7

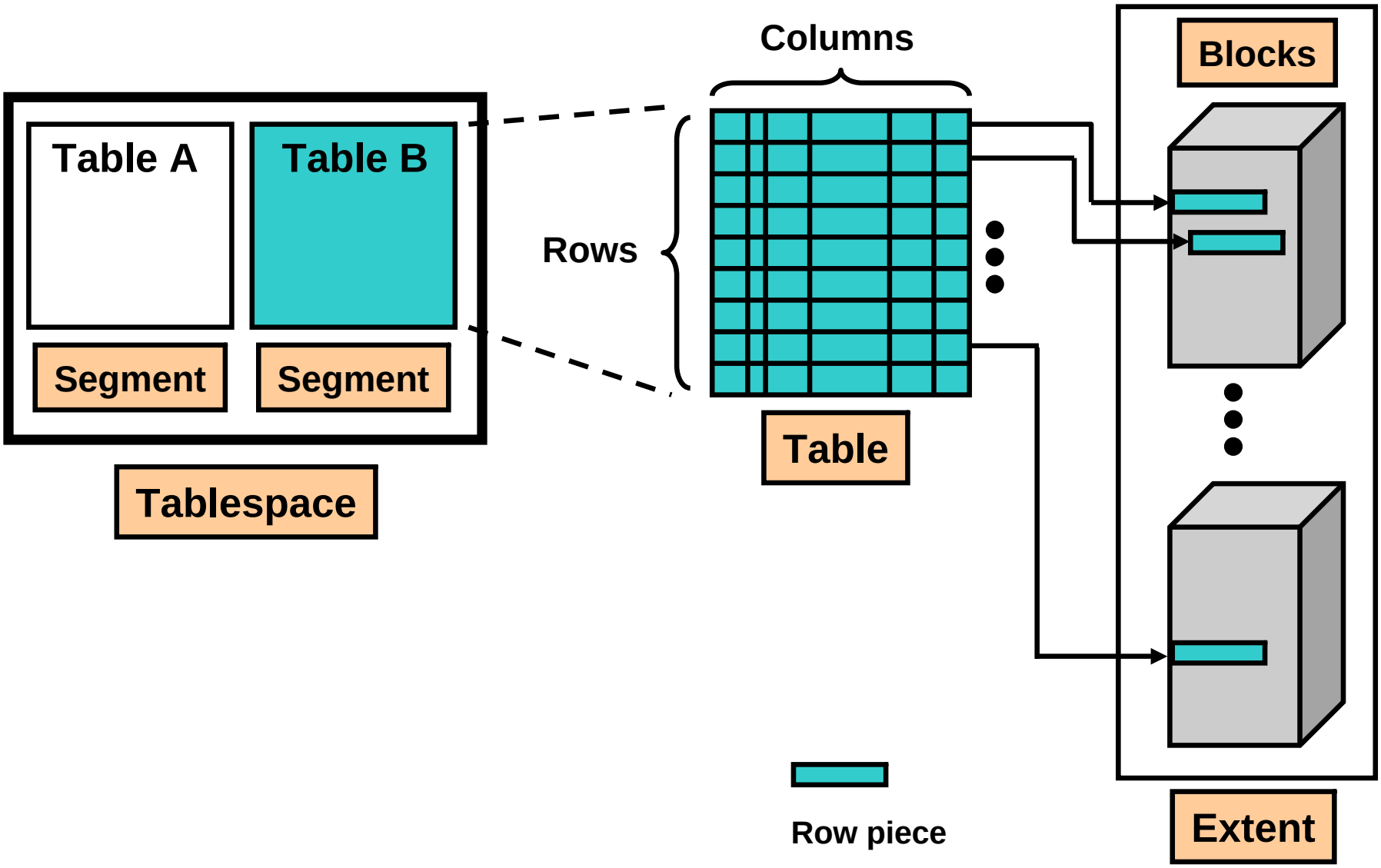
Managing Database Storage Structures

Objectives

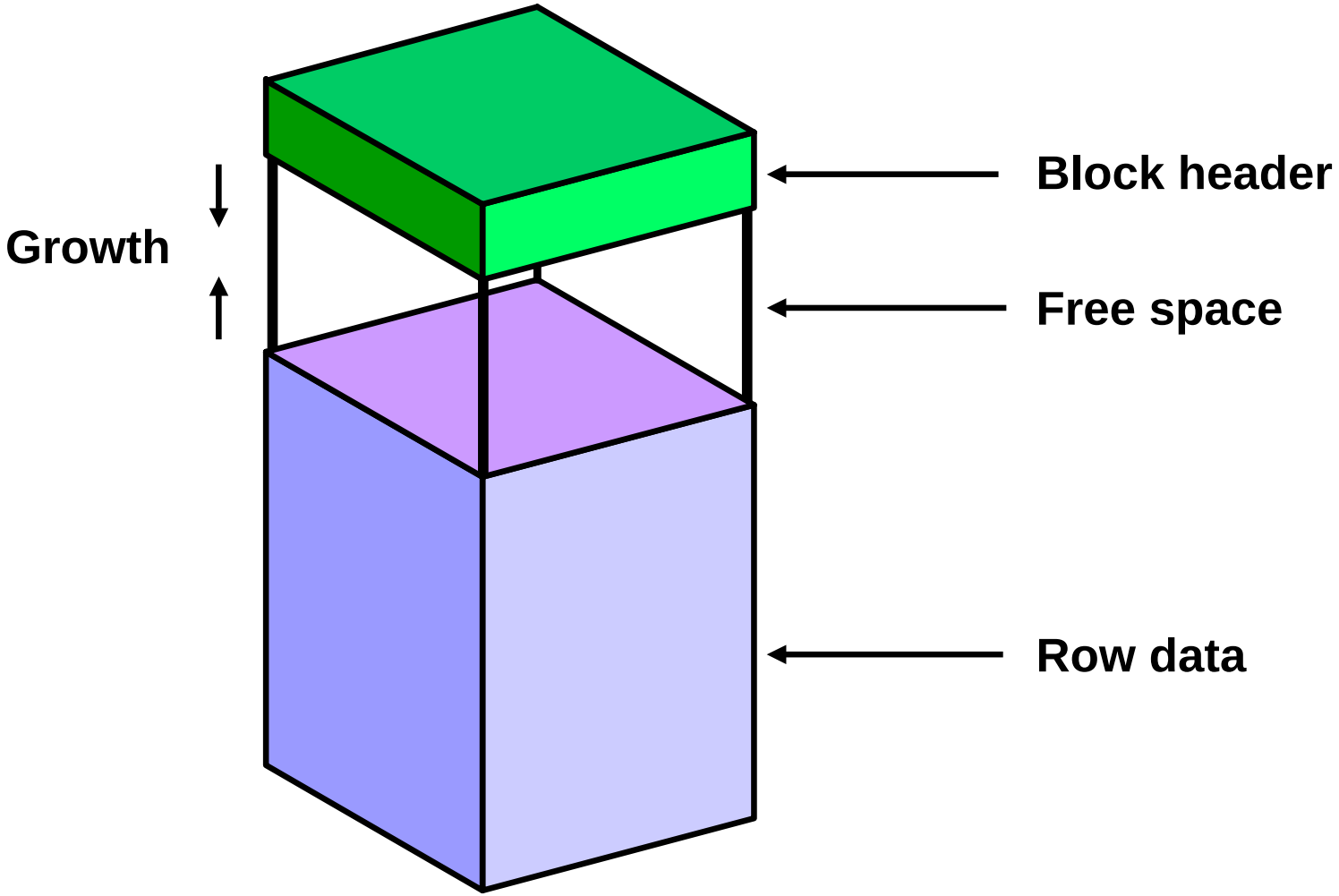
After completing this lesson, you should be able to:

- Describe the storage of table row data in blocks
- Create and manage tablespaces
- Obtain tablespace information

How Table Data Is Stored



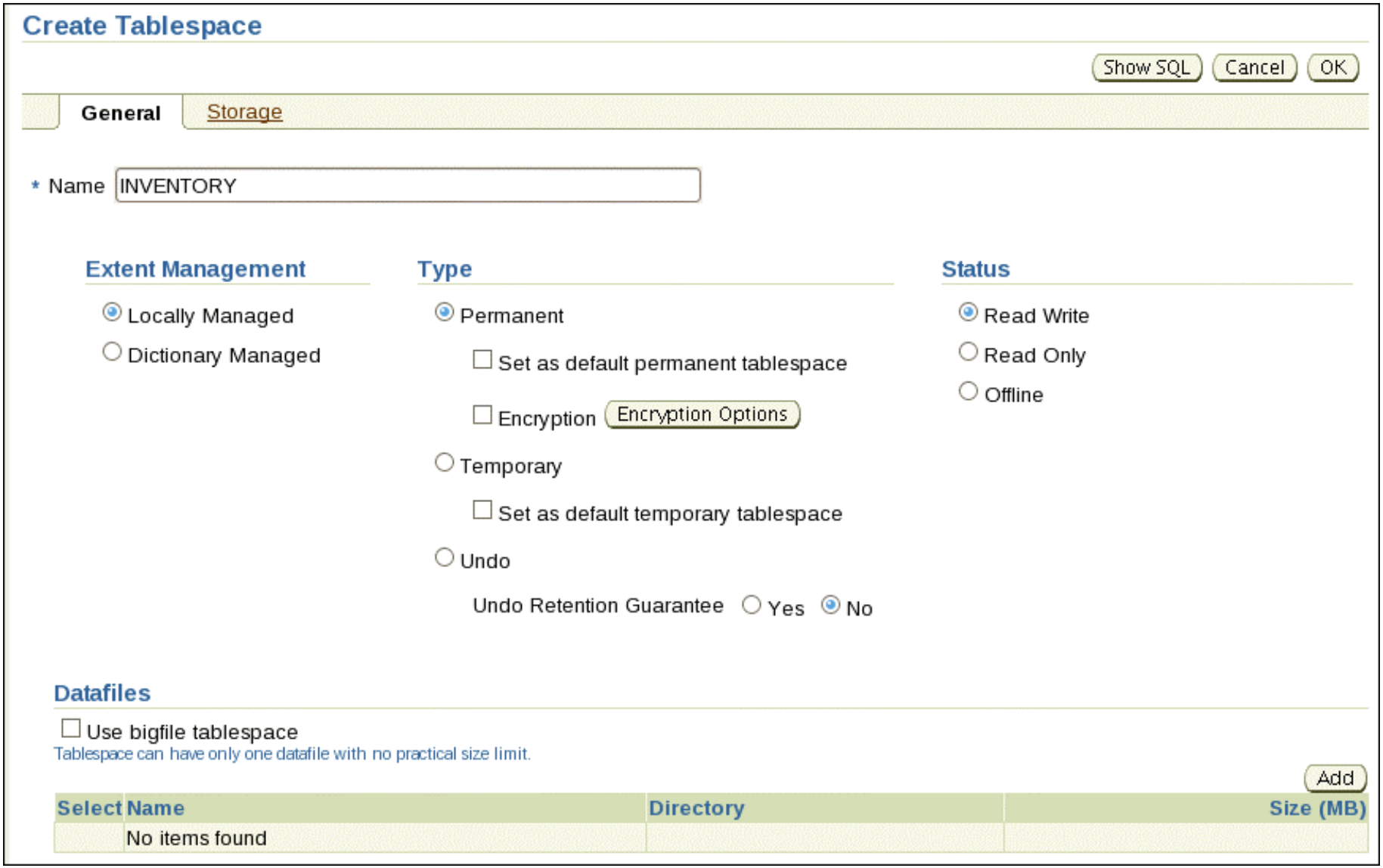
Database Block: Contents



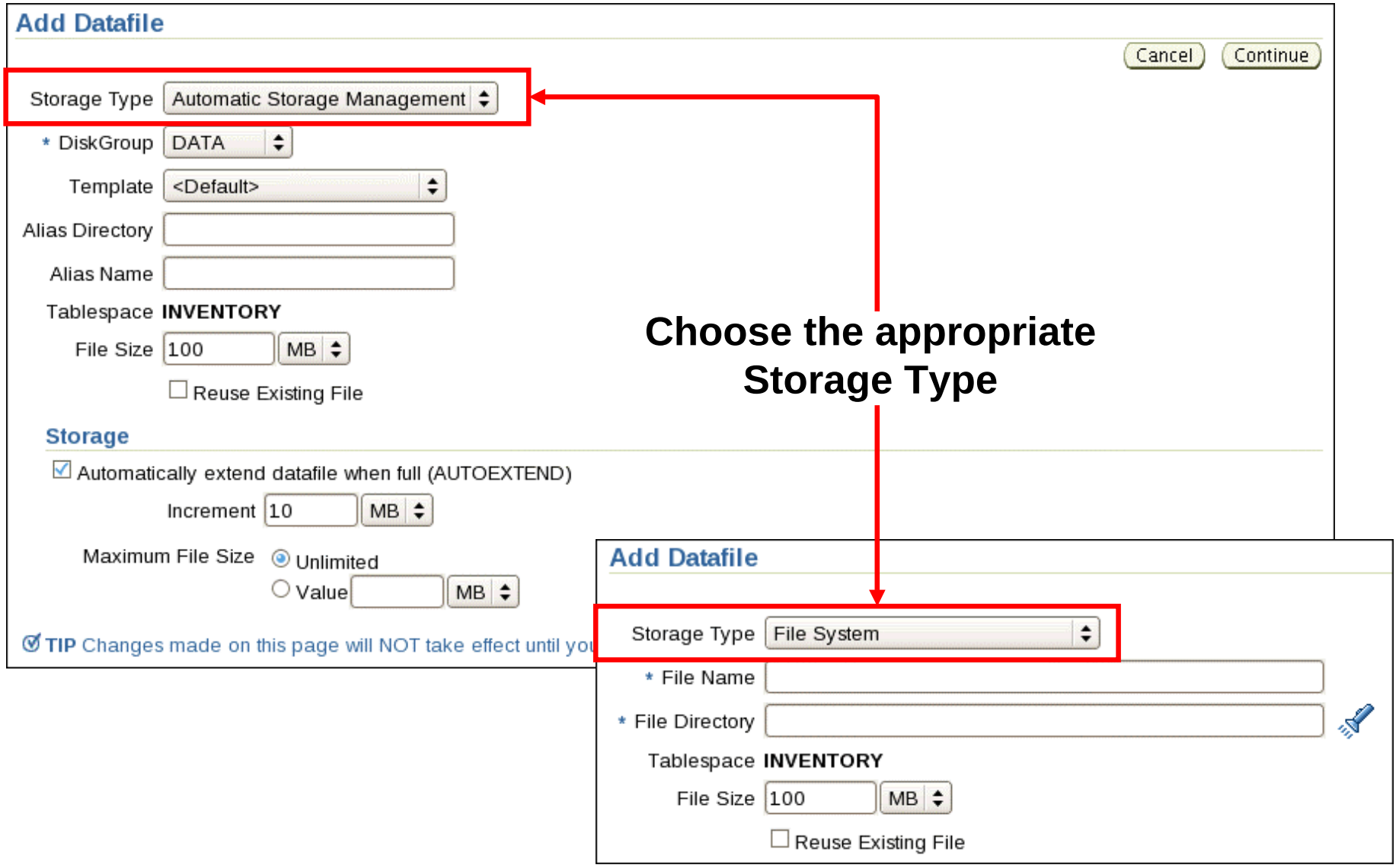
Exploring the Storage Structure

Click the links to view detailed information.

