



Science & Technology
Facilities Council

Backup Infrastructure – Additional Information

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Overview

- Central RMAN Catalogue
- Scripts
- Email notification
- Restore validate
- Catalogue resync
- Mend: mail in email script





RMAN Catalog

- Backup details stored centrally
- Common scripts
- One connection from all machines
- Version has to be newest
- Setup at RAL:
 - Dedicated server
 - Cold backups

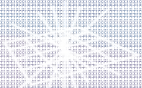




Scripts

- Jobs in crontab on each database:

```
# RMAN Schedules follow here
30 1 * * 1 /home/oracle/rmanfulback.sh mars rman <password> rcat >/dev/null 2>&1
30 1 * * 2-7 /home/oracle/rmanincback.sh mars rman <password> rcat >/dev/null 2>&1
30 3 * * * /home/oracle/rmanvalidate.sh mars rman <password> rcat >/dev/null 2>&1
```





Full Backup Script 1

```
#!/bin/ksh
#
#####
#
# THE INPUT PARAMETERS ARE :
#
# $1      - Target DB
# $2      - RMAN owner
# $3      - RMAN password
# $4      - RMAN DB
#
# Script to backup archived redo log files
#
#####
#
# Check arguments
#
if [[ $# -ne 4 ]]
then
    echo "$0 Error on $HOST: \nUsage: $0 TARGET_DB RMAN_OWNER RMAN_PWD RMAN_DB"
    exit 1
fi
```



Full Backup Script 2

```
#####  
# RMAN variables #  
#####  
#  
export SID=$1  
export RMAN_OWNER=$2  
export RMAN_PWD=$3  
export RMAN_DB=$4  
export LOGIN_PATH=$PATH  
export LOGIN_LD_LIBRARY_PATH=$LD_LIBRARY_PATH  
  
./ /home/oracle/ora10$SID.sh  
  
export HBlog=/home/oracle/$SID/rmanlogs/fulback${SID}.`date +%d%m%y%H%M%S`.log  
echo $HBlog  
  
export emailsub=$HOSTNAME.$ORACLE_SID..Backup.Failure
```





Full Backup Script 3

```
rman target / catalog ${RMAN_OWNER}/${RMAN_PWD}@${RMAN_DB} log \"${HBlog}\" << SQL
show all;
run {
backup incremental level 0 database plus archivelog delete input;
}
report obsolete;
delete noprompt obsolete;
list backup;
Exit

SQL

oraerror=`cat $HBlog | grep "ORA-"`
rmanerror=`cat $HBlog | grep "RMAN-"`

echo $oraerror
echo $rmanerror
if [ -z "$oraerror" -a -z "$rmanerror" ]
then
    echo "No Errors"
else
    echo "Errors Found !!!!!"
    cat $HBlog |mailx -s $emailsub databaseservices@stfc.ac.uk
fi
```



Level 1 Backup

```
show all;  
run {  
  backup incremental level 1 database plus archivelog delete input;  
}  
report obsolete;  
delete noprompt obsolete;  
list backup;  
exit
```





Archive Logs Backup

```
show all;  
run {  
  backup archivelog all delete input;  
}  
report obsolete;  
delete noprompt obsolete;  
list backup;  
exit
```

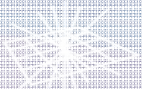




RMAN Sync

- Run through OEM

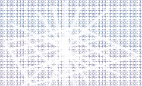
```
show all;  
run {  
  resync catalog;  
}  
list backup;  
exit
```





Restore Validate

```
show all;  
run {  
restore validate database archivelog all;  
}  
list backup;  
exit
```





Email Job through OEM

Oracle Enterprise Manager (SYSMAN) - Job Activity - Microsoft Internet Explorer

Address: <http://peaceful.esc.rl.ac.uk:7777/em/console/jobs/jobsTable>

ORACLE Enterprise Manager 10g
Grid Control

Home Targets Deployments Alerts Compliance **Jobs** Reports

Job Activity | Job Library

Job Activity Page Refreshed 10-Jun-2007 23:26:56 BST

Status: Name: [Advanced Search](#)

