

The Oracle logo consists of the word "ORACLE" in white, uppercase, sans-serif font, centered within a solid red square. The background of the slide is a complex network diagram with various nodes and connecting lines, some of which are highlighted in a darker grey.

Database Evolution and Monitoring

Liana LUPSA

Collaboration with Oracle

Bringing early access to Oracle database 12c Release 2 features

Evaluate infrastructure changes needed to support new features

- Identify use-cases where new features can help provide better value for CERN research

In return - access to expertise and a highly demanding computing environment

Provide intensive feedback to Oracle as to help improve the quality of its products.



Database Evolution and Monitoring

- › Oracle Database 12c Release 2
- › Oracle Database In-Memory
- › Oracle Enterprise Manager 13c



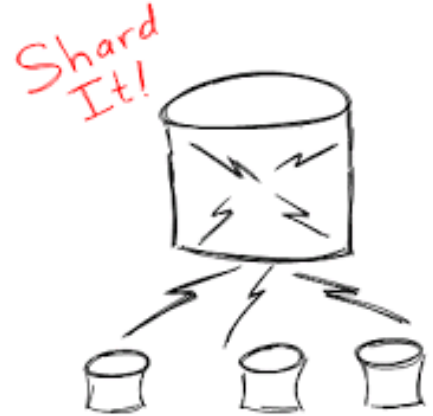
Oracle Database 12c Release 2

New Features:

- **Sharding** - used for applications that require extreme scalability
- Refinements to Oracle Database **In-Memory** capabilities
- In-Memory column Store on Active Data Guard
- Heat Map
- Support for End-to-End **JSON** and JavaScript

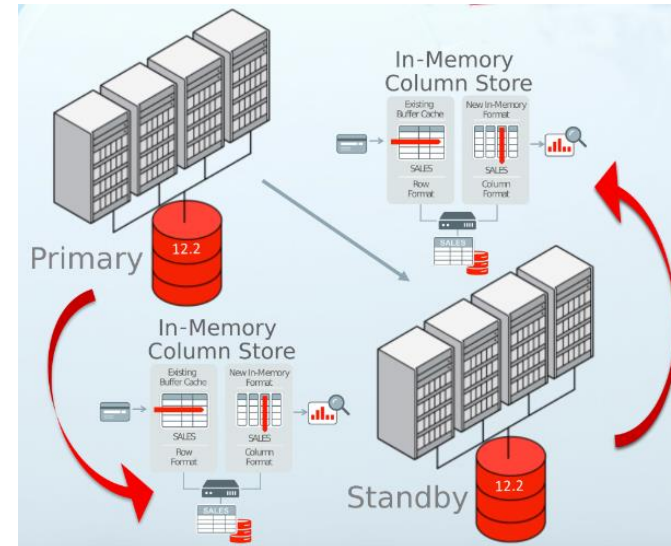
Change: Deprecation of Direct File System Placement for Oracle Cluster Registry (OCR) and Voting Files

New: Oracle Clusterware files managed by Oracle Automatic Storage Management (Oracle ASM) vs NFS



Oracle Database 12c Release 2

- Installation and configuration 2-instance RAC database
- RAC and Security tests
- Active Data Guard Multi-instance media recovery - Start media recovery on multiple instance
- Data Guard DB compare
- Password file synchronization to standby
- Automatic Locking of Inactive User Accounts
- Upgrade process to latest Oracle release from 11.2.0.4 and 12.1.0.2
- Role-Based Conditional Auditing
- Explore new features like In-Memory on standby (read-only) databases
 - In-Memory on Active Data Guard
 - In-Memory join groups and cached expressions
 - Automatic Data Tiering



Oracle Database In-Memory

Data held in memory in a columnar data format

Speed up analytical queries

Analytics run faster on column format

In 12cR2 - the In-Memory option will be much smarter regarding the data to hold in memory versus which data is on disk

The column store will be a cache

Repopulating managed by least recently used algorithms using the Heat Map that has been introduced in Release 12.1



Figure 1. Oracle's unique dual-format architecture.

Oracle Database In-Memory

Currently in production for the newly developed AIS data warehouse (ERP, HR & Financial data)

Testing ongoing for LHCb experiment - bookkeeping application

Join groups feature very useful

With Database 12c release 2, In-Memory also possible on Active Data Guard stand-by database

Offloading analytic reporting to standby

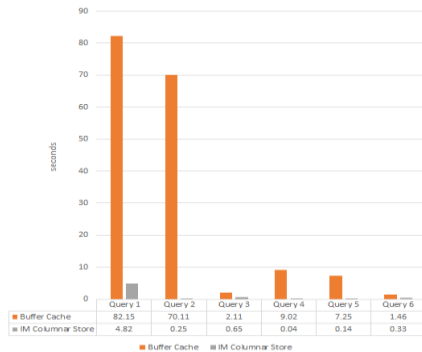
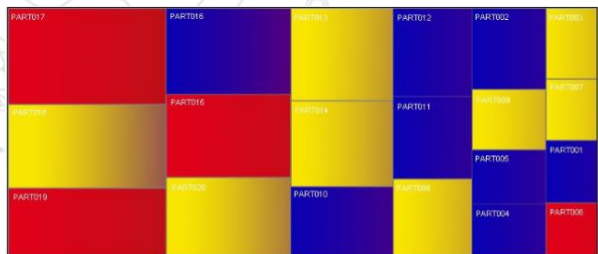
AWR will be available on Active Data Guard as well

Heat Map feature - the In-Memory option will be smart and able to load most frequently accessed data automatically

