

The three investigators

An Introduction to OraChk, TFA and DBSAT

Markus Flechtner



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■ About Markus Flechtner

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- Discipline Manager Infrastructure Database @Trivadis
- Working with Oracle since the 1990's
 - Development (Forms, Reports, PL/SQL)
 - Support
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 - O-NF12CDBA – Oracle 12c New Features for the DBA



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 RAC SIG
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■ Agenda

1. Overview
2. OraChk
3. TFA
4. DBSAT
5. Summary

Overview

■ Oracle database tools ..

■ During the last years, Oracle has released a number of additional database tools, like:

■ OraChk

– Checks an Oracle installation against Oracle best practices

■ TFA (Trace File Analyzer Collector)

– Originally: collecting log and trace files

– Now: Central tool of the "Oracle Support Tools Bundle"

– Included in Grid Infrastructure 11.2.0.4+12.1.0.2 and higher and RDBMS 12.2.0.1

■ DBSAT

– Database Security Assessment Tool

■ Oracle Support Tools Bundle (1)



- Collection of database and RAC support tools
- Includes
 - ORAchk
 - ExaChk – like OraChk, but for Engineered Systems
 - OSWatcher
 - ProcWatcher – tool to examine and monitor Oracle database and/or clusterware processes
 - ORATOP - near real-time monitoring of databases
 - SQLT – helps in tuning SQL statements
 - DARDA - Diagnostic Assistant - interface for other diagnostic tools
 - .. And many more
- Integrated in TFA collector since release 12.1.2.3.0

■ Oracle Support Tools Bundle (2)

```

oracle@kereru:~/ tfactl toolstatus
.------.
|      External SupportTools      |
+-----+-----+-----+
| Host   | Tool           | Status |
+-----+-----+-----+
| kereru | alertsummary  | DEPLOYED |
| kereru | exachk        | DEPLOYED |
| kereru | ls            | DEPLOYED |
| kereru | triage        | DEPLOYED |
| kereru | pstack        | DEPLOYED |
| kereru | orachk        | DEPLOYED |
| kereru | grep          | DEPLOYED |
| kereru | summary       | DEPLOYED |
| kereru | vi            | DEPLOYED |
| kereru | tail          | DEPLOYED |
| kereru | param         | DEPLOYED |
| kereru | dbglevel      | DEPLOYED |
| kereru | managelogs    | DEPLOYED |
| kereru | history       | DEPLOYED |
| kereru | calog         | DEPLOYED |
| kereru | menu          | DEPLOYED |
| kereru | changes       | DEPLOYED |
| kereru | events        | DEPLOYED |
| kereru | srdc          | DEPLOYED |
| kereru | ps            | DEPLOYED |
'-----+-----+-----'

```

■ Tool integration in RDBMS packages (1)

- Some tools are integrated in the Oracle RDBMS packages or patch packages
 - 12.2.0.1 (Base Release)
 - 11.2.0.4.5 (Jan 2015) Database Patch Set Update (DB PSU)
 - 11.2.0.4 Bundle Patch 15 for Exadata Database (Jan 2015)
 - 11.2.0.4 Patch 12 on Windows Platforms

```
oracle@kereru: pwd
/u00/app/oracle/product/12.2.0.1/suptools
oracle@kereru: ls -ltr
total 18688
drwxr-xr-x. 3 oracle oinstall          20 Aug 17  2017 tfa
drwxr-xr-x. 6 oracle oinstall        4096 Aug 17  2017 orachk
-rw-r--r--. 1 oracle oinstall 19132244 Oct 12 11:31 orachk.zip
drwxr-xr-x. 2 oracle oinstall          70 Feb 23 19:40 oratop
```

OraChk

■ ORAchk – Purpose & History

- Available since July 2011
- Current version 12.2.0.1.4
- Formerly known as "RACCheck"
- Supported on Unix, Linux and Windows
- **Checks your installation against more than 1.000 Oracle Best Practices**
 - Audit_Checks_Report_Orachk.html contains a list of all checks
 - Additional user defined checks are possible
- ExaChk is a similar tool for Exadata
- Prompts for an upgrade when you are running a version older than 120 days



■ ORAchk – Not a RAC or database tool only



- ORAchk includes checks for
 - **Oracle Database (Single Instance + RAC)**
 - **MAA Validation**
 - **Upgrade Readiness**
 - Golden Gate
 - Enterprise Manager Cloud Control
 - Peoplesoft
 - Siebel
 - Oracle Sun Server
 - ..

