PR Newswire
United Business Media

ORACLE 10g A's: AWR, ADDM, ASH, ASM..

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Manager, DBA Group
Agenda

- AWR - Automatic Workload Repository
- ASH - Active Session History
- ADDM - Automatic database Diagnostic Monitor
- ADVISORY
- ASMM - Automatic Shared Memory Management
- ASM - Automatic Storage Management
- Q&A
Pre-Requisite for Self Tuning Features

STATISTICS_LEVEL

- BASIC: Turn off all Self-tuning Features
- TYPICAL: Default & Recommended
- ALL: More Stats for Manual SQL diagnostics
## Self Tuning Features

```sql
SELECT statistics_name, activation_level
FROM v$statistics_level
ORDER BY 2;
```

<table>
<thead>
<tr>
<th>Feature</th>
<th>Activation Level</th>
</tr>
</thead>
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<tr>
<td>PGA Advice</td>
<td>TYPICAL</td>
</tr>
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<td>Shared Pool Advice</td>
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<td>Streams Pool Advice</td>
<td>TYPICAL</td>
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<tr>
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</tr>
<tr>
<td>Timed OS Statistics</td>
<td>ALL</td>
</tr>
<tr>
<td>Plan Execution Statistics</td>
<td>ALL</td>
</tr>
</tbody>
</table>
AWR – Automatic Workload Repository

- In-Memory Statistics
- SGA
- Bgnd
- Fgnd
- MMON 60 Min
- V$
- DBA_
- Internal Clients
- ADDM
- Advisory
- Auto SQLTuning
- External Clients
- EM
- SQL*Plus
- 3rd Party Tool
- WORKLOAD REPOSITORY

Oracle 10g A’s : AWR, ADDM, ASH, ASM ..
ASH – Active Session History

- Only Records ACTIVE Sessions means NON-IDLE Sessions
- Rolling buffer and previous information is overwritten when required
- Writes 1 out of 10 Samples to AWR
ASH – Sampling

1s

Wait 1
Wait 2
Wait 3
Wait 4
Wait 5
Wait 6
Wait 7
Wait 8

Active Session 1

1s

Session 1 - Wait 1
Session 1 - Wait 4
Session 1 - Wait 7
Session 2 - Wait 1

ASH

V$ACTIVE_SESSION_HISTORY

Active Session 2
Active Session 3
Active Session 4
Active Session 5

INACTIVE SESSIONS
**ASH Buffers facts**

**ASH Buffer Size**
- Min 1M and Max 30M
- Max( Min ( No. of CPU * 2 M, 5% of SHARED_POOL_SIZE, 2% of SGA_TARGET), 1M)
- Hidden parameter "ASH_SIZE" ➞ Please Don’t change it

- ASH Buffers Data is flushed to AWR when buffers are 66% filled by MMNL process
- Hidden parameter "ASH_EFLUSH_TRIGGER" ➞ Please Don’t change it

- ASH Buffers are filled with 1 Sec Samples from Active Session-state information
- Hidden parameter "ASH_SAMPLING_INTERVAL" ➞ Please Don’t change it
- Hidden parameter "ASH_SAMPLE_ALL" ➞ Please Don’t change it
**ASH Buffers facts**

- One out of 10 ASH sampled Record of each Session is pushed to AWR
  - Hidden parameter "ASH_DISK_FILTER_RATIO=10" ➔ Please Don’t change it

- ASH can be disabled by the following methods
  - Hidden parameter "ASH_ENABLE=FALSE" ➔ Please Don’t change it
  - Use STATISTICS_LEVEL=BASIC ➔ Recommended option

- Check the Size in your Database
  
  ```
  SELECT * FROM v$sgastat WHERE name = 'ASH buffers';
  ```
ASH – Automatic Shell History

ASH Report in Text or HTML format using
$ORACLE_HOME/rdbms/admin/ashrpt.sql -- Report for Specified Duration
$ORACLE_HOME/rdbms/admin/ashrpti.sql -- Report for Specified duration and
for Specified DB and Instance