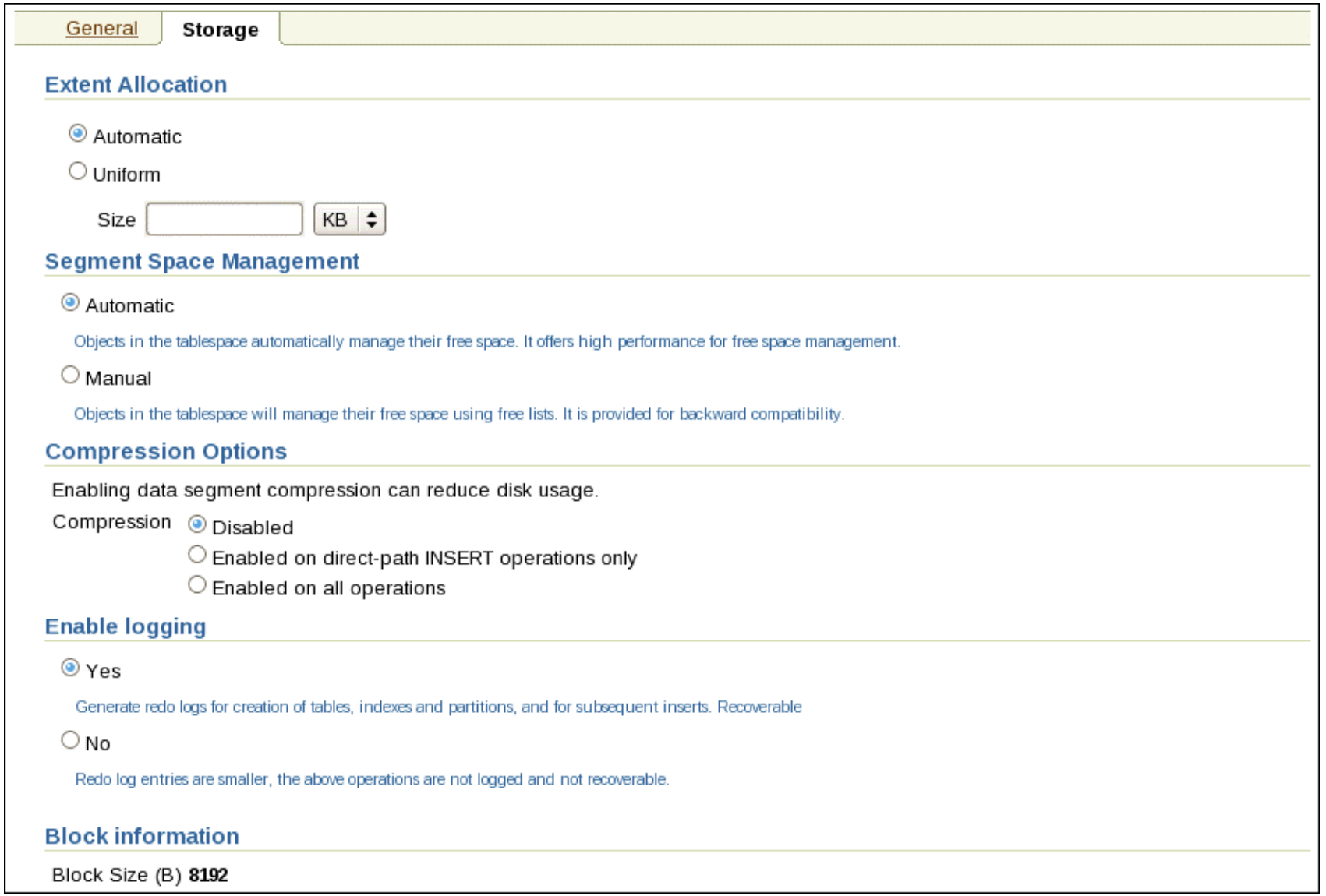
Creating a New Tablespace



Creating a New Tablespace

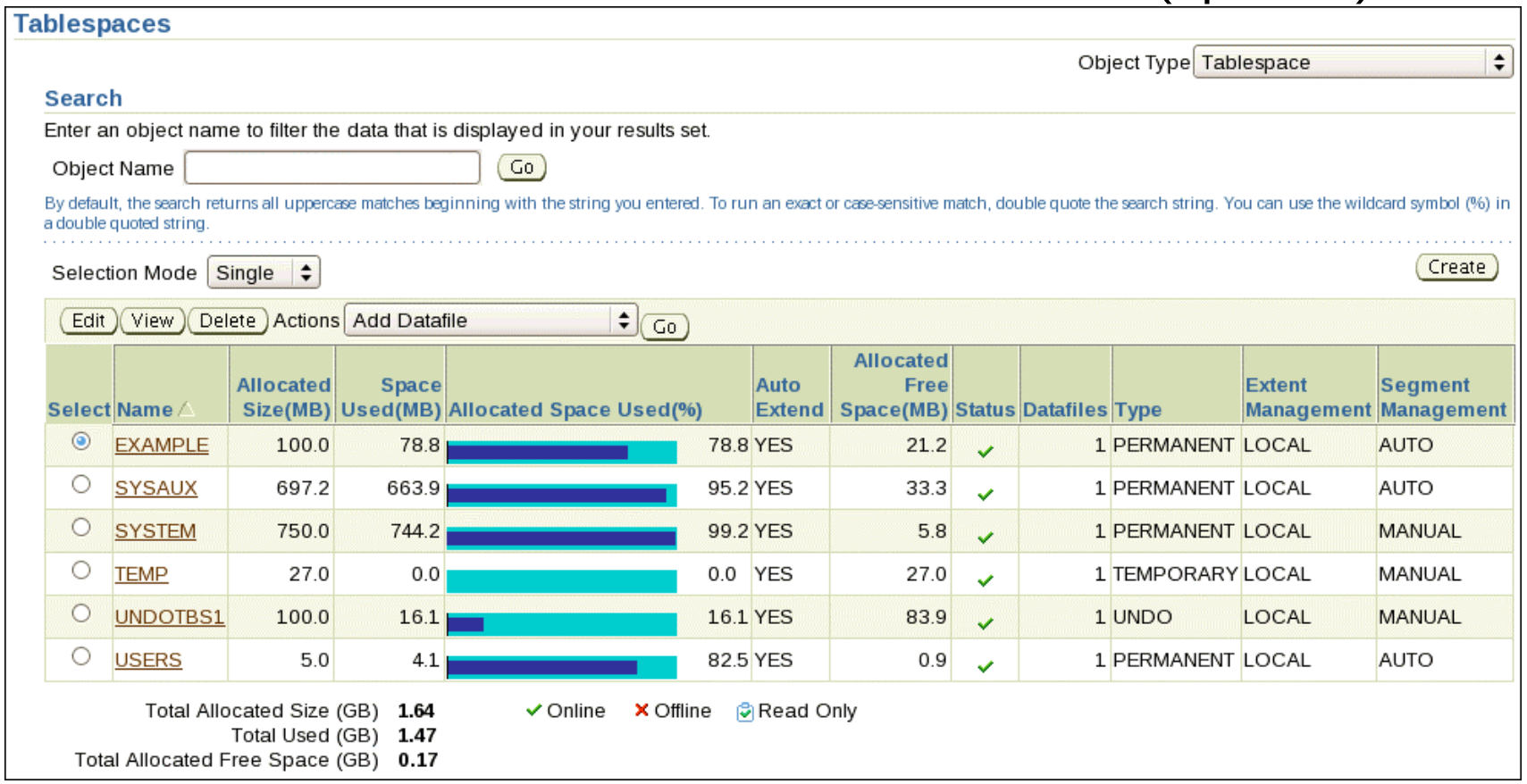


Storage for Tablespaces