View:

| OS Command 1-25 of 30

Select	Name	Status (Executions)	Scheduled	Targets	Target Type	Owner	Job Type
<input checked="" type="radio"/>	SOLITAIRE - SEND BACKUP EMAIL	1 Scheduled	11-Jun-2007 08:00:00 BST	solitaire.esc.rl.ac.uk	Host	SYSMAN	OS Command
<input type="radio"/>	PARIS - RMAN RESYNC	1 Scheduled	11-Jun-2007 07:47:00 BST	paris.dl.ac.uk	Host	SYSMAN	OS Command
<input type="radio"/>	HONEY - RMAN RESYNC	1 Scheduled	11-Jun-2007 07:46:00 BST	honey.esc.rl.ac.uk	Host	SYSMAN	OS Command
<input type="radio"/>	JINX - RMAN RESYNC	1 Scheduled	11-Jun-2007 07:45:00 BST	jinx.dl.ac.uk	Host	SYSMAN	OS Command
<input type="radio"/>	CASTOR151 - LOG HOUSEKEEPING	1 Scheduled	11-Jun-2007 07:45:00 BST	castor151.ads.rl.ac.uk	Host	SYSMAN	OS Command
<input type="radio"/>	CASTOR150 - LOG HOUSEKEEPING	1 Scheduled	11-Jun-2007 07:45:00 BST	castor150.ads.rl.ac.uk	Host	SYSMAN	OS Command
<input type="radio"/>	LCGDB00 - LOG HOUSEKEEPING	1 Scheduled	11-Jun-2007 07:45:00 BST	lcgdb00.gridpp.rl.ac.uk	Host	SYSMAN	OS Command
<input type="radio"/>	LCG0610 - LOG HOUSEKEEPING	1 Scheduled	11-Jun-2007 07:45:00 BST	lcg0610.gridpp.rl.ac.uk	Host	SYSMAN	OS Command
<input type="radio"/>	JINX - LOG HOUSEKEEPING	1 Scheduled	11-Jun-2007 07:45:00 BST	jinx.dl.ac.uk	Host	SYSMAN	OS Command
<input type="radio"/>	PARIS - LOG HOUSEKEEPING	1 Scheduled	11-Jun-2007 07:45:00 BST	paris.dl.ac.uk	Host	SYSMAN	OS Command
<input type="radio"/>	PEACEFUL - LOG HOUSEKEEPING	1 Scheduled	11-Jun-2007 07:45:00 BST	peaceful.esc.rl.ac.uk	Host	SYSMAN	OS Command
<input type="radio"/>	HELGA - LOG HOUSEKEEPING	1 Scheduled	11-Jun-2007 07:45:00 BST	helga.dl.ac.uk	Host	SYSMAN	OS Command
<input type="radio"/>	ELECTRA - LOG HOUSEKEEPING	1 Scheduled	11-Jun-2007 07:45:00 BST	elektra.dl.ac.uk	Host	SYSMAN	OS Command
<input type="radio"/>	CAPLAN - LOG HOUSEKEEPING	1 Scheduled	11-Jun-2007 07:45:00 BST	caplan.dl.ac.uk	Host	SYSMAN	OS Command
<input type="radio"/>	LCG0611 - LOG HOUSEKEEPING	1 Scheduled	11-Jun-2007 07:45:00 BST	lcg0611.gridpp.rl.ac.uk	Host	SYSMAN	OS Command

<http://peaceful.esc.rl.ac.uk:7777/em/console/jobs/runDetails?filterStatus=-1&runsORExecutionsChoice=run&execId=327388D1992FDfC1> Internet





Backup Email 1

Backup.Report.100607080011 - Message (Plain Text)

File Edit View Insert Format Tools Actions Help Adobe PDF

Reply Reply to All Forward

From: oracle@solitaire.esc.rl.ac.uk Sent: Sun 10/06/2007 08:00
To: databaseservices@stfc.ac.uk
Cc:
Subject: Backup.Report.100607080011

Latest Database Backup Times

Database	DB Key	Latest Backup	Bytes Processed	Seconds Taken
RCAT	99596	09-JUN-2007 17:03:53	190537728	144
WARHORSE	63906	09-JUN-2007 18:45:32	7495680	16
STAGERDB	52964	09-JUN-2007 19:46:00	554975232	211
HEKATE	39357	09-JUN-2007 20:16:08	37117952	27
SETH	67249	09-JUN-2007 20:50:06	92168192	116
VENUS	16242	09-JUN-2007 21:04:30	54312960	59
MINERVA	5141	09-JUN-2007 21:05:03	98525184	91
STAGERDB	60562	09-JUN-2007 22:30:46	10133504	16
OGMA	77881	10-JUN-2007 00:02:10	54083584	66
WARHORSE	56831	10-JUN-2007 00:45:25	7774208	8
NGSDB	102149	10-JUN-2007 01:17:47	55009280	37
MARS	1	10-JUN-2007 01:33:07	75505664	58
LUGH	84573	10-JUN-2007 03:04:34	72032256	126
MERCURY	43090	10-JUN-2007 04:15:07	67067904	153





Backup Email 2

Backup.Report.100607080011 - Message (Plain Text)