ASH Report
- Top Events
- Load Profile
- Top SQL
- Top Sessions
- Top Objects/Files/Latches
- Activity Over Time

- You can Dump ASH content to File
SQL> oradebug setmypid
SQL> oradebug dump ashdump 5 -- This will dump last 5 minute content
AWR – In Memory Statistics

In-Memory Statistics

ASH

AWR STATISTICS

V$

SGA

In-Memory Statistics

BASE STATISTICS - Stats collected in Memory

<table>
<thead>
<tr>
<th>Table Name</th>
<th>Description</th>
</tr>
</thead>
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<tr>
<td>V$SEGMENT_STATISTICS</td>
<td>Object Statistics showing access &amp; Usage</td>
</tr>
<tr>
<td>V$SYS_TIME_MODEL</td>
<td>Showing time spend by Activities</td>
</tr>
<tr>
<td>V$SYSSTAT</td>
<td>SYSTEM Statistics</td>
</tr>
<tr>
<td>V$OSSTAT</td>
<td>OS Statistics showing CPU and Memory</td>
</tr>
<tr>
<td>V$ACTIVE_SESSION_HISTORY</td>
<td>Recent Session Activities</td>
</tr>
</tbody>
</table>

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Oracle 10g A's: AWR, ADDM, ASH, ASM ..
Base Statistics
- It is raw data collected in Oracle Database
  - E.g. Number of any Waits or Physical Read since system startup

Metrics
- It is the statistics derived from Base Statistics
  - E.g. Number of any specific waits or Physical Read in last one hour
- Oracle support Metrics for following statistics
  - System
  - Sessions
  - Files
  - Wait events
- MMON periodically updates the Metrics data from corresponding Base Statistics
### Metrics Views

| METRICS GENERAL INFORMATION | V$METRICNAME  
V$METRICGROUP  
V$METRIC  
V$METRIC_HISTORY  
DBA_HIST_METRIC_NAME  |
|----------------------------|---------------------------------------------------------------|
| SYSTEM METRICS             | V$SYSMETRIC  
V$SYSMETRIC_HISTORY  
V$SYSMETRIC_SUMMARY  
DBA_HIST_SYSMETRIC_HISTORY  
DBA_HIST_SYSMETRIC_SUMMARY  |
| SESSIONS METRICS           | V$SESSMETRIC  
DBA_HIST_SESSMETRIC_HISTORY  |
| FILES METRICS              | V$FILEMETRIC  
V$FILEMETRIC_HISTORY  
DBA_HIST_FILEMETRIC_HISTORY  |
| WAIT EVENTS METRICS        | V$EVENTMETRIC  
V$WAITCLASSMETRIC  
V$WAITCLASSMETRIC_HISTORY  |
Benefit of Metrics

Snapshot → Compute the Differences → Query Metrics Views

OLD → DBA → NEW
AWR – Automatic Workload Repository

In-Memory Statistics

External Clients
- EM
- SQL*Plus
- 3rd Party Tool

WORKLOAD REPOSITORY

MMON

V$

DBA_

SGA

Bgnd Fgnd
AWR – Workload Repository

- SGA
- In-Memory Statistics

Every 60 Minutes

SYSAUX Tablespace

WR SCHEMA

9:00 am
- Snapshot 1
10:00 am
- Snapshot 2
11:00 am
- Snapshot 3
12:00 am
- Snapshot 4
1:00 pm
- Snapshot 5
2:00 pm
- Snapshot 6
3:00 pm
- Snapshot 7
4:00 pm
- Snapshot 8
5:00 pm
- Snapshot 9

WORKLOAD REPOSITORY

Seven days

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AWR – Workload Repository

```
dbms_workload_repository.modify_snapshot_settings
(   interval => 60,
    retention => 43200);
    --30 days=43200

SELECT snap_interval, retention FROM dba_hist_wr_control;
```
AWR – WR Schema