■ ORAchk – Interfaces

- CLI tool
 - Daemon possible
- HTML- and ZIP-output
- Results can be stored in a database
 - → "configuration management lite"
- GUI
 - Collection Manager (APEX)
 - Enterprise Manager Plugin



■ ORAchk - Installation

- Clusterware 11.2.0.4 and 12.1.0.2 and RDBMS 12.2.0.1
 - Installed with the software (into \$ORACLE_HOME/suptools/orachk)
- For older versions
 - Install the current version of TFA Collector
 - Download the OraChk standalone package (MOS note 1268927.2)

■ ORAchk – Basic Command Line Options

Option	Meaning
-a	Run all Checks
-b	Best Practice Check only
-p	Patch Check Only
-u –o pre post	Pre or Post Upgrade Checks
-dbnames	run for a subset of databases only
-clusternodes	run for a subset of nodes only
-h	Help on all available parameters (long list)

■ ORAchk – Sample Output (1)

- ORAchk checks O/S, clusterware and databases on all nodes of a cluster
- Result: ZIP-File and HTML-Report

```
Data collections completed. Checking best practices on kereru.  
-----
```

```
WARNING => system is not started with runlevel 3 or 5  
INFO => Important Storage Minimum Requirements for Grid & Database Homes  
WARNING => There are some application objects with STALE statistics. for NCDB122  
INFO => Most recent ADR incidents for /u00/app/oracle/product/12.2.0.1  
INFO => Oracle GoldenGate failure prevention best practices  
INFO => user_dump_dest has trace files older than 30 days for NCDB122  
INFO => At some times checkpoints are not being completed for NCDB122  
WARNING => One or more redo log groups are not multiplexed for NCDB122  
FAIL => Operating system hugepages count does not satisfy total SGA requirements  
WARNING => OSWatcher is not running as is recommended.  
FAIL => Database parameter DB_BLOCK_CHECKSUM is not set to recommended value on NCDB122 instance  
FAIL => Database parameter DB_LOST_WRITE_PROTECT is not set to recommended value on NCDB122 instance  
WARNING => Database parameter DB_BLOCK_CHECKING on PRIMARY is NOT set to the recommended value. for NCDB122
```

■ ORAchk – Sample Output (2) – HTML-File Header

Oracle orachk Assessment Report

System Health Score is 88 out of 100 (detail)

Summary

OS/Kernel Version	LINUX X86-64 OELRHEL 7 4.1.12-112.14.15.el7uek.x86_64
DB Home – Version – Names	/u00/app/oracle/product/12.2.0.1 – 12.2.0.1.0 – NCDB122
EM Agent Home	/u00/app/oracle/product/agent13cr2/agent_13.2.0.0.0
Database Server	kereru
ORAchk Version	12.2.0.1.4_20171212
Collection	orachk_kereru_NCDB122_030418_161825
Duration	4 mins, 2 seconds
Executed by	oracle
Arguments	-dbnames NCDB122
Collection Date	04-Mar-2018 16:20:21

Note! This version of ORAchk is considered valid for 38 days from today or until a new version is available

■ ORAchk – Sample Output (3) – Overview

Database Server				
Status	Type	Message	Status On	Details
<input checked="" type="checkbox"/> FAIL	SQL Check	Table AUD\$[FGA_LOG\$] should use Automatic Segment Space Management	All Databases	View
<input checked="" type="checkbox"/> FAIL	OS Check	Operating system hugepages count does not satisfy total SGA requirements	All Database Servers	View
<input checked="" type="checkbox"/> WARNING	SQL Check	Consider investigating the frequency of SGA resize operations and take corrective action	All Databases	View
<input checked="" type="checkbox"/> WARNING	SQL Check	Consider increasing the value of the session_cached_cursors database parameter	All Databases	View
<input checked="" type="checkbox"/> WARNING	SQL Check	Consider investigating changes to the schema objects such as DDLs or new object creation	All Databases	View
<input checked="" type="checkbox"/> WARNING	OS Check	Linux Disk I/O Scheduler should be configured to Deadline	All Database Servers	View
<input checked="" type="checkbox"/> WARNING	SQL Check	Duplicate objects were found in the SYS and SYSTEM schemas	All Databases	View
<input checked="" type="checkbox"/> WARNING	OS Check	OSWatcher is not running as is recommended.	All Database Servers	View

