



Oracle Database 12c: New Features in ASM/ACFS

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Solution Architect

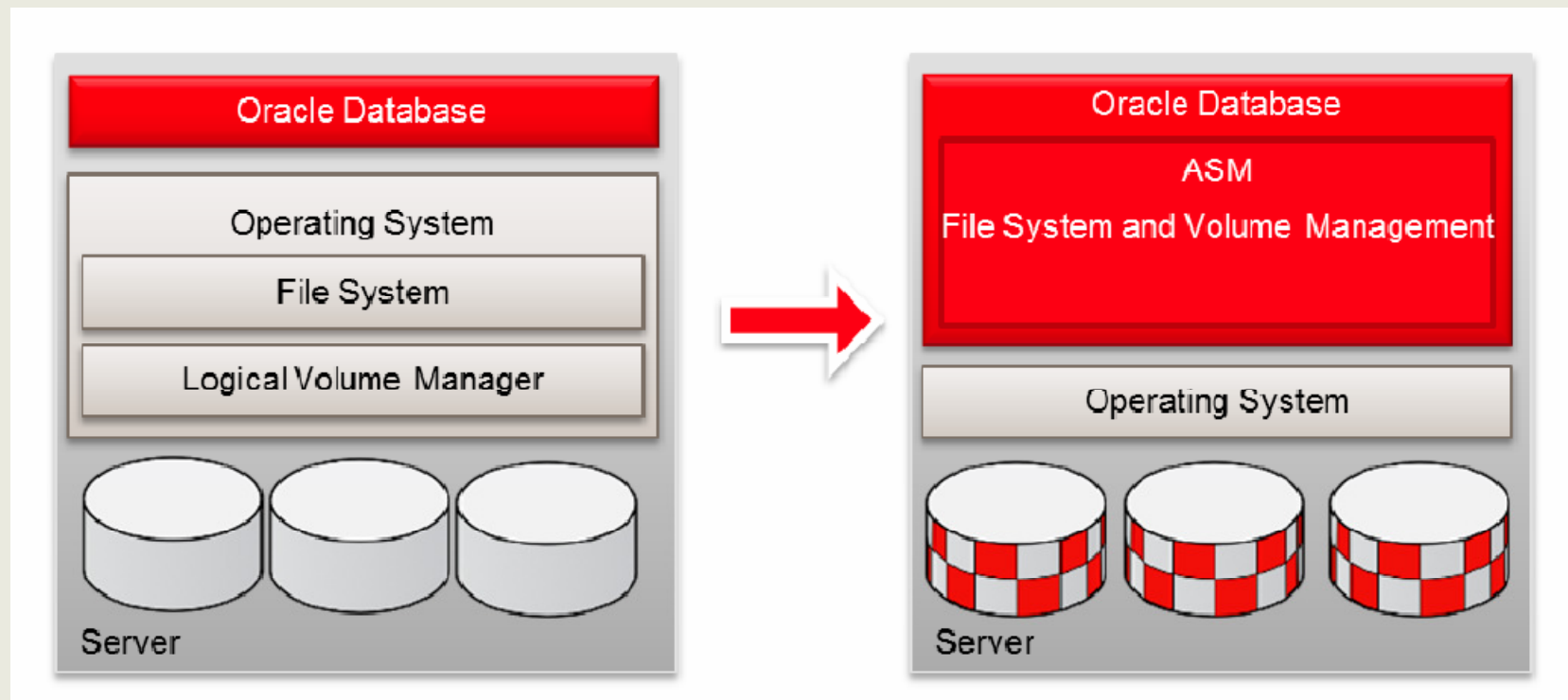


About me

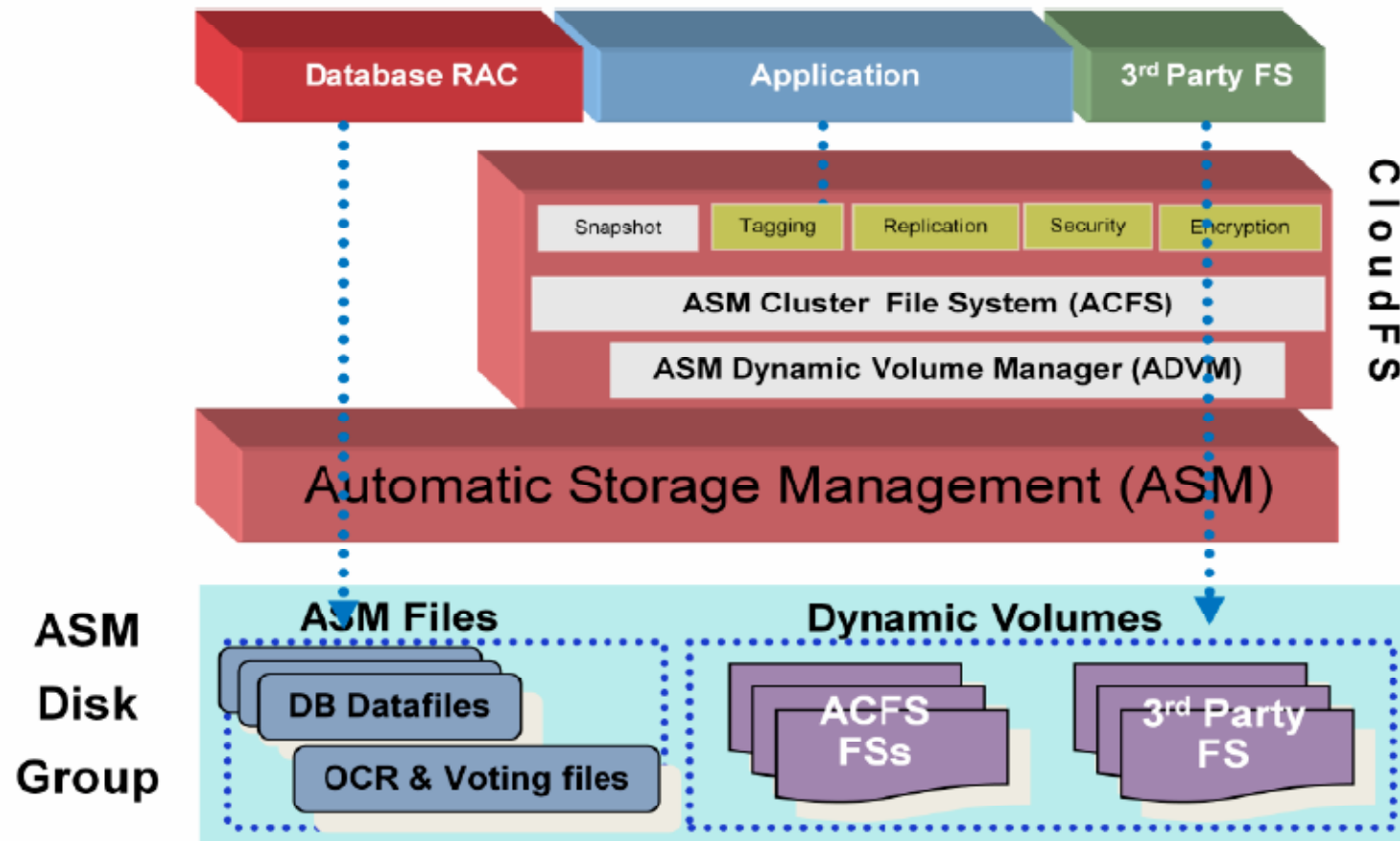
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- ◆ Oracle ACE 2011
- ◆ Working with Oracle technology since 1989
- ◆ Installation, configuration and support for various Oracle products
 - Database
 - Internet application server
 - Fusion middleware
 - Hyperion EPM
- ◆ System architect
 - Architecture planning
 - Capacity planning
 - Performance tuning
- ◆ Numerous successful projects based on Oracle technology
- ◆ Trainer experience, Oracle courses for
 - Database administrators
 - Application server administrators
- ◆ Speaker on various Oracle conferences
 - IOUG
 - EOUG
 - HrOUG
 - SiOUG
 - SrOUG

Automatic Storage Management (ASM)



ASM Cluster File System (ACFS)