- METADATA Tables
  - WRM$$_xx$$ → DBA_HIST_xx

- Advisory Tables
  - WRI$$_xx$$ → DBA_HIST_xx

- Historical Statistics Tables
  - WRH$$_xx$$ → DBA_HIST_xx

Partitioned Tables by day
7 days
## Different types of AWR report

<table>
<thead>
<tr>
<th>Script Name</th>
<th>Description</th>
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<td>awrrpt.sql</td>
<td>AWR Workload Report</td>
</tr>
<tr>
<td>awrddrpt.sql</td>
<td>Side by Side AWR comparision</td>
</tr>
<tr>
<td>awrinfo.sql</td>
<td>AWR Information like current Usage and Data Distribution</td>
</tr>
<tr>
<td>awrload.sql</td>
<td>Load AWR Dump from one DB to another</td>
</tr>
<tr>
<td>awrsqrpt.sql</td>
<td>Create AWR report for specific SQL statement</td>
</tr>
</tbody>
</table>
Automatic Database Diagnostic Monitor

SGA

In-Memory Statistics

MMON

60 Min

AWR

SNAPSHOT

ADDM Results

DBA

Reactive Monitoring

Proactive Monitoring

ADDM
ADDM

1. Report and Advise on
   - High Load SQL and PL/SQL statements
   - System Resources like CPU bottleneck
   - Space Management
   - Storage Management
   - Backup and Recovery Management
2. Create on-demand report using script
   Named addmrpt.sql present in $ORACLE_HOME/rdbms/admin directory
3. Use EM for analysis

Related Alerts

Performance Analysis
Period Start Time **Sep 5, 2006 7:00:56 PM**  Period Duration (minutes) **59.18**

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<tr>
<th>Impact (%)</th>
<th>Finding</th>
<th>Recommendations</th>
</tr>
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<tbody>
<tr>
<td>89.2</td>
<td><strong>SQL statements consuming significant database time were found</strong></td>
<td>3 SQL Tuning</td>
</tr>
</tbody>
</table>
ADDM

- It is also called Advisor for the Database Instance
- It helps in identifying the problem and their causes
- It also provides recommendation for each problem
- It can potentially call all other 10g new advisors

In Short ADDM main objective is
1. Reduce Bottlenecks
2. Improve Performance
# Oracle 10g Advisor

## Related Links

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Oracle 10g A’s : AWR, ADDM, ASH, ASM ..
Oracle 10g Advisor

Advisors

- ADDM
- Segment Advisor
- Undo Management

- Memory Advisor
- SQL Access Advisor
- MITR Advisor
- SQL Tuning Advisor

Advisor Tasks

Search

Select an advisory type and optionally enter a task name to filter the data that is displayed in your results set.

Advisory Type Task Name Advisor Runs Status
All Types

- Last Run
- All

Go

Results

View Result Delete Actions Re-schedule

Select Advisory Type Name Description User Status

- SQL Tuning Advisor SQL_TUNING_indy1
- ADDM ADDM_643928553_1_1799
- Segment Advisor SYS_AUTO_SPCADV_5022592006

Oracle 10g A’s: AWR, ADDM, ASH, ASM ..
**Advisor – SQL Tuning Advisor**

**Advisor Central**

**Advisors**

- ADDM
- Segment Advisor
- Undo Management
- Memory Advisor
- SQL Access Advisor
- MTTB Advisor
- SQL Tuning Advisor

**SQL Tuning Advisor Links**

The SQL Tuning Advisor analyzes individual SQL statements and makes recommendations for improving their performance sources, which will lead you to a data source where you can tune SQL statements using the SQL Tuning Advisor.

