



Oracle Configuration Discrepancies Check

*Ensuring Consistency Between Runtime Setup and
Configuration Management Data*

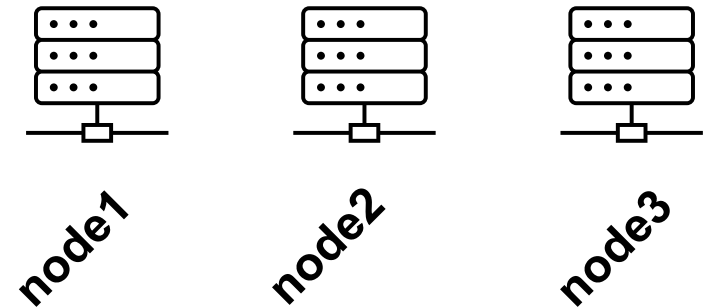
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Introduction

Databases at CERN

- ORACLE service provides 100 databases to the CERN community
- RAC Databases
 - Run across multiple servers (nodes) in a cluster
 - Each node runs an instance of the Oracle database
- Database runs from a specific path; environment changes require updates



LDAP

Repository used by automation and scripts

The screenshot shows an LDAP Browser window with the following structure:

- LDAP - SC-ENTITY=aisbip_ais2_rac55, SC-CATEGORY=entities, ou=syscontrol, dc=cern, dc=ch - syscontrol
- LDAP Browser
 - SC-ENTITY=AIS_NRAc_crs
 - SC-ENTITY=aisbid2_clone
 - SC-ENTITY=aisbip_ais2_rac55 (6)
 - SC-CATEGORY=db-addresses (9)
 - SC-CATEGORY=hosts (2)
 - SC-HOST-NAME=...
 - SC-HOST-NAME=...
 - SC-CATEGORY=nfs-volumes (11)
 - SC-CATEGORY=ping-entities (1)
 - SC-PING-ENTITY-ID=1
 - SC-CATEGORY=tnsnetservices (7)
 - SC-TNS-NET-SERVICE-NAME=AISBI_IRIS_PROD
 - SC-TNS-NET-SERVICE-NAME=AISBI_SERVICE_PROD
 - SC-TNS-NET-SERVICE-NAME=AISBIHA_SERVICE_PROD
 - SC-TNS-NET-SERVICE-NAME=AISBIP
 - SC-TNS-NET-SERVICE-NAME=aisbip_ais2_rac55
 - SC-TNS-NET-SERVICE-NAME=AISBIP_FIREWALL
 - SC-TNS-NET-SERVICE-NAME=DATAHUB_SERVICE_PROD
 - SC-CATEGORY=tnsnetservices-local (5)
 - SC-TNS-NET-SERVICE-NAME=AISBI_IRIS_PROD
 - SC-TNS-NET-SERVICE-NAME=AISBI_SERVICE_PROD
 - SC-TNS-NET-SERVICE-NAME=AISBIHA_SERVICE_PROD
 - SC-TNS-NET-SERVICE-NAME=aisbip_aisbi_rac52
 - SC-TNS-NET-SERVICE-NAME=DATAHUB_SERVICE_PROD
 - SC-ENTITY=aisbip_devdbs2_rac17
 - SC-ENTITY=aisbit2_clone
 - SC-ENTITY=aisbdb2_clone
 - SC-ENTITY=aisdbp_ais1_rac55
 - SC-ENTITY=aisdbp_ais_nrac
 - SC-ENTITY=aisdbp_devdbs2_rac17
 - SC-ENTITY=aisdbs_aistest_rac16
 - SC-ENTITY=aisdbt2_clone
 - SC-ENTITY=AISTEST3_RAC16_crs
 - SC-ENTITY=AISTEST_RAC16_crs
 - SC-ENTITY=alextest_rac52
 - SC-ENTITY=alionr_alionr_dcsrac

The right pane shows the details for the entry `SC-ENTITY=aisbip_ais2_rac55`:

DN: SC-ENTITY=aisbip_ais2_rac55, SC-CATEGORY=entities, ou=syscontrol, dc=cern, dc=ch