New features in ASM 12c

General enhancements

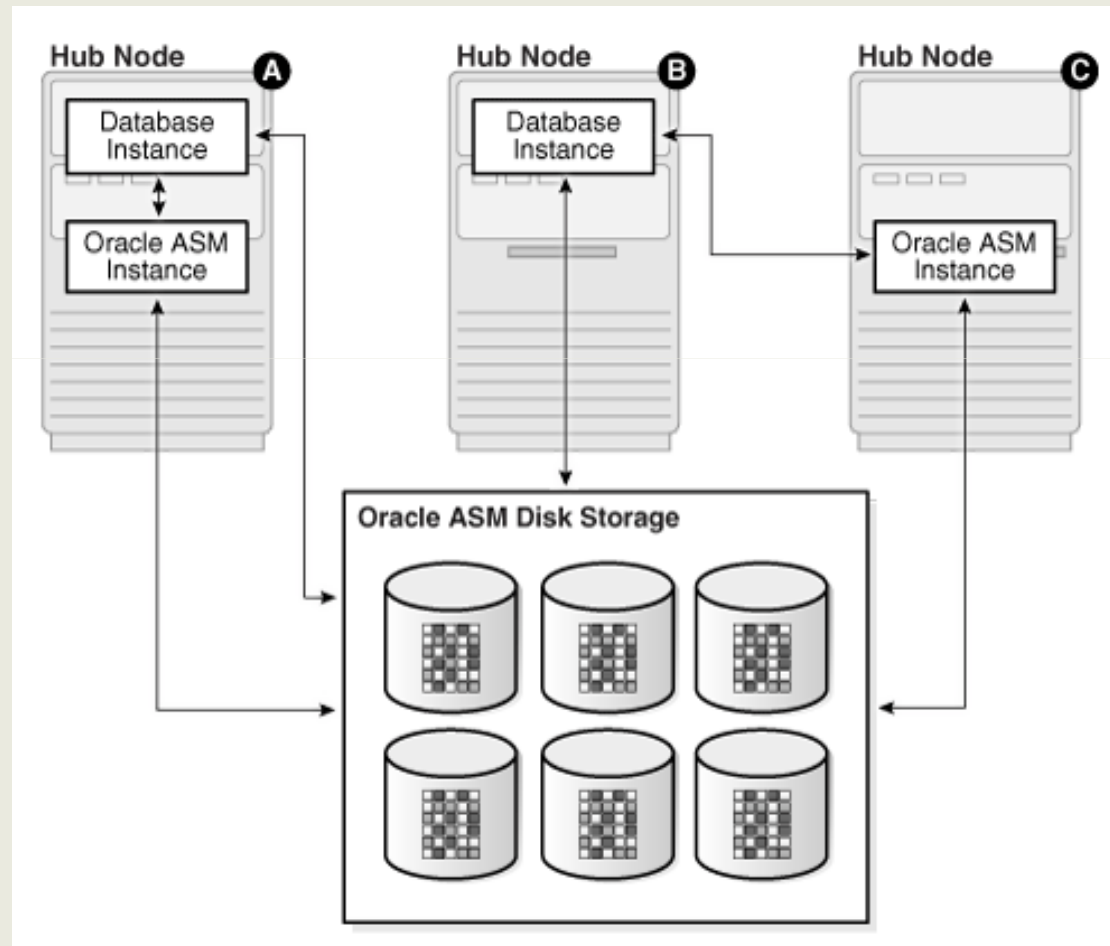
- ◆ Revised version of the physical metadata replication point
 - now replicates physically addressed metadata, such as the disk header and allocation tables, within each disk.
 - Oracle ASM is more resilient to bad disk sectors and external corruptions
- ◆ Support for increased storage limits
 - Oracle ASM now supports 511 disk groups.
 - The maximum Oracle ASM disk size is now 32 petabytes (PB)
- ◆ The ALTER DISKGROUP statement has been updated with a REPLACE clause_____

New features in ASM 12c

Oracle Flex ASM

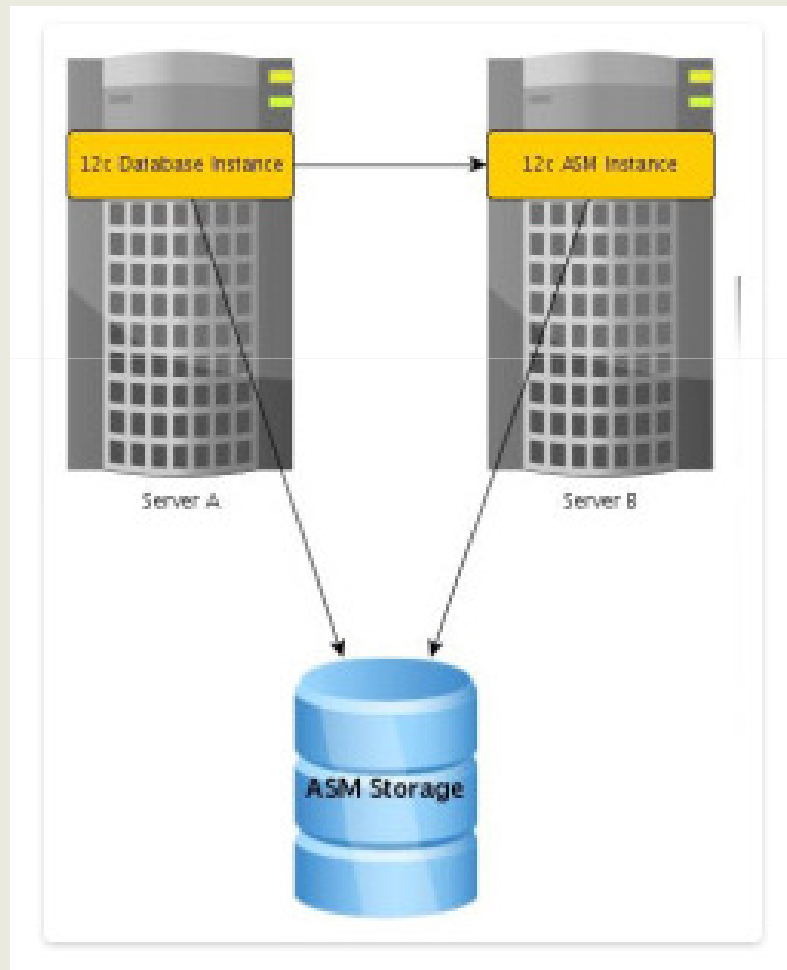
- ◆ enables an Oracle ASM instance to run on a separate physical server from the database servers.
- ◆ Many Oracle ASM instances can be clustered to support a large number of database clients.
 - This feature enables you to consolidate all the storage requirements into a single set of disk groups.
 - All these disk groups can be managed by a small set of Oracle ASM instances running in a single cluster.
- ◆ Oracle Flex ASM supports only Oracle Database 12c Release 1 (12.1) and later releases

New features in ASM 12c Oracle Flex ASM

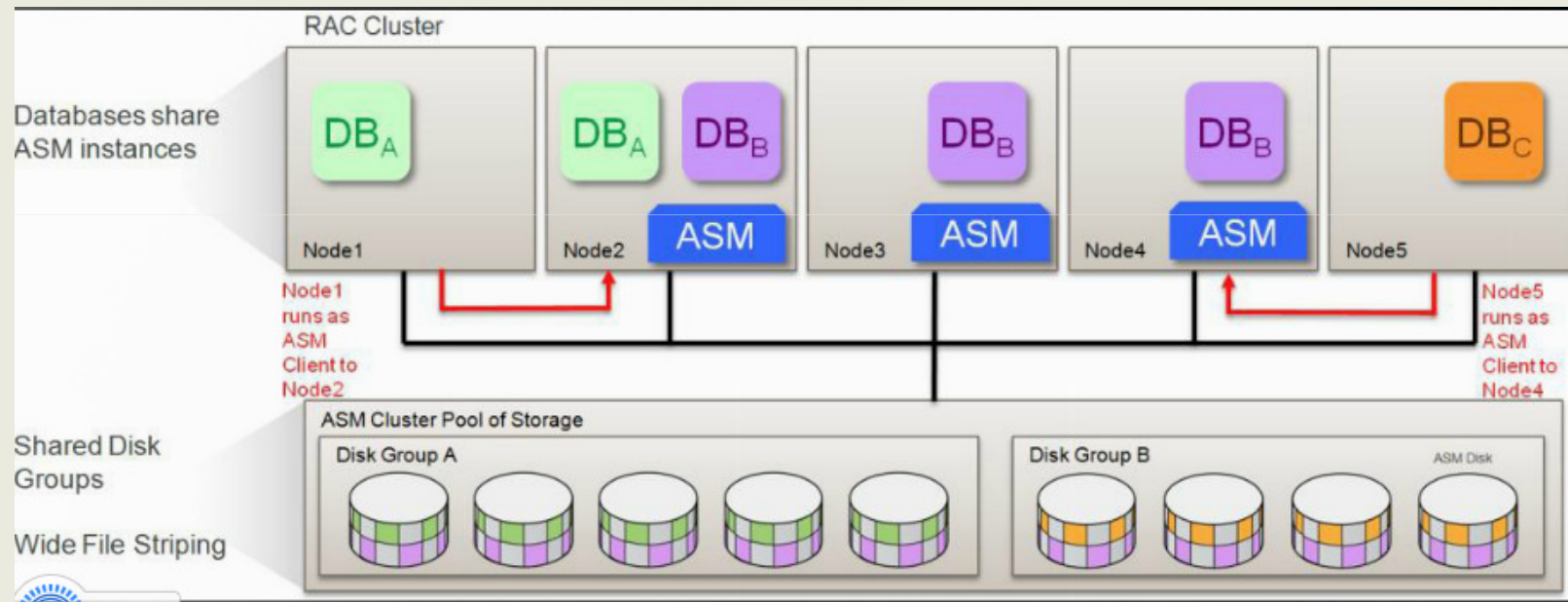


New features in ASM 12c

Oracle Flex ASM



New features in ASM 12c Oracle Flex ASM



New features in ASM 12c

Disk Scrubbing

- ◆ checks logical data corruptions and repairs the corruptions automatically in normal and high redundancy disks groups.
- ◆ is designed so that it does not have any impact to the regular input and output (I/O) operations in production systems.
- ◆ The scrubbing process repairs logical corruptions using the Oracle ASM mirror disks.
- ◆ Disk scrubbing uses Oracle ASM rebalancing to minimize I/O overhead.