■ ORAchk – Sample Output (4) – Details

Hide				
<input type="checkbox"/> WARNING	OS Check	OSWatcher is not running as is recommended.	All Database Servers	View
<input type="checkbox"/> WARNING	SQL Check	One or more redo log groups are not multiplexed	All Databases	Hide
Non-multiplexed redo logs				
Recommendation				
Needs attention on		NCDB122		
Passed on		-		
Status on NCDB122:				
WARNING => One or more redo log groups are not multiplexed				
DATA FOR NCDB122 FOR NON-MULTIPLEXED REDO LOGS				

■ ORAchk – Advanced Command Line Options

Option	Meaning
-diff	Compare 2 reports
-d	Manage ORAchk daemon
-profile	Run for specific components or applications like: <ul style="list-style-type: none">• ASM• Clusterware• EBS• MAA• Goldengate• Enterprise Manager Cloud Control• ..



■ ORAchk – Collection Manager (1)

- ORAchk results can be stored in a repository database
- Collection Manager is a GUI for the repository database
- APEX application
 - Installation script is delivered with ORAchk software (e.g. Apex5_CollectionManager_App.sql)
- Installation
 - Create database user for ORAchk
 - Install APEX application
 - The required tables are created when installing the application



■ ORAchk – Collection Manager (2)

■ Set environment

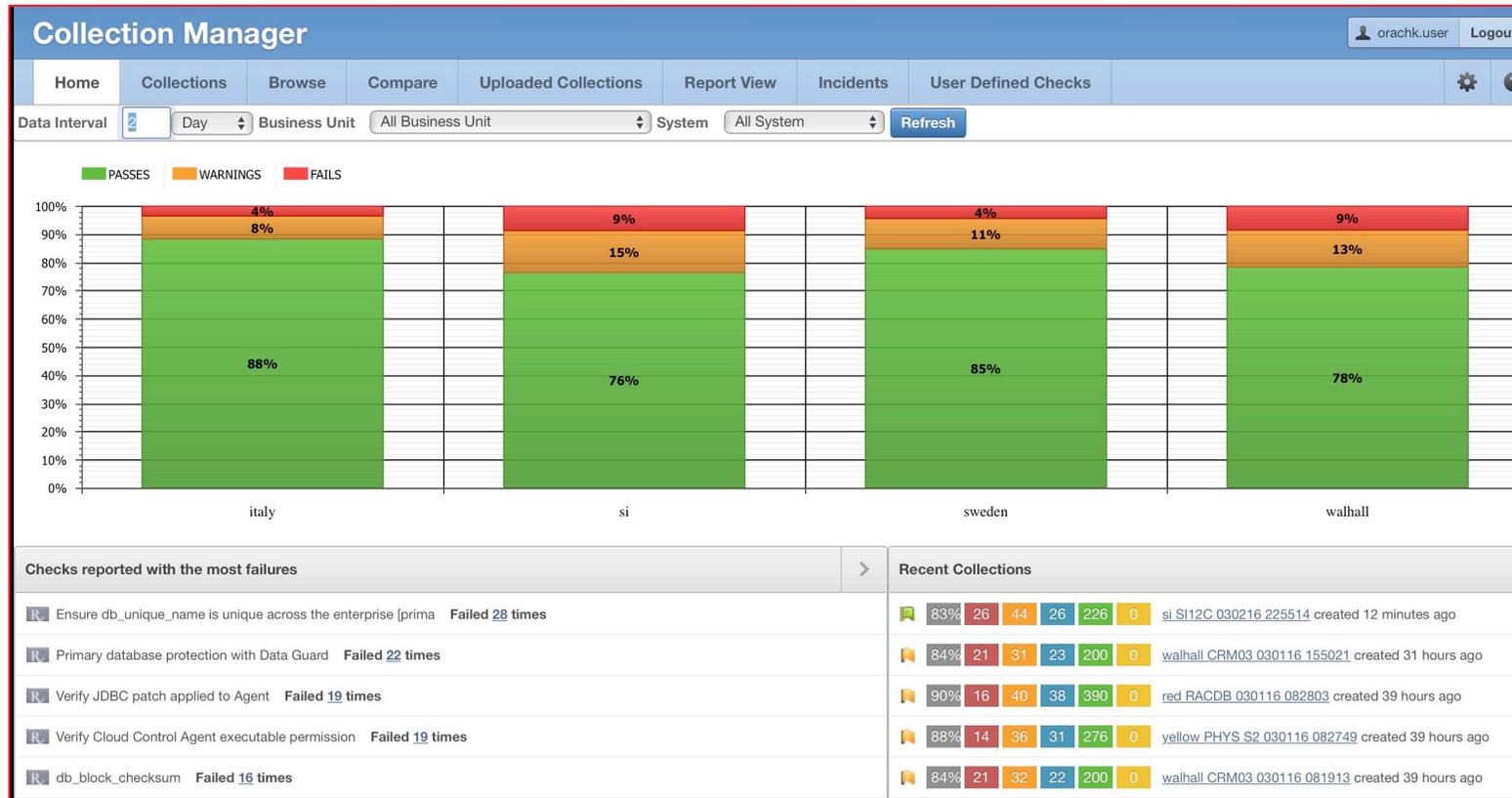
```
export RAT_UPLOAD_USER=orachkcm
export RAT_UPLOAD_PASSWORD=orachkcm
export RAT_ZIP_UPLOAD_TABLE=RCA13_DOCS
export
RAT_UPLOAD_CONNECT_STRING="(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=kea.m
arkusdba.net)(PORT=1521))(CONNECT_DATA=(SERVER=DEDICATED)(SERVICE_NAME=XE
)))"
```

