

Session 16 MORE BACKUPS with RMAN (ARCHIVELOG)

The Oracle base remains unchanged with value /opt/oracle

```
[oracle@oracloud12c ~]$ cd ARCHIVE
[oracle@oracloud12c ARCHIVE]$ ls -l
total 1659292
-rw-r-----. 1 oracle dba 2507264 Apr  4 17:56
                                arch_950182417_1_1360.log
-rw-r-----. 1 oracle dba 4925952 Apr  4 17:56
                                arch_950182417_1_1361.log
-rw-r-----. 1 oracle dba 29149184 Apr  4 18:06
                                arch_950182417_1_1362.log
```

Etc ...

```
-rw-r-----. 1 oracle dba 45450752 Apr  6 06:00
                                arch_950182417_1_1411.log
-rw-r-----. 1 oracle dba 27033088 Apr  6 06:28
                                arch_950182417_1_1412.log
-rw-r-----. 1 oracle dba 27231232 Apr  6 07:47
                                arch_950182417_1_1413.log
```

← Since we turned to Archive Log mode, we stored Log files from 1360 to 1413

```
[oracle@oracloud12c ARCHIVE]$ cd ../BACKUP
[oracle@oracloud12c BACKUP]$ ls -l
total 2807888
-rw-r-----. 1 oracle dba 1820352512 Apr  4 18:09 full_09svgsor_9_1
-rw-r-----. 1 oracle dba 983048192 Apr  4 18:10 full_0asvgsrh_10_1
-rw-r-----. 1 oracle dba 33931264 Apr  4 18:10 full_0bsvgssu_11_1
-rw-r-----. 1 oracle dba 5922816 Apr  4 18:16 full_0dsvgt78_13_1
-rw-r-----. 1 oracle dba 32014336 Apr  4 18:19 full_0fsvgtldr_15_1
```

← Since we turned to Archive Log mode, we stored Backup Sets (9,10,11,13,15)

```
[oracle@oracloud12c BACKUP]$ rman target /
```

Recovery Manager: Release 12.1.0.2.0 - Production on Fri Apr 6
09:01:21 2018

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connected to target database: STUDENT (DBID=4285838094)

```
RMAN> report need backup;
```

RMAN retention policy will be applied to the command

RMAN retention policy is set to redundancy 2

Report of files with less than 2 redundant backups

File #bkps Name

```
-----
1      1      /opt/oracle/oradata/student/system01.dbf
file 2 is excluded from whole database backup
```

```

3      1      /opt/oracle/oradata/student/sysaux01.dbf
file 5 is excluded from whole database backup
file 7 is excluded from whole database backup
9      1      /opt/oracle/oradata/student/joke01.dbf
10     1      /opt/oracle/product/12.1.0/dbhome_1/dbs/myundo01.dbf
11     1      /opt/oracle/oradata/student/joke02.dbf
12     1      /opt/oracle/oradata/student/indx01.dbf

```

*** Since there are many files in need of backup, we are going to do WHOLE and FULL backup (that can be used as a base for other incremental ones) of Database. Also, we will add ALL Archive Logs stored so far***

```

RMAN> backup incremental level 0 database plus archivelog
      filesperset=5;

```

```

Starting backup at 06-APR-18
current log archived
allocated channel: ORA_DISK_1
channel ORA_DISK_1: SID=253 device type=DISK
channel ORA_DISK_1: starting archived log backup set
channel ORA_DISK_1: specifying archived log(s) in backup set
input archived log thread=1 sequence=1365 RECID=6 STAMP=972597258
input archived log thread=1 sequence=1366 RECID=7 STAMP=972597657
input archived log thread=1 sequence=1367 RECID=8 STAMP=972597708
input archived log thread=1 sequence=1368 RECID=9 STAMP=972597738
input archived log thread=1 sequence=1369 RECID=10 STAMP=972599144
ETC ...

```

```

channel ORA_DISK_1: specifying archived log(s) in backup set
input archived log thread=1 sequence=1412 RECID=53 STAMP=972714521
input archived log thread=1 sequence=1413 RECID=54 STAMP=972719259
input archived log thread=1 sequence=1414 RECID=55 STAMP=972723759
input archived log thread=1 sequence=1415 RECID=56 STAMP=972723955
channel ORA_DISK_1: starting piece 1 at 06-APR-18
channel ORA_DISK_1: finished piece 1 at 06-APR-18
piece handle=/home/oracle/BACKUP/full_0usvl5of_30_1
tag=TAG20180406T090555 comm          ent=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:01
Finished backup at 06-APR-18

