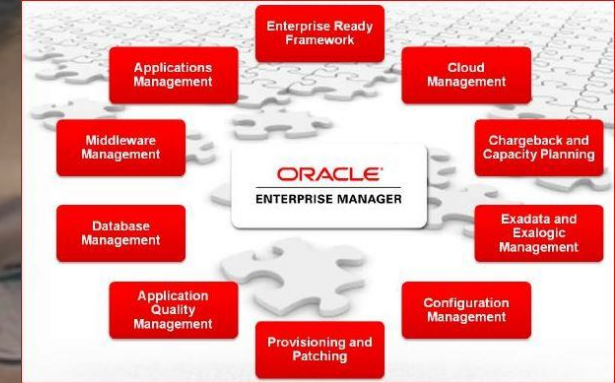


ORACLE®

Enterprise Manager- Empowering the DBA and all of IT

Enterprise Manager 12c, Release 4 and 5

Kellyn Pot'Vin-Gorman
Consulting Member of Enterprise Manager Technical Team
Strategic Customer Program
Dec, 2015



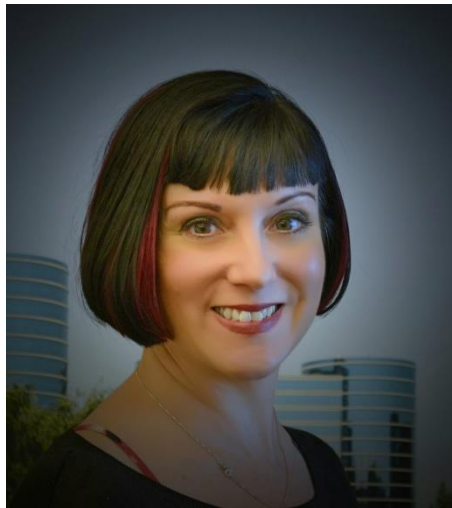
Safe Harbor Statement

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle's products remains at the sole discretion of Oracle.

Program Agenda

- 1 Who I Am in the Community
- 2 How I Got Here
- 3 Automation to Propel the DBA Forward
- 4 Incredible Features
- 5 12.1.0.5

About



(Former)



ORACLE
ACE Director

(Current)



about.me



Kellyn Pot'Vin

EM12c Goth Cowgirl



User Group Community Support

Involved with many User Groups and Meetups, (RMOUG, IOUG, ODTUG, UTOUG, NWOUG, OUGN, UNYOUUG, NoCOUG)

- Women in Tech Groups.
- Family “Learn to Code”, (Lady Coders, Devoxx4Kids, etc...)
- Introduction to Tech Careers for all age groups, Kindergarten through College.
- WIT Scholarships and Highschool attendees to RMOUG’s Yearly Technical Conference.
- Presenter, writer, blogger and social media maven.

Where'd the Women Go??

- Jr. DBA I started out with, left the industry after first 9 months as a database administrator.
- In 15 years, I've worked with 13 women, 52 men.
- 8 of the 13 women have left the industry, where only one of the men.
- Created a vacuum that drove me to support women in technology initiatives in the US and Europe.



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Where Did I Start?

- 1998 was desktop support.
- Created workstation installations with multiple 16-bit Oracle applications configured.
- Oracle requested a review of the configuration.
- Recommended send me to certification classes for database administration.



High End Performance DBA

- Note patterns that most others miss.
- Created unique and successful solutions for demanding environments
- Daily tasks require time to perform, but don't offer real value.
- So in turn, I automated to pay forward in time savings to allocate towards
- Allowing me to invest in learning new technologies.



Excellent Mentors

- RMAN, Scaling and Partitioning from Tim Gorman
- Optimization from the likes of Cary Millsap, Kerry Osborne and Craig Shallahammer
- ASH and AWR from Kyle Hailey, JB, Graham Wood, (and Tim Gorman)
- The optimizer from Maria Colgan
- Troubleshooting from Alex Gorbachev and Tanel Poder
- SQL Tuning from Karen Morton and Steven Feuerstein

Great teachers lead to great career opportunities and experience.

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How Environment Changes Required Me to Change

- Career changed from ONSITE DBA to [more often] REMOTE DBA groups
- Learned first hand how frustrating it could be to manage someone else's proprietary environments.
- How could I simplify my own environments for others to manage when I wasn't available?



“Go Away Before I Replace You With a Small and Efficient Shell Script”



Some Make it Difficult, Just to be Difficult...

- Some technical professionals like to make things complex as they believe
- it makes them an asset to the company.
- It really makes them a liability....



Why Automation is Important

- No longer did I want anyone to have to understand my scripting “style” and syntax, (especially at 3am in the morning.)
- Single Pane of Glass that wasn’t dependent on OS/App type.
- Secure, set up for correct access for remote DBA group.



Enterprise Management

Started with EM10g, automating:

- Backups
- Nightly jobs, (no more job “creep”!)
- Monitoring and alert notifications

The screenshot displays the Oracle Enterprise Manager 10g console interface. The browser address bar shows the URL `http://grid10g-4889/em/console/home`. The page title is "Oracle Enterprise Manager (SYSMAN) - Oracle Enterprise Manager Console Homepag". The main content area is titled "Oracle Enterprise Manager 10g Grid Control" and includes navigation tabs for "Home", "Targets", and "Deployments".

The "Overview" section shows "Total Monitored Targets 23" and "All Targets Status". A pie chart displays the status distribution: 59% (green), 41% (grey), and 5% (red). A legend indicates "Unknown(0)" and "Up(13)".

The "All Targets Alerts" section shows:

- Critical: 1
- Warning: 34
- Errors: 27

The "All Targets Policy Violations" section shows:

- Critical: 59
- Warning: 49
- Informational: 4

The "All Targets Jobs" section shows:

- Problem Executions (last 7 days): 0
- Suspended Executions (last 7 days): 0

The "Target Search" section includes a search dropdown set to "All".

The "Security Policy Violations" section shows:

- Critical: 59
- Warning: 49
- Informational: 1
- New in Last 24 Hours: 0

The "Critical Patch Advisories for Oracle Homes" section shows:

- Patch Advisories: 0
- Affected Oracle Homes: 0
- Oracle MetaLink Credentials: **Not Configured**

The "Deployments Summary" section shows:

- View: Database Installations
- Software Targets Without Inventory: 1 of 3

The "Database Installations" section shows:

- Oracle Database 10g 10.1.0.4.0

The status bar at the bottom of the page shows "Done".