New features in ASM 12c

Disk Resync Enhancements

- ◆ enable fast recovery from instance failure and faster resync performance overall.
- ◆ enables multiple disks to be brought online simultaneously or to control the speed of the resync operation.
- ◆ has a resync power limit to control resync parallelism and improve performance.
- ◆ Disk resync checkpoint functionality provides faster recovery from instance failures by enabling the resync to resume from the point at which the process was interrupted or stopped

New features in ASM 12c

Even Read For Disk Groups

- ◆ distributes data reads evenly across all the disks in a disk group.
- ◆ For each I/O request presented to the system, there may be one or more disks that contain the data.
- ◆ With this feature, each request to read can be sent to the least loaded of the possible source disks.
- ◆ enabled by default on all Oracle Database and Oracle ASM instances of version 12.1 and higher in non-Exadata environments.
- ◆ enabled in an Exadata environment when there is a failure.
- ◆ applicable only to disk groups with normal or high redundancy.

New features in ASM 12c Rebalance Enhancements

- ◆ improve scalability, performance, and reliability of the rebalance operation.
- ◆ extends the rebalance process to operate on multiple disk groups in a single instance.
- ◆ improves support for thin provisioning, user-data validation, and improved error handling

New features in ASM 12c

Shared Oracle ASM Password File in a Disk Group

- ◆ implements the infrastructure needed to address the bootstrapping issues of Oracle ASM shared password file in an Oracle ASM disk group.
- ◆ solves the bootstrapping problem for storing shared Oracle ASM password files in a disk group.
- ◆ password file for Oracle Database or Oracle ASM can reside on a designated Oracle ASM disk group
- ◆ You can use a password file located on a disk group for authentication only if
 - the Oracle ASM instance is running and the designated disk group is mounted
- ◆ The COMPATIBLE.ASM disk group attribute must be set to at least 12.1 for the disk group where the password is to be located.

New features in ASM 12c

Shared Oracle ASM Password File in a Disk Group

- ◆ The SYSASM privilege is required to manage the Oracle ASM password file.
- ◆ The SYSDBA privilege on Oracle ASM is required to manage the database password file
- ◆ The shared password file in a disk group is managed by ASMCMD commands, the ORAPWD tool, and SRVCTL commands.
- ◆ ORAPWD supports the creation of password files on an Oracle ASM disk group.
- ◆ All other password file manipulation is performed with ASMCMD or SRVCTL commands.

New features in ASM 12c

Shared Oracle ASM Password File in a Disk Group

- ◆ You must specify the disk group location and database unique name when using orapwd to create a database password file on a disk group. For example:
\$ orapwd file='+data/ORCL/orapwdb' dbuniquename='orcl'
Enter password for SYS:
- ◆ The asm switch specifies that orapwd create an Oracle ASM password file rather than a database password file. For example:
\$ orapwd file='+data/ASM/orapwasm' asm=y
Enter password for SYS:

New features in ASM 12c

File Access Control Enhancements on Windows

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- ◆ Oracle Database now supports the use of an Oracle home user, which can be specified at installation time.
- ◆ The Oracle home user is associated with an Oracle home and it cannot be changed after installation.
- ◆ Different Oracle homes on a system can share the same Oracle home user or use different Oracle home user names
- ◆ You can now use access control to separate roles in Windows environments. With Oracle Database services running as users rather than Local System
- ◆ the Oracle ASM access control feature is enabled to support role separation on Windows

New features in ASM 12c

Rolling Migration Framework for Oracle ASM One-off Patches

- ◆ enhances the rolling migration framework to apply oneoff patches released for Oracle ASM in a rolling manner.
- ◆ You can use this feature in a clustered Oracle ASM 12c Release 1 (12.1) and higher environment to update one node at a time to the latest patch level
- ◆ the overall availability of the Oracle ASM cluster or the database clusters using Oracle ASM for storage is not affected
- ◆ improves database availability by migrating the database to another Oracle ASM instance before a shut down and upgrade operation

Database Express replaces Database Control



ORACLE Enterprise Manager Database Express 12c

Help | SYS | Log Out

HOTSOS (12.1.0.1.0) Configuration Storage Security Performance beta12.homework.local

Page Refreshed 12:44:15 PM GMT+0200 Auto Refresh 1 Minute

Database Home

Status

- Up Time: 1 hour, 31 minutes, 19 seconds
- Type: Single instance (hotsos)
- Version: 12.1.0.1.0 Enterprise Edition
- Database Name: HOTSOS
- Instance Name: hotsos
- Platform Name: Linux x86 64-bit
- Host Name: beta12.homework.local
- Oracle Home: /u05/app/oracle/product/12.1.0/dbhome_2
- Thread: 1
- Archiver: Stopped

Performance

Activity Class: Services

Resources

Host CPU

Active Sessions

Memory

Data Storage

Incidents - Last 24 Hours

Instance	Time	Incident	Problem	Error
No Incidents				

Running Jobs

Instance	Owner	Name	Elapsed	Started
No Running Jobs				

SQL Monitor - Last Hour (20 max)

Status	Duration	Type	ID	User	Parallel	Database Time	SQL Text
	15.7m		0kscu68htb20u	TEST		2.0m	BEGIN load7(1000...
	15.9m		0kscu68htb20u	TEST		2.0m	BEGIN load7(1000...
	15.4m		0kscu68htb20u	TEST		2.0m	BEGIN load7(1000...
	15.4m		0kscu68htb20u	TEST		2.0m	BEGIN load7(1000...
	15.5m		0kscu68htb20u	TEST		2.0m	BEGIN load7(1000...



Database Express replaces Database Control

The screenshot displays the Oracle Enterprise Manager Database Express 12c interface, specifically the Memory Management section. The page is titled "Memory Management" and includes a "Configure Memory" link. The interface is divided into two main sections: Configuration and Statistics.