Attribute	Description	Value
objectClass		SC-ORACLE-RDBMS-SERVICE (structural)
SC-ENTITY		aisbip_ais2_rac55
SC-AUTOMATIC-STARTUP		no
SC-CATEGORY		ORADB
SC-CONFIGURATION-DIRECTORY		/ORA/dbs01/syscontrol
SC-DB-ADMIN-LOG-LOCATION		/ORA/dbs01/syscontrol/local/logs
SC-DB-COMPILED-PLATFORM		64
SC-DB-CRS-REFERENCE		AIS2_RAC55_crs
SC-DB-DATABASE-NAME		AISBIP
SC-DB-DATAFILE-LOCATION		/ORA/dbs03/AISBIP/datafile
SC-DB-DBID		1488053994
SC-DB-EXPORT-LOCATION		/ORA/dbEXP
SC-DB-EXPORT-LOG-LOCATION		/ORA/dbs01/syscontrol/local/logs/dbEXP
SC-DB-LOG-LOCATION		/ORA/dbs00/AISBIP/bdump
SC-DB-ORAINST-LOC		/ORA/dbs01/oracle/product/rdbms/orainst.loc
SC-DB-SPPFILE-LOCATION		/ORA/dbs00/AISBIP/spfile
SC-DB-TEMP-FILE-SIZE		-1
SC-DB-TNSNAMES		tnsnames.ora
SC-DB-TNSNAMES-LOCATION		/ORA/dbs01/oracle/product/rdbms19170_cern1/network/admin
SC-DB-UNIQUE-NAME		AISBIP_AIS2_RAC55
SC-DOMAIN		AISDB
SC-EM-TARGET-NAME		AISBIP.WORLD_AISBIP1
SC-EM-TARGET-NAME		AISBIP.WORLD_AISBIP2
SC-LOGS-OWNER		oracle
SC-MONIT-SMS		true
SC-ORACLE-HOME		/ORA/dbs01/oracle/product/rdbms1923_cern1
SC-OS		Linux
SC-PROFILE		tabxml_generated
SC-PROFILE-TEMPLATE		COMMON_ORA__COMMON_RDBMS__PERL_11_2_0.j2
SC-PROJECT		CET
SC-RMAN-ARCHIVE-POLICY		none
SC-RMAN-BACKUP		normalD
SC-RMAN-COMMAND-DIR		/ORA/dbs01/syscontrol/projects/rman/cmd/rman_templates
SC-RMAN-COMMENT		24.03.2015
SC-RMAN-HOST		...
SC-RMAN-PITR-RETENTION		62
SC-RMAN-RECO		1
SC-RMAN-RECOVERCOPY-DELAY		0

Running Configuration

```
# [ oracle@aisbi-00001:/ORA/dbs01/oracle/home [11:39:39] [19.21.0.0.0 [GRID] SID=GRID] 0 ] #  
$ srvctl config database  
AISBIP_AIS2_RAC55
```

```
# [ oracle@aisbi-00001:/ORA/dbs01/oracle/home [11:39:40] [19.21.0.0.0 [GRID] SID=GRID] 0 ] #  
$ srvctl config database -d AISBIP_AIS2_RAC55  
Database unique name: AISBIP_AIS2_RAC55  
Database name: AISBIP  
Oracle home: /ORA/dbs01/oracle/product/rdbms1923_cern1  
Oracle user: oracle  
Spfile: /ORA/dbs03/AISBIP_AIS2_RAC55/spfileAISBIP.ora  
Password file: /ORA/dbs03/AISBIP_AIS2_RAC55/orapwAISBIP  
Domain: cern.ch  
Start options: open  
Stop options: immediate  
Database role: PRIMARY  
Management policy: AUTOMATIC  
Server pools:  
Disk Groups:  
Mount point paths:  
Services: aisbi_service_prod,aisbiha_service_prod,AISBIP,datahub_service_prod,IRIS,itdb_dbr_archive_log_backup
```

OEM

Monitoring tool for databases

ORACLE Enterprise Manager Cloud Control 13c

Databases

Performance ▾ Availability ▾ Security ▾ Schema ▾ Administration ▾

View Database Load Map Search List

▲ Search

Find Name

View ▾ + Add ▾ ✕ Remove Configure

Name	Type	Status	Target Version
▶️ ADCH_ADCRNEW_RAC52.cern.ch	Cluster Database : Physical Standby	↑	19.21.0.0.0
▶️ ADCR_ADCRNEW_RAC54	Cluster Database : Primary	↑	19.21.0.0.0
▶️ AISBID2_CLONE.cern.ch	Cluster Database	↑	19.23.0.0.0
▲ AISBIP_AIS2_RAC55.cern.ch	Cluster Database : Primary	↑	19.23.0.0.0
▲ Instances		N/A	
AISBIP_AIS2_RAC55.cern.ch_AISBIP1	Database Instance : Primary	↑	19.23.0.0.0
AISBIP_AIS2_RAC55.cern.ch_AISBIP2	Database Instance : Primary	↑	19.23.0.0.0
▲ Services		N/A	
aisbi_service_prod	Oracle Database Service	↑	19.23.0.0.0
aisbiha_service_prod	Oracle Database Service	↑	19.23.0.0.0
AISBIP	Oracle Database Service	↑	19.23.0.0.0
AISBIP_AIS2_RAC55.cern.ch_1	Oracle Database Service	↑	19.23.0.0.0