- Top Activity
- Period SQL
- SQL Tuning Sets
- Snapshots
- Preserved Snapshot Sets
Advisor – SQL Tuning Advisor

- SQL Tuning Advisor
  - Stats Analysis
    - Recommend Missing Stats
  - SQL Profiling 10g R2
    - Create & Recommend SQL Profile
  - Access Path Analysis
    - Recommend New Indexes
    - Call SQL Access Advisor
  - SQL Structure Analysis
    - Advise by Rewriting the Query

Oracle 10g A’s: AWR, ADDM, ASH, ASM..
Advisor – SQL Access Advisor

Advisor Central

Advisors

- ADDM
- Segment Advisor
- Undo Management

- Memory Advisor
- MTTR Advisor
- SQL Access Advisor
- SQL Tuning Advisor

Oracle Enterprise Manager 10g

Advisor Central > SQL Access Advisor: Initial Options

SQL Access Advisor: Initial Options

Select a set of initial options.

- Use Default Options
  
  The new task will use the Oracle recommended options, as defined in the Enterprise Manager Default Template.

- Inherit Options from a Task or Template
  
  The new task will inherit options from a selected task or template. The selected task or template will remain unchanged.

- Tip: You are selecting the starting point for the wizard. All options can be changed from within the wizard.
SQL Access Advisor: Workload Source

Select the source of the workload that you want to use for the analysis. The best workload is one that fully represents all the SQL statements in your database.

- Current and Recent SQL Activity
  SQL will be selected from the cache.
- Import Workload from SQL Repository
  Choose any SQL Tuning Set from the SQL Repository.
  SQL Tuning Set
- User-Defined Workload; Import SQL from a Table or View
  The table or view must contain at least SQL_TEXT and USERNAME columns.
  Table
- Create a Hypothetical Workload from the Following Schemas and Tables
  The advisor can create a hypothetical workload if the tables contain dimension or primary/foreign key constraints.
  Tables
  Comma-separated list
  TIP: Enter "Schema.%" to specify all the tables belonging to a particular schema.

Filter Options

TIP: For workloads containing a large number of SQL statements, Oracle recommends using filtering to reduce analysis time.
# SQL Access Advisor

## Recommendation Types

The advisor may recommend indexes or materialized views to reduce the time it takes to read data. However, you must balance this benefit of structures to be recommended by the advisor.

- Indexes
- Materialized Views
- Both Indexes and Materialized Views
- Evaluation Only

Evaluation Only

Evaluates usage of existing access structures and describes which access structures are currently being used by this workload. No new access structures will be recommended.

## Advisor Mode

The advisor can run in one of two modes, Limited or Comprehensive. Limited Mode is meant to return quickly after processing the statements below a certain threshold. Comprehensive Mode will perform an exhaustive analysis.

- Limited Mode
  Analysis will focus on highest cost statements
- Comprehensive Mode
  Analysis will be exhaustive

## Advanced Options
# Memory Advisor - ASMM

## Automatic Shared Memory Management

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Page Refreshed Sep 6, 2006 2:48:52 PM GMT

[Image of Memory Advisor - ASMM](image)
**Advisor – ASMM**

**SGA = 20G**

- **DB Buffer Cache**
- **Shared Pool**
- **Java Pool**
- **Large Pool**
- **Streams Pool**
- **Auto Tuned**
- **Redolog Buffer**
- **Fixed SGA**

**SGA_TARGET = 20G**

**SGA_MAX_SIZE = 20G**

**STATISTICS_LEVEL = TYPICAL**

- **LOG_BUFFER**
- **DB_KEEP_CACHE_SIZE**
- **DB_RECYCLE_CACHE_SIZE**
- **DB_nK_CACHE_SIZE**

**Manually Tuned Parameters**

- **SGA_MAX_SIZE = 20G**

---

- Set **STATISTICS_LEVEL = TYPICAL | ALL** to use ASMM
- Set **SGA_TARGET > 0** [Default =0 means ASMM is disabled]

- **DB_CACHE_SIZE / SHARED_POOL_SIZE / JAVA_POOL_SIZE / LARGE_POOL_SIZE / STREAMS_POOL_SIZE** = 0 when **SGA_TARGET** is set to non Zero value

- If you specify any value to above Auto Tuned variable in initialization parameter file, they will become Lower bound value  
  e.g. if **SGA_TARGET=20G** and **SHARED_POOL_SIZE=5G**, then **SHARED POOL** never shrink below 5G
  - **ASMM** uses new Background process **MMAN** [Memory Manager]  
  - **MMAN** coordinates the sizing of Memory components
Advisor – ASMM

The System Global Area (SGA) is a group of shared memory structures that contain data and shared objects when the database is started.

