

# Homogenous Database Copies With BR\*Tools

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# Agenda

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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
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# Restrictions of the Current Procedure

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## **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

# Objectives of the New Functionality

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## **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

# Challenges of the New Procedure (1)

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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

# Challenges of the New Procedure (2)

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## 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

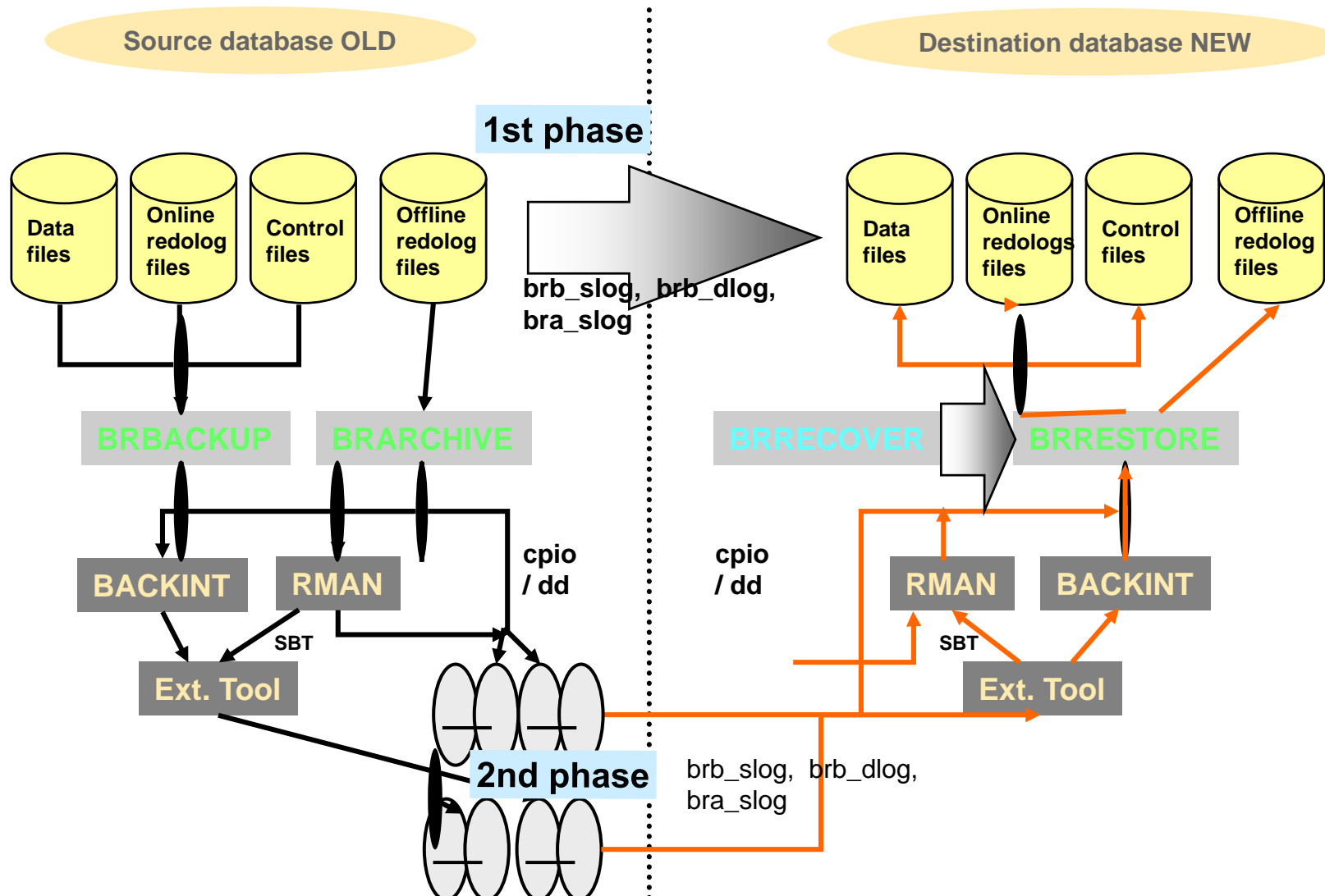
## Creating new control files with a new database name

- 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



# Prerequisites of the New Procedure

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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!**



# Details of the New Procedure (1)

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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

# Details of the New Procedure (2)

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## 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

# Details of the New Procedure (3)

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## 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

# Sample Database Copy Scripts

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Simple database copy pseudo-script – recover until the last archivelog 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`

# Additional Information

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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://scn.sap.com/community/oracle> -> 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

- <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!**