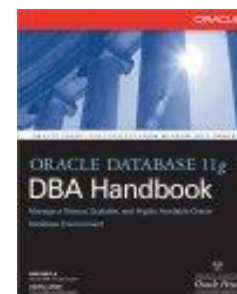
Cursus: DBA1 & DBA2

Cursus: DWH, OAS & BIS

Certifications

1Z0-042

1Z0-043





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You have successfully completed
the SUPINFO course n°22

**Oracle Technologies
Managing Undo**

Managing Undo

The end