```

```

Starting backup at 06-APR-18
using channel ORA_DISK_1
file 2 is excluded from whole database backup
file 5 is excluded from whole database backup
file 7 is excluded from whole database backup
channel ORA_DISK_1: starting incremental level 0 datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00003
name=/opt/oracle/oradata/student/sysaux01.dbf
input datafile file number=00001
name=/opt/oracle/oradata/student/system01.dbf

```

```

input datafile file number=00004
name=/opt/oracle/oradata/student/undotbs01.dbf
input datafile file number=00010
name=/opt/oracle/product/12.1.0/dbhome_1/dbs/m                                yundo01.dbf
input datafile file number=00008
name=/opt/oracle/oradata/student/mine01.dbf
input datafile file number=00006
name=/opt/oracle/oradata/student/users01.dbf
input datafile file number=00009
name=/opt/oracle/oradata/student/joke01.dbf
input datafile file number=00012
name=/opt/oracle/oradata/student/indx01.dbf
input datafile file number=00011
name=/opt/oracle/oradata/student/joke02.dbf
channel ORA_DISK_1: starting piece 1 at 06-APR-18
channel ORA_DISK_1: finished piece 1 at 06-APR-18
piece handle=/home/oracle/BACKUP/full_0vsv15oh_31_1
tag=TAG20180406T090625 comm                               ent=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:01:05
Finished backup at 06-APR-18

```

```

Starting backup at 06-APR-18
current log archived
using channel ORA_DISK_1
channel ORA_DISK_1: starting archived log backup set
channel ORA_DISK_1: specifying archived log(s) in backup set
input archived log thread=1 sequence=1416 RECID=57 STAMP=972724053
channel ORA_DISK_1: starting piece 1 at 06-APR-18
channel ORA_DISK_1: finished piece 1 at 06-APR-18
piece handle=/home/oracle/BACKUP/full_10sv15ql_32_1
tag=TAG20180406T090733 comm                               ent=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:01
Finished backup at 06-APR-18

```

```

Starting Control File and SPFILE Autobackup at 06-APR-18
piece
handle=/opt/oracle/fast_recovery_area/STUDENT/autobackup/2018_04_06/o1
_mf                               _s_972724054_fdgw8qdf_.bkp comment=NONE
Finished Control File and SPFILE Autobackup at 06-APR-18

```

RMAN> **list backup;**

← It will show us everything including ALL Archived Logs (listing is too big))

RMAN> **list backup of database;**

List of Backup Sets
=====

BS Key	Type	LV	Size	Device	Type	Elapsed Time	Completion Time
-----	----	--	-----	-----	-----	-----	-----
9	Full		1.70G	DISK		00:01:20	04-APR-18

BP Key: 9 Status: AVAILABLE Compressed: NO Tag:
TAG20180404T180827

Piece Name: /home/oracle/BACKUP/full_09svgsor_9_1

List of Datafiles in backup set 9

File	LV	Type	Ckp	SCN	Ckp	Time	Name
------	----	------	-----	-----	-----	------	------

3	Full	28470564	04-APR-18	/opt/oracle/oradata/student/sysaux01.dbf
11	Full	28470564	04-APR-18	/opt/oracle/oradata/student/joke02.dbf
12	Full	28470564	04-APR-18	/opt/oracle/oradata/student/indx01.dbf

BS Key	Type	LV	Size	Device	Type	Elapsed Time	Completion Time
--------	------	----	------	--------	------	--------------	-----------------

10	Full		937.50M	DISK		00:00:34	04-APR-18
----	------	--	---------	------	--	----------	-----------

BP Key: 10 Status: AVAILABLE Compressed: NO Tag:

TAG20180404T180827

Piece Name: /home/oracle/BACKUP/full_0asvgsrh_10_1

List of Datafiles in backup set 10

File	LV	Type	Ckp	SCN	Ckp	Time	Name
------	----	------	-----	-----	-----	------	------

1	Full	28470959	04-APR-18	/opt/oracle/oradata/student/system01.dbf
6	Full	28470959	04-APR-18	/opt/oracle/oradata/student/users01.dbf
9	Full	28470959	04-APR-18	/opt/oracle/oradata/student/joke01.dbf

BS Key	Type	LV	Size	Device	Type	Elapsed Time	Completion Time
--------	------	----	------	--------	------	--------------	-----------------

11	Full		32.35M	DISK		00:00:04	04-APR-18
----	------	--	--------	------	--	----------	-----------

BP Key: 11 Status: AVAILABLE Compressed: NO Tag:

TAG20180404T180827

Piece Name: /home/oracle/BACKUP/full_0bsvgssu_11_1

List of Datafiles in backup set 11

File	LV	Type	Ckp	SCN	Ckp	Time	Name
------	----	------	-----	-----	-----	------	------