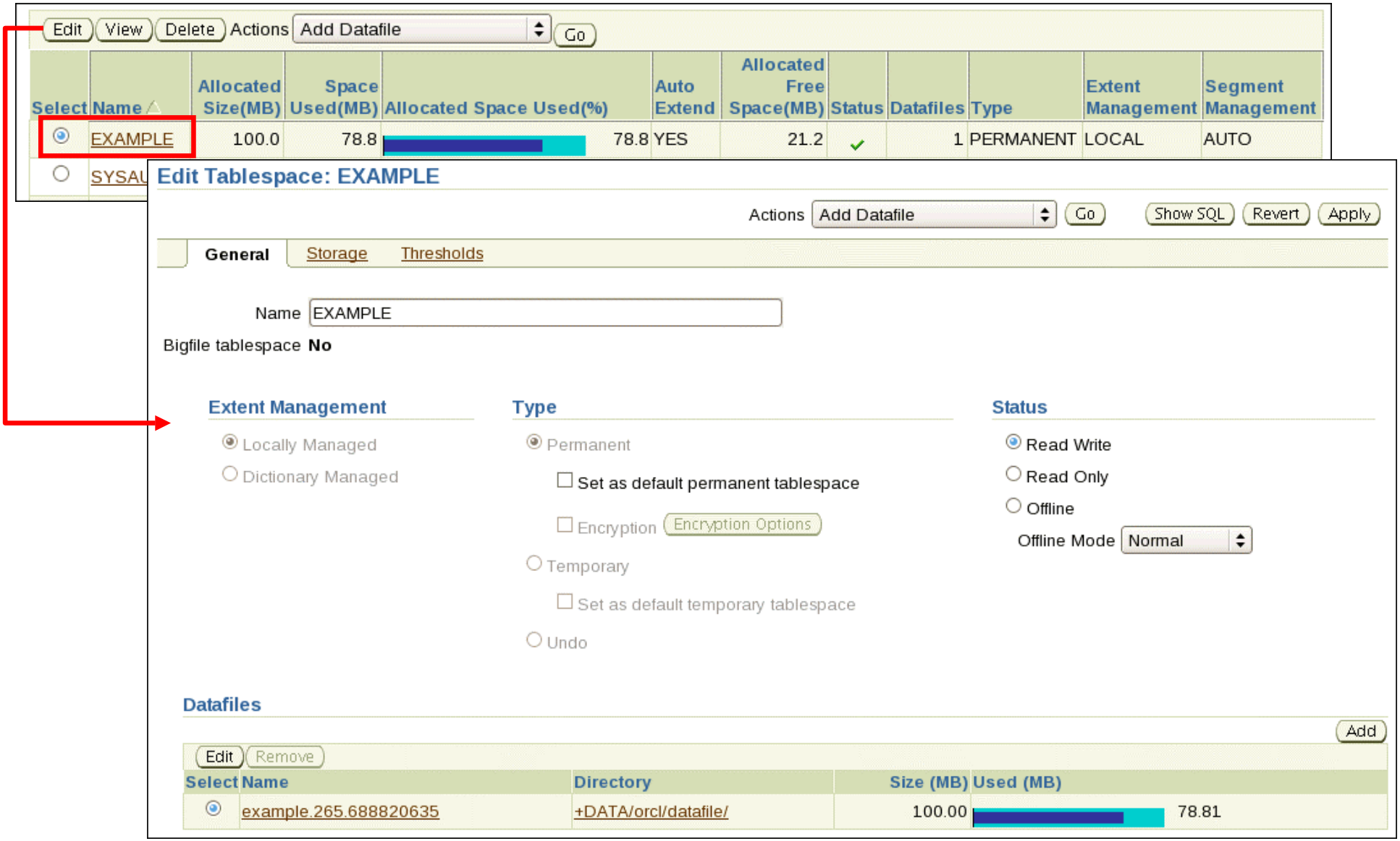
Tablespaces in the Preconfigured Database

- SYSTEM
- SYSAUX
- TEMP
- UNDOTBS1
- USERS
- EXAMPLE (optional)