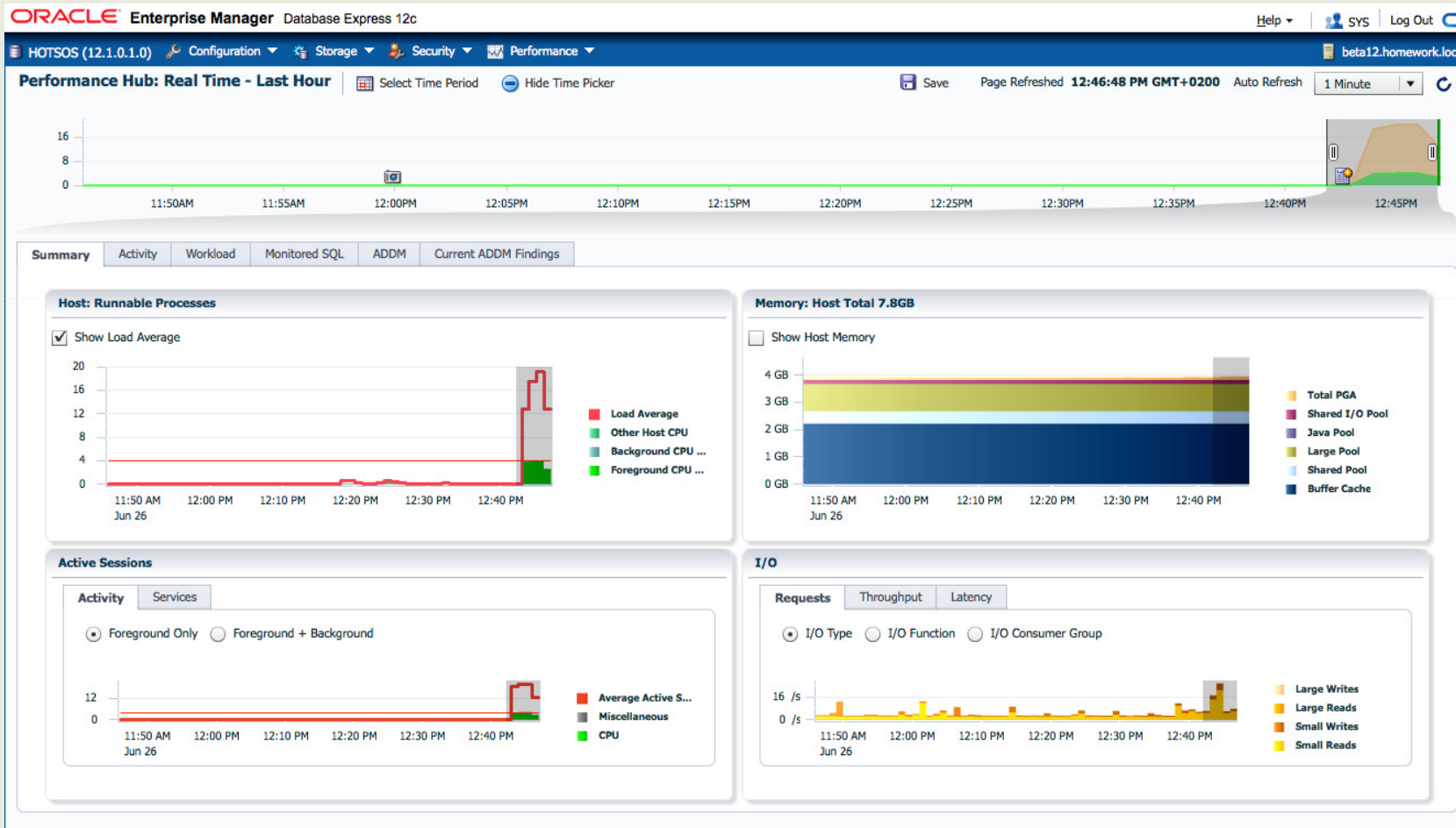
Configuration Section:

- Memory Settings:**
 - SGA Memory:** Management Mode: Auto; sga_target: 3.9GB; db_cache_size: 2GB; large_pool_size: 1GB.
 - PGA Memory:** Management Mode: Auto; pga_aggregate_target: 2GB.
- SGA Advisor:** A line graph showing the "Estimator Percentage of Time Saved" on the y-axis (ranging from -0.02 to 0) against "sga_target (MB)" on the x-axis (ranging from 0 to 8000). The current setting is at 3900 MB, where the estimator percentage is 0.
- PGA Advisor:** A line graph showing the "Estimated Cache Hit Percentage" on the y-axis (ranging from 0 to 100) against "pga_aggregate_target (MB)" on the x-axis (ranging from 0 to 16000). The current setting is at 2000 MB, where the hit percentage is 100%.

Statistics Section:

- Allocation Breakdown:** A stacked bar chart showing the memory allocation for SGA and PGA. The SGA bar is composed of Buffer Cache, Shared Pool, Large Pool, Java Pool, Shared I/O Pool, PGA - Untunable, PGA - SQL Workareas, and PGA - Freeable. The PGA bar is composed of PGA - Freeable.
- Allocation History:** A stacked area chart showing the memory allocation over time from 11:50 AM to 12:35 PM on Jun 26. The components are the same as in the Allocation Breakdown chart.
- Top Sessions by PGA Consumed:** A bar chart showing the PGA memory consumed by the top sessions. The y-axis is "PGA Memory Consumed" (0 MB to 12 MB) and the x-axis is "Session ID". The sessions are: 3,1 (~11.5 MB), 11,15 (~8.5 MB), 472,1 (~6.5 MB), 485,23 (~6.5 MB), 474,1 (~3.5 MB), 318,1 (~2.5 MB), 315,1 (~2.5 MB), 163,3 (~2.0 MB), and 321,1 (~1.5 MB).

Database Express replaces Database Control



Database Express replaces Database Control



ORACLE Enterprise Manager Database Express 12c

Help | SYS | Log Out

HOTSOS (12.1.0.1.0) Configuration Storage Security Performance

Performance Hub: Real Time - Last Hour

Select Time Period Hide Time Picker Save Page Refreshed 12:48:31 PM GMT+0200 Auto Refresh 1 Minute

Summary Activity Workload **Monitored SQL** ADDM Current ADDM Findings

Top 100 By Last Active Time Type All Execution Detail SQL Detail Session Detail Kill Session ID

Status	Duration	Type	ID	SQL Plan Hash	User	Parallel	Database Time	IO Requests	Start	Ended	SQL Text
✓	3.6m	SQL	0kscu68htbz0u		TEST		3.6m		12:42:13 PM	12:45:48 PM	BEGIN load7(1000000); END;
✓	3.6m	SQL	0kscu68htbz0u		TEST		3.6m		12:42:13 PM	12:45:48 PM	BEGIN load7(1000000); END;
✓	3.6m	SQL	0kscu68htbz0u		TEST		3.6m		12:42:13 PM	12:45:48 PM	BEGIN load7(1000000); END;
✓	3.6m	SQL	0kscu68htbz0u		TEST		3.6m		12:42:13 PM	12:45:48 PM	BEGIN load7(1000000); END;
✓	3.6m	SQL	0kscu68htbz0u		TEST		3.6m		12:42:13 PM	12:45:48 PM	BEGIN load7(1000000); END;
✓	3.6m	SQL	0kscu68htbz0u		TEST		3.6m		12:42:13 PM	12:45:48 PM	BEGIN load7(1000000); END;
✓	3.6m	SQL	0kscu68htbz0u		TEST		3.6m		12:42:13 PM	12:45:47 PM	BEGIN load7(1000000); END;
✓	3.6m	SQL	0kscu68htbz0u		TEST		3.6m		12:42:13 PM	12:45:47 PM	BEGIN load7(1000000); END;
✓	3.6m	SQL	0kscu68htbz0u		TEST		3.6m		12:42:13 PM	12:45:47 PM	BEGIN load7(1000000); END;
✓	3.6m	SQL	0kscu68htbz0u		TEST		3.6m		12:42:13 PM	12:45:47 PM	BEGIN load7(1000000); END;
✓	3.6m	SQL	0kscu68htbz0u		TEST		3.6m		12:42:13 PM	12:45:47 PM	BEGIN load7(1000000); END;
✓	3.6m	SQL	0kscu68htbz0u		TEST		3.6m		12:42:13 PM	12:45:47 PM	BEGIN load7(1000000); END;
✓	3.6m	SQL	0kscu68htbz0u		TEST		3.6m		12:42:13 PM	12:45:47 PM	BEGIN load7(1000000); END;
✓	3.6m	SQL	0kscu68htbz0u		TEST		3.6m		12:42:13 PM	12:45:46 PM	BEGIN load7(1000000); END;
✓	3.6m	SQL	0kscu68htbz0u		TEST		3.6m		12:42:13 PM	12:45:46 PM	BEGIN load7(1000000); END;
✓	3.6m	SQL	0kscu68htbz0u		TEST		3.5m		12:42:13 PM	12:45:46 PM	BEGIN load7(1000000); END;
✓	3.6m	SQL	0kscu68htbz0u		TEST		3.6m		12:42:13 PM	12:45:46 PM	BEGIN load7(1000000); END;
✓	3.6m	SQL	0kscu68htbz0u		TEST		3.6m		12:42:13 PM	12:45:46 PM	BEGIN load7(1000000); END;





New features in ASM 12c Oracle Enterprise Manager

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- ◆ Oracle Enterprise Manager Cloud Control replaces Enterprise Manager Database Control for administering Oracle Automatic Storage Management

Base Enterprise Manager Functionality

- ◆ The base installation of Enterprise Manager Cloud Control 12c includes several features free of charge with the purchase of any Oracle software license or Support contract.
- ◆ The release of Oracle Enterprise Manager Cloud Control 12c makes several licensing changes. Some features that were part of licensed packs are now included in the base functionality

Base Enterprise Manager Functionality

- ◆ Log in to Enterprise Manager Cloud Control 12c as a super administrator
- ◆ Click Setup (in the upper right corner of the page), Management Packs, then Management Pack Access
- ◆ Disable access for all Management packs for Oracle database target
- ◆ When you disable a Management Pack, links that are part of that pack will either
 - be disabled or,
 - when a link is clicked, a message will indicate that the associated pack is not licensed for use.

