

# **Monitoring and Managing Storage**

# Objectives

**After completing this lesson, you should be able to:**

- **Tune redo writing and archiving operations**
- **Issue statements that can be suspended when encountering space condition errors**
- **Reduce space-related error conditions through proactively managing tablespace space usage**
- **Reclaim wasted space from tables and indexes using the segment-shrink functionality**
- **Estimate the size of new tables and indexes**
- **Use different storage options to improve performance of queries**
- **Rebuild indexes online**

# Online Redo Log File Configuration

- **Size redo log files to minimize contention.**
- **Provide enough groups to prevent waiting.**
- **Store redo log files on separate, fast devices.**
- **Monitor the redo log file configuration with:**
  - **V\$LOGFILE**
  - **V\$LOG**
  - **V\$INSTANCE\_RECOVERY**



# Redo Logfile Sizing Advisor

ORACLE Enterprise Manager 10g Database Control

Setup Preferences Help Logout Database

Database: orcl > Redo Log Groups Logged in As SYS

## Redo Log Groups

**Update Message**  
The recommended optimal redo log file size is 49 MB.

**Search**

Name

To run an exact match search or to run a case sensitive search, double quote the search criteria. The wildcard (%) symbol can still be used in a double quoted search string.

**Results**

**Actions**

# Increasing the Performance of Archiving

- Allow the LGWR process to write to a disk different from the one the ARCn process is reading.
- Share the archiving work during a temporary increase in workload:

```
ALTER SYSTEM ARCHIVE LOG ALL  
TO <log_archive_dest>
```

- Increase the number of archive processes.
- Change archiving speed:
  - LOG\_ARCHIVE\_MAX\_PROCESSES
  - LOG\_ARCHIVE\_DEST\_n

# Resumable Statements

**A resumable statement:**

- **Allows you to suspend large operations instead of receiving an error**
- **Gives you a chance to fix the problem while the operation is suspended, rather than starting over**
- **Is suspended for the following conditions:**
  - **Out of space**
  - **Maximum extents reached**
  - **Space quota exceeded**