Program Agenda

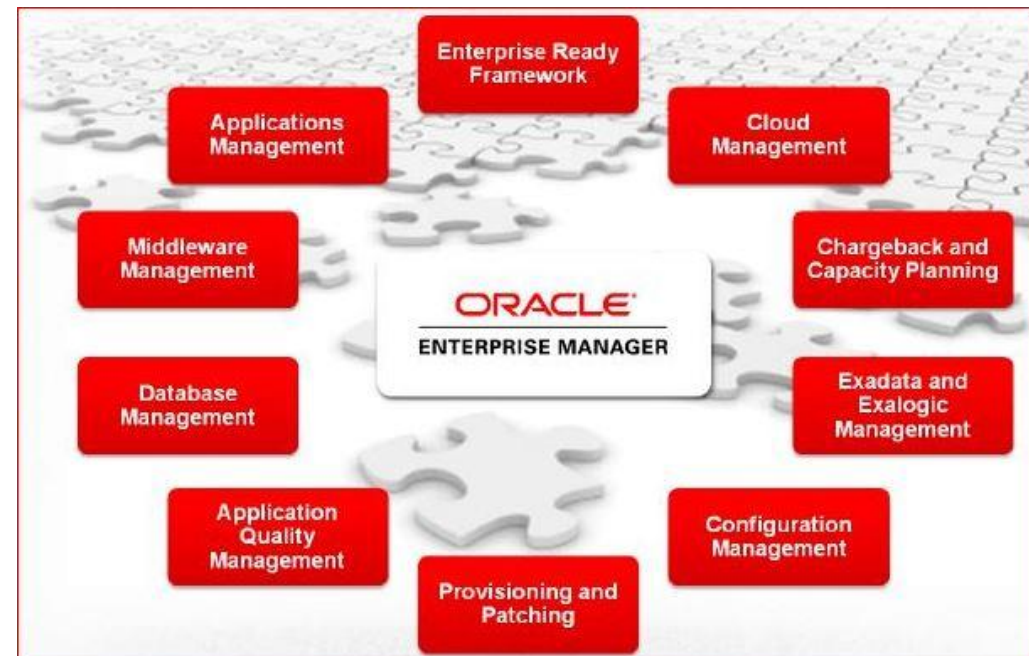
- 1 Who I Am in the Community
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Enterprise Manager 12c

Not just database tool, but Infrastructure tool.

How much more could I automate?

New ways to provide value to the business.



The Infrastructure Tool

- How much do you already use in your everyday DBA work
- How can this be used to create a new and better way to automate resource allocation so the DBA can do more with less?



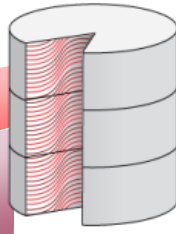
Automate and Enhance Everything

- Advanced Metric management, notifications and alerts.
- Automation through advanced job service.
- New Optimizations with Real Application Testing and Real User Experience, (RUEI)
- Full-feature cloud management, including chargeback and dashboard UI.
- Cloning and provisioning with Database as a Service that includes a Self-Service Portal.
- Schema refreshes automated via Schema as a Service, (SaaS)

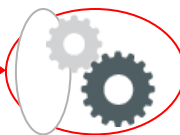
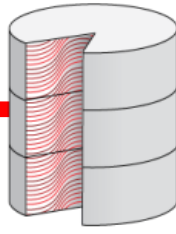
DBaaS “Snap Clone”

Production Database

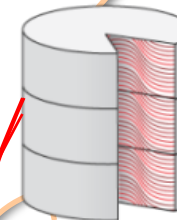
NAME	SSN	SALARY
AGUILAR	203-33-3234	40,000
BENSON	323-22-2943	60,000



Masking & Sub setting



Test Master Database



010110011
101001010
000111010

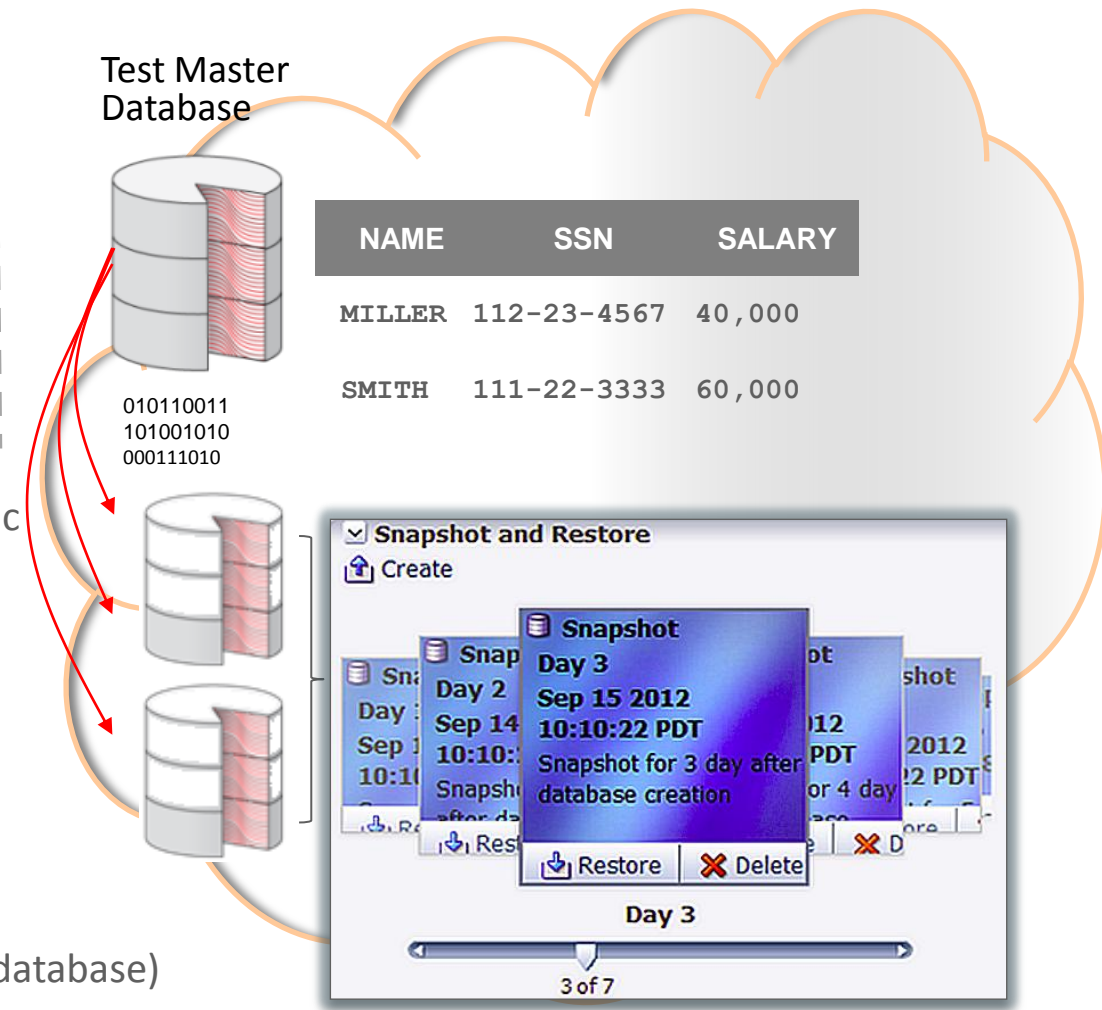
NAME	SSN	SALARY
MILLER	112-23-4567	40,000
SMITH	111-22-3333	60,000