Base Enterprise Manager Functionality

Management Pack Access

Enterprise Manager provides central management for your entire Oracle environment. Some premium functionality contained within this release of Enterprise Manager requires a separate Oracle license. Use target based access to enable or disable access for each target or use pack based batch update to enable or disable selected packs for all targets associated with the specified target type.

View Options

Choose from the below options to view management pack access information.

- Licensable Targets
 All Targets (Licensable targets and all dependent targets)

Pack Access Target Based Pack Based Batch Update Auto Licensing

TIP Enabling or disabling packs will affect pack-related management access for dependent targets.

Search Database

Name	Type	Host	Oracle Cloud Management Pack for Oracle Database	Database Diagnostics Pack	Oracle Database Lifecycle Management Pack	Data Masking Pack	Test Data Management Pack	Database Tuning Pack	Pack Access Agreed
orcl	Database Instance	oradb12c	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

TIP In Oracle Database 11g, you need to set the initialization parameter 'control_management_pack_access' to disable or enable Database Diagnostic and Tuning Packs.

TIP For a detailed description of above functionality and where they can be used within the product refer to the Oracle Database Licensing Information document, the Oracle Application Server Licensing Information document or the Oracle Enterprise Manager Licensing Information document.

Base Enterprise Manager Functionality

Management Packs

Management Pack Access

Enterprise Manager provides central management for your entire Oracle environment. Some premium functionality contained within this release of Enterprise Manager requires you to enable or disable selected packs for all targets associated with the specified target type.

View Options

Choose from the below options to view management pack access information.

Licensable Targets
 All Targets (Licensable targets and all dependent targets)

Pack Access Target Based Pack Based Batch Update Auto Licensing

Available Packs

Type:

- Oracle Cloud Management Pack for Oracle Database
- Oracle Cloud Management Pack for Oracle Fusion Middleware
- Application Replay Pack
- Database Diagnostics Pack
- Oracle Database Lifecycle Management Pack
- Data Masking Pack
- Test Data Management Pack
- Database Tuning Pack
- Configuration Management Pack for Applications
- WLS Management Pack EE

Selected Packs

Move
Move All
Remove
Remove All

Auto Licensing Enable Disable

Auto Licensing Disabled List

Following table shows packs and its associated target types for which auto licensing is disabled.

Pack Name	Type
No packs with disable auto licensing	

Base Enterprise Manager Database Management Features

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- ◆ Advisor Central
- ◆ Data movement
- ◆ Error management
- ◆ Grid Infrastructure management (ASM and CRS)
- ◆ High availability
- ◆ Non-structured data management
- ◆ Object, program and initialization parameters management
- ◆ Optimizer Management
- ◆ Patch Recommendations
- ◆ Pluggable Database (PDB) Create/Plug/Unplug
- ◆ Resource Management
- ◆ Scheduler Central
- ◆ Security
- ◆ SQL Execution
- ◆ Space and Undo Management
- ◆ Support Workbench
- ◆ Upgrade Planner
- ◆ Workspace management

Enterprise Manager ASM pages

ORACLE Enterprise Manager Cloud Control 12c

Setup Help SYSMAN Log Out

Enterprise Targets Favorites History Search Target Name +ASM_oradb12c oradb12c

+ASM_oradb12c Automatic Storage Management

Host: oradb12c > Automatic Storage Management: +ASM_oradb12c

Automatic Storage Management

Home Performance Disk Groups Configuration Users ASM Cluster File System

Data Retrieved Jul 26, 2013 11:14:45 AM CEST Refresh

General

Current Status Up
 Up Since Jul 26, 2013 9:53:58 AM CEST
 Availability (%) 99.45 (Last 24 hours)
 Instance Name +ASM
 Version 12.1.0.1.0
 Host oradb12c
 Oracle Home /u01/app/oracle/product/12.1.0/grid

Startup/Shutdown

Disk Group Usage (GB)

Disk Group	Unallocated	System	orcl	ASM
FRA	~5.8	~0.1	~0.1	~0.0
DATA	~4.5	~0.0	~3.2	~0.0

Diagnostic Summary

Alert Log No ORA- errors
Active Incidents 0

Serviced Databases

Name	Disk Groups	Failure Groups	Allocated Space (GB)	Availability	Incidents
orcl	FRA, DATA	Not Configured	3.68		3 2
ASM	DATA	Not Configured	0		Not Monitored

Serviced ASM Cluster File Systems

Mount Point	Availability	State	Used (%)	Used (GB)	Size (GB)	Allocated Space (GB)	Volume	Disk Group
(No ASM Cluster File Systems)								

Other Volumes

Volume	Volume Device	Usage	State	Disk Group	Size (GB)	Allocated Space (GB)	Redundancy
No object found							

Incidents

Incident Counts 0 0 1 0

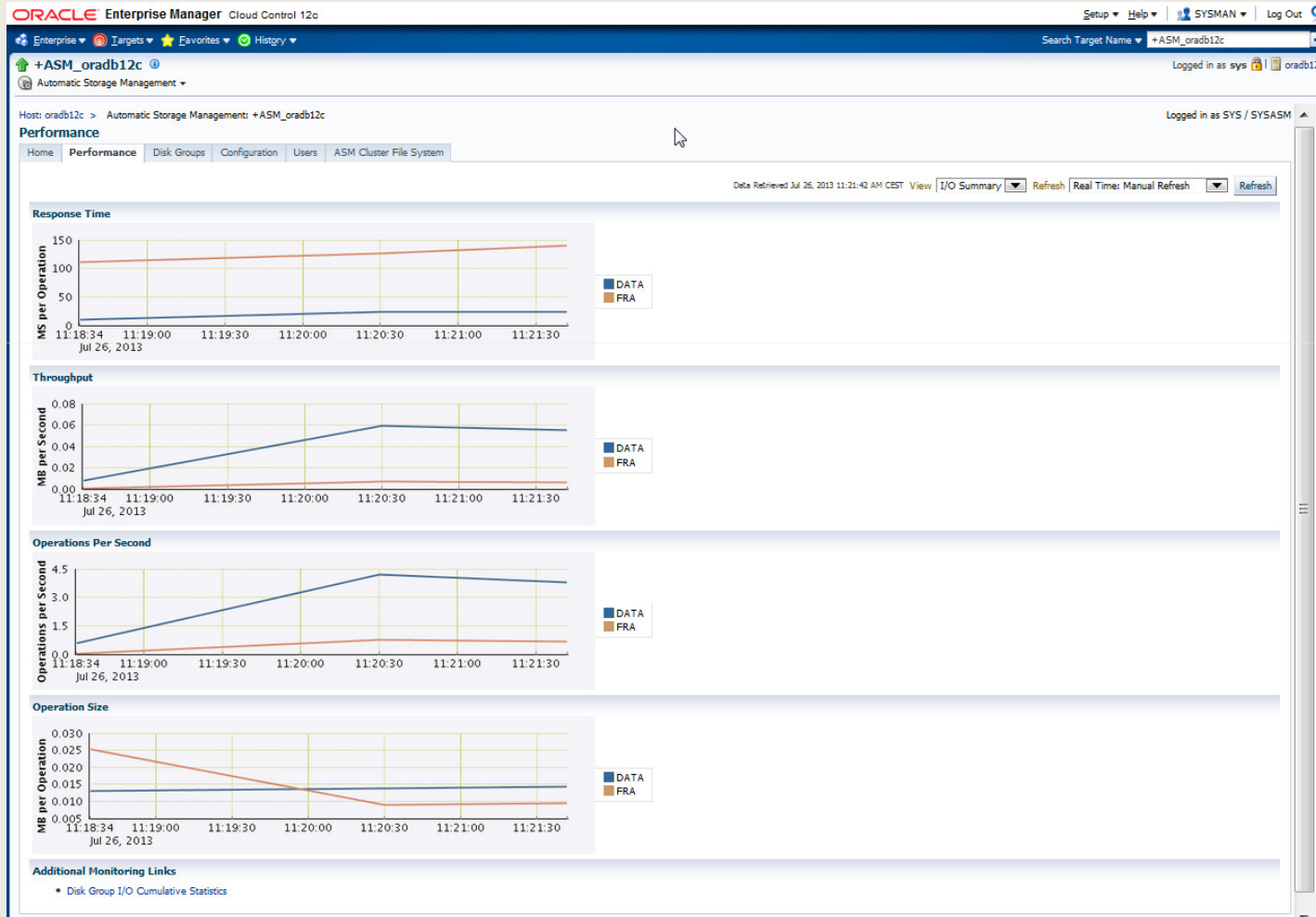
Severity	Message	Created At	Last Updated At	Escalation Level
(No alerts)				

Host Incidents

Incident Counts 0 0 1 0

Severity	Message	Created At	Last Updated At	Escalation Level
	Filesystem / has 9.72% available space, fallen below warning (20) or critical (5) threshol...	Jul 25, 2013 8:39:20 AM	Jul 25, 2013 9:06:19 AM	None