# Using Resumable Space Allocation

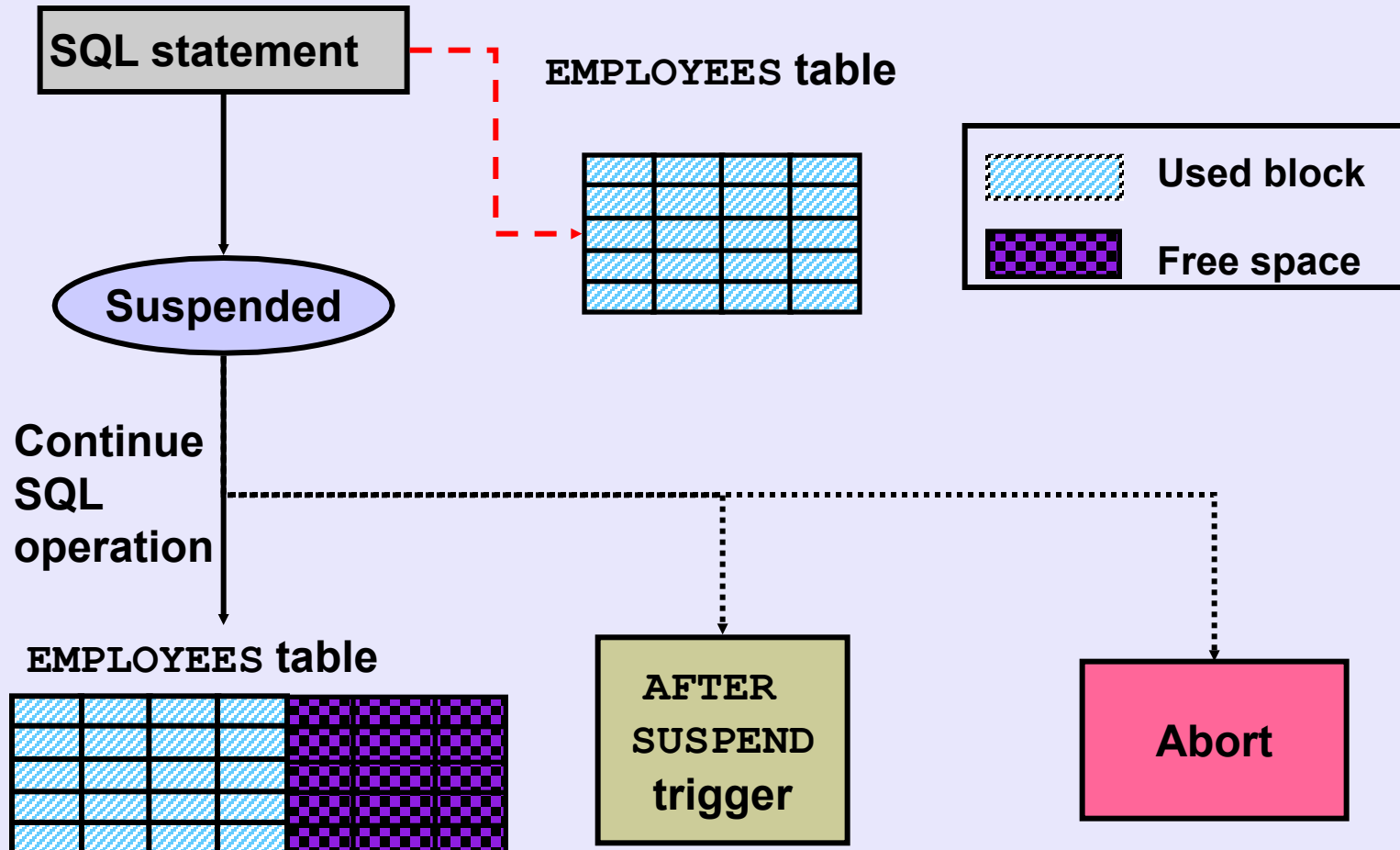
- Queries, DML operations, and certain DDL operations can be resumed if they encounter an out-of-space error.
- A resumable statement can be issued through SQL, PL/SQL, SQL\*Loader, or the Oracle Call Interface (OCI).
- To run a resumable statement, you must first enable resumable statements for your session.

```
ALTER SESSION ENABLE RESUMABLE;  
  
INSERT INTO sales_new SELECT * FROM sh.sales;  
  
ALTER SESSION DISABLE RESUMABLE;
```





# Resuming Suspended Statements

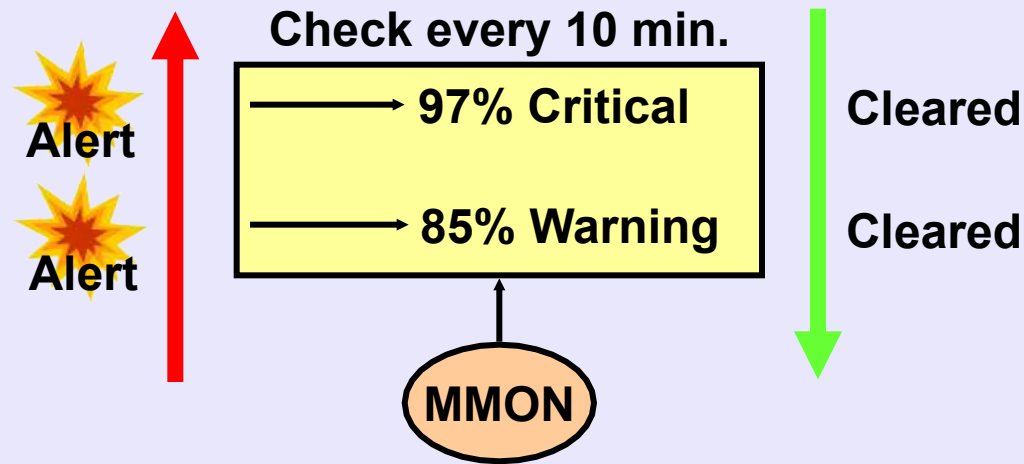




# Proactive Tablespace Monitoring Overview

- **Server-generated alerts inform you that:**
  - **Tablespaces are running low on available space**
  - **Segments are running out of space**
- **Data gathering and reporting provides:**
  - **Historical tablespace disk space usage**
  - **Segment growth trend analysis**

# Tablespace Space Usage Monitoring



- **Read-only and offline tablespaces:** Do not set up alerts.
- **Temporary tablespace:** Threshold corresponds to space currently used by sessions.
- **Undo tablespace:** Threshold corresponds to space used by active and unexpired extents.
- **Tablespaces that can extend automatically:** Threshold is based on the maximum file size.