4	Full	28472490	04-APR-18	/opt/oracle/oradata/student/undotbs01.dbf
8	Full	28472490	04-APR-18	/opt/oracle/oradata/student/mine01.dbf
10	Full	28472490	04-APR-18	/opt/oracle/product/12.1.0/dbhome_1/dbs/myundo01.dbf

BS Key	Type	LV	Size	Device	Type	Elapsed Time	Completion Time
--------	------	----	------	--------	------	--------------	-----------------

13	Full		5.64M	DISK		00:00:00	04-APR-18
----	------	--	-------	------	--	----------	-----------

BP Key: 13 Status: AVAILABLE Compressed: NO Tag:

TAG20180404T181608

Piece Name: /home/oracle/BACKUP/full_0dsvgt78_13_1

List of Datafiles in backup set 13

File	LV	Type	Ckp	SCN	Ckp	Time	Name
------	----	------	-----	-----	-----	------	------

6	Full	28473632	04-APR-18	/opt/oracle/oradata/student/users01.dbf
8	Full	28473632	04-APR-18	/opt/oracle/oradata/student/mine01.dbf

BS Key	Type	LV	Size	Device	Type	Elapsed Time	Completion Time
--------	------	----	------	--------	------	--------------	-----------------

15	Full		30.52M	DISK		00:00:01	04-APR-18
----	------	--	--------	------	--	----------	-----------

BP Key: 15 Status: AVAILABLE Compressed: NO Tag:
TAG20180404T181939
Piece Name: /home/oracle/BACKUP/full_0fsvgtdr_15_1
List of Datafiles in backup set 15
File LV Type Ckp SCN Ckp Time Name

4 Full 28474641 04-APR-18 /opt/oracle/oradata/student/undotbs01.dbf

BS Key Type LV Size Device Type Elapsed Time Completion Time

30 **Incr 0 2.62G** DISK 00:00:55 06-APR-18
BP Key: 30 Status: AVAILABLE Compressed: NO Tag:
TAG20180406T090625

Piece Name: /home/oracle/BACKUP/full_0vsvl5oh_31_1
List of Datafiles in backup set 30
File LV Type Ckp SCN Ckp Time Name

1 0 Incr 29153195 06-APR-18
/opt/oracle/oradata/student/system01.dbf
3 0 Incr 29153195 06-APR-18
/opt/oracle/oradata/student/sysaux01.dbf
4 0 Incr 29153195 06-APR-18
/opt/oracle/oradata/student/undotbs01.dbf
6 0 Incr 29153195 06-APR-18
/opt/oracle/oradata/student/users01.dbf
8 0 Incr 29153195 06-APR-18
/opt/oracle/oradata/student/mine01.dbf
9 0 Incr 29153195 06-APR-18
/opt/oracle/oradata/student/joke01.dbf
10 0 Incr 29153195 06-APR-18
/opt/oracle/product/12.1.0/dbhome_1/dbs/myundo01.dbf
11 0 Incr 29153195 06-APR-18
/opt/oracle/oradata/student/joke02.dbf
12 0 Incr 29153195 06-APR-18
/opt/oracle/oradata/student/indx01.dbf

← The database set created today is # 30 and it is 2.62 GB big

RMAN> **BACKUP INCREMENTAL LEVEL 0 TABLESPACE users, mine;**

← This is same as FULL (default) type of backup; it may be used as a base for Incremental one

Starting backup at 06-APR-18
using channel ORA_DISK_1
channel ORA_DISK_1: starting incremental level 0 datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00008
name=/opt/oracle/oradata/student/mine01.dbf
input datafile file number=00006
name=/opt/oracle/oradata/student/users01.dbf
channel ORA_DISK_1: starting piece 1 at 06-APR-18
channel ORA_DISK_1: finished piece 1 at 06-APR-18
piece handle=/home/oracle/BACKUP/full_12svl61g_34_1

```
tag=TAG20180406T091111 comm ent=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:01
Finished backup at 06-APR-18
```

```
Starting Control File and SPFILE Autobackup at 06-APR-18
piece
handle=/opt/oracle/fast_recovery_area/STUDENT/autobackup/2018_04_06/o1
_mf_s_972724273_fdgwhkb9_.bkp comment=NONE
Finished Control File and SPFILE Autobackup at 06-APR-18
```

```
RMAN> BACKUP INCREMENTAL LEVEL 0 DATAFILE 4; ← this is undotbs1.dbf
```

```
Starting backup at 06-APR-18
using channel ORA_DISK_1
channel ORA_DISK_1: starting incremental level 0 datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00004
name=/opt/oracle/oradata/student/undotbs01.dbf
channel ORA_DISK_1: starting piece 1 at 06-APR-18
channel ORA_DISK_1: finished piece 1 at 06-APR-18
piece handle=/home/oracle/BACKUP/full_14svl62j_36_1
tag=TAG20180406T091147 comm ent=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:03
Finished backup at 06-APR-18
```

```
Starting Control File and SPFILE Autobackup at 06-APR-18
piece
handle=/opt/oracle/fast_recovery_area/STUDENT/autobackup/2018_04_06/o1
_mf_s_972724310_fdgwjpbs_.bkp comment=NONE
Finished Control File and SPFILE Autobackup at 06-APR-18
```

```
RMAN> BACKUP INCREMENTAL LEVEL 1 TABLESPACE mine;
```

