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Oracle Database 12c – Pluggable Databases – Part III



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Using the Player

Print Version



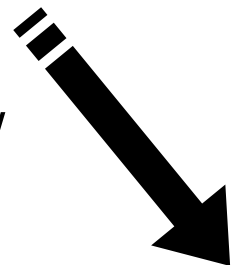
Course Outline



Player Controls

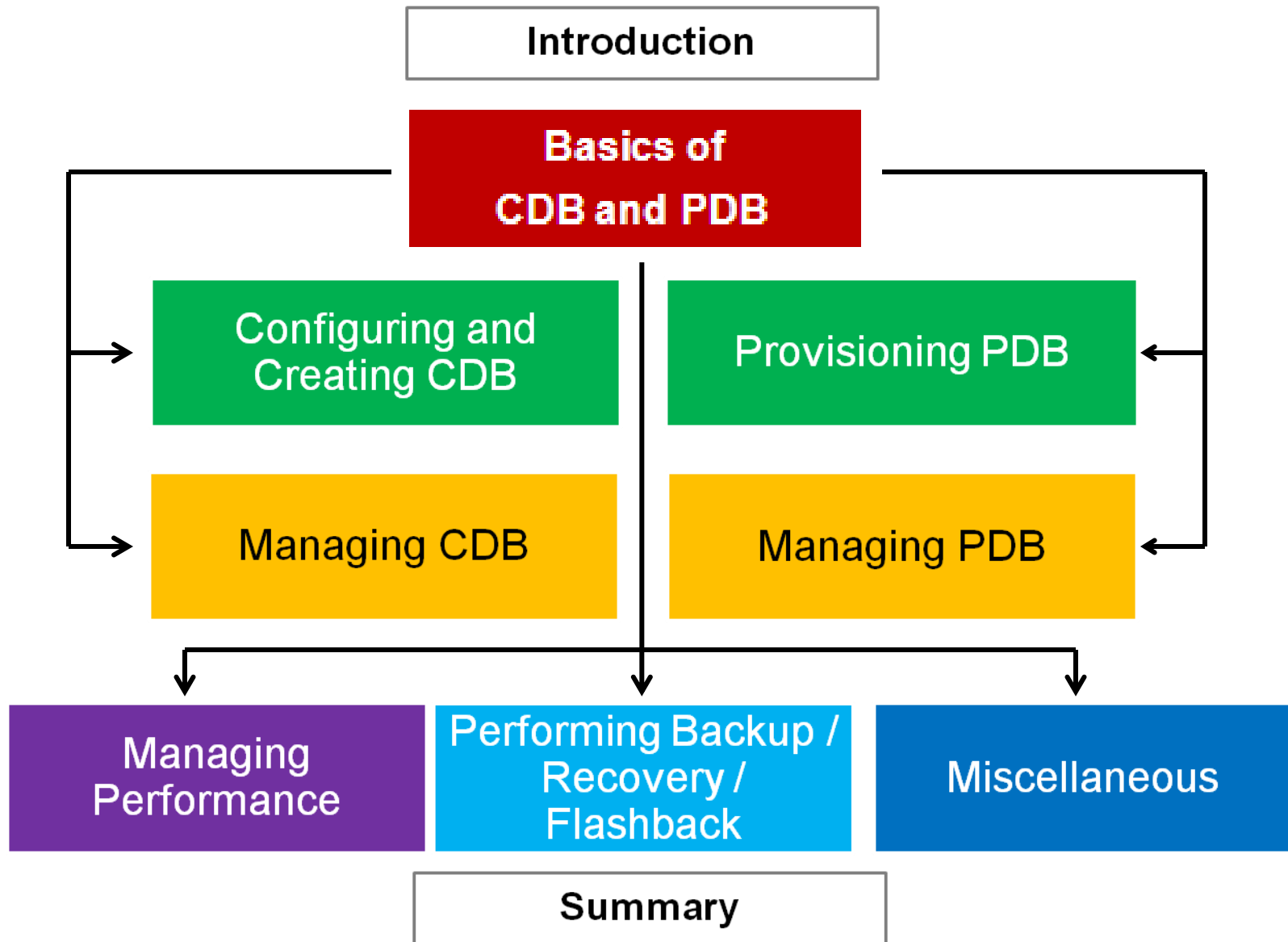


Change View



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Road Map



PART – I

Basics of CDB and PDB

Configuring and
Creating CDB

Provisioning PDB

PART – II

Managing CDB

Managing PDB

PART – III

Beta2

Managing
Performance

Performing Backup /
Recovery /
Flashback

Beta2

Miscellaneous

Search

What skills will I learn?