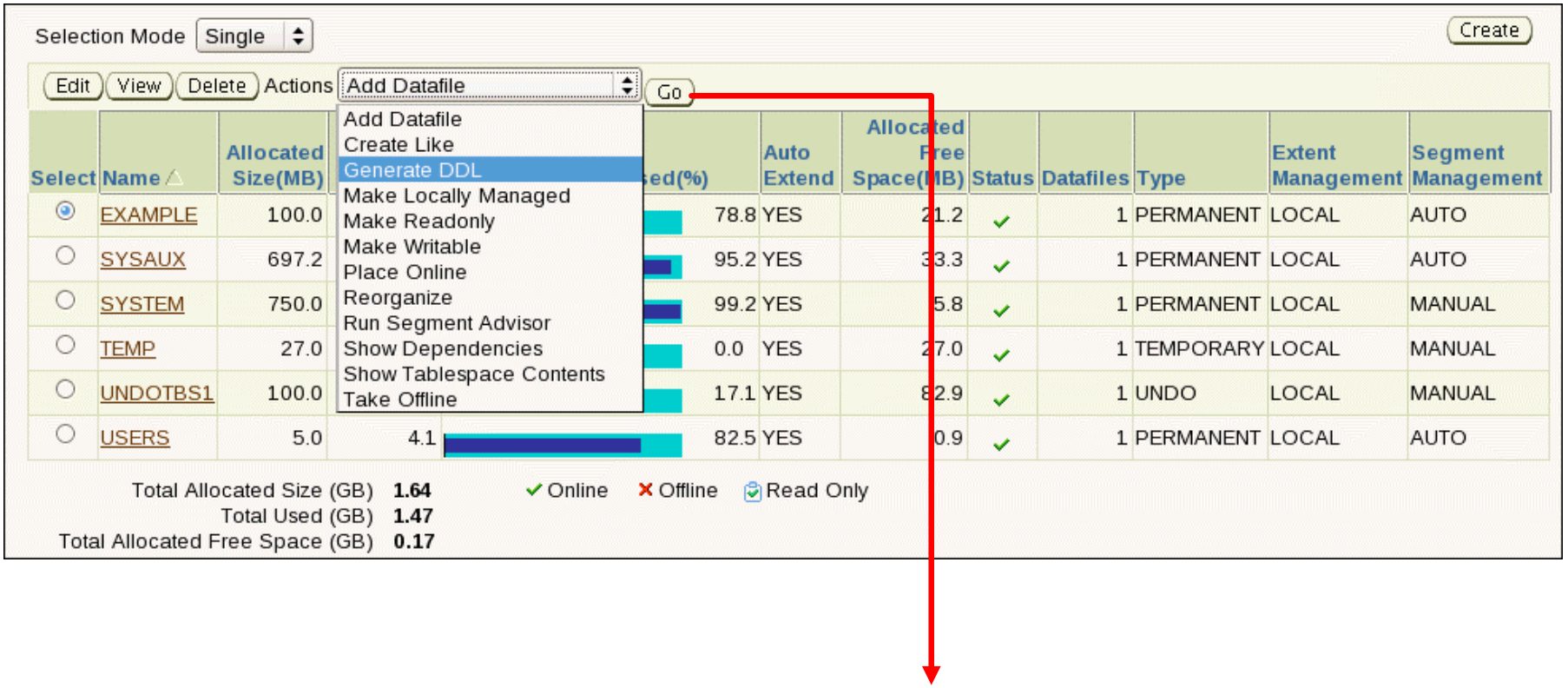


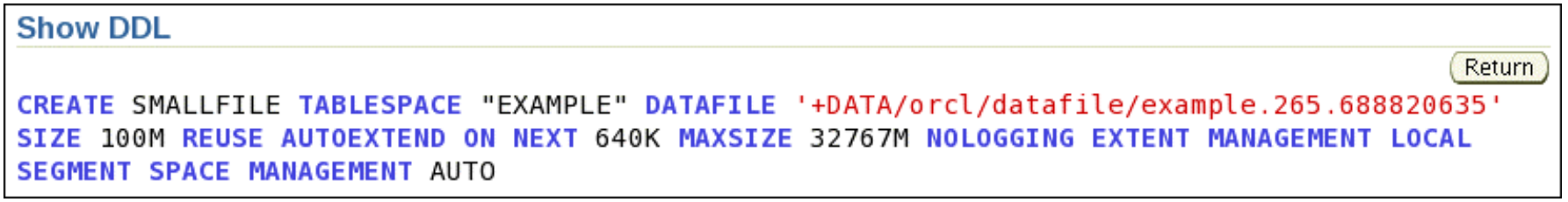
Select	Name	Allocated Size(MB)	Space Used(MB)	Allocated Space Used(%)	Auto Extend	Allocated Free Space(MB)	Status	Datafiles	Type	Extent Management	Segment Management
◉	EXAMPLE	100.0	78.8	78.8	YES	21.2	✓	1	PERMANENT	LOCAL	AUTO
○	SYSAUX	697.2	663.9	95.2	YES	33.3	✓	1	PERMANENT	LOCAL	AUTO
○	SYSTEM	750.0	744.2	99.2	YES	5.8	✓	1	PERMANENT	LOCAL	MANUAL
○	TEMP	27.0	0.0	0.0	YES	27.0	✓	1	TEMPORARY	LOCAL	MANUAL
○	UNDOTBS1	100.0	16.1	16.1	YES	83.9	✓	1	UNDO	LOCAL	MANUAL
○	USERS	5.0	4.1	82.5	YES	0.9	✓	1	PERMANENT	LOCAL	AUTO