In-Memory Area becomes dynamic

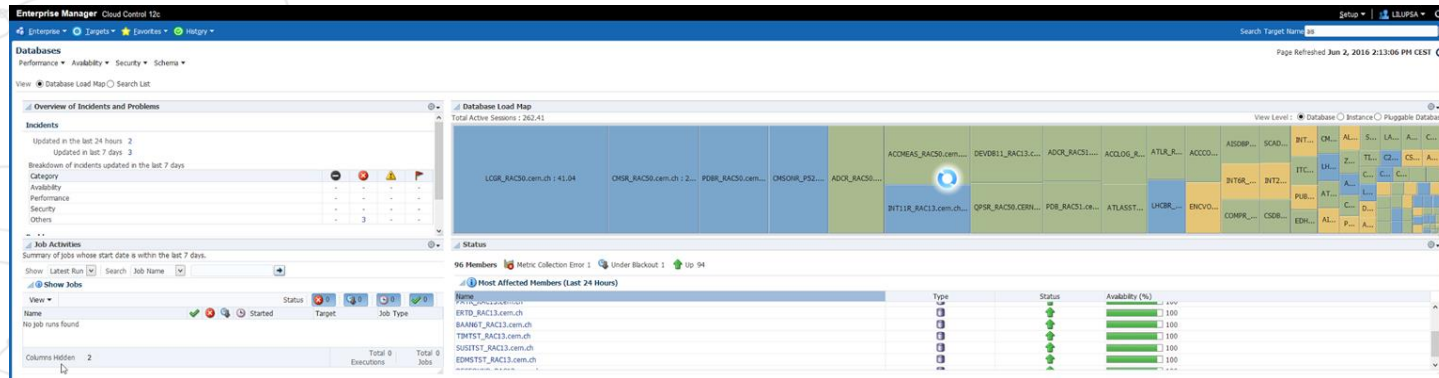
Increasing size is possible without any instance restart

In-memory expressions - automatic caching of results for most frequently used function calls and expressions



Oracle Enterprise Manager at CERN

- › Main monitoring tool for Oracle infrastructure



- › Improve end-users experience of CERN Applications by identifying and fixing performance issues (DB, MW)
- › Provide availability metrics to the CERN Service Availability status board for applications running on WebLogic servers
- › EM12c - current production service - Over 5500 monitored targets - over 300 hosts/agents

Oracle Enterprise Manager 13c

Oracle Enterprise Manager 13c announced at Oracle OpenWorld - “always on” monitoring

New capabilities and features have been evaluated

Always On Monitoring Service

Gold Image Based Agent Lifecycle Management - mass deploy updates with ease

Framework and Monitoring

User Defined Target Properties

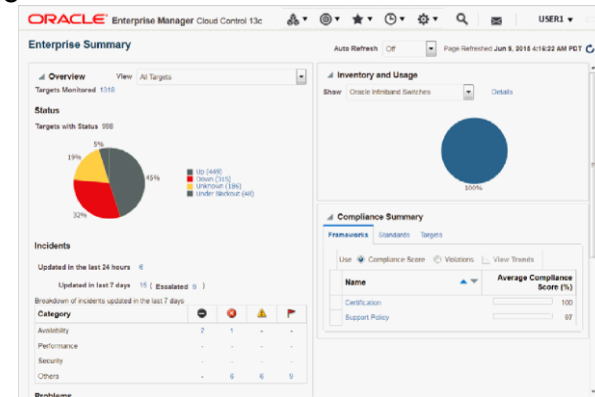
Incident Manager

Corrective Actions

Provided comprehensive feedback and reports to Oracle

Integrate with existing DB group systems and upgrading to Enterprise Manager 13c

Integration of the new Oracle Enterprise Manager 13c with the CERN Single Sign-On



Oracle EM 13c with CERN SSO

- Fine tune the security access
- What type of users can access :
 - CERN users
 - External users
- SSO - forget about configuration and delegation
- Redirect to the oem login page - <https://login.cern.ch/>
- Single point of trusted authentication
- 2 factor authentication - enhanced security

CERN Single Sign-On

Sign in with a CERN account, a Federation account or a public service account

Sign in with your CERN account

Reminder: you have agreed to comply with the CERN computing rules

Use credentials

Username or Email address Password

Remember Username or Email Address [Need password help ?](#)

Use one-click authentication

[Sign in using your current Windows/Kerberos credentials \[autologon\]](#)
Use your current authentication token. You need Internet Explorer on CERN Windows or Firefox on SLC (Firefox help here).

[Sign in using your Certificate \[autologon\]](#)
Use a EuGridPKI trusted certificate. Don't forget to first map your Certificate to your CERN Account.

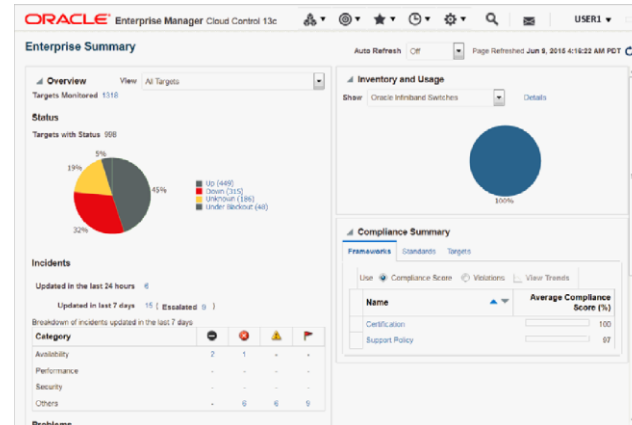
[Use strong two factor authentication \[show\]](#)

Sign in with a public service account

[Facebook, Google, Live, etc.](#)
Authenticate using an external account provider such as Facebook, Google, Live, Yahoo, Orange.

Sign in with your organization or institution account

[eduGAIN](#)



Questions