Allocation History
This chart shows the history of the components of the SGA.

Current Allocation
Automatic Shared Memory Management Enabled
Total SGA Size (MB) 2048

SGA Component Current Allocation (MB)
- Shared Pool: 608
- Buffer Cache: 1392
- Large Pool: 16
- Java Pool: 16
- Other: 16

Maximum SGA Size
The Maximum SGA Size specifies the maximum memory that the database may use (SGA Size does not exceed the Maximum SGA Size).

Total SGA Size (MB) 2048

- Percentage improvement in DB Time for various sizes of SGA
- Current SGA Size
- Maximum SGA Size

You can click on the curve in the graph to set a new value. Total SGA Size cannot be greater than the SGA Max Size. First modify the Max SGA size (from the parent page) and then select a value of SGA up to the Max SGA size.

The database must be restarted before any changes to this value take effect.
Advisor – ASMM

Oracle Enterprise Manager 10g
Database Control

Memory Parameters

SGA | PGA
---|---
The Program Global Area (PGA) is a memory buffer that contains data and control information.

Aggregate PGA Target: **300 MB**

Current PGA Allocated (KB): **156404**

Maximum PGA Allocated (KB): **223705** (since startup)

Cache Hit Percentage (%): **100**

PGA Memory Usage Details

**TIP** The sum of PGA and SGA should be less than the total system memory.

PGA Aggregate Target Advice

Cache hit percentage

0% 20% 40% 60% 80% 100%

0 500 1000 1500 2000 2500 3000

PGA Target (MB)

- Variation of cache hit ratio with PGA target
- Current PGA target
- Overflow range

Aggregate PGA Target: **300 MB**

**TIP** You can click on the curve in the graph to set a new value.
Advisor – Segment Advisor

Advisor Central

Advisors
- ADDM
- Memory Advisor
- MTTR Advisor
- Segment Advisor
- SQL Access Advisor
- SQL Tuning Advisor
- Undo Management

Segment Advisor: Scope

You can get advice on shrinking segments for individual schema objects or entire tablespaces.

- Tablespaces
- Schema Objects

Overview
The segment advisor determines whether objects have unused space that can be released, taking estimated future space requirements into consideration. The estimated future space calculation is based on historical trends.
What is ASM

- ASM stands for Automatic Storage Management
- It is Oracle Cluster File System and Volume Manager
- Designed for Oracle Database Related Files
- Provide Storage management capabilities like striping as well as mirroring

Not Certified for
- Trace Files
- ORACLE_HOME
- Voting Disk
- OCR Files
- Alert Log
- Password File
- Binary File (BFILE)

- Data files
- Log files
- Archived files
- Control Files
- DataGuard
- Change Tracking File
- Temp File
- SPfile
- DG file
- Flashback Logs
- Datapump File

ASM stands for Automatic Storage Management, It is Oracle Cluster File System and Volume Manager, and is designed for Oracle Database Related Files. It provides storage management capabilities such as striping as well as mirroring. However, it is not certified for several types of files, including Trace Files, ORACLE_HOME, Voting Disk, OCR Files, Alert Log, Password File, Binary File (BFILE), and others.
**Benefits of Automatic Storage Management**

- Provide efficient management of storage
- No need for buggy OCFS or expensive 3rd party CFS
- Provide integrated Cluster File system and Volume management capabilities