Enterprise Manager ASM pages



Enterprise Manager ASM pages

ORACLE Enterprise Manager Cloud Control 12c

Enterprise Targets Favorites History Search Target Name +ASM_oradb12c

+ASM_oradb12c Automatic Storage Management

Host: oradb12c > Automatic Storage Management: +ASM_oradb12c > Disk Group I/O Cumulative Statistics

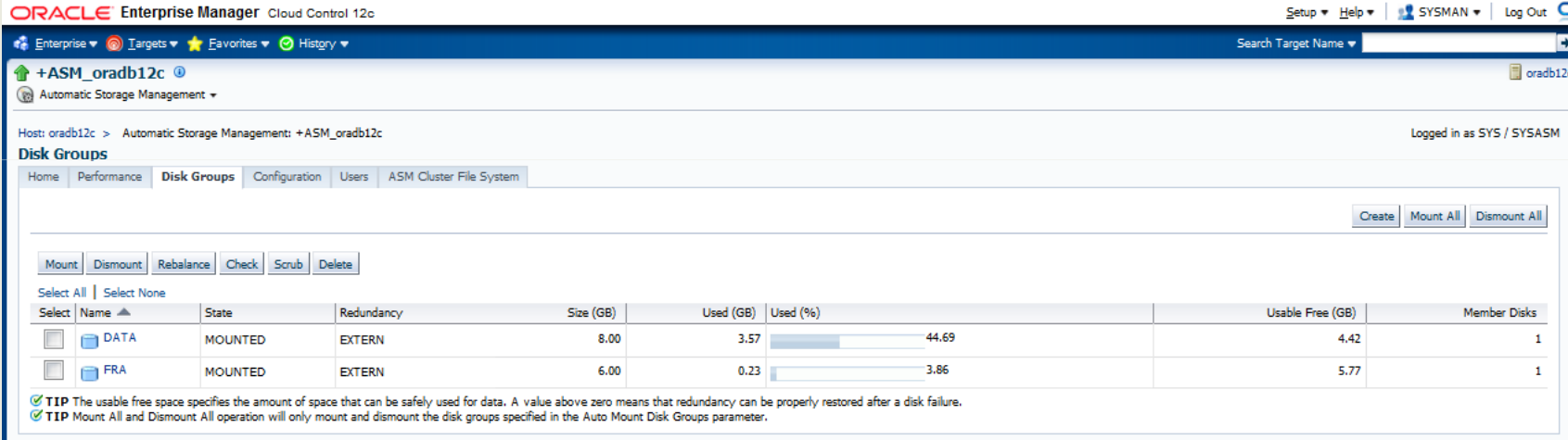
Logged in as SYS / SYSASM

Date Retrieved Jul 26, 2013 11:20:33 AM CEST Refresh Real Time: Manual Refresh Refresh

Expand All | Collapse All

Disk Groups	Average Response Time (ms)	Average Throughput (MB per second)	Total I/O Calls	Reads			Writes				
				Total	Hot	Cold	Errors	Total	Hot	Cold	Errors
Automatic Storage Management - +ASM_oradb12c	184.54	0	64279	54216	0	53887	0	10063	0	6532	0
DATA	111.35	0.01	59625	53902	0	53712	0	5723	0	3929	0
FRA	1,122.2	0	4654	314	0	175	0	4340	0	2603	0

Enterprise Manager ASM pages



ORACLE Enterprise Manager Cloud Control 12c

Enterprise Targets Favorites History Search Target Name

+ASM_oradb12c Automatic Storage Management oradb12c

Host: oradb12c > Automatic Storage Management: +ASM_oradb12c Logged in as SYS / SYSASM

Home Performance **Disk Groups** Configuration Users ASM Cluster File System

Create Mount All Dismount All

Mount Dismount Rebalance Check Scrub Delete

Select All | Select None

Select	Name	State	Redundancy	Size (GB)	Used (GB)	Used (%)	Usable Free (GB)	Member Disks
<input type="checkbox"/>	DATA	MOUNTED	EXTERN	8.00	3.57	44.69	4.42	1
<input type="checkbox"/>	FRA	MOUNTED	EXTERN	6.00	0.23	3.86	5.77	1

TIP The usable free space specifies the amount of space that can be safely used for data. A value above zero means that redundancy can be properly restored after a disk failure.
TIP Mount All and Dismount All operation will only mount and dismount the disk groups specified in the Auto Mount Disk Groups parameter.

Enterprise Manager ASM pages

ORACLE Enterprise Manager Cloud Control 12c Setup Help SYSMAN Log Out

Enterprise Targets Favorites History Search Target Name

+ASM_oradb12c Logged in as sys oradb12c

Automatic Storage Management

Host: oradb12c > Automatic Storage Management: +ASM_oradb12c > Disk Group: DATA Logged in as SYS / SYSASM

Disk Group: DATA

General Performance Templates Files Access Control Volumes

General

Name: DATA
State: MOUNTED
Redundancy: EXTERN
Total Size (GB): 8
Pending Operations: 0
Allocation Unit (MB): 1

Advanced Attributes Edit

Database Compatibility: 10.1.0.0.0
ASM Compatibility: 12.1.0.0.0
ASM Volume Compatibility: Disabled
Smart Scan Capability: Disabled
File Access Control: Disabled
Failure Group Repair Time (Hours): 24.0
Disk Group Content: Data
Thin Provisioned: Disabled
Content Checking: Disabled

Current Disk Group Usage (GB)

Category	Value (GB)	Percentage
Free	4.42	44%
System	0.06	0%
ASM	0.00	0%
ORCL	3.51	55%

Disk Group Daily Space Usage History (Last 7 Days)

Date	ORCL (GB)	ASM (GB)
Jul 22, 2013	~3.5	0
24	~3.5	0

Member Disks Add

Select All | Select None

Select	Disk	Failure Group	Path	Library	Read/Write Errors	State	Mode	Size (GB)	Used (GB)	Used (%)	Failgroup Type
<input type="checkbox"/>	DATA_0000	DATA_0000	/dev/oracleasm/disks/VOL1	SYSTEM	0	NORMAL	✓	8.00	3.57	44.69	REGULAR

Online Offline

Enterprise Manager ASM pages

ORACLE Enterprise Manager Cloud Control 12c

Enterprise Targets Favorites History

Setup Help SYSMAN Log Out

Search Target Name

+ASM_oradb12c

Automatic Storage Management

Host: oradb12c > Automatic Storage Management: +ASM_oradb12c > Disk Group: DATA

Disk Group: DATA

General Performance Templates Files Access Control Volumes

The following are the directories, files and aliases associated with the serviced databases in this disk group.

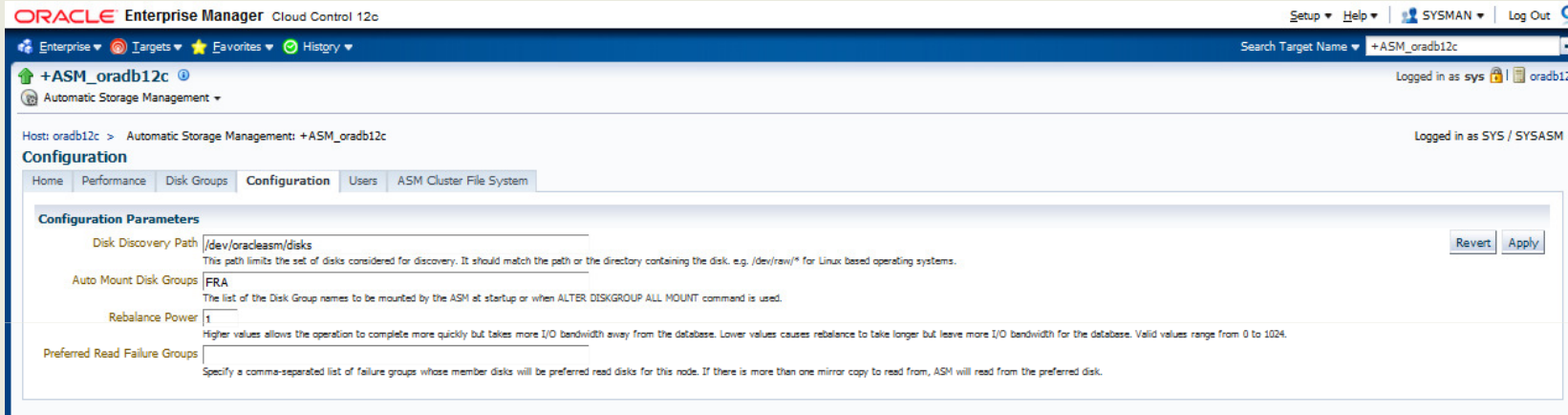
Create Alias Create Directory Rename Edit File Scrub Delete