# Edit Tablespace Page

Database Control Database

Database: orcl > Tablespaces > Edit Tablespace: EXAMPLE Logged in As SYS

## Edit Tablespace: EXAMPLE

Show SQL Revert Apply

General Storage **Thresholds**

Tablespace Size **150.000**  
(MB)

Space Used (MB) **77.813**

Space Used (%) 51.88

### Space Used Thresholds

Use Default Thresholds Modify Database Defaults

Warning (%) **85**

Critical (%) **97**

Specify Thresholds, by percent used

Warning (%)

Critical (%)

Disable Thresholds

# Segment Advisor Overview

Database: [orcl.us.oracle.com](#) > [Advisor Central](#) > Segment Advisor

## Segment Advisor

You can get advice on shrinking segments for individual schema objects or entire tablespaces.

Cancel

Continue

- Tablespaces
- Schema Objects

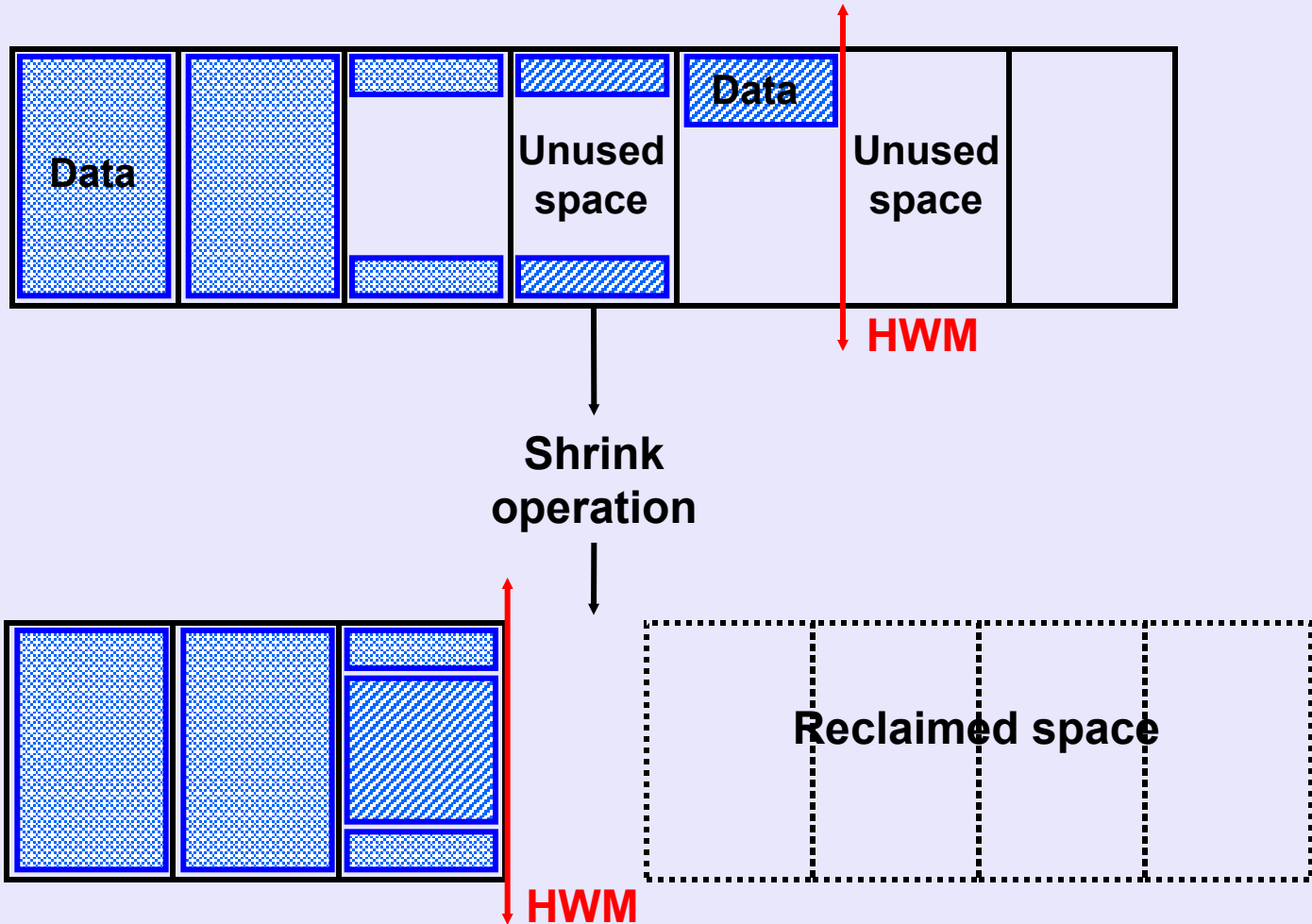
### Advisor Mode

- Complete Analysis of All Segments (Comprehensive)  
In the absence of available statistics, the advisor will sample selected objects as needed, and generate more complete recommendations. The analysis may take a long time to finish.
- Analysis Based on Available Statistics (Limited)  
The analysis will be based on statistics collected on the segment. In the absence of statistics, no recommendations will be generated.

### Overview

The segment advisor determines whether objects have unused space that can be released, taking estimated future space requirements into consideration. The estimated future space calculation is based on historical trends.

# Shrinking Segments: Overview





# Shrinking Segments: Considerations

- **Online and in-place operation**
- **Applicable only to segments residing in ASSM tablespaces**
- **Candidate segment types:**
  - **Heap-organized tables and index-organized tables**
  - **Indexes**
  - **Partitions and subpartitions**
  - **Materialized views and materialized view logs**
- **Indexes are maintained.**
- **Triggers are not fired.**

# Database Control and Segment Shrink

Select	Schema	Table Name	Tablespace	Partition Type	Partitions	Subpartitions	IOT	Clustered