At the end of this course, you should be able to perform:

- Whole and partial CDB and PDB backups
- Recovery from instance failure
- Recovery from root container files loss
- Recovery from PDB datafiles loss
- Flashback CDB

Who is the target audience?

What are the prerequisites?

PROPERTIES

Allow user to leave interaction:

Show 'Next Slide' Button:

Completion Button Label:

[After viewing all the steps](#)

[Show upon completion](#)

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Properties...



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Why Take This Course?

- What's in it for me?
- What are challenges I face on the job?
- How can this help me do my job better?



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Oracle Database 12c – Backup, Recover and Flashback CDB and PDBs

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PART – III

Managing
Performance

Beta2

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Miscellaneous

Beta2

Backup CDB and applications independently:

- ARCHIVELOG mode at CDB level
- CDB and / or PDB backups

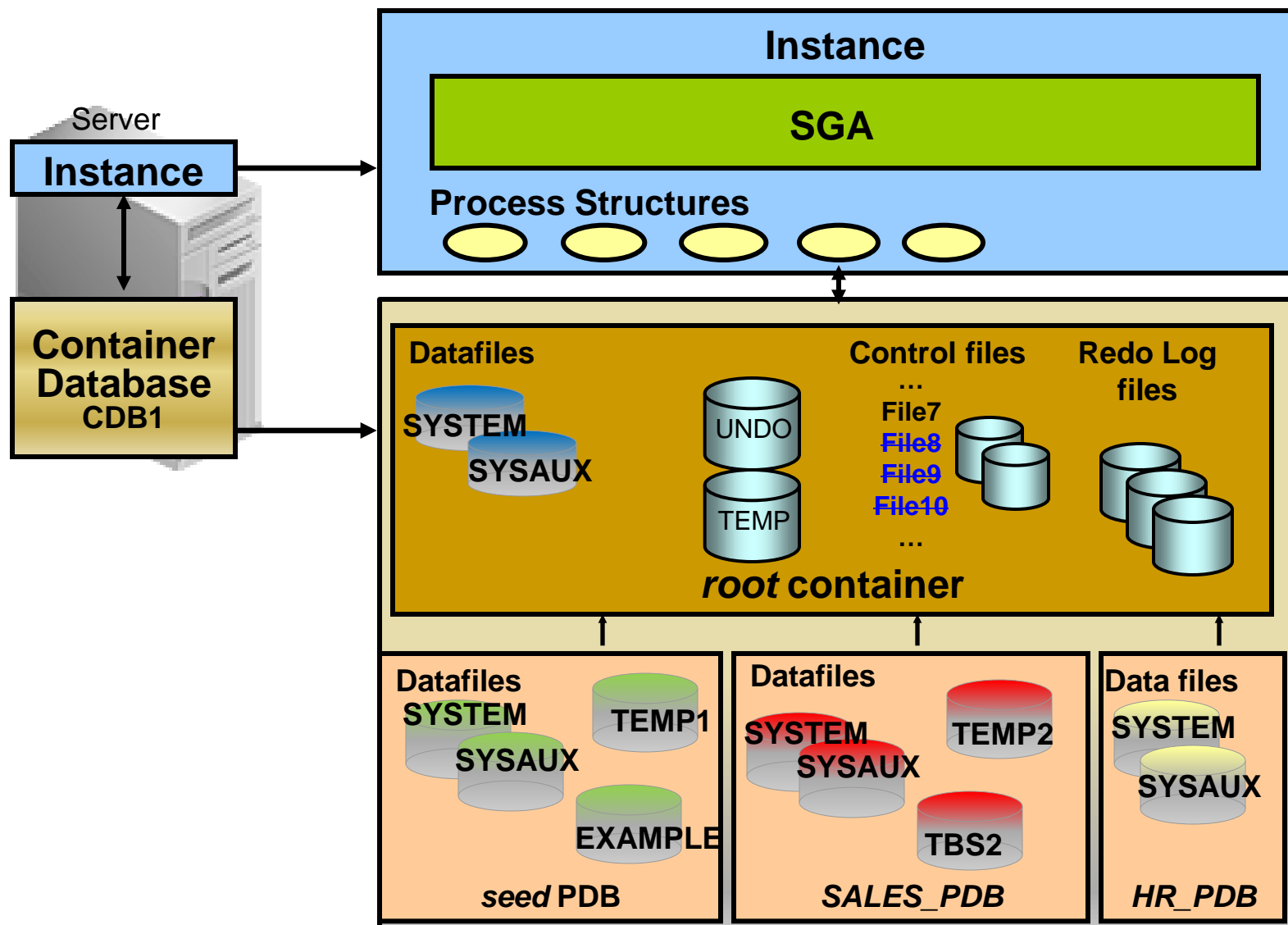
Recover CDB or PDBs according to situations:

- Instance failure
- Complete media recovery due to missing / corrupted files:
 - CDB or PDB tempfile
 - Controlfile
 - Redo log file
 - Root datafile
 - PDB datafile
- CDB / PDB / Tablespace PITR

Flashback database at CDB or PDB level:

- Common / local schema dropped

Database Architecture in 12c – Logical and Physical Structure



New Syntax and Clauses

- Use RMAN or EM to perform any backup or recovery type

```
$ export ORACLE_SID=CDB1  
$ rman TARGET / or $rman TARGET sysbackup/p@CDB1
```

- DATABASE keyword operates on all PDBs and root

```
RMAN> BACKUP DATABASE;  
RMAN> RECOVER DATABASE;
```

- PLUGGABLE DATABASE operates on individual PDBs

```
RMAN> BACKUP PLUGGABLE DATABASE hr_pdb, sales_pdb;  
RMAN> RECOVER PLUGGABLE DATABASE hr_pdb;
```

- To backup, restore, recover the root, use ROOT keyword

```
RMAN> BACKUP PLUGGABLE DATABASE "CDB$ROOT";
```

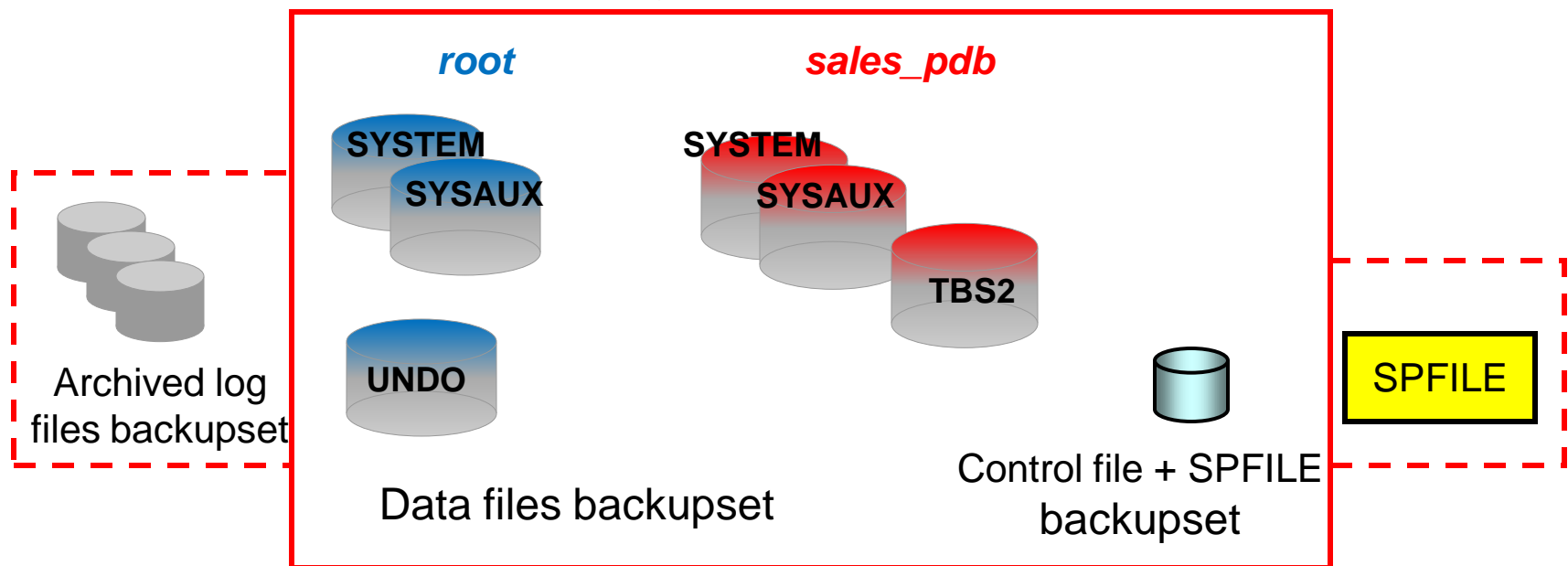
- Qualify tablespace of PDB with PDB name

```
RMAN> BACKUP TABLESPACE sales_pdb:tbs2;  
RMAN> RESTORE TABLESPACE system;
```