- Parameters can be passed to OraChk, too.
- OraChk stores the connection data in a wallet

■ Run ORAchk

- If the environment is set, then the data will be inserted into the repository database

ORAchk – Collection Manager (3) – some screenshots



■ ORAchk – Collection Manager (4) – some screenshots

The screenshot displays the ORAchk Collection Manager interface. At the top, there is a navigation bar with tabs for Home, Collections, Browse, Compare, Uploaded Collections, Report View, and Incidents. The user is logged in as 'orachk.user'. Below the navigation bar, there are filters for Data Interval (2 Day), Business Unit (All Business Unit), and System (All System). There are also dropdowns for DB Version and Platform, and a checkbox for 'Show Only Collections With Patch Results'. The main area shows two collections being compared: 'Collection1' (walhall CRM03 030116 081913) and 'Collection2' (walhall CRM03 030116 003311). Below this, there is a 'Health Checks Baseline Comparison Report' table.

Check Name	Status1	StatusMsg1	Hostname1	DBName1	InstName1	Status2	StatusMsg2	Hostname2
db_lost_write_protect	PASS	Database parameter DB_LOST_WRITE_PROTECT is set to recommended value on TVD12 instance	walhall	TVD12	TVD12	FAIL	Database parameter DB_LOST_WRITE_PROTECT is NOT set to recommended value on TVD12 instance	walhall
db_lost_write_protect	PASS	Database parameter DB_LOST_WRITE_PROTECT is set to recommended value on TVD12CDB instance	walhall	TVD12CDB	TVD12CDB	FAIL	Database parameter DB_LOST_WRITE_PROTECT is NOT set to recommended value on TVD12CDB instance	walhall

■ ORAchk – Collection Manager (5) – some screenshots

Home Collections Browse Compare Uploaded Collections Report View Incidents [Settings] [Help]

Business Unit: All Business Unit System: All System Data Interval: 1 Month Refresh

Filters: Apply Filters Reset Page

Select Collection Name: rac1node1 RACPDB2 022215 212351 Status: -- Select Status -- Host Name: -- Select Host -- Search (Searches "Check Name" Column):