<table>
<thead>
<tr>
<th>Traditional Volume Mgmt.</th>
<th>ASM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>Tables</td>
</tr>
<tr>
<td>Tablespaces</td>
<td>Tablespaces</td>
</tr>
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<td>Files</td>
<td>Disk Groups</td>
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<tr>
<td>File systems</td>
<td></td>
</tr>
<tr>
<td>Logical Volumes</td>
<td>Physical Volumes</td>
</tr>
<tr>
<td>Physical Volumes</td>
<td>Physical Volumes</td>
</tr>
</tbody>
</table>

- Automatic Storage Management
Benefits of Automatic Storage Management

- Provide efficient management of storage
- Provide integrated Cluster File system and Volume management capabilities
- No need for buggy OCFS or expensive 3rd Party CFS
- Provide Software Mirroring on top of vendor supplied SAN [2 or 3 Mirrors]
Benefits of Automatic Storage Management

- Provide efficient management of storage
- Provide integrated Cluster File system and Volume management capabilities
- No need for buggy OCFS or expensive 3rd Party CFS
- Provide Software Mirroring on top of vendor supplied SAN [2 or 3 Mirrors]
- Automatic online re-organization of disk space for any new addition/removal of storage capacity
Pre-Requisite for ASM

- Need CSS daemon for creating an ASM instance
  $ ps -ef | grep css
  1. In RAC, it is done by Oracle Clusterware
  2. In Single Instance environment, you have to run
  $ORACLE_HOME/bin/localconfig add

  To reconfigure the CSS daemon to run from the new Oracle home:
  # $ORACLE_HOME/bin/localconfig reset $ORACLE_HOME

- Need Additional at least 100M of memory for ASM instance
ASM Components

- ASM Instance
- ASM Disk
- Disk Group
- Failure Group
- ASM Files
**ASM Components – ASM Instance**

10g has two types of Instance

- INSTANCE_TYPE = asm  [ASM Instance]
- INSTANCE_TYPE = rdbms [Default]  [DB Instance]

**Feature of ASM instance**

- Do not mount the database but manage metadata required to make ASM files available for DB instances

```
$ sqlplus /nolog
SQL> connect / as sysdba
Connected to an Idle instance
SQL> startup
ASM instance started

Total System Global Area    79691776 bytes
Fixed Size                1247396 bytes
Variable Size            53278556 bytes
ASM Cache                25165824 bytes
ASM diskgroups mounted
```
ASM Components – ASM Instance

10g has two types of Instance

- INSTANCE_TYPE = asm  
  ASM Instance
- INSTANCE_TYPE = rdbms [Default]  
  DB Instance

Feature of ASM instance

- Do not mount the database but manage metadata required to make ASM files available for DB instances
- DB Instance access ASM files directly and contact ASM instance only for the layout of ASM files
- Contains no physical files like log files / control files or data files
- Requires only the init.ora file for startup
- Instance Name is +ASM or +ASM1..n [RAC]
ASM Components — ASM Instance

Database Configuration Assistant  Manual using SQL  Oracle Universal Installer

SQL> startup pfile=init+ASM.ora

Database Configuration Assistant, Step 1 of 3: Operations

- Create a Database
- Configure Database Options
- Delete a Database
- Manage Templates

Oracle Universal Installer: Create Database

Create Database

If you want to create a new database, Oracle recommends using the Oracle Database Configuration Assistant. This tool provides a simple, graphical method for creating a database, and can be automatically launched at the end of installation. You can create a database, configure ASM, or install software only.

- Create a database
- Configure Automatic Storage Management (ASM)
- Install database Software only
ASM Components

- ASM Instance
- ASM Disk
- Disk Group
- Failure Group
- ASM Files
ASM Components – ASM Disks

- It is first task in ASM environment to discover and add Disks to ASM management
  asm_diskstring = ‘/dev/dsk/sdc4’,’/dev/dsk/sdd’

- In 10g Rel 2, Disk names are unique within Disk Group while in Rel 1 it is unique within ASM instance.