CDB Backup – Partial CDB Backup

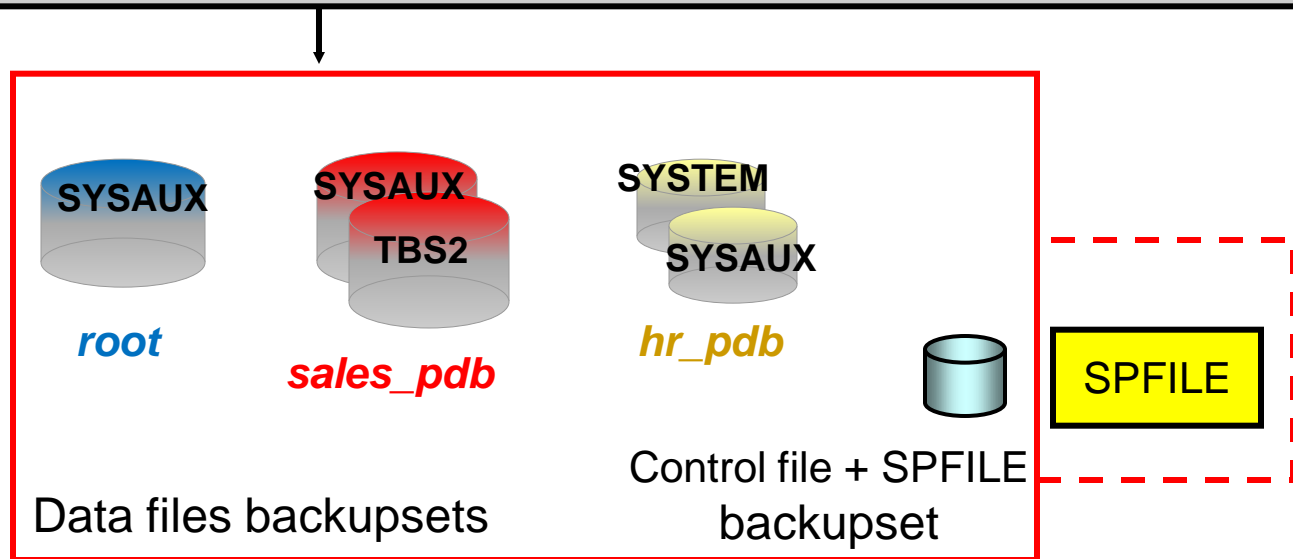
Backup the root and/or individual PDB.

```
RMAN> CONNECT TARGET /  
RMAN> BACKUP PLUGGABLE DATABASE "CDB$ROOT", sales_pdb;  
RMAN> BACKUP PLUGGABLE DATABASE sales_pdb  
2> PLUS ARCHIVELOG;
```



Backup partial PDBs.

```
RMAN> CONNECT TARGET /  
RMAN> REPORT SCHEMA;  
RMAN> BACKUP TABLESPACE sales_pdb:tbs2;  
RMAN> BACKUP TABLESPACE hr_pdb:system,  
      > sales_pdb:sysaux;  
RMAN> BACKUP TABLESPACE sysaux, hr_pdb:sysaux;
```