← By default, level 1 backup is DIFFERENTIAL – it will cover only changed blocks since ANY Incremental Level of backup (0 or 1)

```
Starting backup at 06-APR-18
using channel ORA_DISK_1
channel ORA_DISK_1: starting incremental level 1 datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00008
name=/opt/oracle/oradata/student/mine01.dbf
channel ORA_DISK_1: starting piece 1 at 06-APR-18
channel ORA_DISK_1: finished piece 1 at 06-APR-18
piece handle=/home/oracle/BACKUP/full_16svl63k_38_1
tag=TAG20180406T091219 comm ent=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:01
Finished backup at 06-APR-18
```

```
Starting Control File and SPFILE Autobackup at 06-APR-18
piece
handle=/opt/oracle/fast_recovery_area/STUDENT/autobackup/2018_04_06/o1
```

_mf_s_972724341_fdgwk094_.bkp comment=NONE
Finished Control File and SPFILE Autobackup at 06-APR-18

RMAN> **BACKUP INCREMENTAL LEVEL 1 CUMULATIVE DATAFILE 4;**

← **Level 1 backup may be also CUMULATIVE (not default) – it will cover only changed blocks since the last Level 0 backup**

Starting backup at 06-APR-18
using channel ORA_DISK_1
channel ORA_DISK_1: starting incremental level 1 datafile backup set
channel ORA_DISK_1: specifying datafile(s) in backup set
input datafile file number=00004
name=/opt/oracle/oradata/student/undotbs01.dbf
channel ORA_DISK_1: starting piece 1 at 06-APR-18
channel ORA_DISK_1: finished piece 1 at 06-APR-18
piece handle=/home/oracle/BACKUP/full_18svl64j_40_1
tag=TAG20180406T091251 comm ent=NONE
channel ORA_DISK_1: backup set complete, elapsed time: 00:00:01
Finished backup at 06-APR-18

Starting Control File and SPFILE Autobackup at 06-APR-18
piece
handle=/opt/oracle/fast_recovery_area/STUDENT/autobackup/2018_04_06/o1
_mf_s_972724372_fdgwlnjs_.bkp comment=NONE
Finished Control File and SPFILE Autobackup at 06-APR-18

RMAN> **LIST BACKUP OF TABLESPACE mine;**

List of Backup Sets
=====

BS Key	Type	LV	Size	Device	Type	Elapsed Time	Completion Time
11	Full		32.35M	DISK		00:00:04	04-APR-18
BP Key: 11 Status: AVAILABLE Compressed: NO Tag:							
TAG20180404T180827							
Piece Name: /home/oracle/BACKUP/full_0bsvgssu_11_1							
List of Datafiles in backup set 11							
File	LV	Type	Ckp	SCN	Ckp	Time	Name
8	Full		28472490	04-APR-18			/opt/oracle/oradata/student/mine01.dbf

BS Key	Type	LV	Size	Device	Type	Elapsed Time	Completion Time
13	Full		5.64M	DISK		00:00:00	04-APR-18
BP Key: 13 Status: AVAILABLE Compressed: NO Tag:							
TAG20180404T181608							
Piece Name: /home/oracle/BACKUP/full_0dsvgt78_13_1							
List of Datafiles in backup set 13							
File	LV	Type	Ckp	SCN	Ckp	Time	Name
----	----	----	-----	-----	-----	-----	-----

8 Full 28473632 04-APR-18 /opt/oracle/oradata/student/mine01.dbf

BS Key	Type	LV	Size	Device	Type	Elapsed Time	Completion Time
30	Incr	0	2.62G	DISK		00:00:55	06-APR-18
BP Key: 30 Status: AVAILABLE Compressed: NO Tag:							
TAG20180406T090625							
Piece Name: /home/oracle/BACKUP/full_0vsvl5oh_31_1							
List of Datafiles in backup set 30							
File	LV	Type	Ckp	SCN	Ckp Time	Name	
8	0	Incr	29153195	06-APR-18		/opt/oracle/oradata/student/mine01.dbf	