DB Version: -- Select DB Version -- Platform: -- Select OS Platform -- DB Name: -- Select DB Name -- Search By Check Id:

Audit checks: Ignore Selected Undo Ignore Raise Ticket On Collection

1 - 310

<input type="checkbox"/>	Check Name	Status	Status Message	Hostname	Instance Name	DB Name
<input type="checkbox"/>	▲ Verify AUD\$ and FGA_LOG\$ tables use Automatic Segment Space Management	FAIL	Table AUD\$[FGA_LOG\$] should use Automatic Segment Space Management for RACPDB2	rac1node1	NA	RACPDB2
<input type="checkbox"/>	▲ Verify no duplicate parameter entries in database init.ora(spfile)	FAIL	There should be no duplicate parameter entries in the database init.ora(spfile) file for RACCCDB	rac1node2	NA	RACCCDB

ORAchk – Collection Manager (6) – some screenshots

Home Collections Browse Compare Uploaded Collections Report View Incidents

Business Unit: All Business Unit System: All System Data Interval: 1 Month Refresh

Select Collection: rac1node1_RACPDB2_022215_212351 Ignore Data Interval Printable View

Collection orachk_rac1node1_RACPDB2_022215_212351 Report [Score : 91%]

System Graphical Summary

Database Servers Summary

Clusterwide (12)	rac1node1 (76)	rac1node2 (60)
INFO-PASS - 1	WARNING - 7	WARNING - 7
	INFO - 11	INFO - 1
	INFO-PASS - 1	INFO-PASS - 1
PASS - 11	PASS - 57	PASS - 51

ASM Summary

+ASM1 (10)	+ASM2 (9)
WARNING - 1	WARNING - 1
INFO-PASS - 2	INFO-PASS - 1
PASS - 7	PASS - 7

Databases Summary

RACEDB (37)	RACPDB1 (10)	RACPDB2 (10)
FAIL - 3	FAIL - 1	FAIL - 1
WARNING - 3	INFO - 1	INFO - 1
INFO - 1	INFO-PASS - 1	INFO-PASS - 1
INFO-PASS - 11	PASS - 7	PASS - 7
PASS - 19		

Database Instances Summary

+ASM1 (4)	+ASM2 (3)	RACEDB1 (15)	RACEDB2 (16)	(1)
WARNING - 1	FAIL - 1	INFO - 3	WARNING - 2	
		INFO-PASS - 6	INFO-PASS - 10	INFO-PASS - 1
PASS - 3	PASS - 2	PASS - 6	PASS - 4	

TFA

■ Real life experience ..

- 26 node cluster
 - 5 databases
- Strange ASM issue
- Oracle Support requested
 - Clusterware logs
 - ASM alert.logs
 - Database alert.logs

For each of the
26 servers!!



■ Trace File Analyzer Collector

- Initial release in January 2013, current version 18.1.1 (January 2018)
- **Collects trace and log files and system information from all nodes into a cluster with a single command initiated on one cluster node**
- **Integrates a lot of other tools with one single CLI**
- Centralized output
- **Real-time scanning** for specific error messages possible → Automatic Collection
- Included in Clusterware since 11.2.0.4 and 12.1.0.2 and with the database 12.2
- For other versions (10.2 or higher):
 - Download from MOS: 1513912.1
 - RAC and DB Support Tools Bundle is included in current TFA package

■ TFA Collector – Installation

- For Clusterware 11.2.0.4 and 12.1.0.2 and RDBMS 12.2: No additional installation required
- For older versions:

```
[root@rac1node1 tmp]# ./installTFALite.sh
Starting TFA installation
Enter a location for installing TFA [/tmp]: /u00/app/oracle
Checking for available space in /u00/app/oracle
Enter a Java Home that contains Java 1.6 or later : /usr/java/jre1.7.0_13
Running Auto Setup for TFA as user root..
Would you like to do a [L]ocal only or [C]lusterwide installation ? [L|l|C|c] [C] : C
The following installation requires temporary use of SSH.
If SSH is not configured already then we will remove SSH when complete.
Do you wish to Continue ? [Y|y|N|n] [N] y
Installing TFA at /u00/app/oracle in all hosts
Discovering Nodes and Oracle resources
Checking whether CRS is up and running
```

..