<input type="radio"/>	HR	COUNTRIES	EXAMPLE		0		0 IOT	NO
<input type="radio"/>	HR	DEPARTMENTS	EXAMPLE		0		0	NO
<input checked="" type="radio"/>	HR	EMPLOYEES	EXAMPLE		0		0	NO

## Shrink Segment: Options

Segment Name **HR.EMPLOYEES**

Object Type **Table**

Show SQL

Cancel

Continue

The shrink operation compacts fragmented space and, optionally, frees the space. The shrink operation will take some time and will be scheduled as a job.

### Shrink Options

Compact Segments and Release Space

This will first compact the segments and then release the recovered space to the tablespace. During the short space release phase, any cursors referencing this segment may be invalidated and queries on the segment could be disrupted.

Compact Segments

Compacting will compact segment data without releasing the recovered space. After compacting the data, the recovered space can be quickly released by running Compact Segments and Release Space.

### Segment Selection

Shrink HR.EMPLOYEES Only

Shrink HR.EMPLOYEES and All Dependent Segments

### Dependent Segments

Schema	Segment Name	Type	Tablespace
HR	EMPLOYEES	TABLE	EXAMPLE
HR	EMP_EMAIL_UK	INDEX	EXAMPLE

# Accessing the Segment Advisor

Database: [orcl.us.oracle.com](#) > Advisor Central Logged in As SYS

## Advisor Central

Page Refreshed **Apr 24, 2004 12:39:57 PM** Refresh

### Advisors

<a href="#">ADDM</a>	<a href="#">Memory Advisor</a>	<a href="#">Segment Advisor</a>
<a href="#">SQL Tuning Advisor</a>	<a href="#">MTTR Advisor</a>	<a href="#">Undo Management</a>
<a href="#">SQL Access Advisor</a>		

Select	Name <sup>△</sup>	Type	Extent Management	Segment Management	Status	Size (MB)	
<input checked="" type="radio"/>	<a href="#">EXAMPLE</a>	PERMANENT	LOCAL	AUTO	ONLINE	150.000	80
<input type="radio"/>	<a href="#">SYSAUX</a>	PERMANENT	LOCAL	AUTO	ONLINE	320.000	302
<input type="radio"/>	<a href="#">SYSTEM</a>	PERMANENT	LOCAL	MANUAL	ONLINE	450.000	447
<input type="radio"/>	<a href="#">TEMP</a>	TEMPORARY	LOCAL	MANUAL	ONLINE	20.000	17