BS Key	Type	LV	Size	Device	Type	Elapsed Time	Completion Time
33	Incr	0	5.64M	DISK		00:00:00	06-APR-18
BP Key: 33 Status: AVAILABLE Compressed: NO Tag:							
TAG20180406T091111							
Piece Name: /home/oracle/BACKUP/full_12svl61g_34_1							
List of Datafiles in backup set 33							
File	LV	Type	Ckp	SCN	Ckp Time	Name	
8	0	Incr	29154309	06-APR-18		/opt/oracle/oradata/student/mine01.dbf	

BS Key	Type	LV	Size	Device	Type	Elapsed Time	Completion Time
37	Incr	1	32.00K	DISK		00:00:00	06-APR-18
BP Key: 37 Status: AVAILABLE Compressed: NO Tag:							
TAG20180406T091219							
Piece Name: /home/oracle/BACKUP/full_16svl63k_38_1							
List of Datafiles in backup set 37							
File	LV	Type	Ckp	SCN	Ckp Time	Name	
8	1	Incr	29154584	06-APR-18		/opt/oracle/oradata/student/mine01.dbf	

← Notice how much bigger is set # 33 (Level 0) from set # 37 (Level 1 Differential)

RMAN> LIST BACKUP OF DATAFILE 4;

List of Backup Sets
=====

BS Key	Type	LV	Size	Device	Type	Elapsed Time	Completion Time
11	Full		32.35M	DISK		00:00:04	04-APR-18
BP Key: 11 Status: AVAILABLE Compressed: NO Tag:							
TAG20180404T180827							
Piece Name: /home/oracle/BACKUP/full_0bsvgssu_11_1							
List of Datafiles in backup set 11							

File	LV	Type	Ckp	SCN	Ckp Time	Name
4	Full	28472490	04-APR-18			/opt/oracle/oradata/student/undotbs01.dbf

BS Key	Type	LV	Size	Device	Type	Elapsed Time	Completion Time
15	Full		30.52M	DISK		00:00:01	04-APR-18
BP Key: 15 Status: AVAILABLE Compressed: NO Tag:							
TAG20180404T181939							

Piece Name: /home/oracle/BACKUP/full_0fsvgtldr_15_1

List of Datafiles in backup set 15

File	LV	Type	Ckp	SCN	Ckp Time	Name
------	----	------	-----	-----	----------	------

4	Full	28474641	04-APR-18			/opt/oracle/oradata/student/undotbs01.dbf
---	------	----------	-----------	--	--	---

BS Key	Type	LV	Size	Device	Type	Elapsed Time	Completion Time
30	Incr 0		2.62G	DISK		00:00:55	06-APR-18
BP Key: 30 Status: AVAILABLE Compressed: NO Tag:							
TAG20180406T090625							

Piece Name: /home/oracle/BACKUP/full_0vsvl5oh_31_1

List of Datafiles in backup set 30

File	LV	Type	Ckp	SCN	Ckp Time	Name
------	----	------	-----	-----	----------	------

4	0	Incr	29153195		06-APR-18	/opt/oracle/oradata/student/undotbs01.dbf
---	---	------	----------	--	-----------	---

BS Key	Type	LV	Size	Device	Type	Elapsed Time	Completion Time
35	Incr 0		8.11M	DISK		00:00:01	06-APR-18
BP Key: 35 Status: AVAILABLE Compressed: NO Tag:							
TAG20180406T091147							

Piece Name: /home/oracle/BACKUP/full_14svl62j_36_1

List of Datafiles in backup set 35

File	LV	Type	Ckp	SCN	Ckp Time	Name
------	----	------	-----	-----	----------	------

4	0	Incr	29154531		06-APR-18	/opt/oracle/oradata/student/undotbs01.dbf
----------	---	------	----------	--	-----------	---

BS Key	Type	LV	Size	Device	Type	Elapsed Time	Completion Time
39	Incr 1		272.00K	DISK		00:00:00	06-APR-18
BP Key: 39 Status: AVAILABLE Compressed: NO Tag:							
TAG20180406T091251							

Piece Name: /home/oracle/BACKUP/full_18svl64j_40_1

List of Datafiles in backup set 39

File	LV	Type	Ckp	SCN	Ckp Time	Name
------	----	------	-----	-----	----------	------

4	1	Incr	29154793		06-APR-18	/opt/oracle/oradata/student/undotbs01.dbf
----------	---	------	----------	--	-----------	---

← Notice how much bigger is set # 35 (Level 0) from set # 39 (Level 1 Cumulative))

RMAN> **REPORT NEED BACKUP;**

RMAN retention policy will be applied to the command
RMAN retention policy is set to redundancy 2
Report of files with less than 2 redundant backups
File #bkps Name

file 2 is excluded from whole database backup
file 5 is excluded from whole database backup
file 7 is excluded from whole database backup

← There is no file that is below retention policy of 2 (all files are covered at least twice)