■ TFA Collector – Update

- TFA updates are not part of the PSUs/RUs
 - → TFA installed with Oracle software is not updated automatically
- Manual updates
 - Running TFA is detected automatically
 - TFA is updated in the correct directory

■ TFA Collector – Architecture

■ JAVA-based tool

■ TFA-daemon “TFAMain” running on all cluster nodes

```
oracle@rac1node1:~/ [rdbms12102] ps -ef |grep tfa |grep -v grep
root  2325      1  0 10:14 ?        00:00:03 /bin/sh /etc/init.d/init.tfa run
root  3631      1  0 10:16 ?        00:05:10 /u00/app/grid/product/12.1.0.2/jdk/jre/bin/java -
[.]  oracle.rat.tfa.TFAMain /u00/app/grid/product/12.1.0.2/tfa/rac1node1/tfa_home
```

■ Data Storage

- File-Repository for Diagnostic Information
- Berkeley Database for metadata, file inventory, event history, etc.

■ Command Line Interface

- tfactl (perl)
- Communication with daemon using secure sockets

■ TFA Collector – Commands (1) – Command Overview

```
oracle@kereru:~/ [NCDB122] tfactl
tfactl> help

Usage : /u00/app/oracle/tfa/bin/tfactl <command> [options]
       commands:diagcollect|collection|analyze|ips|run|start|stop|print|directory|
       toolstatus
For detailed help on each command use:
  /u00/app/oracle/tfa/bin/tfactl <command> -help

tfactl> exit
```

■ TFA Collector – Commands (2) – commands for root

- Configuration tasks must be done by root
- Additional commands are available via "tfactl":

```
root@kereru:/home/oracle/ [NCDB122] tfactl
tfactl> help

Usage : /u00/app/oracle/tfa/bin/tfactl <command> [options]
       commands:diagcollect|collection|analyze|ips|run|start|stop|enable|disable|s
tatus|print|access|purge|directory|host|receiver|set|toolstatus|uninstall|diagn
osetfa
For detailed help on each command use:
  /u00/app/oracle/tfa/bin/tfactl <command> -help

tfactl> exit
```

■ TFA Collector – Commands (3) – print config

```
oracle@kereru:~/ [NCDB122] tfactl print config
```

```
-----  
|                               kereru                               |  
-----+-----+-----  
| Configuration Parameter                                         | Value |  
-----+-----+-----  
| TFA Version                                                     | 12.2.1.0.0 |  
| Java Version                                                    | 1.8       |  
| Public IP Network                                              | false    |  
| Automatic Diagnostic Collection                               | true     |  
| Alert Log Scan                                                | true     |  
| Disk Usage Monitor                                            | true     |  
| Managelogs Auto Purge                                         | false    |  
| Trimming of files during diagcollection                       | true     |  
| Inventory Trace level                                         | 1        |  
| Collection Trace level                                        | 1        |  
| Scan Trace level                                              | 1        |  
[..]
```

■ TFA Collector – Commands (4) – diagcollect (1)

- Collects trace and log files from the cluster nodes

```
grid@bert:~/ [+ASM2] tfactl diagcollect
Collecting data for the last 12 hours for all components...
Collecting data for all nodes
[...]
```

2018/03/04 19:38:30 CET : Collection Name : tfa_Sun_Mar_04_19_38_26_CET_2018.zip
2018/03/04 19:38:30 CET : Collecting diagnostics from hosts : [ernie, bert]
2018/03/04 19:38:30 CET : Scanning of files for Collection in progress...
2018/03/04 19:38:30 CET : Collecting additional diagnostic information...
[...]

Logs are being collected to:

```
/u00/app/oracle/tfa/repository/collection_Sun_Mar_04_19_38_26_CET_2018_node_all
/u00/app/oracle/tfa/repository/collection_Sun_Mar_04_19_38_26_CET_2018_node_all/bert.tfa_Su
n_Mar_04_19_38_26_CET_2018.zip
/u00/app/oracle/tfa/repository/collection_Sun_Mar_04_19_38_26_CET_2018_node_all/ernie.tfa_S
un_Mar_04_19_38_26_CET_2018.zip
```

■ TFA Collector – Commands (5) – diagcollect (2)

■ Which data is collected by default?