Altering a Tablespace

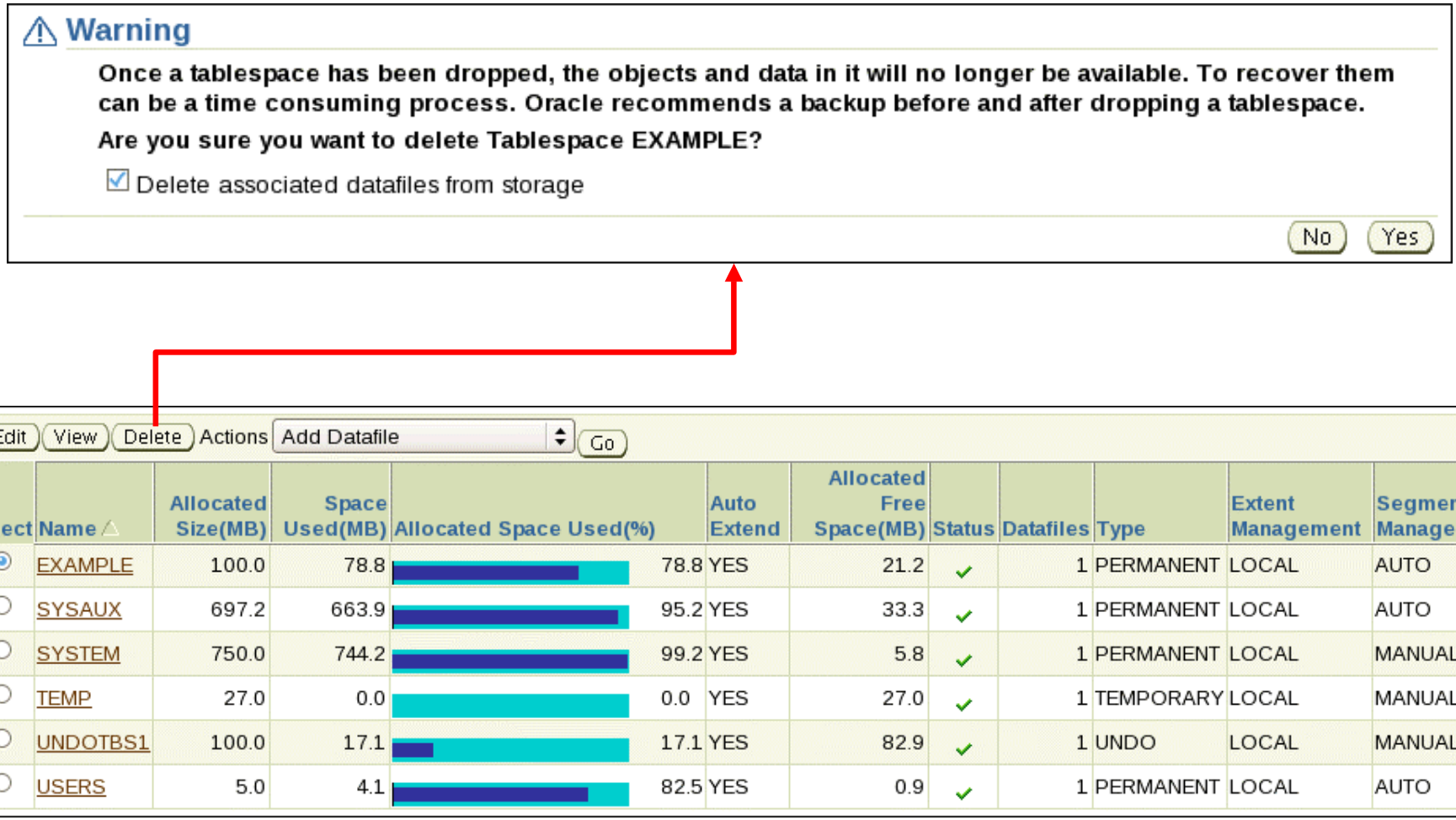


Actions with Tablespaces





Dropping Tablespaces



Select	Name	Allocated Size(MB)	Space Used(MB)	Allocated Space Used(%)	Auto Extend	Allocated Free Space(MB)	Status	Datafiles	Type	Extent Management	Segment Management
◉	EXAMPLE	100.0	78.8	78.8	YES	21.2	✓	1	PERMANENT	LOCAL	AUTO
○	SYSAUX	697.2	663.9	95.2	YES	33.3	✓	1	PERMANENT	LOCAL	AUTO