Introduction

Monitoring Challenges

- Constantly changing environment
- Updates required in both OEM and LDAP
- Issues when updates fail or are done manually
 - OEM might report the database as down while it is actually up
 - Synchronization issues between running information and metadata repositories

Example

TARGET_NAME	LDAP Configuration	Running Configuration	OEM Configuration
AIS1-RAC52	crs1921_cern1	crs1921_cern1	crs1921_cern1
AIS1-RAC54	crs1923_cern1	crs1923_cern1	crs1923_cern1
AIS1-RAC55	crs1921_cern1	crs1921_cern1	crs1921_cern1
CMS-CMSRAC	crs19180_cern1	crs19180_cern1	crs1921
...

Objective

Overview of the Project Aim

- Avoid issues with monitoring and script functionality
- Ensure synchronization of running information and metadata repositories
- Detect discrepancies between running setup and configuration.
- Prepare and send a report to DBA team

Tools and Methods

What is Rundeck ?

- Rundeck Automation Tool
 - Connects to servers
 - Easily run automation tasks across a set of nodes
 - Already configured within the team

Tools and Methods

What is Rundeck ?

Database

Database clone refresh (or creation)

Options:

SRC_db_unique_name:
AISBIP_DEVDBS2_RAC17

clone_unique_name:
AISBIT2_CLONE

allow_no_backup:
TRUE

operation_mode:
REFRESH

size_GB:
200

Succeeded 0.13:15 at 5/28 10am

you

825a06a8

#191820

Run Again

Log Output »

100% 3/3 COMPLETE 0 FAILED 0 INCOMPLETE 0 NOT STARTED

Node	Start time	Duration
All Steps OK		
Initialization (local on Rundeck node)	10:20:45 am	0.00:00
get-hosts-from-db-unique-name	10:20:45 am	0.00:00
Global Variable	10:20:46 am	0.00:00
Global Variable	10:20:47 am	0.00:00
Global Variable	10:20:47 am	0.00:00
Get first host fqdn	10:20:47 am	0.00:00
All Steps OK		
backup-clone	10:20:47 am	0.01:29
cleanup-clone	10:22:17 am	0.01:33

Proposed Solution

- Rundeck job
 - Get data from OEM and LDAP
 - Get the Running Configuration from servers
- Python and Bash script
 - Consolidate all the information in a database
 - Create a email report

Data Sources

How to do it ?

- LDAP
 - vegas-cli
- Running Configuration
 - Access olr.loc file
 - crsctl
- OEM
 - Connect directly to Oracle Repository

Challenges

- Data preprocessing and cleaning required

	ENTITY	NAME	VERSION	ORACLE_HOME
Running Configuration	RAC	DEVDB19U_DEVDBS_RAC17	rdbms1923_cern1	/ORA/dbs01/oracle/product/rdbms1923_cern1
LDAP	RAC	devdb19u_devdbs2_rac17	rdbms1923_cern1	/ORA/dbs01/oracle/product/rdbms1923_cern1
OEM	rac_database	DEVDB19U_DEVDBS_RAC17.cern.ch	rdbms1923_cern1	/ORA/dbs01/oracle/product/rdbms1923_cern1
	oracle_database	DEVDB19U_DEVDBS1_RAC17.cern.ch_DEVDB19U1	rdbms1923_cern1	/ORA/dbs01/oracle/product/rdbms1923_cern1
	oracle_database	DEVDB19U_DEVDBS1_RAC17.cern.ch_DEVDB19U2	rdbms1923_cern1	/ORA/dbs01/oracle/product/rdbms1923_cern1

LDAP Discrepancies

	SC_SUBCATEGORY	SC_ENTITY	SC_VERSION	SC_HOME_PATH
1	CMAN	CMAN_ATLAS01_PROD	12.1.0.1.0	/ORA/dbs01/oracle/product/cman1940
2	CMAN	CMAN_GEN01_PROD	12.1.0.1.0	/ORA/dbs01/oracle/product/cman
3	RAC	POSTM_TN02_RAC54	rdbms19170_cern2	/ORA/dbs01/oracle/product/rdbms1921_cern2
4	RAC	CSDBC1_CLONE	rdbms19123_cern1	/ORA/dbs01/oracle/product/rdbms1923_cern1
5	RAC	INT2R_INTDBS_RAC16	rdbms1921_cern0	/ORA/dbs01/oracle/product/rdbms1921_cern
6	RAC	ATLR_ATLR_RAC54	rdbms1921_cern2	/ORA/dbs01/oracle/product/rdbms19121_cern2
7	CRS	INTDBS_RAC17	oracle-crs-crs1923_cern1.x86_64	/CRS/dbs01/crs1923_cern1
8	CRS	TESTDBS_RAC17	oracle-crs-crs1923_cern1.x86_64	/CRS/dbs01/crs1923_cern1
9	CRS	ACC_RAC17	oracle-crs-crs1923_cern1.x86_64	/CRS/dbs01/crs1923_cern1
10	CRS	DEVDBS1_RAC17	oracle-crs-crs1923_cern1.x86_64	/CRS/dbs01/crs1923_cern1

