

Managing Temporary Tablespace

First we will discuss about use of temporary tablespace. We use it to manage space for database sort operation. For example: if we join two large tables it require space for sort operation because oracle cannot do shorting in memory. This sort operation will be done in temporary tablespace.

We must assign a temporary tablespace to each user in the database; if we don't assign temporary tablespace to user in the database oracle allocate sort space in the SYSTEM tablespace by default.

Important:

- That a temporary tablespace cannot contain permanent objects and therefore doesn't need to be backed up.
- When we create a TEMPFILE, Oracle only writes to the header and last block of the file. This is why it is much quicker to create a TEMPFILE than to create a normal database file.
- TEMPFILES are not recorded in the database's control file.
- We cannot remove datafiles from a tablespace until you drop the entire tablespace but we can remove a TEMPFILE from a database:

```
SQL> ALTER DATABASE TEMPFILE "<disk>:\<directory>\<Tablespace Name>.dbf"  
DROP INCLUDING DATAFILES;
```

- Except for adding a tempfile, you cannot use the ALTER TABLESPACE statement for a locally managed temporary tablespace (operations like rename, set to read only, recover, etc. will fail).

Activity

How to create Temporary Tablespace?

```
CREATE          TEMPORARY          TABLESPACE          temp          TEMPFILE  
'<disk>:\<directory>\<Tablespace Name>.dbf' size 20M;
```

How can I define Default Temporary Tablespaces?

We can define a Default Temporary Tablespace at database creation time, or by issuing an "ALTER DATABASE" statement:

```
ALTER DATABASE DEFAULT TEMPORARY TABLESPACE temp;
```

Important:

- The default "Default Temporary Tablespace" is SYSTEM.
- Each database can be assigned one and only one Default Temporary Tablespace.
- Temporary Tablespace is automatically assigned to users.

Restriction:

The following restrictions apply to default temporary tablespaces:

- The Default Temporary Tablespace must be of type TEMPORARY
- The DEFAULT TEMPORARY TABLESPACE cannot be taken off-line
- The DEFAULT TEMPORARY TABLESPACE cannot be dropped until you create another one.

How to see the default temporary tablespace for a database?

```
SELECT      *      FROM      DATABASE_PROPERTIES      where  
PROPERTY_NAME='DEFAULT_TEMP_TABLESPACE';
```

How to Monitor Temporary Tablespaces and Sorting?

Use following query to view temp file information:

```
Select * from dba_temp_files; or Select * from v$tempfile;
```

Use following query for monitor temporary segment

```
Select * from v$sort_segments or Select * from v$sort_usage
```

Use following query for free space in tablespace :

```
select      TABLESPACE_NAME,BYTES_USED,      BYTES_FREE      from
V$TEMP_SPACE_HEADER;
```

How to Dropping / Recreating Temporary Tablespace? (Method)

This should be performed during off ours with no user logged on performing work.
If you are working with a temporary tablespace that is NOT the default temporary tablespace for the database, this process is very simple. Simply drop and recreate the temporary tablespace:

Step:1 Drop the Tablespace

```
DROP TABLESPACE temp;
Tablespace dropped.
```

Step: 2 Create new temporary tablespace.

```
CREATE TEMPORARY TABLESPACE TEMP
TEMPFILE '<disk>:\<directory>\<Tablespace Name>.dbf' SIZE 500M REUSE
AUTOEXTEND ON NEXT 100M MAXSIZE unlimited
EXTENT MANAGEMENT LOCAL UNIFORM SIZE 1M;
```

How to Dropping / Recreating Default Temporary Tablespace? (Method)

You will know fairly quickly if the tablespace is a default temporary tablespace when you are greeted with the following exception:

```
DROP TABLESPACE temp;
drop tablespace temp
```

*

ERROR at line 1:

ORA-12906: cannot drop default temporary tablespace

Step: 1 Create another temperory tablespace.

```
CREATE TEMPORARY TABLESPACE temp2
TEMPFILE '<disk>:\<directory>\<Tablespace Name>.dbf'SIZE 5M REUSE
AUTOEXTEND ON NEXT 1M MAXSIZE unlimited
EXTENT MANAGEMENT LOCAL UNIFORM SIZE 1M;
Tablespace created.
```

Step: 2 Make default tablespace.

```
ALTER DATABASE DEFAULT TEMPORARY TABLESPACE temp2;
Database altered.
```

Step: 3 Drop old default tablespace.

```
DROP TABLESPACE temp INCLUDING CONTENTS AND DATAFILES;
Tablespace dropped.
```

Most Important:

You do not need to assign temporary tablespace while creating a database user. The Temporary Tablespace is automatically assigned. The name of the temporary tablespace is determined by the DEFAULT_TEMP_TABLESPACE column from the data dictionary view DATABASE_PROPERTIES_VIEW.