Edit View Delete Actions Add Datafile Go

- Add Datafile
- Create Like
- Generate DDL
- Make Locally Managed
- Make Readonly
- Make Writable
- Place Online
- Reorganize
- Show Dependencies
- Run Segment Advisor
- Take Offline

85.00

# Segment Advisor

ORACLE Enterprise Manager 10g Database Control Setup Preferences Help Logout

Database

○ — ○ — ○ — ●  
Tablespaces Options Schedule **Review**

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## Segment Advisor: Review

Database **orcl** Cancel Show SQL Back Step 4 of 4 Submit

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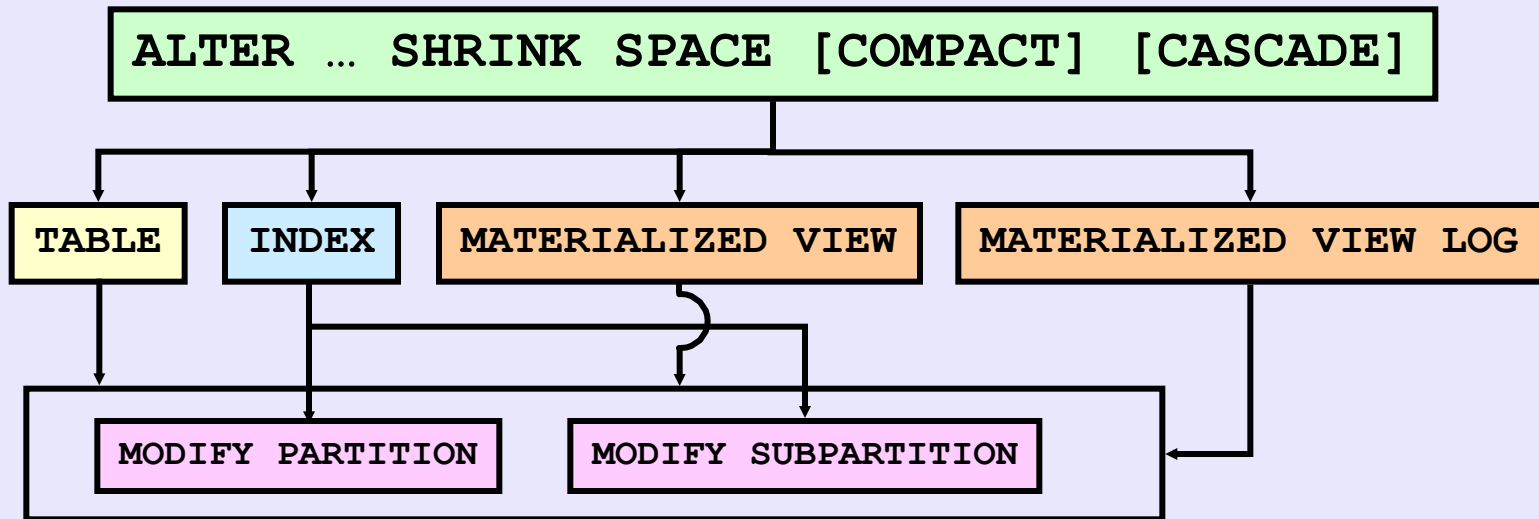
Task Name **SHRINK\_1272154**  
Task Description **Get shrink advice based on object growth trend**  
Advisor Mode **Complete Analysis of All Segments (Comprehensive)**  
Time Limit for Analysis (secs) **Unlimited**  
Advisory Results Retention (days) **30**

### Selected Objects

Tablespace	Type
TBSALERT	PERMANENT

Cancel Show SQL Back Step 4 of 4 Submit

# Shrinking Segments Using SQL



```
ALTER TABLE employees ENABLE ROW MOVEMENT; ①
```

```
ALTER TABLE employees SHRINK SPACE CASCADE; ②
```