OEM Discrepancies

OEM_DB_UNIQUE_NAME	OEM_DB_HOME_PATH	OEM_DB_INSTANCE_NAME	OEM_DB_INSTANCE_HOME_PATH
EDHP_AIS_NRAC	/ORA/dbs01/oracle/product/rdbms19170_cern1	EDHP_AIS_NRAC_EDHP1	/ORA/dbs01/oracle/product/rdbms1923_cern1
EDHP_AIS_NRAC	/ORA/dbs01/oracle/product/rdbms19170_cern1	EDHP_AIS_NRAC_EDHP2	/ORA/dbs01/oracle/product/rdbms1923_cern1
WCERNP_AIS_NRAC	/ORA/dbs01/oracle/product/rdbms19170_cern1	WCERNP_AIS_NRAC_WCERNP1	/ORA/dbs01/oracle/product/rdbms1923_cern1
WCERNP_AIS_NRAC	/ORA/dbs01/oracle/product/rdbms19170_cern1	WCERNP_AIS_NRAC_WCERNP2	/ORA/dbs01/oracle/product/rdbms1923_cern1
KITRYDB_AIS1_RAC52	/ORA/dbs01/oracle/product/rdbms19170_cern1	KITRYDB_AIS1_RAC52_KITRYDB1	/ORA/dbs01/oracle/product/rdbms1923_cern1
AISDBP_DEVDBS2_RAC17	/ORA/dbs01/oracle/product/rdbms1921_cern2	AISDBP_DEVDBS2_RAC17_AISDBP1	/ORA/dbs01/oracle/product/rdbms1923_cern1
AISDBP_DEVDBS2_RAC17	/ORA/dbs01/oracle/product/rdbms1921_cern2	AISDBP_DEVDBS2_RAC17_AISDBP2	/ORA/dbs01/oracle/product/rdbms1923_cern1
PAYD_AISTEST_RAC16	/ORA/dbs01/oracle/product/rdbms1921_cern2	PAYD_AISTEST_RAC16_PAYD1	/ORA/dbs01/oracle/product/rdbms1923_cern1
PAYD_AISTEST_RAC16	/ORA/dbs01/oracle/product/rdbms1921_cern2	PAYD_AISTEST_RAC16_PAYD2	/ORA/dbs01/oracle/product/rdbms1923_cern1

Discrepancies

NAME	LDAP_HOME_PATH	RC_HOME_PATH	OEM_HOME_PATH
ACC_RAC17	/CRS/dbs01/crs1923_cern1	/CRS/dbs01/crs1923_cern1	(null)
CSDB_TESTDBS_RAC16_CSDB1	/ORA/dbs01/oracle/product/rdbms19170_cern1	/ORA/dbs01/oracle/product/rdbms1921_cern2	/ORA/dbs01/oracle/product/rdbms1923_cern1
CSDB_TESTDBS_RAC16_CSDB2	/ORA/dbs01/oracle/product/rdbms19170_cern1	/ORA/dbs01/oracle/product/rdbms1923_cern1	/ORA/dbs01/oracle/product/rdbms1923_cern1
EMREPP_CLUSTER	(null)	(null)	/CRS/dbs01/crs19180
INFORLND_AISTEST_RAC16_INFORLND1	/ORA/dbs01/oracle/product/rdbms18110_jvm18110_cern1	/ORA/dbs01/oracle/product/rdbms1923_cern1	/ORA/dbs01/oracle/product/rdbms18110_jvm18110_cern1
INFORLNT_AISTEST_RAC16	/ORA/dbs01/oracle/product/rdbms1923_cern1	/ORA/dbs01/oracle/product/rdbms1923_cern1	/ORA/dbs01/oracle/product/rdbms1921_cern2
INTDB11_INTDBS_RAC16_INTDB111	/ORA/dbs01/oracle/product/rdbms1921_cern0	/ORA/dbs01/oracle/product/rdbms1921_cern2	/ORA/dbs01/oracle/product/rdbms1921_cern0
PAYP_AIS3_RAC55	/ORA/dbs01/oracle/product/rdbms1923_cern1	(null)	/ORA/dbs01/oracle/product/rdbms19170_cern1

Next improvements



Prepare HTML discrepancies report



Send email notifications



Automate discrepancy fix



Thank you!

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