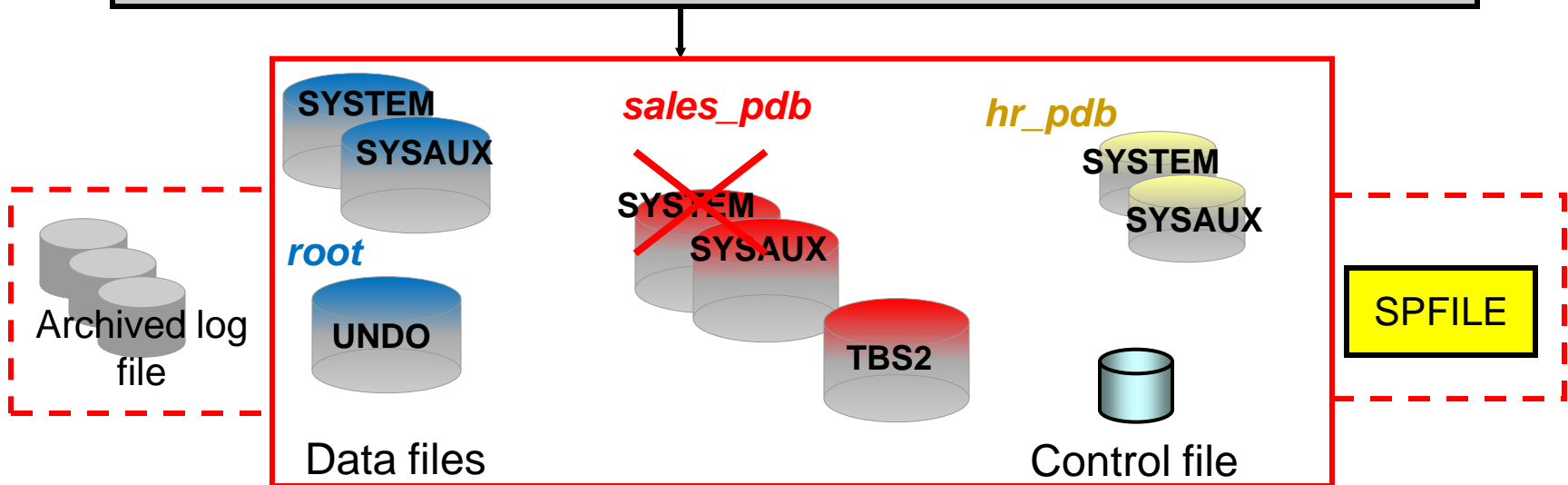


- Instance recovery: **CDB level only**
- Automatic root or PDB tempfile recreation after CDB startup
- Complete media recovery after file loss or corruption
 - CDB level: same as for non-CDB
 - PDB level not available in Beta1
 - Tablespace level: same as for non-CDB
- Incomplete media recovery after file loss or corruption
 - CDB level: same as for non-CDB
 - PDB level not available in Beta1
 - TSPITR for **root tablespaces ONLY** except SYSTEM, UNDO, SYSAUX
- Flashback database
 - **CDB level only**
 - PDB level not available in Beta1
- Block recovery: no change

Media Failure – **PDB SYSTEM** Datafile Loss

- Any datafile belonging to a PDB **SYSTEM** tablespace
- Complete media recovery: CDB mounted