○	SYSTEM	750.0	744.2	99.2	YES	5.8	✓	1	PERMANENT	LOCAL	MANUAL
○	TEMP	27.0	0.0	0.0	YES	27.0	✓	1	TEMPORARY	LOCAL	MANUAL
○	UNDOTBS1	100.0	17.1	17.1	YES	82.9	✓	1	UNDO	LOCAL	MANUAL
○	USERS	5.0	4.1	82.5	YES	0.9	✓	1	PERMANENT	LOCAL	AUTO

Viewing Tablespace Information

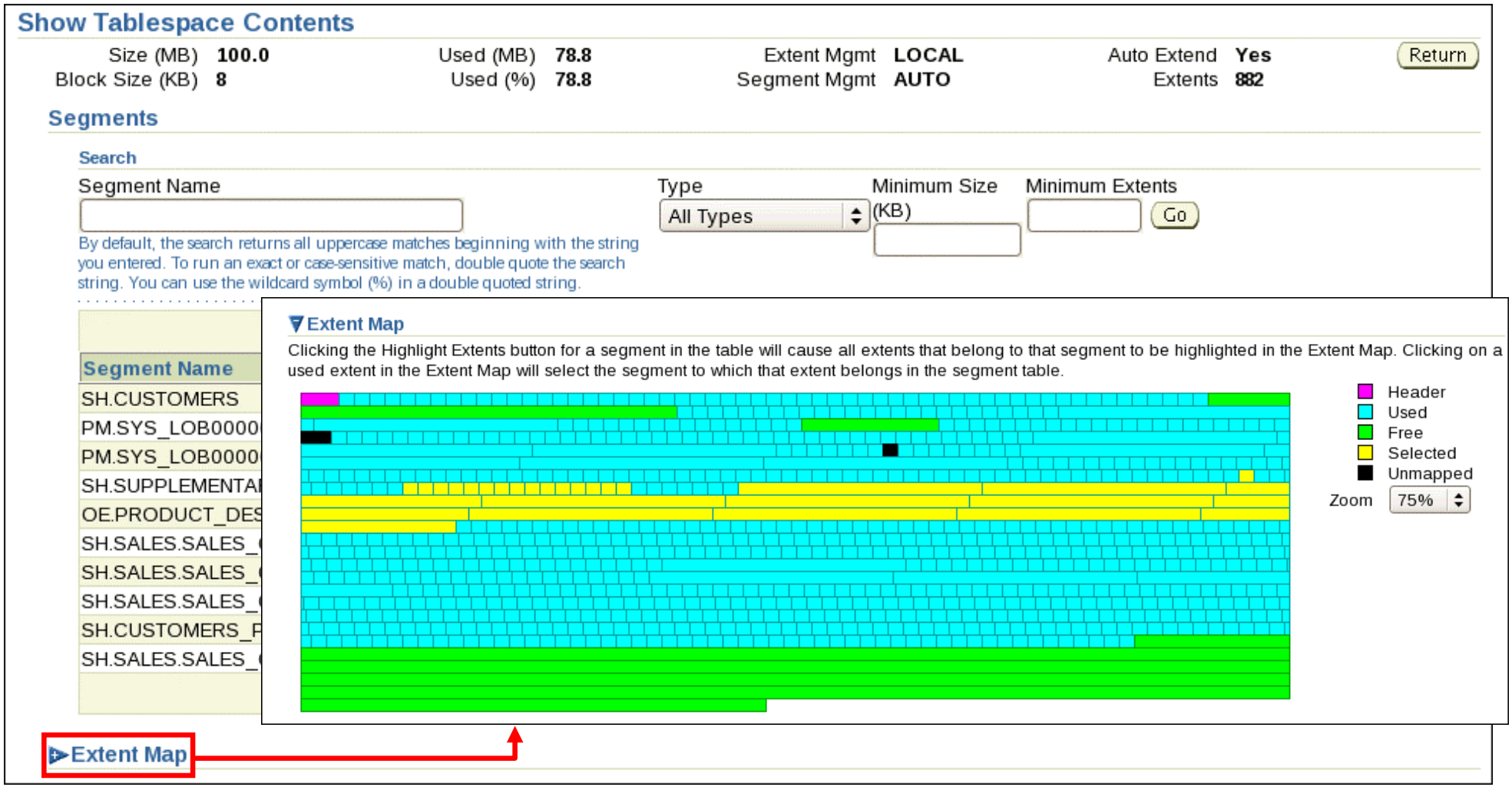
```
SELECT tablespace_name, status, contents, logging, extent_management,
allocation_type, segment_space_management
FROM dba_tablespaces
```