• Features

- **Rapid** and **space efficient** cloning of large databases; **versions** 10g to 12c
- Supports **ALL storage vendors** and configurations (SAN and NAS)
- Integrated lifecycle management (**lineage and association tracking**)
- “**Rewind**” capability to restore and access past data

• Benefits

- Agile provisioning (minutes to clone TB sized database)
- Over 90% storage savings (KBs of additional space for cloning TB sized database)
- Reduced administrative overhead from integrated lifecycle management



Making a DBaaS Snapclone

Production



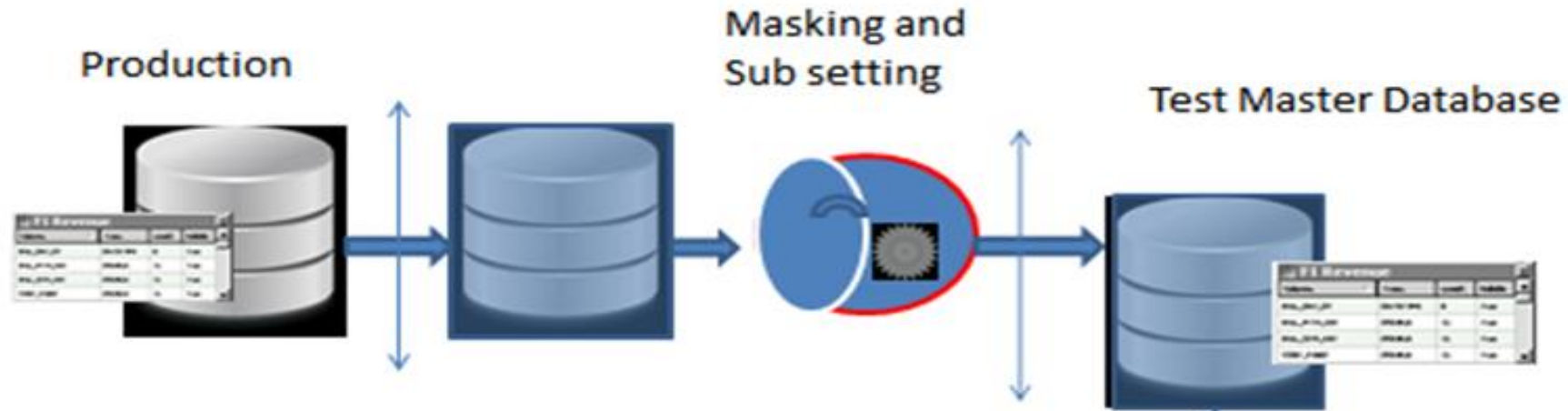
Making a DBaaS Snapclone



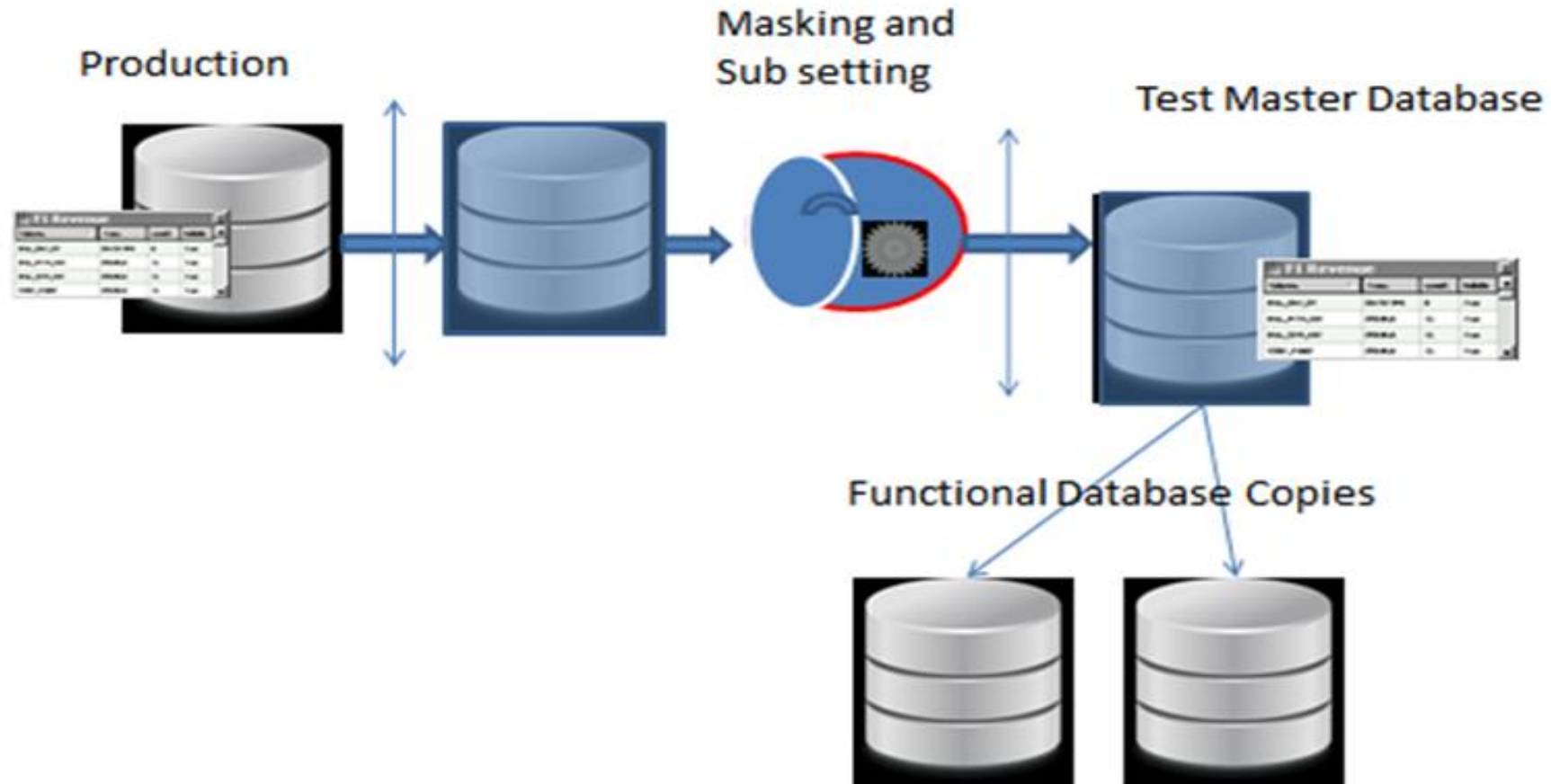
Making a DBaaS Snapclone



Making a DBaaS Snapclone



Making a DBaaS Snapclone



The Self Service Portal

Database Cloud Self Service Portal Page Refreshed Mar 31, 2014 3:54:05 PM EDT

Manage [My Servers](#) [My Databases](#) [My Middleware](#) [My Tests](#) My Preference