Select All Select None Expand All Collapse All

Select	Name	Physical Size (KB)	Logical Size (KB)	Primary Region	Permissions			Ownership	
					Owner	Group	Other	Owner	Group
<input type="checkbox"/>	DATA								
<input type="checkbox"/>	ASM								
<input type="checkbox"/>	ASMPARAMETERFILE								
<input type="checkbox"/>	PASSWORD								
<input type="checkbox"/>	ORCL								
<input type="checkbox"/>	CONTROLFILE								
<input type="checkbox"/>	DATAFILE								
<input type="checkbox"/>	DD7C48AA5A4404A2E04325AAE80A403C								
<input type="checkbox"/>	E2177357A9C610CFE0431EC8A8C0E64A								
<input type="checkbox"/>	E21785D6D7C01416E0431EC8A8C0ED4C								
<input type="checkbox"/>	ONLINELOG								
<input type="checkbox"/>	PARAMETERFILE								
<input type="checkbox"/>	TEMPFILE								
<input type="checkbox"/>	spfileorclora	1024	3.5	COLD	Read-write	Read-write	Read-write		
<input type="checkbox"/>	orapwasm	0	7.5	COLD	Read-write	Read-write	Read-write		

Create Alias Create Directory Rename Edit File Scrub Delete

Enterprise Manager ASM pages



ORACLE Enterprise Manager Cloud Control 12c

Enterprise Targets Favorites History

Search Target Name +ASM_oradb12c

Logged in as sys oradb12c

Host: oradb12c > Automatic Storage Management: +ASM_oradb12c

Logged in as SYS / SYSASM

Configuration

Home Performance Disk Groups Configuration Users ASM Cluster File System

Configuration Parameters

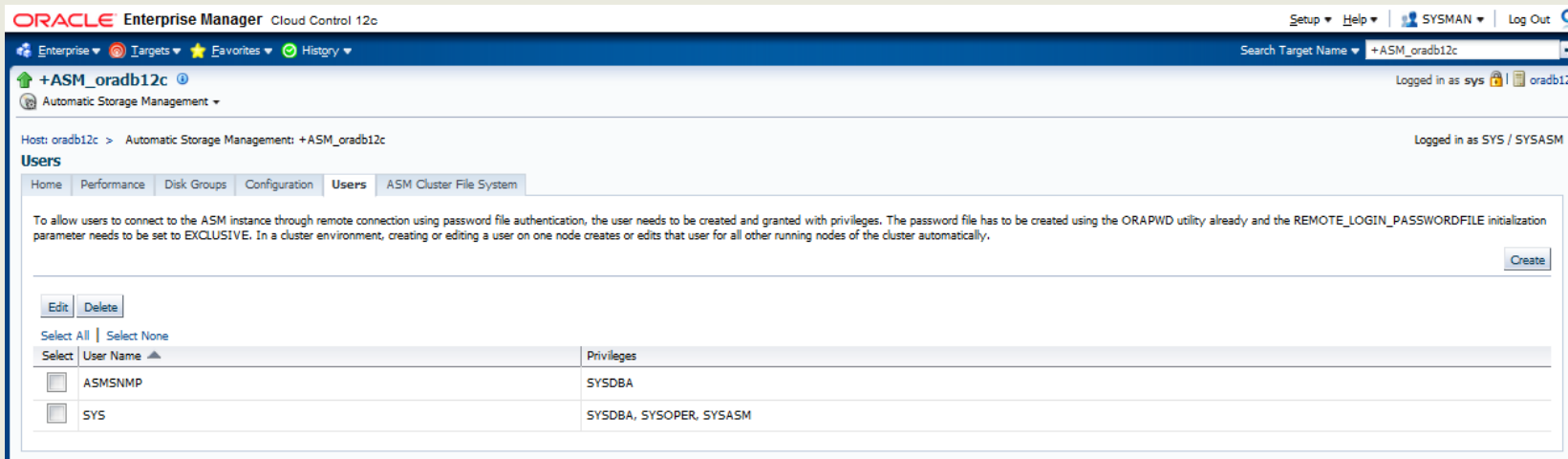
Disk Discovery Path /dev/oracleasm/disks
This path limits the set of disks considered for discovery. It should match the path or the directory containing the disk, e.g. /dev/raw/* for Linux based operating systems.

Auto Mount Disk Groups FRA
The list of the Disk Group names to be mounted by the ASM at startup or when ALTER DISKGROUP ALL MOUNT command is used.

Rebalance Power 1
Higher values allows the operation to complete more quickly but takes more I/O bandwidth away from the database. Lower values causes rebalance to take longer but leave more I/O bandwidth for the database. Valid values range from 0 to 1024.

Preferred Read Failure Groups
Specify a comma-separated list of failure groups whose member disks will be preferred read disks for this node. If there is more than one mirror copy to read from, ASM will read from the preferred disk.

Revert Apply



ORACLE Enterprise Manager Cloud Control 12c

Enterprise Targets Favorites History

Search Target Name +ASM_oradb12c

Logged in as sys oradb12c

Host: oradb12c > Automatic Storage Management: +ASM_oradb12c

Logged in as SYS / SYSASM

Users

Home Performance Disk Groups Configuration Users ASM Cluster File System

To allow users to connect to the ASM instance through remote connection using password file authentication, the user needs to be created and granted with privileges. The password file has to be created using the ORAPWD utility already and the REMOTE_LOGIN_PASSWORDFILE initialization parameter needs to be set to EXCLUSIVE. In a cluster environment, creating or editing a user on one node creates or edits that user for all other running nodes of the cluster automatically.