RMAN> **REPORT OBSOLETE;**

RMAN retention policy will be applied to the command
RMAN retention policy is set to redundancy 2
Report of obsolete backups and copies

Type	Key	Completion Time	Filename/Handle
Archive Log	1	04-APR-18	
/home/oracle/ARCHIVE/arch_950182			417_1_1360.log
Archive Log	2	04-APR-18	
/home/oracle/ARCHIVE/arch_950182			417_1_1361.log
Archive Log	3	04-APR-18	
/home/oracle/ARCHIVE/arch_950182			417_1_1362.log
Backup Set	13	04-APR-18	
Backup Piece	13	04-APR-18	
/home/oracle/BACKUP/full_0dsvgt7			8_13_1
Backup Set	15	04-APR-18	
Backup Piece	15	04-APR-18	
/home/oracle/BACKUP/full_0fsvgt7d			r_15_1
Backup Set	16	04-APR-18	
Backup Piece	16	04-APR-18	
/opt/oracle/fast_recovery_area/S			
TUDENT/autobackup/2018_04_04/o1_mf_s_972584381_fdbmvx3c_.bkp			
Backup Set	17	04-APR-18	
Backup Piece	17	04-APR-18	
/opt/oracle/fast_recovery_area/S			
TUDENT/autobackup/2018_04_04/o1_mf_s_972584539_fdbn0vbc_.bkp			
Backup Set	32	06-APR-18	
Backup Piece	32	06-APR-18	
/opt/oracle/fast_recovery_area/S			
TUDENT/autobackup/2018_04_06/o1_mf_s_972724054_fdgw8qdf_.bkp			
Backup Set	34	06-APR-18	
Backup Piece	34	06-APR-18	
/opt/oracle/fast_recovery_area/S			
TUDENT/autobackup/2018_04_06/o1_mf_s_972724273_fdgwhkb9_.bkp			
Backup Set	36	06-APR-18	
Backup Piece	36	06-APR-18	
/opt/oracle/fast_recovery_area/S			
TUDENT/autobackup/2018_04_06/o1_mf_s_972724310_fdgwjpk9_.bkp			

RMAN> **DELETE OBSOLETE;**

RMAN retention policy will be applied to the command

RMAN retention policy is set to redundancy 2

using channel ORA_DISK_1

Deleting the following obsolete backups and copies:

Type	Key	Completion Time	Filename/Handle
Archive Log	1	04-APR-18	
/home/oracle/ARCHIVE/arch_950182			417_1_1360.log
Archive Log	2	04-APR-18	
/home/oracle/ARCHIVE/arch_950182			417_1_1361.log
Archive Log	3	04-APR-18	
/home/oracle/ARCHIVE/arch_950182			417_1_1362.log
Backup Set	13	04-APR-18	
Backup Piece	13	04-APR-18	
/home/oracle/BACKUP/full_0dsvgt7			8_13_1
Backup Set	15	04-APR-18	
Backup Piece	15	04-APR-18	
/home/oracle/BACKUP/full_0fsvgt7			r_15_1
Backup Set	16	04-APR-18	
Backup Piece	16	04-APR-18	
/opt/oracle/fast_recovery_area/S			
TUDENT/autobackup/2018_04_04/o1_mf_s_972584381_fdbmvx3c_.bkp			
Backup Set	17	04-APR-18	
Backup Piece	17	04-APR-18	
/opt/oracle/fast_recovery_area/S			
TUDENT/autobackup/2018_04_04/o1_mf_s_972584539_fdbn0vbc_.bkp			
Backup Set	32	06-APR-18	
Backup Piece	32	06-APR-18	
/opt/oracle/fast_recovery_area/S			
TUDENT/autobackup/2018_04_06/o1_mf_s_972724054_fdgw8qdf_.bkp			
Backup Set	34	06-APR-18	
Backup Piece	34	06-APR-18	
/opt/oracle/fast_recovery_area/S			
TUDENT/autobackup/2018_04_06/o1_mf_s_972724273_fdgwhkb9_.bkp			
Backup Set	36	06-APR-18	
Backup Piece	36	06-APR-18	
/opt/oracle/fast_recovery_area/S			
TUDENT/autobackup/2018_04_06/o1_mf_s_972724310_fdgwjpk9_.bkp			