# Segment Shrink: Execution Considerations

- **Use compaction only:**
  - To avoid unnecessary cursor invalidation
  - During peak hours
- **DML operations and queries can be issued during compaction.**
- **DML operations are blocked when the HWM is adjusted.**

# Segment Resource Estimation

**Create Table**

Show SQL Cancel OK

General Constraints Storage Options Partitions

\* Name EMP

Schema JFV

Tablespace EXAMPLE

Organization **Standard, Heap Organized**

**Estimate Table Size**

OK

To get an accurate estimation for the size of the table, all table columns and storage parameters must be defined. The estimation of the table size is based on the following data: column data types, column sizes, Free Space (PCTFREE). Extent information is used to calculate the space allocation impact on the currently selected tablespace

Projected Row Count 40000 Estimate Table Size

**Result of Creating Table in Tablespace EXAMPLE**

Estimated Table Size(MB) **3.81**

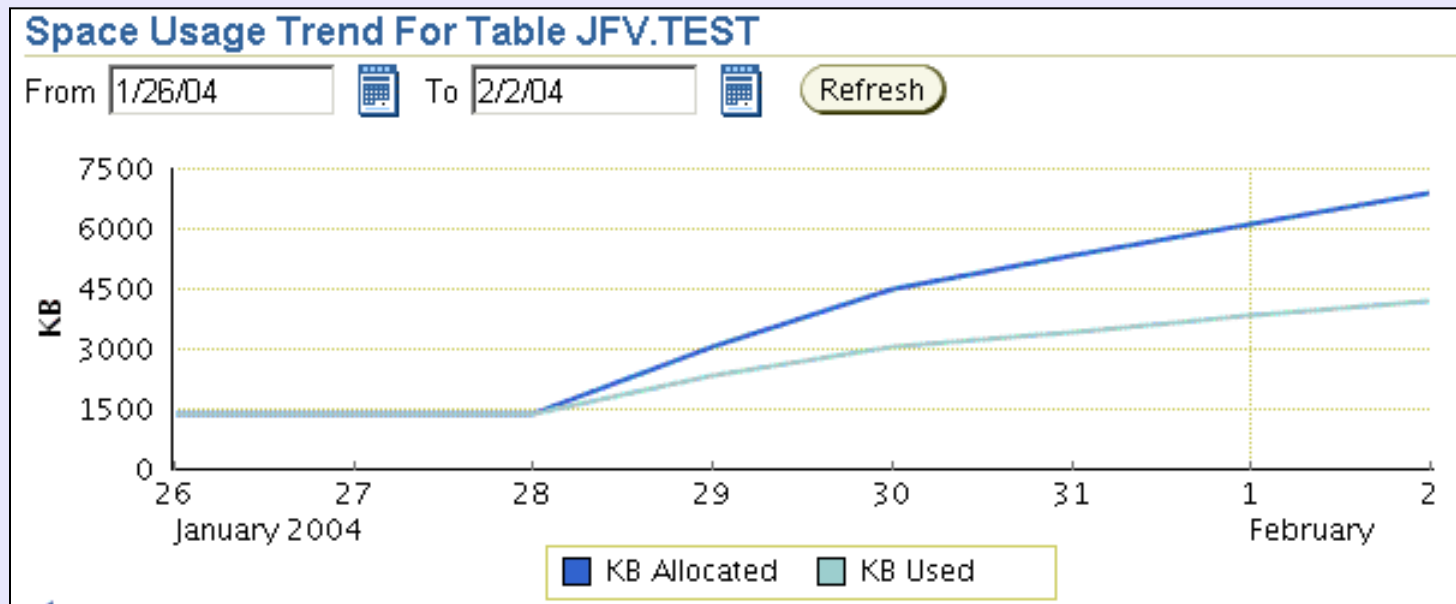
Space Allocated in Tablespace(MB) **4.00**

**TIP** The Estimated Table Size does not include an estimate for LOB,IOT Overflow, Nested Table or Partition segments.

PHONE_NUMBER	VARCHAR2	20		
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# Growth Trend Report

- **Used by the Segment Advisor**
- **Space usage statistics are collected into AWR**





以上内容仅为本文档的试下载部分，为可阅读页数的一半内容。如要下载或阅读全文，请访问：<https://d.book118.com/558050041057006063>