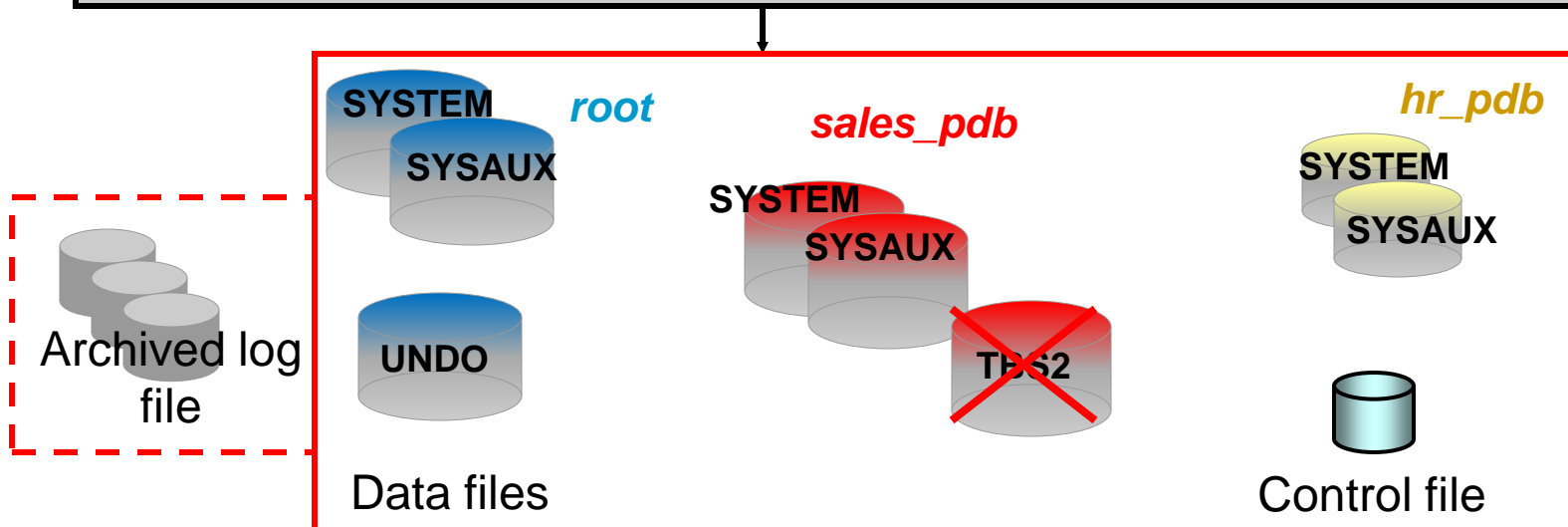
```
RMAN> STARTUP MOUNT;  
RMAN> RESTORE TABLESPACE sales_pdb:system;  
RMAN> RECOVER TABLESPACE sales_pdb:system;  
RMAN> ALTER DATABASE OPEN;  
RMAN> ALTER PLUGGABLE DATABASE ALL OPEN;
```



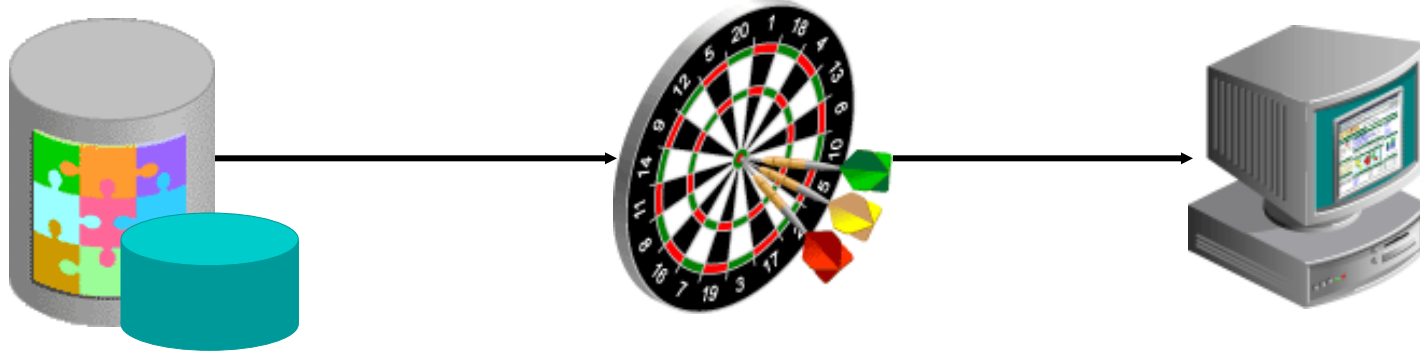
Media Failure – PDB non SYSTEM Datafile Loss

- Any other PDB tablespace except SYSTEM
- Complete media recovery: tablespace OFFLINE

```
SQL> CONNECT system/p@sales_pdb
SQL> ALTER TABLESPACE tbs2 OFFLINE IMMEDIATE;
RMAN> CONNECT TARGET /
RMAN> RESTORE TABLESPACE sales_pdb:tbs2;
RMAN> RECOVER TABLESPACE sales_pdb:tbs2;
SQL> ALTER TABLESPACE tbs2 ONLINE;
```