Do you really want to delete the above objects (enter YES or NO)? **YES**

deleted archived log

archived log file name=/home/oracle/ARCHIVE/arch_950182417_1_1360.log

RECID=1 S TAMP=972582990

deleted archived log

archived log file name=/home/oracle/ARCHIVE/arch_950182417_1_1361.log

RECID=2 S TAMP=972583019

deleted archived log

archived log file name=/home/oracle/ARCHIVE/arch_950182417_1_1362.log

RECID=3 S TAMP=972583616

```

deleted backup piece
backup piece handle=/home/oracle/BACKUP/full_0dsvgt78_13_1 RECID=13
STAMP=97258          4168
deleted backup piece
backup piece handle=/home/oracle/BACKUP/full_0fsvgtldr_15_1 RECID=15
STAMP=97258          4379
deleted backup piece
backup piece
handle=/opt/oracle/fast_recovery_area/STUDENT/autobackup/2018_04_0
4/o1_mf_s_972584381_fdbmvx3c_.bkp RECID=16 STAMP=972584381
deleted backup piece
backup piece
handle=/opt/oracle/fast_recovery_area/STUDENT/autobackup/2018_04_0
4/o1_mf_s_972584539_fdbn0vbc_.bkp RECID=17 STAMP=972584539
deleted backup piece
backup piece
handle=/opt/oracle/fast_recovery_area/STUDENT/autobackup/2018_04_0
6/o1_mf_s_972724054_fdgw8qdf_.bkp RECID=32 STAMP=972724055
deleted backup piece
backup piece
handle=/opt/oracle/fast_recovery_area/STUDENT/autobackup/2018_04_0
6/o1_mf_s_972724273_fdgwhkb9_.bkp RECID=34 STAMP=972724273
deleted backup piece
backup piece
handle=/opt/oracle/fast_recovery_area/STUDENT/autobackup/2018_04_0
6/o1_mf_s_972724310_fdgwjpk_.bkp RECID=36 STAMP=972724310
Deleted 10 objects

```

RMAN> **LIST BACKUP OF TABLESPACE mine;**

List of Backup Sets

=====

BS Key	Type	LV	Size	Device	Type	Elapsed Time	Completion Time
11	Full		32.35M	DISK		00:00:04	04-APR-18
BP Key: 11 Status: AVAILABLE Compressed: NO Tag:							
TAG20180404T180827							
Piece Name: /home/oracle/BACKUP/full_0bsvgssu_11_1							
List of Datafiles in backup set 11							
File	LV	Type	Ckp	SCN	Ckp Time	Name	
8	Full		28472490	04-APR-18		/opt/oracle/oradata/student/mine01.dbf	

BS Key	Type	LV	Size	Device	Type	Elapsed Time	Completion Time
30	Incr 0		2.62G	DISK		00:00:55	06-APR-18
BP Key: 30 Status: AVAILABLE Compressed: NO Tag:							
TAG20180406T090625							
Piece Name: /home/oracle/BACKUP/full_0vsvl5oh_31_1							
List of Datafiles in backup set 30							
File	LV	Type	Ckp	SCN	Ckp Time	Name	

```

-----
8      0  Incr 29153195    06-APR-18
        /opt/oracle/oradata/student/mine01.dbf

BS Key   Type LV Size          Device Type Elapsed Time Completion Time
-----
33        Incr 0   5.64M        DISK          00:00:00      06-APR-18
        BP Key: 33   Status: AVAILABLE   Compressed: NO   Tag:
TAG20180406T091111
        Piece Name: /home/oracle/BACKUP/full_12svl61g_34_1
List of Datafiles in backup set 33
File LV Type Ckp SCN      Ckp Time  Name
-----
8      0  Incr 29154309    06-APR-18
        /opt/oracle/oradata/student/mine01.dbf

BS Key   Type LV Size          Device Type Elapsed Time Completion Time
-----
37        Incr 1   32.00K        DISK          00:00:00      06-APR-18
        BP Key: 37   Status: AVAILABLE   Compressed: NO   Tag:
TAG20180406T091219
        Piece Name: /home/oracle/BACKUP/full_16svl63k_38_1
List of Datafiles in backup set 37
File LV Type Ckp SCN      Ckp Time  Name
-----
8      1  Incr 29154584    06-APR-18
        /opt/oracle/oradata/student/mine01.dbf

```

← We can see that piece # 13 was deleted here (beyond retention policy of 2)

RMAN> **LIST BACKUP OF DATAFILE 4;**

List of Backup Sets
=====

```

BS Key   Type LV Size          Device Type Elapsed Time Completion Time
-----
11        Full   32.35M        DISK          00:00:04      04-APR-18
        BP Key: 11   Status: AVAILABLE   Compressed: NO   Tag:
TAG20180404T180827
        Piece Name: /home/oracle/BACKUP/full_0bsvgssu_11_1
List of Datafiles in backup set 11
File LV Type Ckp SCN      Ckp Time  Name
-----
4      Full 28472490 04-APR-18 /opt/oracle/oradata/student/undotbs01.dbf

BS Key   Type LV Size          Device Type Elapsed Time Completion Time
-----
30        Incr 0   2.62G        DISK          00:00:55      06-APR-18
        BP Key: 30   Status: AVAILABLE   Compressed: NO   Tag:
TAG20180406T090625