Example:

Step:1 Create database user

```
create user test identified by test default TABLESPACE users;
User created.
```

Step: 2 View information

```
SELECT USERNAME, DEFAULT_TABLESPACE, TEMPORARY_TABLESPACE FROM
DBA_USERS WHERE USERNAME='TEST';
USERNAME DEFAULT_TABLESPACE TEMPORARY_TABLESPACE
```

```
-----
TEST USERS TEMP
```

NOTE: Temporary Tablespace TEMP is automatically assigned to the user TEST.

Certain Restrictions?

- The default temporary tablespace can not be DROP.
- The default temporary tablespace can not be taken offline

How to Move Temp file

- 1- shutdown immediate;
- 2- move the file to new local;
- 3- startup mount;
- 4- alter database rename file
 '/oracle1/oradata/devdb/data/basic/tbs_temp_basic01.dbf'
 to '/oracle_1/oradata/devdb/data/basic/tbs_temp_basic01.dbf';
- 5- open.

RESIZE THE TEMPFILE IN TEMP TABLESPACE

```
alter database tempfile '+DATA/prod/datafile/temp03.dbf' resize 2G reuse;
```

```
alter database tempfile '/SID/oradata/data02/temp12.dbf' autoextend on maxsize 1800M;
```

```
alter tablespace TEMP add tempfile '/oracle/PLP/oradata01/ilhprod/temp_01.dbf' size 30G reuse;
```

```
/oracle/PLP/oradata01/ilhprod/temp_01.dbf
```

[Oracle: display tablespace information with sizes | #less tar.gz.ro](#)

```
SELECT tablespace_name, round(sum(bytes)/1024/1024, 2) as "Size (MB)" FROM dba_temp_files GROUP BY tablespace_name;
```

FAQ - Interview Question

****1. Q: What is a temporary tablespace in Oracle?****

A: A temporary tablespace in Oracle is a dedicated area used by the database for sorting and temporary storage of data during query processing. It is used to manage and store temporary data generated by SQL operations like sorting, grouping, and joining.

****2. Q: How is a temporary tablespace different from a permanent tablespace?****

A: The primary difference is the type of data stored. A permanent tablespace is used for storing permanent database objects like tables and indexes, whereas a temporary tablespace is used for temporary storage during query processing.

****3. Q: What is the significance of a temporary tablespace in sorting operations?****

A: During sorting operations (e.g., ORDER BY clause in SQL queries), Oracle uses the temporary tablespace to store intermediate result sets. This is crucial for efficient query processing, especially when dealing with large datasets.

****4. Q: How can you create a temporary tablespace in Oracle?****

A: You can create a temporary tablespace using the `CREATE TEMPORARY TABLESPACE` statement. For example:

```
``sql
CREATE TEMPORARY TABLESPACE temp_ts
TEMPFILE 'temp01.dbf' SIZE 100M AUTOEXTEND ON NEXT 10M;
``
```

****5. Q: Can a user have a specific temporary tablespace assigned to them?****

A: Yes, a user in Oracle can have a specific temporary tablespace assigned to them. This can be done during user creation or by altering the user using the `ALTER USER` statement.

****6. Q: How does Oracle manage temporary space within a temporary tablespace?****

A: Oracle manages temporary space using temporary segments. These segments are created in the temporary tablespace to store intermediate data during sorting and other operations. Oracle automatically releases the space once the operation is completed.

****7. Q: What is the role of the `TEMP\_UNDO\_ENABLED` parameter in Oracle?****

A: The `TEMP\_UNDO\_ENABLED` parameter determines whether or not undo information for temporary segments is stored in the undo tablespace. If set to `TRUE`, undo information is stored in the undo tablespace; otherwise, it is stored in the temporary tablespace.

****8. Q: How can you monitor the space usage in a temporary tablespace?****

A: You can monitor space usage in a temporary tablespace by querying the `DBA\_TEMP\_FILES` and `DBA\_TEMP\_FREE\_SPACE` views. These views provide information about the files in the temporary tablespace and the free space available, respectively.

****9. Q: Can a temporary tablespace be dropped?****

A: Yes, a temporary tablespace can be dropped using the `DROP TABLESPACE` statement. However, it's important to ensure that no active sessions are using the temporary tablespace before attempting to drop it.

****10. Q: What considerations should be taken into account when sizing a temporary tablespace?****

A: The size of a temporary tablespace should be sufficient to handle the largest temporary storage requirements during query processing. It's essential to monitor and adjust the size based on the workload and performance requirements. Additionally, enabling autoextend and setting an appropriate NEXT size can help accommodate varying workloads.