

Homogenous Database Copies With BR*Tools

DOAG SAP SIG

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Agenda



- 1. Restrictions of the current procedure**
- 2. Objectives of the new functionality**
- 3. Challenges of the new procedure**
- 4. Overview of the new procedure**
- 5. Prerequisites of the new procedure**
- 6. Details of the new procedure**
- 7. Sample scripts for procedure automation**
- 8. Additional information**



Homogenous system copy using backup / restore

- Supports only offline backups
- Often requires an extraordinary backup
- Lack of support for special backup technologies
 - Split-mirror backup
 - Standby database backup
 - Incremental backup

Homogenous system copy using backup / restore

- Support for all types of backups
 - Online backup
 - Split-mirror backup
 - Standby database backup
 - Incremental backup
- No need for extraordinary backups
- No changes in spfile on the new host before starting the procedure
 - db_name
 - control_files
 - log_archive_dest[1]
- Support for fully automatic / unattended procedures
- No need for online link between source and destination hosts

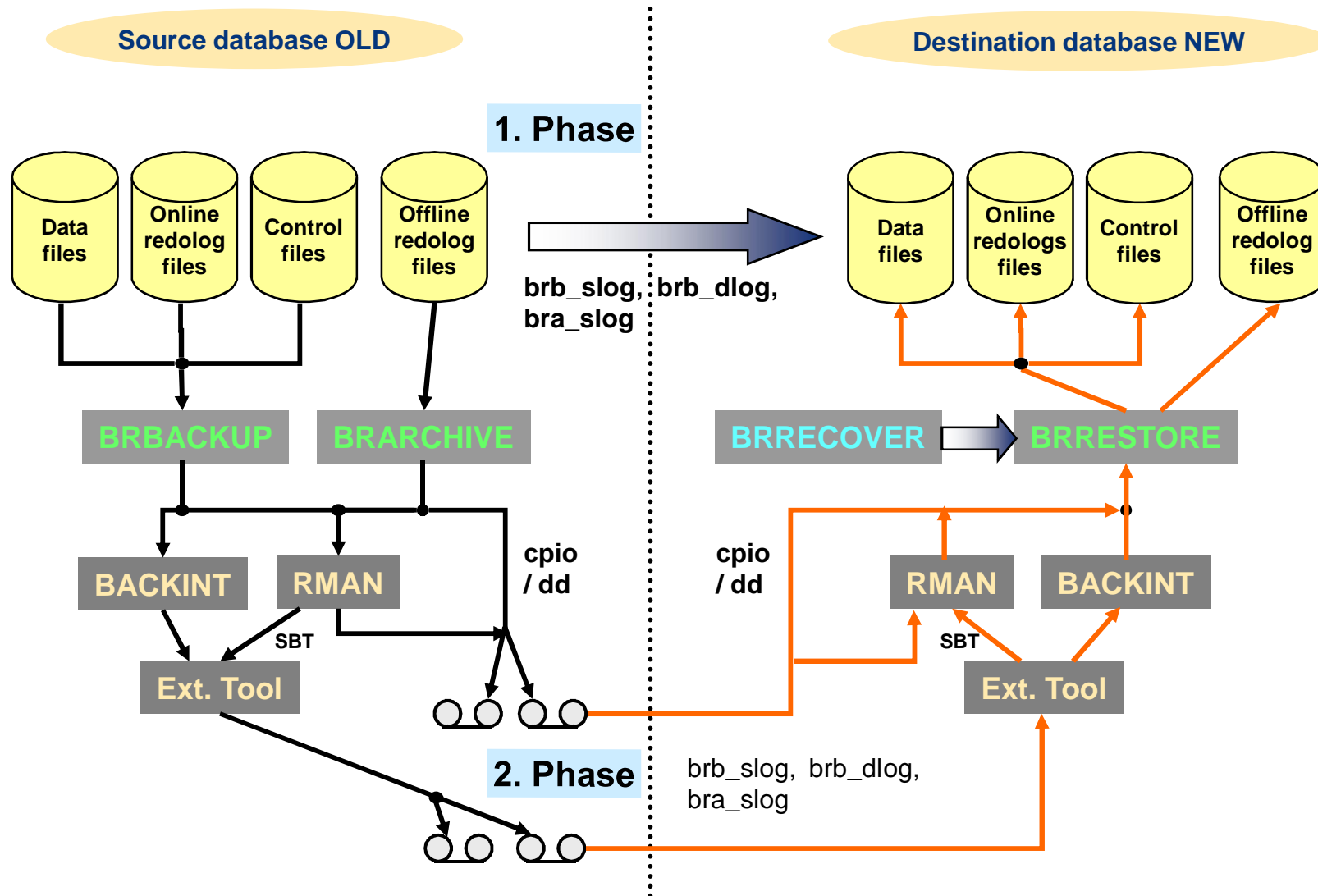


- Restoring files into new sapdata home directory
 - Already implemented in BRRESTORE
- Renaming control files after restore in file system and in spfile
 - cntrlOLD.dbf -> cntrlNEW.dbf
 - Oracle control_file parameter does not need to be changed
 - The disk device layout of control files must not change
- Renaming database in spfile after restore of control files
 - db_name = NEW -> db_name = OLD
- Renaming data files in control file before applying archivelog files
 - /oracle/OLD/sapdata1/sr3_1/sr3.data1 -> /oracle/NEW/sapdata1/sr3_1/sr3.data1
- Setting new destination for restore of data and archivelog files with RMAN
 - set newname for datafile
 - set archivelog destination
 - Oracle log_archive_dest[1] parameter does not need to be changed