SQL> CREATE DISKGROUP data_dg1 EXTERNAL REDUNDANCY DISK ‘/dev/dsk/sdc4’,’/dev/dsk/sdd4’;
SQL> SELECT name FROM v$asm_disk;
  Name
DATA_DG1_0000
DATA_DG1_0001
ASM Components — ASM Disks

Means Disk is of Oracle Object but can only be added to disk group with FORCE keyword

Means Disk is available to be added to any disk group

Same as CANDIDATE except that Disk is configured using ASMLIB

Means Disk was formerly part of some disk group

Means Disk is already part of existing disk group
ASM Components – ASM Disk Groups Creation

Database Configuration Assistant

Oracle Universal Installer

Manual using SQL

SQL> CREATE DISKGROUP data_dg1 EXTERNAL REDUNDANCY disk '/dev/raw/raw1','/dev/raw/raw2';

Enterprise Manager
SQL> CREATE TABLESPACE indy_data DATAFILE '+DATA_DG1' size 100M;

Set the parameter DB_CREATE_FILE_DEST to +DATA_DG1
Examples: For the SID = DEVDB1

SQL> CREATE TABLESPACE indy_test_tblspc DATAFILE SIZE 100M;
+DATA_DG1/DEVDB1/datafile/indy_test_tblspc.299.121212129

SQL> CREATE TABLESPACE TEST100 DATAFILE '+DATADG1' size 100M;
+DATA_DG1/DEVDB1/datafile/indy_test_tblspc.300.121212129

SQL> CREATE TEMPORARY TABLESPACE TEMP1 TEMPFILE
 '+DATADG1/DEVDB1/datafile/temp2.tst' size 100M;
+DATA_DG1/DEVDB1/datafile/temp1.tst
$ export ORACLE_SID=+ASM
$ asmcmd
ASMCMD> ls -ltr
State Type Rebal Unbal Name
MOUNTED EXTERN N N DG_DATA/
File System to ASM Migration

- Using EM
- Using DBMS_FILE_TRANSFER
- Using RMAN Manually
- Using XMLDB
Moving from File System to ASM - EM

- It uses RMAN for the movement
- Job is scheduled using DBMS_SCHEDULER

It uses RMAN for the movement
Job is scheduled using DBMS_SCHEDULER

Oracle 10g A's: AWR, ADDM, ASH, ASM...
**DBMS_FILE_TRANSFER and ASM**

**File System to ASM**

1. File System
2. DBMS_FILE_TRANSFER
3. ASM Disk

**ASM to File System**

1. ASM Disk
2. DBMS_FILE_TRANSFER
3. File System

**ASM to ASM**

1. ASM Disk
2. DBMS_FILE_TRANSFER
3. ASM Disk

**COPY_FILE** - Read Local File and copy it to new location on local system

**GET_FILE** - Contact Remote DB to read Remote file and copy it to Local system

**PUT_FILE** - Read Local File and contact Remote DB to copy it to remote system

**Note:** This operation can be performed directly without having to convert the datafile. It will only be used for Database files like Datafile, tempfiles, controlfiles etc.
SQL> CREATE DIRECTORY NonASM AS '/export/home/oracle/data' ;
Directory created.

SQL> CREATE DIRECTORY ASM_D AS as '+DATAD_G1/DEVPROF' ;
Directory created.

SQL> begin
  2  DBMS_FILE_TRANSFER.COPY_FILE( 
  3    source_directory_object => 'ASM_D' , 
  4    source_file_name => 'spfiledevprof.ora' , 
  5    destination_directory_object => 'NonASM' , 
  6    destination_file_name => 'spfileDEV.ora'); 
  7  end ;
  8 /

PL/SQL procedure successfully completed.
File System to ASM Migration

- Using EM
- Using DBMS_FILE_TRANSFER
- Using RMAN Manually
- Using XMLDB
I can be reached at indy.johal@prnewswire.com for any questions

THANKS