TABLESPACE_NAME	STATUS	CONTENTS	LOGGING	EXTENT_MANAGEMENT	ALLOCATION_TYPE	SEGMENT_SPACE_MANAGEMENT
SYSTEM	ONLINE	PERMANENT	LOGGING	LOCAL	SYSTEM	MANUAL
SYSAUX	ONLINE	PERMANENT	LOGGING	LOCAL	SYSTEM	AUTO
UNDOTBS1	ONLINE	UNDO	LOGGING	LOCAL	SYSTEM	MANUAL
TEMP	ONLINE	TEMPORARY	NOLOGGING	LOCAL	UNIFORM	MANUAL
USERS	ONLINE	PERMANENT	LOGGING	LOCAL	SYSTEM	AUTO
EXAMPLE	ONLINE	PERMANENT	NOLOGGING	LOCAL	SYSTEM	AUTO

```
SELECT ts#, name FROM v$tablespace
```

TS#	NAME
0	SYSTEM
1	SYSAUX
2	UNDOTBS1
4	USERS
3	TEMP
6	EXAMPLE

Viewing Tablespace Contents



Oracle-Managed Files (OMF)

Specify file operations in terms of database objects rather than file names.

Parameter	Description
DB_CREATE_FILE_DEST	Defines the location of the default file system directory for data files and temporary files
DB_CREATE_ONLINE_LOG_DEST_n	Defines the location for redo log files and control file creation
DB_RECOVERY_FILE_DEST	Default location for the fast recovery area

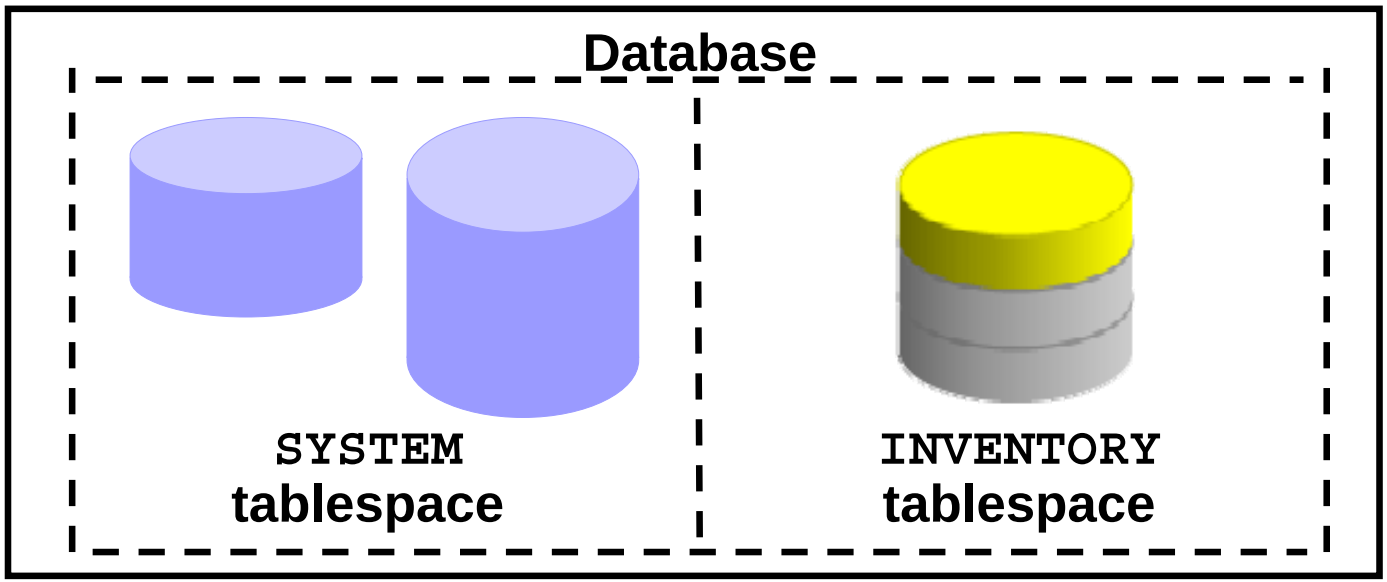
Example:

```
SQL> ALTER SYSTEM SET DB_CREATE_FILE_DEST = '+DATA';
SQL> CREATE TABLESPACE tbs_1;
```

Enlarging the Database

You can enlarge the database in the following ways:

- Creating a new tablespace
- Adding a data file to an existing smallfile tablespace
- Increasing the size of a data file
- Providing for the dynamic growth of a data file



Quiz

A database can have a mixture of Oracle-managed and unmanaged files.

1. True
2. False

Quiz

Bigfile Tablespaces must have 1 file of at least 100 MB.

1. True
2. False

Summary

In this lesson, you should have learned how to:

- Describe the storage of table row data in blocks
- Create and manage tablespaces
- Obtain tablespace information

Practice 7 Overview: Managing Database Storage Structures

This practice covers the following topics:

- Creating tablespaces
- Gathering information about tablespaces