Home [Chargeback](#) View Real Time: Manual Refresh

Notifications

Databases Due to Expire in Next 7 Days 0

Service Templates Published in Last 7 Days 0

Usage

Databases: 2

Schema Services: 0

Pluggable Databases: 1

Memory: 1.54 GB

Storage: 6.93 GB

Database Service Instances

View [Request](#) [Delete](#)

Name	Instance Type	Instance Status	Start	End	Zone Name
dbas0001.us.oracle.com	Cluster Database	↑	Mar 21, 2014 2:25:32 PM EDT	Indefinitely	DBAAS_ZONE
Q4B001@dbas0001.us.oracle.com	Database Instance	↑	Mar 21, 2014 3:04:48 PM EDT	Indefinitely	DBAAS_ZONE
pdbs4.us.oracle.com_PDB000	Pluggable Database	↑	Mar 21, 2014 2:24:46 PM EDT	Indefinitely	DBAAS_ZONE

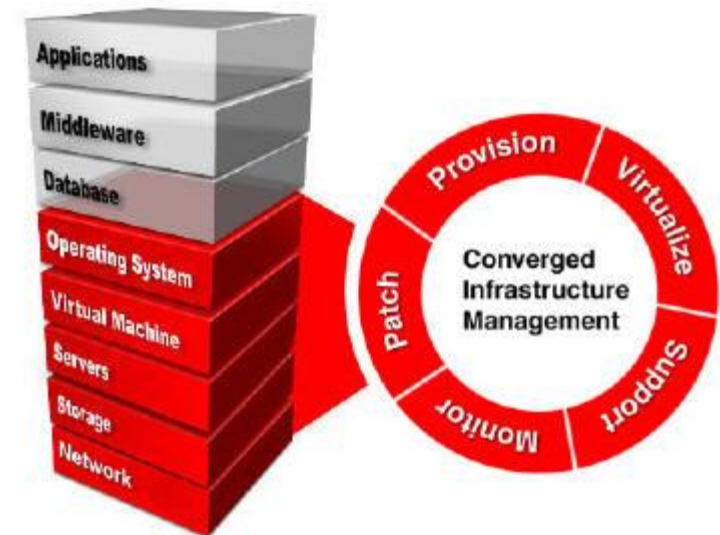
Requests

View [Reschedule](#) [Cancel](#) Search

Request ID	Name	Status	Service Instance	Request Type	Service Template	Submission Date
3481	DBAAS_DEMO - Fri Mar 21 2014 15:03:14 EDT_CREATE_4_47	Success	dbas0001.us.oracle.com	Create Service Instance	Snap Clone o	Mar 21, 2014 3:04:48 PM
3480	DBAAS_DEMO - Fri Mar 21 2014 14:25:19 EDT_CREATE_25_32	Success	dbas0001.us.oracle.com	Create Service Instance	Medium 112C	Mar 21, 2014 2:25:32 PM
3479	DBAAS_DEMO - Fri Mar 21 2014 14:24:12 EDT_CREATE_24_45	Success	pdbs4.us.oracle.com_PDB000	Create Service Instance	Small Financ	Mar 21, 2014 2:24:46 PM

Database LifeCycle Management Pack

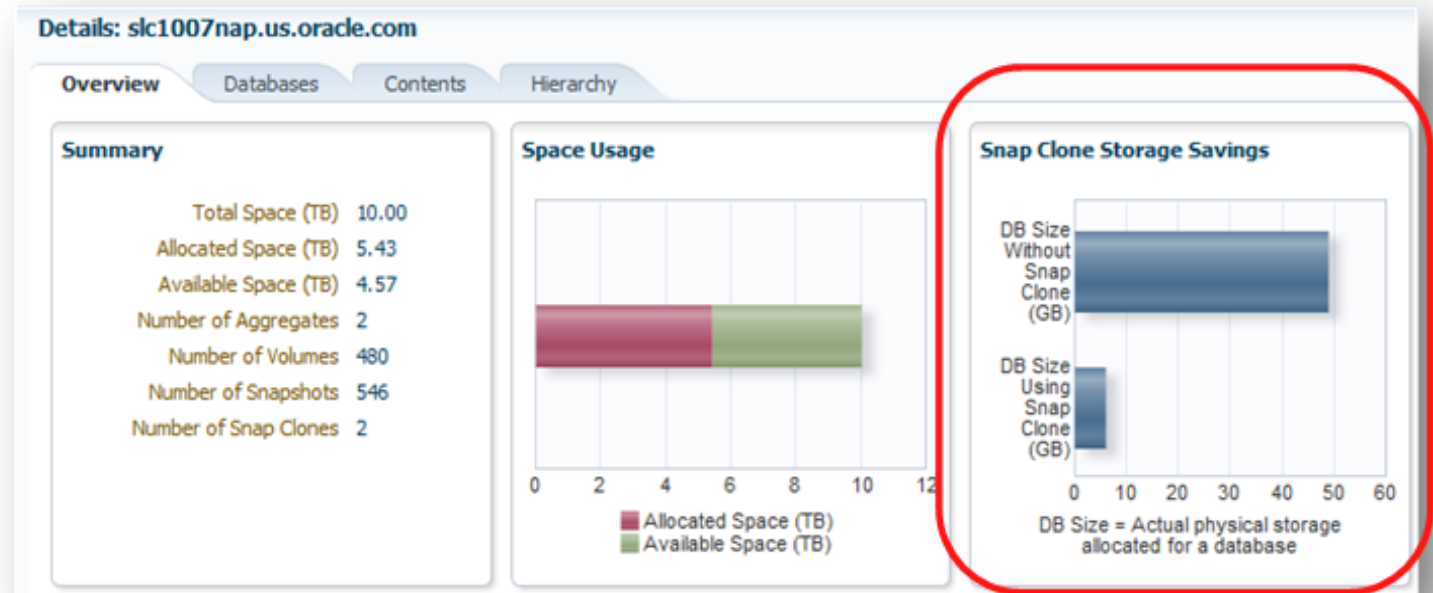
- Patching with minimal downtime, including Weblogic domains!
- Mass upgrade of databases using DBLM.
- Continual Delivery of single instance and multi-tenant databases that ease project resource constraints using provisioning.
- Compliance policies and reporting, including STIG!