File Edit View Insert Format Tools Actions Help Adobe PDF

Reply Reply to All Forward

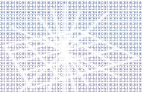
From: oracle@solitaire.esc.rl.ac.uk Sent: Sun 10/06/2007 08:00
To: databaseservices@stfc.ac.uk
Cc:
Subject: Backup.Report.100607080011

The Following Databases have not been backed up in the last 24 hours

no rows selected

Latest Restore Validate Runs

Database	DB Key	Latest Restore	Validate
OGMA	77881	09-JUN-2007	12:48:28
MINERVA	5141	09-JUN-2007	22:50:26
SETH	67249	10-JUN-2007	03:20:14
LUGH	84573	10-JUN-2007	05:17:54
MARS	1	10-JUN-2007	04:13:03
RCAT	99596	10-JUN-2007	07:01:27
VENUS	16242	09-JUN-2007	23:11:32
HFK&TF	39357	09-JUN-2007	22:16:05





Email Script

```
#####  
#  
# This script Produces Backup Reports to be sent to the DBAs  
#  
# Amendments :  
#     AJW - 15/05/2007 initial construction  
#  
#####  
  
# set the rcat environment  
  
. /home/oracle/ora10rcat.sh  
  
sqlplus / as sysdba <<-!!  
@/home/oracle/rmanrep1.sql  
exit  
!!  
  
export emailsub=Backup.Report.`date +%d%m%y%H%M%S`  
echo $emailsub  
  
cat /home/oracle/rmanrep1.txt |mailx -s $emailsub databaseservices@stfc.ac.uk
```



Email SQL

```
spool /home/oracle/rmanrep1.txt;
set line 120
set pagesize 999

/* get list of latest database backup times */

select a.db_name "Database",
       db.dbid "DBID",
       a.end_time "Latest Backup",
       a.output_bytes "Bytes Processed",
       (end_time - start_time) * 60 * 60 * 24 "Seconds Taken"
  from rman.rc_rman_status a, rman.rc_database db
 where object_type in ('DB FULL','DB INCR')
       and status = 'COMPLETED'
       and operation = 'BACKUP'
 and end_time = (select max(end_time) from rman.rc_rman_status b
                where b.db_name = a.db_name
                   and b.db_key = a.db_key
                   and object_type in ('DB FULL','DB INCR')
                   and status = 'COMPLETED'
                   and operation = 'BACKUP')
 and db.db_key = a.db_key
 order by end_time ;
```




Backup for Catalog (twice a day)

```
 ${ORACLE_HOME}/bin/rman target / nocatalog log \"${HBlog}\" << SQL  
 show all;  
 shutdown immediate  
 startup mount;  
 backup database;  
 startup;  
 report obsolete;  
 delete noprompt obsolete;  
 list backup;  
 exit
```

SQL





RMAN Config

```
RMAN> show all;
```

```
RMAN configuration parameters are:
```

```
CONFIGURE RETENTION POLICY TO REDUNDANCY 2;  
CONFIGURE BACKUP OPTIMIZATION ON;  
CONFIGURE DEFAULT DEVICE TYPE TO DISK;  
CONFIGURE CONTROLFILE AUTOBACKUP ON;  
CONFIGURE CONTROLFILE AUTOBACKUP FORMAT FOR DEVICE TYPE DISK TO  
    '/opt/oracle/backup/mars/%F.bak';  
CONFIGURE DEVICE TYPE DISK BACKUP TYPE TO COMPRESSED BACKUPSET PARALLELISM 1;  
CONFIGURE DATAFILE BACKUP COPIES FOR DEVICE TYPE DISK TO 1;  
CONFIGURE ARCHIVELOG BACKUP COPIES FOR DEVICE TYPE DISK TO 1;  
CONFIGURE CHANNEL DEVICE TYPE DISK MAXPIECESIZE 100 M FORMAT  
    '/opt/oracle/backup/mars/mars_%U.bak';  
CONFIGURE MAXSETSIZE TO UNLIMITED;  
CONFIGURE ENCRYPTION FOR DATABASE OFF;  
CONFIGURE ENCRYPTION ALGORITHM 'AES128';  
CONFIGURE ARCHIVELOG DELETION POLICY TO NONE;  
CONFIGURE SNAPSHOT CONTROLFILE NAME TO  
    '/opt/oracle/app/oracle/product/10.2.0/dbs/snapcf_mars1.f';
```

```
RMAN>
```



Summary

- We run backup jobs through crontab
- Resync and Email job through OEM
- Archive Logs backup job could be run automatically as oem job when area 70% full (for example)
- Keep it simple, keep it documented





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Questions & (hopefully) Answers

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