- Using incremental backups in the restore procedure
 - Renaming data files in control file before applying an incremental backup
- Restore of control files from split-mirror incremental backup
 - Control file from full backup has no info about incremental backup and vice versa
 - Implemented also in the standard recovery procedures
- Restore of control files from a BRARCHIVE backup
 - Needed if archivelog files were saved with RMAN
 - Control file from database backup has no info about archivelog backup done afterwards
 - Restore will be done using BRRECOVER disaster recovery functionality
 - Implemented also in the standard recovery procedures
- Creating new control files with a new database name
 - db_name = OLD -> db_name = NEW
- Enabling fully unattended mode
 - Automatic determination of the last successful database backup (standard)
 - Automatic determination of the last archivelog file to be applied

Overview of the New Procedure





- Oracle server software is already installed on target system
- Oracle spfile is available and usable
- SAP standard database directories (e.g. sapdataN) are available
- BR*Tools are installed and configured (initNEW.sap)
- SAP system is already installed and configured if defined on DB server

For a database refresh, these prerequisites are automatically fulfilled!



- Determination of the backup / recovery types to be used
 - Offline backup -> database reset recovery
 - Online consistent backup -> database reset recovery
 - Online backup -> database point-in-time recovery
 - Offline/online backup with forward recovery -> database point-in-time recovery
 - Special backup types (standby, split-mirror) will be handled automatically
- Make BRBACKUP summary and detail logs available on new system
- Make BRARCHIVE summary log available on new system
- Backup archivelog files to be used in recovery or copy them to new system
- Make all backups needed accessible on the new host
- Determination of the recovery parameters
 - Database reset: database backup to be used
 - Point-in-time recovery: log seq#, time, scn for end of recovery
- Stop SAP system on the new host



■ Start restore and recovery with BRRECOVER

■ `brrecover [-c force] -t reset -b last|<brb_log> -f NEW [-x X:=Y,...]`

- Restore control files and redolog files
- Restore database data files
- Restore and apply incremental backup if needed
- Apply archivelog files if needed
- Open database and recreate control files

■ `brrecover [-c force] -t dbpit -b last|<log> -seq last|<seq> -pit <time> -scn <scn> -f NEW [-x X:=Y,...]`

- Restore backup control files
- Restore database data files
- Restore split incremental control files if needed
- Restore and apply incremental backup if needed
- Restore control files saved by BRARCHIVE if needed
- Restore and apply archivelog files
- Open database and recreate control files



■ Database copy post-processing

■ Database post-processing

- Delete user OPS\$OLDADM including SAPUSER table
- Create user OPS\$NEWADM including SAPUSER table
- Set SAP<SID> user password: `brconnect -u / -f chpass -o sap<sid> -p <pwd>`
- Cleanup DBA tables: DBSTATHORA, DBSTAIHORA, DBSTATIORA, DBSTATTORA
- ...

■ SAP post-processing

- Run an installation check
- Configure Transport Management System
- Delete canceled and finished jobs
- ...

SAP plans to extend SAPinst to perform this post-processing automatically

- E.g. no creation of control files needed anymore

- Simple database copy pseudo-script – recover until the last archive log file
 - Mount / share sapbackup and saparch directories from the source system
 - cp /oracle/NEW/sapbackup/backOLD.log /oracle/NEW/sapbackup/backNEW.log
 - cp /oracle/NEW/saparch/archOLD.log /oracle/NEW/saparch/archNEW.log
 - Offline / online_cons backup: brrecover -c force -t reset -b last -f NEW
 - Online backup: brrecover -c force -t dbpit -b last -seq last -f NEW
 - Unmount / disconnect sapbackup and saparch directories
- Advanced database copy pseudo-script – recover until given point-in-time
 - At <time>+1: rsh oldhost -l oraold brspace -c force -f dbalter -a switchlog
 - rsh oldhost -l oraold brarchive -u / -c -s
 - rcp oldhost:<oldhome>/sapbackup/backOLD.log <newhome>/sapbackup/backNEW.log
 - rcp oldhost:<oldhome>/sapbackup/<full_brb_log> <newhome>/sapbackup/<full_brb_log>
 - rcp oldhost:<oldhome>/sapbackup/<incr_brb_log> <newhome>/sapbackup/<incr_brb_log>
 - rcp oldhost:<oldhome>/saparch/archOLD.log <newhome>/saparch/archNEW.log
 - brrecover -c force -t dbpit -b last -pit <time> -f NEW

- See SAP notes 1003028 and 1173117 for more information about extended BR*Tools support for database copy
- Check SAP documentation of BR*Tools 7.10
 - <http://www.sdn.sap.com/irj/sdn/ora> -> Oracle DBA Overview -> SAP Database Guide: Oracle
 - <http://help.sap.com> -> SAP NetWeaver -> SAP NetWeaver 7.1 -> English -> SAP NetWeaver Process Integration Library -> Technical Operations -> Administration of Databases -> SAP Database Guide: Oracle
- See SAP note 1060305 for the current list of fixes and enhancements in BR*Tools 7.10
- Download BR*Tools 7.10 from SAP Service Marketplace
 - <http://service.sap.com/swdc> -> Download -> Support Packages and Patches -> Entry by Application Group -> Additional Components -> SAP Kernel -> SAP KERNEL 64-BIT -> SAP KERNEL 7.10 64-BIT -> SAP KERNEL 7.10 64-BIT -> <Platform> -> ORACLE
 - Current patch set is 12 (required)
 - Valid for all SAP releases supporting Oracle 10g

Questions?
Thank you!



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