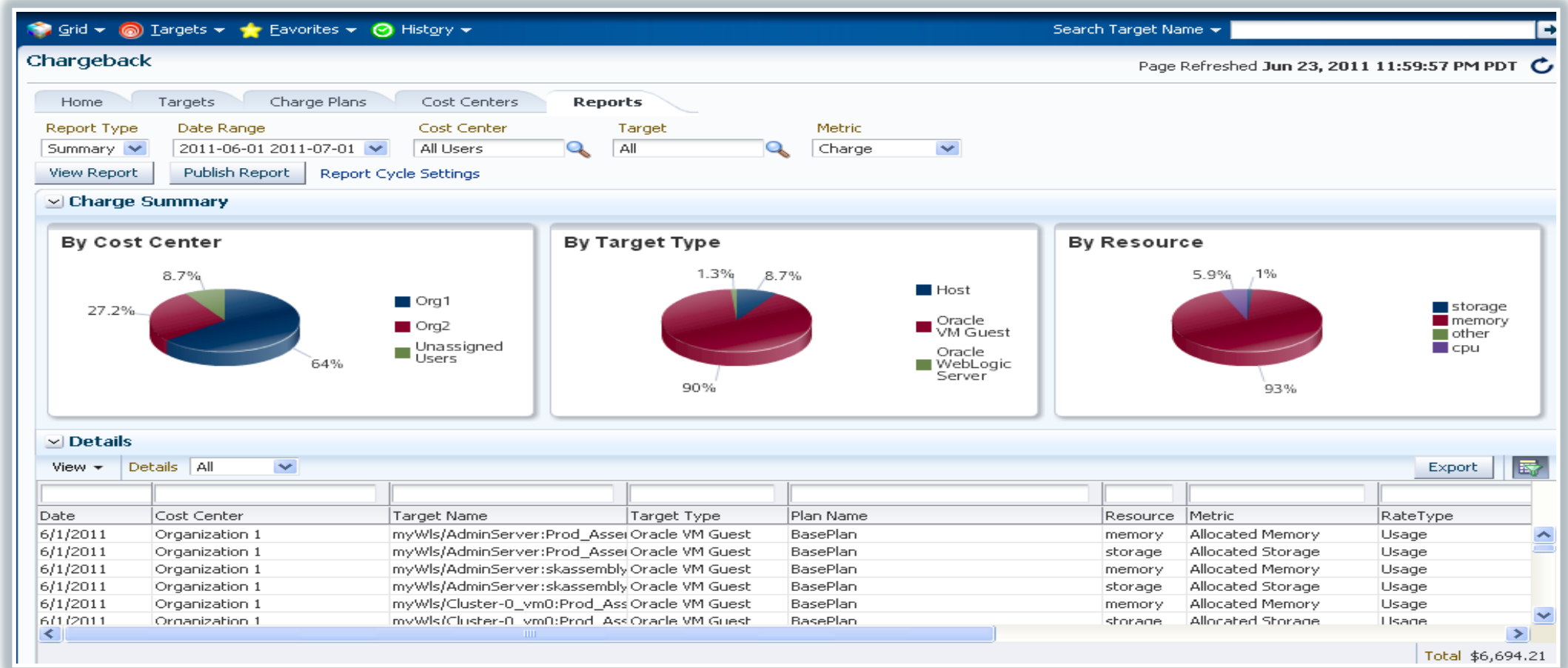
Snap Clone Analyzer

Demonstrates Actual Storage Savings

- Overview Tab
 - Storage summary and usage details
 - Snap Clone Storage Savings



Chargeback



Everything as a Service

First off- Self-Service Portal so the DBA is no longer the “road block”.

- Schema refreshes
- Database cloning
- JVM Diagnostics

No limitations on hardware platforms and with the assistance of scripts via Automatic**, even app tier clones!

Cloud Management Pack

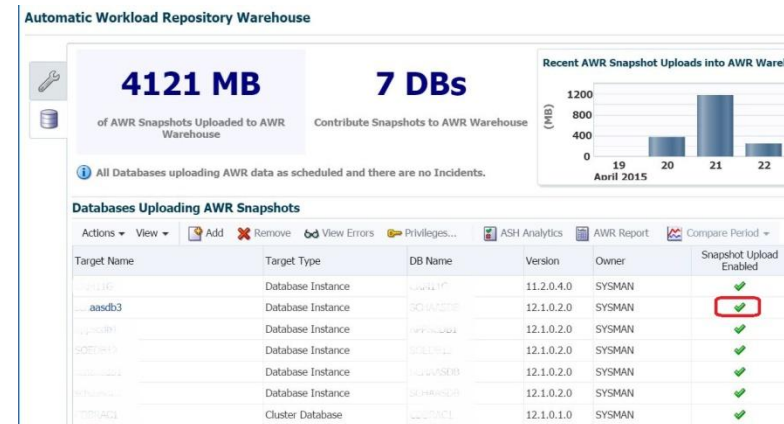
- Build your own private or public cloud, including metering and chargeback!
- Chargeback- it's not just for cloud!
- Database as a Service! Making the most out of your resources by making others responsible.
- Role-based access- secure and quotas to ensure resources aren't overburden.
- Consolidation Planning.
- RESTful API and CLI for Programmatic Access



