

Backing Up Oracle with TSM

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Agenda

- The Problem
- The Solution
- Performance
- Oracle 9i

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Environment

- Solaris 2.8
- 100Mb LAN
- SAN
 - McData Switches (2Gb)
 - IBM ESS
 - IBM LTO 3584, three Gen 2 drives
- TSM Server version 5.1.7
- TSM Client version 5.1.6

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Problem: a Legacy Oracle Environment

Oracle versions (number of instances per host)

	7.3.4	8.0.6	8.1.6	8.1.7
Eos	1		1	
Eris	2	1	2	
Selene	5			2
Pandia	2	2	1	2
Nemea	1			

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Oracle TDP Support

	7.3.4	8.0.2 - 8.0.5	8.0.6	8.1.6	8.1.7	9.x
2.1.9	Y	Y	N	N	N	N
2.2	N	N	Y	Y	Y	N
2.2.1	N	N	N	N	Y	Y
5.2*	N	N	N	N	Y	Y

* Same as 2.2.1, just renamed

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Issues

- Oracle 7.3.4 Enterprise Backup Utility long off support (and nobody used it anyway)
- Current TDPO version 5.2 doesn't support 8.0.x (on paper anyway)
- TDPO version 2.2 not shipped or available for download
- Multiple TDPO versions not possible on single machine

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Solutions

- Use scripted backup for 7.3.4 databases
- Use TDPO 2.2 for all 8.x databases
 - from Partnerworld download site
 - won't work for mixed 8.0.x/9.x systems
- Use LAN Free backup for large (>50 GB) databases

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Performance - LAN

- Standard performance tuning provided good results
 - Charles Nichols paper from Dallas Share
- Scripted backup with client compression had similar performance to Oracle TDP
 - 8-9 MB/sec network throughput with 70% “compression” at client
 - Limited by 100Mb LAN
 - Multiple backup streams made no difference

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Performance – LAN Free

- 250GB to 750GB databases
 - Growth to 1.5T instance expected
- 30+ MB/sec per stream up to 2, steady decline thereafter
- Noticeable (= unacceptable) application performance impact for more than 1 stream
- Performance tuning ongoing, stay tuned

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7.3.4 Script Generator core (SQL)

```
SELECT 1 AS df, 'alter tablespace '||tablespace_name||' begin backup;',
        tablespace_name AS ts FROM dba_data_files WHERE status =
        'AVAILABLE'
UNION
SELECT 2 AS df, '!dsmc sel '||file_name,tablespace_name AS ts
        FROM dba_data_files WHERE status = 'AVAILABLE'
UNION
SELECT 3 AS df, 'alter tablespace '||tablespace_name||' end backup;',
        tablespace_name AS ts FROM dba_data_files WHERE status =
        'AVAILABLE'
ORDER BY ts, df;
ALTER DATABASE BACKUP CONTROLFILE TO TRACE;
SELECT 'ALTER DATABASE BACKUP CONTROLFILE TO
        '||chr(39)||${BACKUPDIR}/controlfile.ctl'||chr(39)||' REUSE;' from dual;
PROMPT !dsmc sel ${BACKUPDIR}/controlfile.ctl
SELECT '!dsmc sel '||member from v$logfile order by member;
```

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7.3.4 Script Sample (SQL)

```
alter tablespace DATA1 begin backup;
!dsmc sel /u0/elisa/data1_01.dbf
!dsmc sel /u0/elisa/data1_02.dbf
alter tablespace DATA1 end backup;
alter tablespace INDEX1 begin backup;
!dsmc sel /u0/elisa/index1_01.dbf
alter tablespace INDEX1 end backup;
...
ALTER DATABASE BACKUP CONTROLFILE TO
        '${BACKUPDIR}/controlfile.ctl' REUSE;
!dsmc sel ${BACKUPDIR}/controlfile.ctl
!dsmc sel /u0/elisa/log/log_01.arc
!dsmc sel /u0/elisa/log/log_02.arc
...
```

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RMAN Commands

```
rman target system/manager rcvcat rman/rman@rca11 cmdfile '/u0/scripts/frieda.full.sql'  
  
delete script frieda_full;  
create script frieda_full {  
# separate tdpo files are needed per instance to set TDPO_FS to keep instances in separate file  
spaces  
allocate channel t1 type 'sbt_tape'  
  parms 'ENV=(TDPO_OPTFILE=/usr/oracle/rman/tdpo.frieda.opt)';  
  allocate channel t2 type 'sbt_tape'  
  parms 'ENV=(TDPO_OPTFILE=/usr/oracle/rman/tdpo.frieda.opt)';  
backup  
  full  
  tag frieda_full  
  format 'df_%t_%s_%p'  
  filesperset 3  
  database;  
  sql 'ALTER SYSTEM ARCHIVE LOG CURRENT';  
  backup  
  format 'arc_%t_%s_%p'  
  archivelog all;  
}  
run { execute script frieda_full; }
```

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Oracle 9i Improvements

- Permanent Configuration Parameters
 - Automatic Channel Allocation
 - Default parallelism and ENV parameters
 - Automatic Control File backups
 - Automatic log switch after backup
 - Default retention policies
 - Redundancy (keep x versions) like 8i
 - Window (keep y days) new in 9i
 - Tablespace excludes

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Oracle 9i Improvements

- Corrupted block media recovery
- Delete Obsolete command
 - Delete scripts no longer necessary
- Improved error reporting
- Logical Standby Databases
 - Standby database can be opened!
- Oracle Enterprise Manager improvements

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Oracle 9i Improvements

- Backup/Restore Optimization – don't do it if there's no change
- Restartable Backups and Restores (datafile level)
- Backup/Restore Optimization – don't do it if there's no change

Use of new options may be hazardous to your data.
Warning: I haven't tested any of these, and there is no Tivoli documentation on how the TDP deals with this.

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Questions?

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