Flashback CDB



1. Configure the FRA.

2. Set the retention target.

3. Enable Flashback Database.

```
SQL> SHUTDOWN IMMEDIATE
SQL> STARTUP MOUNT
SQL> ALTER DATABASE ARCHIVELOG;
SQL> ALTER SYSTEM SET
    2  DB_FLASHBACK_RETENTION_TARGET=2880 SCOPE=BOTH;
SQL> ALTER DATABASE FLASHBACK ON;
SQL> ALTER DATABASE OPEN;
```

If the container database is in ARCHIVELOG mode, there is no need to restart it.

- No flashback of root without flashing back the whole CDB

Flashback CDB – Case

- A local schema in a PDB is dropped
- Flashback CDB: CDB mounted (in exclusive mode)
- Flashback PDB not available in beta 1

```
RMAN> SHUTDOWN IMMEDIATE  
RMAN> STARTUP MOUNT  
RMAN> FLASHBACK DATABASE TO SCN 10;
```

- Open the CDB and all PDBs in READ ONLY to review changes

```
RMAN> ALTER DATABASE OPEN READ ONLY;  
RMAN> ALTER PLUGGABLE DATABASE ALL OPEN READ ONLY;
```

- Open the CDB and all PDBs with RESETLOGS when satisfied

```
RMAN> SHUTDOWN IMMEDIATE  
RMAN> STARTUP MOUNT  
RMAN> FLASHBACK DATABASE TO SCN 10;  
RMAN> ALTER DATABASE OPEN RESETLOGS;  
RMAN> ALTER PLUGGABLE DATABASE ALL OPEN;
```

Monitor progress of Flashback Database with the V\$SESSION_LONGOPS view.

PROPERTIES

Allow user to leave interaction:

Show 'Next Slide' Button:

Completion Button Label:

[Anytime](#)

[Show always](#)

[Next Slide](#)



Properties...



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In this first lesson of the third part of the course, we discussed:

PART – III

Beta2

Managing
Performance

Performing Backup /
Recovery /
Flashback

Beta2

Miscellaneous

- CDB and PDB backups
- Recovery from essential PDB datafile media failure
- Recovery from non-essential PDB datafile media failure
- CDB flashback

Lesson Review

Drag and drop the shapes below to match the choices with the appropriate assumption when backing up a CDB or PDB.

After whole CDB backup

The root and all PDBs data files, control files and SPFILE are backed up

After whole PDB backup

All PDB data files, control files and SPFILE are backed up

After PDB tablespace SYSTEM backup

All data files of the SYSTEM tablespace of the root, control files and SPFILE are backed up

After tablespace SYSTEM backup

All data files of the SYSTEM tablespace of the PDB, control files and SPFILE are backed up

PROPERTIES

On passing, 'Finish' button: [Goes to Next Slide](#)

On failing, 'Finish' button: [Goes to Next Slide](#)

Allow user to leave quiz: [At any time](#)

User may view slides after quiz: [At any time](#)

User may attempt quiz: [Unlimited times](#)



Properties...



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In this third part of the course, we discussed:

PART – I

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PART – II

Managing CDB

Managing PDB

PART – III

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Course Review

A container database allows the consolidation of several databases and prevents redundant _____.

PROPERTIES

On passing, 'Finish' button: [Goes to Next Slide](#)

On failing, 'Finish' button: [Goes to Next Slide](#)

Allow user to leave quiz: [At any time](#)

User may view slides after quiz: [At any time](#)

User may attempt quiz: [Unlimited times](#)



Properties...



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Self-Study Courses

Instructor-led Courses

Other Resources

More Information

There are a variety of channels from which you can learn more about Database 12c. Click on a tab on the left for more information about just a few of the possibilities.

We hope you found this sample self-study course informative and useful.

PROPERTIES

Allow user to leave interaction:
Show 'Next Slide' Button:
Completion Button Label:

After viewing all the steps
Show upon completion
Next Slide



Properties...



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