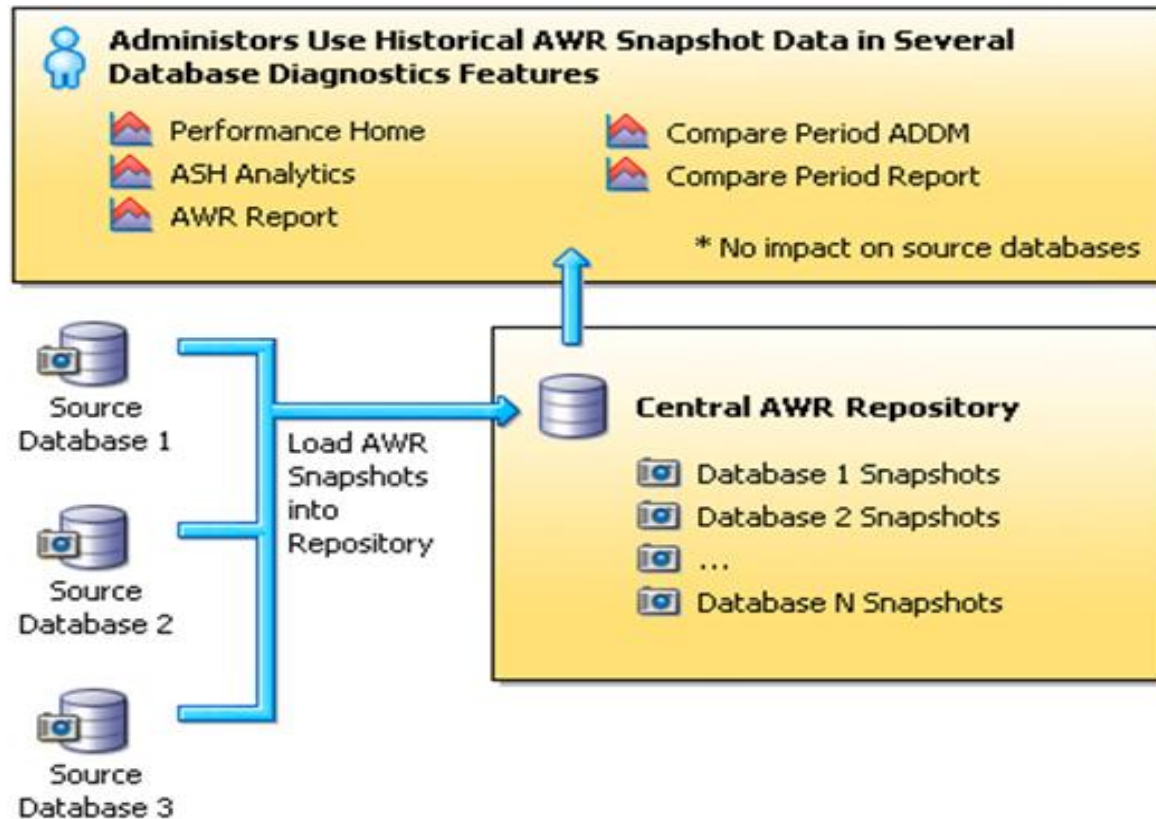
AWR Warehouse

- Centralized AWR, offloading all database AWR data to a secondary environment.
- Simple and efficient ETL that uses an agent to agent push to the AWR host and then load the data.
- AWR objects are then partitioned by DBID/SnapID or combination of both to allow for best performance.

- AWR Mining taken to a whole new level!!

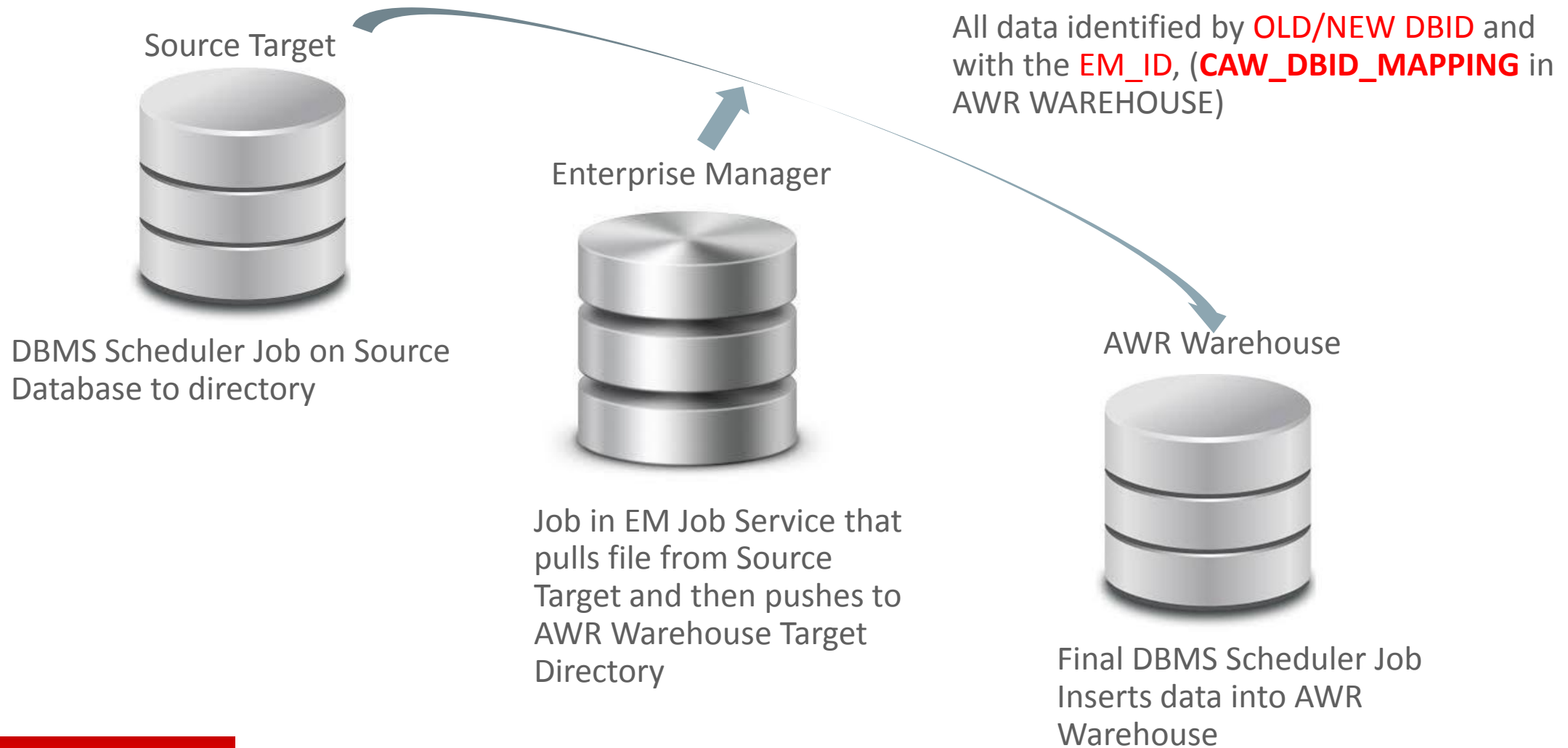


AWR Warehouse - Architecture



- Central warehouse configured for long term AWR data retention
- Historical and ongoing AWR snapshots collected from databases enabled for AWR warehouse
- ETL jobs moves snapshots from source databases into AWR warehouse
- Retention period configurable for weeks, months, years or indefinite retention (default)

AWR ETL Jobs



AWR Performance Features

Databases Uploading AWR Snapshots										
Actions ▾	View ▾	Add	Remove	View Errors	Privileges...	ASH Analytics	AWR Report	Compare Period ▾	Performance Home	
Target Name	Target Type	DB Name	Version	Owner	Snapshot Upload Enabled	Oldest				