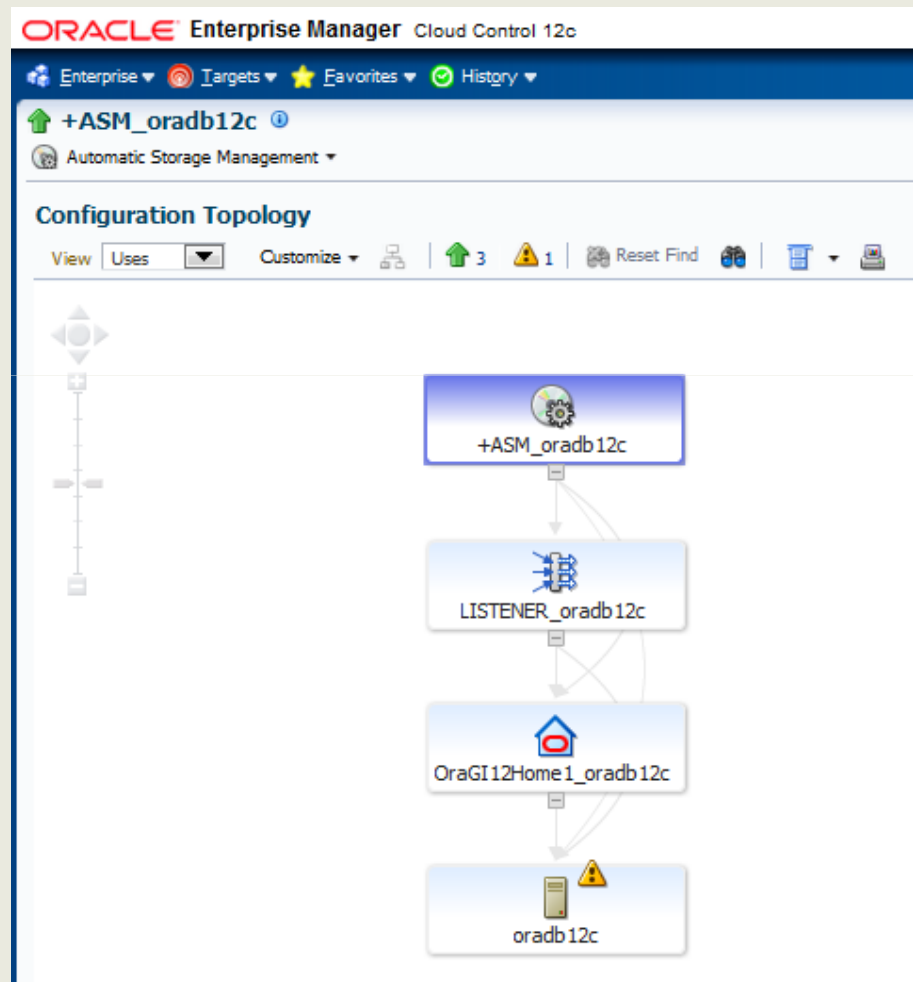
Create

Edit Delete

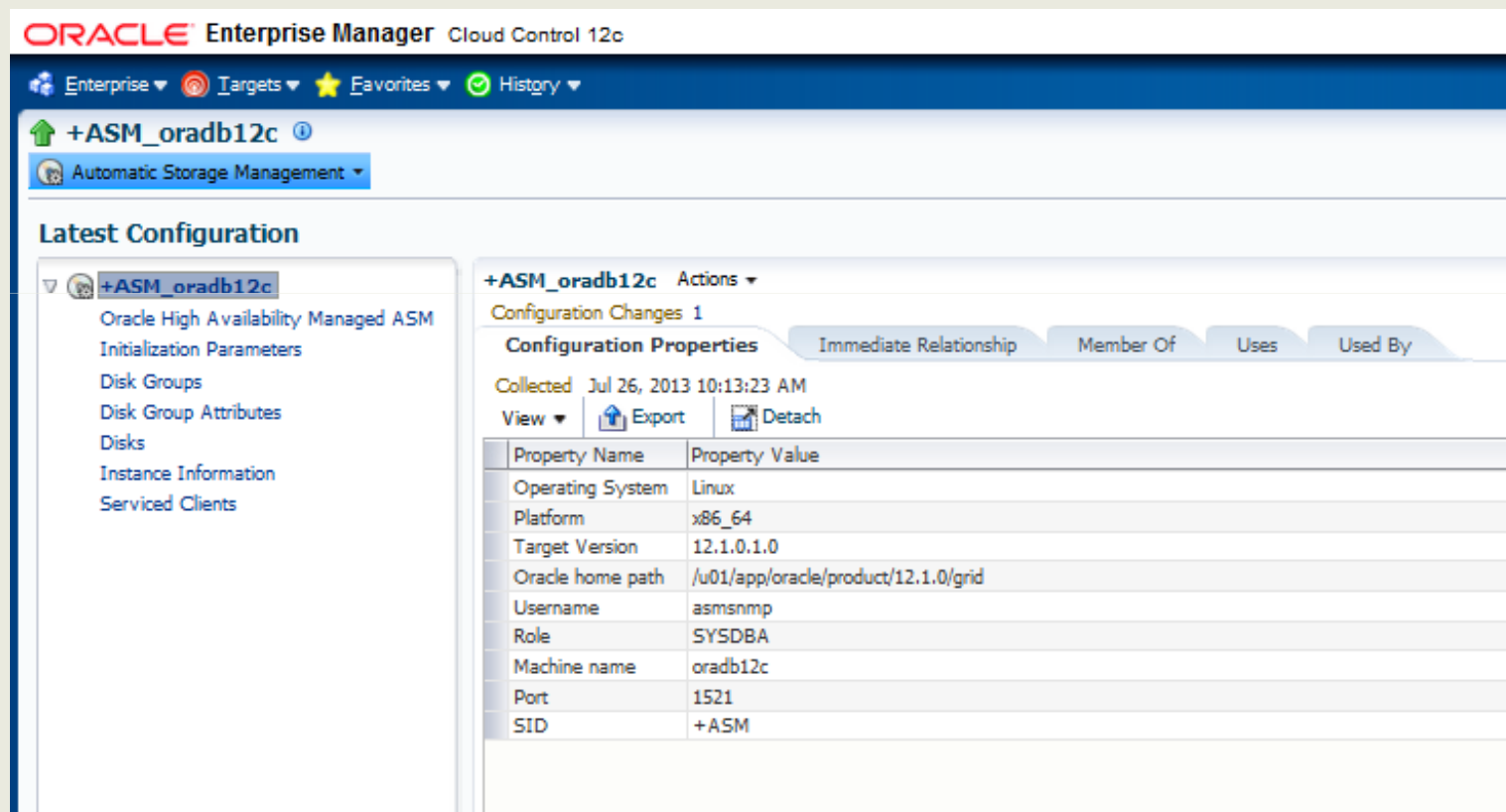
Select All | Select None

Select	User Name	Privileges
<input type="checkbox"/>	ASMSNMP	SYSDBA
<input type="checkbox"/>	SYS	SYSDBA, SYSOPER, SYSASM

Enterprise Manager ASM pages



Enterprise Manager ASM pages



ORACLE Enterprise Manager Cloud Control 12c

Enterprise Targets Favorites History

+ASM_oradb12c Automatic Storage Management

Latest Configuration

+ASM_oradb12c

- Oracle High Availability Managed ASM
- Initialization Parameters
- Disk Groups
- Disk Group Attributes
- Disks
- Instance Information
- Serviced Clients

+ASM_oradb12c Actions

Configuration Changes 1

Configuration Properties Immediate Relationship Member Of Uses Used By

Collected Jul 26, 2013 10:13:23 AM

View Export Detach

Property Name	Property Value
Operating System	Linux
Platform	x86_64
Target Version	12.1.0.1.0
Oracle home path	/u01/app/oracle/product/12.1.0/grid
Username	asmsnmp
Role	SYSDBA
Machine name	oradb12c
Port	1521
SID	+ASM

New features in ACFS/ADVM 12c

Oracle Cloud File System

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- ◆ is designed to help organizations deploy their applications, databases, and storage in private clouds.
- ◆ It delivers a cloud infrastructure that provides network access, rapid elasticity, and provisioning for pooled storage resources
- ◆ Can manage and store all database file types, including general purpose files.
- ◆ includes Oracle Automatic Storage Management Cluster File System (Oracle ACFS) and Oracle ASM Dynamic Volume Manager (Oracle ADVM)

New features in ACFS/ADVM 12c

Oracle ACFS Enhancements

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- ◆ supports all database files for Oracle Database 11g Release 2 (11.2.0.4) or later,
- ◆ except for data files and redo logs in an Oracle Restart configuration.
- ◆ support for database data files is not available for Oracle ACFS in an Oracle Grid 12c Release 1 (12.1) home on Windows.
- ◆ the COMPATIBLE.ADVM attribute must be set to 12.1 or later

New features in ACFS/ADVM 12c

Oracle ACFS Enhancements

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- ◆ supports clusterwide, file granular fcntl advisory file locking while byte range locks continue to operate in node local mode.
- ◆ directory listing performance is improved for newly created directories.
- ◆ supports end-to-end storage visibility for files with the -d option of acfsutil info file.
- ◆ supports unlimited expansions when resizing a file system in a disk group with ADVM compatibility set to 11.2.0.4 or higher.

Oracle ACFS Enhancements Supporting Network File Storage (NFS)

- ◆ High Availability NFS for Oracle Grid Infrastructure provides uninterrupted service of NFS V2/V3 exported paths by exposing NFS exports on Highly Available Virtual IPs (HAVIP) and using Oracle Clusterware agents
- ◆ Oracle ACFS file system exports (using NFS) include Golden Images and patch updates applied to Oracle ACFS snapshots
- ◆ High Availability NFS can also be used as a general high availability solution for Oracle ACFS exported file systems

Oracle ACFS Enhancements

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- ◆ Oracle ACFS supports the creation of a snapshot from an existing snapshot in the same Oracle ACFS file system.
- ◆ snapshot conversions are enabled between read-only and read-write snapshots
- ◆ Tagging operations are available as C application programming interfaces (APIs)

Oracle Clusterware Resources Supporting Oracle ACFS

- ◆ Oracle ACFS and Oracle ADVM resource support is enhanced for both performance and coverage.
- ◆ Oracle Clusterware (CRS) managed resource support is extended to include enhancements for
 - Oracle ACFS Oracle homes,
 - Oracle ACFS General Purpose file systems, and
 - Oracle ADVM volumes

in supporting Oracle Grid Infrastructure Server Oracle ACFS export (using NFS) configurations.

- ◆ SRVCTL has updates to commands for managing Oracle ACFS and Oracle ADVM resources.

Oracle ACFS Plugins

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- ◆ plugin functionality enables a user space application to collect just-in-time Oracle ACFS file and Oracle ADVM volume metrics from the operating system environment.
- ◆ Applications can use the Oracle ACFS plug-in infrastructure to create customized solutions that extend the general application file metric interfaces to include detailed Oracle ACFS file system and volume data.

Oracle ACFS Enhancements

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- ◆ Integration of Oracle ACFS Replication With Auditing, Encryption, and Security
- ◆ Oracle ACFS Auditing and Support for Importing Auditing Data into Oracle Audit Vault Server
- ◆ Support for Oracle ACFS Replication and Tagging on Solaris
- ◆ Support for Oracle ACFS Replication and Tagging on AIX
- ◆ Support for Oracle ACFS Security and Encryption on Solaris



Oracle ACFS Enhancements

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- ◆ Oracle Enterprise Manager replaces Enterprise Manager Database Control for administering Oracle Automatic Storage Management Cluster File System

Questions