```

Piece Name: /home/oracle/BACKUP/full_0vsvl5oh_31_1

List of Datafiles in backup set 30

File	LV	Type	Ckp	SCN	Ckp	Time	Name
------	----	------	-----	-----	-----	------	------

4	0	Incr	29153195	06-APR-18			
---	---	------	----------	-----------	--	--	--

/opt/oracle/oradata/student/undotbs01.dbf

BS Key	Type	LV	Size	Device	Type	Elapsed Time	Completion Time
--------	------	----	------	--------	------	--------------	-----------------

35	Incr	0	8.11M	DISK		00:00:01	06-APR-18
----	------	---	-------	------	--	----------	-----------

BP Key: 35 Status: AVAILABLE Compressed: NO Tag:

TAG20180406T091147

Piece Name: /home/oracle/BACKUP/full_14svl62j_36_1

List of Datafiles in backup set 35

File	LV	Type	Ckp	SCN	Ckp	Time	Name
------	----	------	-----	-----	-----	------	------

4	0	Incr	29154531	06-APR-18			
---	---	------	----------	-----------	--	--	--

/opt/oracle/oradata/student/undotbs01.dbf

BS Key	Type	LV	Size	Device	Type	Elapsed Time	Completion Time
--------	------	----	------	--------	------	--------------	-----------------

39	Incr	1	272.00K	DISK		00:00:00	06-APR-18
----	------	---	---------	------	--	----------	-----------

BP Key: 39 Status: AVAILABLE Compressed: NO Tag:

TAG20180406T091251

Piece Name: /home/oracle/BACKUP/full_18svl64j_40_1

List of Datafiles in backup set 39

File	LV	Type	Ckp	SCN	Ckp	Time	Name
------	----	------	-----	-----	-----	------	------

4	1	Incr	29154793	06-APR-18			
---	---	------	----------	-----------	--	--	--

/opt/oracle/oradata/student/undotbs01.dbf

← We can see that piece # 15 was deleted here (beyond retention policy of 2)

RMAN> EXIT

Recovery Manager complete.

[oracle@oracloud12c BACKUP]\$ ls -l

total 7217652

-rw-r-----	1	oracle	dba	1820352512	Apr	4	18:09	full_09svgssr_9_1
-rw-r-----	1	oracle	dba	983048192	Apr	4	18:10	full_0asvgsrh_10_1
-rw-r-----	1	oracle	dba	33931264	Apr	4	18:10	full_0bsvgssu_11_1
-rw-r-----	1	oracle	dba	171158528	Apr	6	09:05	full_0jsvl5nk_19_1
-rw-r-----	1	oracle	dba	167335424	Apr	6	09:06	full_0ksvl5nn_20_1
-rw-r-----	1	oracle	dba	164568576	Apr	6	09:06	full_0lsvl5np_21_1
-rw-r-----	1	oracle	dba	159000064	Apr	6	09:06	full_0msvl5ns_22_1
-rw-r-----	1	oracle	dba	156814848	Apr	6	09:06	full_0nsvl5nv_23_1
-rw-r-----	1	oracle	dba	154395136	Apr	6	09:06	full_0osvl5o0_24_1
-rw-r-----	1	oracle	dba	153148416	Apr	6	09:06	full_0psvl5o1_25_1
-rw-r-----	1	oracle	dba	150903808	Apr	6	09:06	full_0qsvl5o4_26_1
-rw-r-----	1	oracle	dba	141077504	Apr	6	09:06	full_0rsvl5o8_27_1
-rw-r-----	1	oracle	dba	135642624	Apr	6	09:06	full_0ssvl5o9_28_1

```
-rw-r-----. 1 oracle dba      90737664 Apr  6 09:06 full_0tsvl5oc_29_1
-rw-r-----. 1 oracle dba      82358272 Apr  6 09:06 full_0usvl5of_30_1
-rw-r-----. 1 oracle dba 2811150336 Apr  6 09:07 full_0vsvl5oh_31_1
-rw-r-----. 1 oracle dba       459776 Apr  6 09:07 full_10svl5ql_32_1
-rw-r-----. 1 oracle dba       5922816 Apr  6 09:11 full_12svl61g_34_1
-rw-r-----. 1 oracle dba       8511488 Apr  6 09:11 full_14svl62j_36_1
-rw-r-----. 1 oracle dba        40960 Apr  6 09:12 full_16svl63k_38_1
-rw-r-----. 1 oracle dba       286720 Apr  6 09:12 full_18svl64j_40_1
```

← Most of these backup files store our Archived Logs covered with syntax option PLUS
ARCHIVELOG

```
[oracle@oracloud12c BACKUP]$ exit
logout
```