- ASH Analytics
- AWR Report
- Comparison Period, (aka ADDM Comparison)
- Database Performance Home

Performing a Comparison

ggr1

Oracle Database Performance Availability Security Schema Administration

Run Compare Period ADDM

Step 1: Select a Comparison Period

Time Zone GMT-07:00

Begin Time Jul 1, 2014 12:00:10 PM

End Time Jul 1, 2014 1:00:08 PM

TIP Time will be adjusted to the capture time of the closest snapshot

Step 2: Select a Base Period

Database 3373983684

Time Zone GMT-07:00

Offset

Offset Preceding Period

Baseline

Baseline

Customize

Begin Time Jul 8, 2014 12:00:51 PM

End Time Jul 8, 2014 1:00:14 PM

Yes, you can compare one snapshot against another snapshot in DIFFERENT database! 😊

Database 3373983684

CAW_DBID_MAPPING Table

```
SQL> desc dbsnmp.caw_dbid_mapping;
```

Name	Null?	Type
MAPPING_ID		NUMBER (38)
EM_ID		NUMBER
TARGET_NAME		VARCHAR2 (266)
TARGET_TYPE		VARCHAR2 (64)
OLD_DBID		NUMBER
NEW_DBID		NUMBER

Most important table for anyone querying the AWR Warehouse!



Querying the AWR Warehouse Tips

Update Scripts with DBID identified to filter.

Join:

- CAW_DBID_MAPPING on OLD_DBID/NEW_DBID=DBID
- CAW_DBID_MAPPING on TARGET_NAME=TARGET_NAME

How Current AWR Queries Change

```
from dba_hist_sys_time_model stm, dba_hist_snapshot s, gv$parameter p, dbsnmp.caw_dbid_mapping m

where stm.stat_name in ('DB CPU','background cpu time')

and LOWER(m.target_name)= '&dbname'

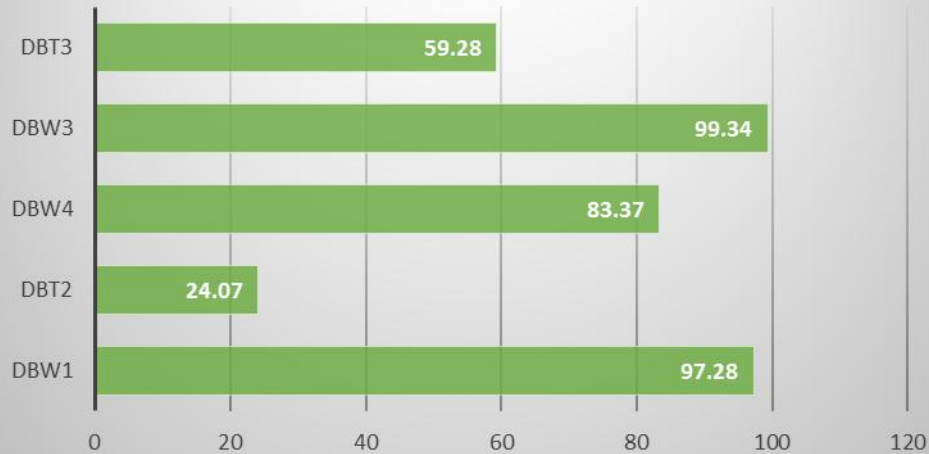
and s.dbid= m.new_dbid and s.snap_id = stm.snap_id

and s.dbid = stm.dbid and s.instance_number = stm.instance_number

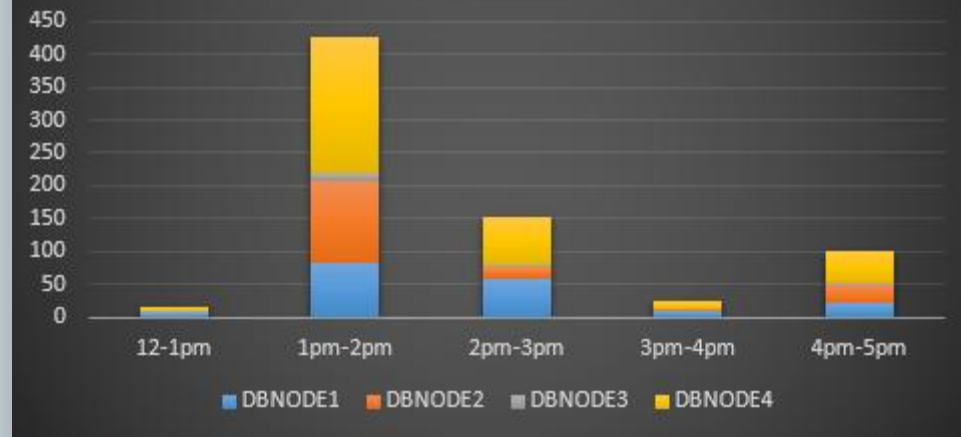
and p.name = 'cpu_count' and p.inst_id = s.instance_number)
```

Answer Specific IT Questions

Average Weekly Offload Pct Efficiency



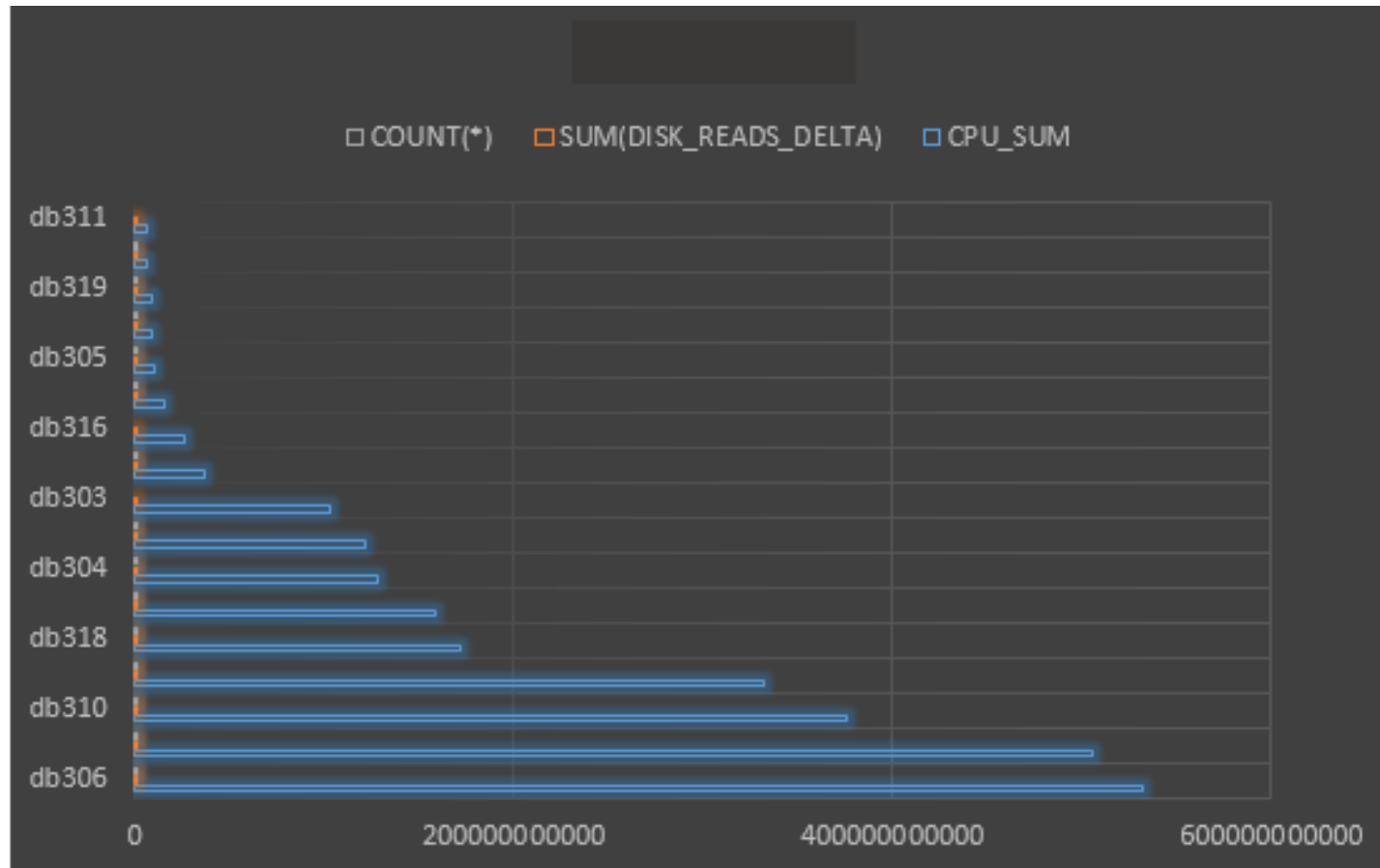
Wait for CPU % During High Session Count



Updating Existing AWR Queries to Go Across Hosts

```
select * from (  
  select  
    m.target_name,  
    sum(CPU_TIME_DELTA),  
    sum(DISK_READS_DELTA),  
    count(*)  
  from  
    DBA_HIST_SQLSTAT a, dba_hist_snapshot s, dba_hist_database_instance di, dbsnmp.caw_dbid_mapping m  
    where di.host_name='&host'  
    and di.dbid in m.new_dbid  
    and m.new_dbid = a.dbid  
    and a.snap_id = s.snap_id  
    and s.begin_interval_time > sysdate -120  
    group by m.target_name  
  order by  
    sum(CPU_TIME_DELTA) desc)
```

Graphing CPU Usage Per DB for One Host



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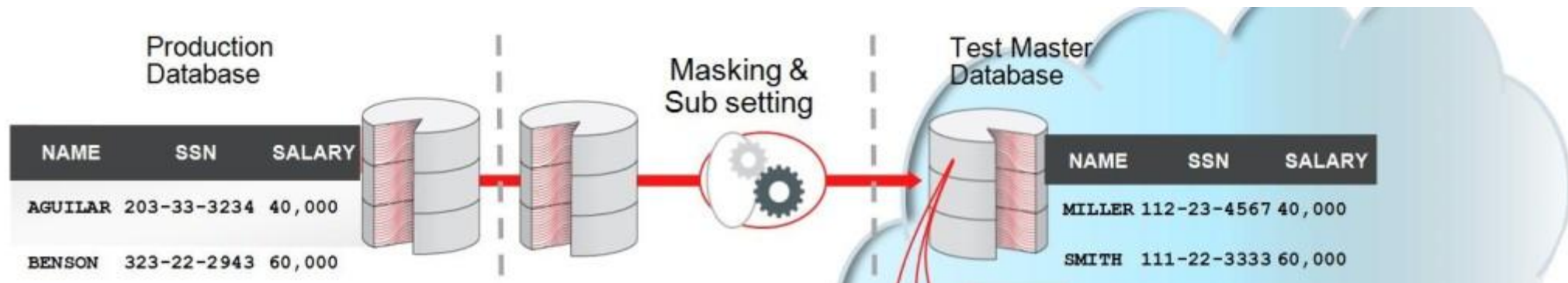
12.1.0.5 and the Hybrid Cloud

- Single pane of glass approach.
- Using Database as a Service, ability to create snapclones from local hosts to the cloud AND back.
- Same monitoring templates, patching, tuning and other tasks that are performed on-premise, can easily be performed in the cloud!
- Hybrid Cloud Gateway to ensure easy connectivity for on-premise EM12c to the cloud.



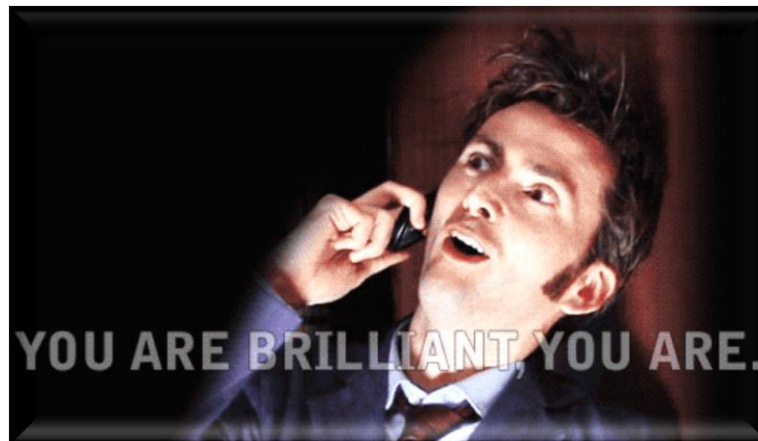
Datamasking Between Production and the Cloud

- Cost Savings via cloning on-premise to the cloud for test, QA and development.
- Protect key sensitive data from production by implementing datamasking and subsetting before cloning to the test master database in the cloud.
- Ability to simply clone both directions- on-premise to cloud, cloud to on-premise



What This Means for the Future of the Database Admin

- You're not out of a job.
- The tedious will become automated.
- Your job will become more interesting and challenging.
- You will no longer be a resource constraint to projects and deadlines.
- You will be happier, the business will be more successful and we all will prosper!



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<http://twitter.com/dbakevlar>



Linked In

<http://linkedin.com/in/kellynpotvin>



My blog

<http://dbakevlar.com>



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