- alert.log from all databases
- ASM log files
- listener.log files
- Patch Information
- CHM information
- Clusterware logs
- OS information

■ Data is "trimmed" to the relevant time window

```
2018/03/04 19:40:36 CET : Total Number of Files checked : 4382
2018/03/04 19:40:36 CET : Total Size of all Files Checked : 1.8GB
2018/03/04 19:40:36 CET : Number of files containing required range : 287
2018/03/04 19:40:36 CET : Total Size of Files containing required range : 375MB
2018/03/04 19:40:36 CET : Number of files trimmed : 26
2018/03/04 19:40:36 CET : Total Size of data prior to zip : 143MB
2018/03/04 19:40:36 CET : Saved 270MB by trimming files
2018/03/04 19:40:36 CET : Zip file size : 8.6MB
2018/03/04 19:40:36 CET : Total time taken : 126s
```

■ TFA Collector – Commands (6) – autodiagcollect

- Enable Automatic diagnostic collection

```
root@rac1node1:~/ tfactl set autodiagcollect=<ON|OFF> [-c]
```

- Tfa will scan the alert.log files and runs "diagcollect" automatically
- Collection triggered by ORA-600, ORA-7445, ORA-4031, ..
- Trimming interval +/- 600 seconds

■ TFA Collector – other tools (1)

(partial) list of the tools which are integrated in TFA (incl. "Support Tools Bundle"):

Command in TFACTL	Explanation
Alertsummary	Event summary from all alert.log files
Changes	Lists changes of OS and instance configuration
Oratop	"top" for Oracle Databases, Linux client required
Events	List important events
Pstack	Stack trace for a process (across the cluster)
Darda	Diagnostic assistant, , common interface for various tools
Prw (ProcWatcher)	Capture diagnostic output for performance issues and session hangs

Please see TFA documentation for a complete list incl. documentation for each tool

■ TFA Collector – oratop

```

oracle@bert:~/ [+ASM2] tfactl oratop -database RCDB

oratop: Release 14.2.1 Production on Sun Mar  4 19:51:01 2018
Copyright (c) 2011, Oracle. All rights reserved.

Connecting ...

Processing ...
Oracle 12c - Primary RCDB  19:51:06 up: 998s,  2 ins,  4 sn,  1 us, 8.2G mt,  0% fra,  0 er,  7 pdb,  1.9% db

```

ID	%CPU	LOAD	%DCU	AAS	ASC	ASI	ASW	ASP	AST	UST	MBPS	IOPS	IORL	LOGR	PHYR	PHYW	%FR	PGA	TEMP	UTPS	UCPS	SSRT	DCTR	DWTR	%DBT
2	6	1	0	1	0	0	0	0	0	2	0	5	37u	283	0	0	6	549M	3.0M	0	10	184u	80	19	64.3
1	8	2	0	1	0	0	0	0	0	2	0	6	68u	243	0	0	7	563M	3.0M	0	9	198u	64	35	35.7

EVENT (C)	TOTAL WAITS	TIME(s)	AVG_MS	PCT	WAIT_CLASS
DB CPU		298		41	
db file sequential read	59157	143	2.0	20	User I/O
service monitor: inst recovery completion	5	119	24984.5	16	Cluster
gc current block 2-way	17439	84	3.8	12	Cluster
gc current block congested	3674	83	22.8	11	Cluster

■ TFA Collector – "summary"

- Displays a summary for all Oracle-home-directories
 - Path
 - Version
 - Component
 - Databases + Instances
 - Installed Patches

```
oracle@bert:~/ [+ASM2] tfact1 summary
[...]
```

Home	Type	Version	Patches
/u00/app/grid/product/12.2.0.1	GI	12.2.0.1.0	26710464,26928563,26839277,26737232,26925644,26635944
/u00/app/oracle/product/12.2.0.1	DB	12.2.0.1.0	21955394,26710464,26925644,26635944
/u00/app/oracle/agent13cr2/agent_13.2.0.0.0	DB		

DBSAT

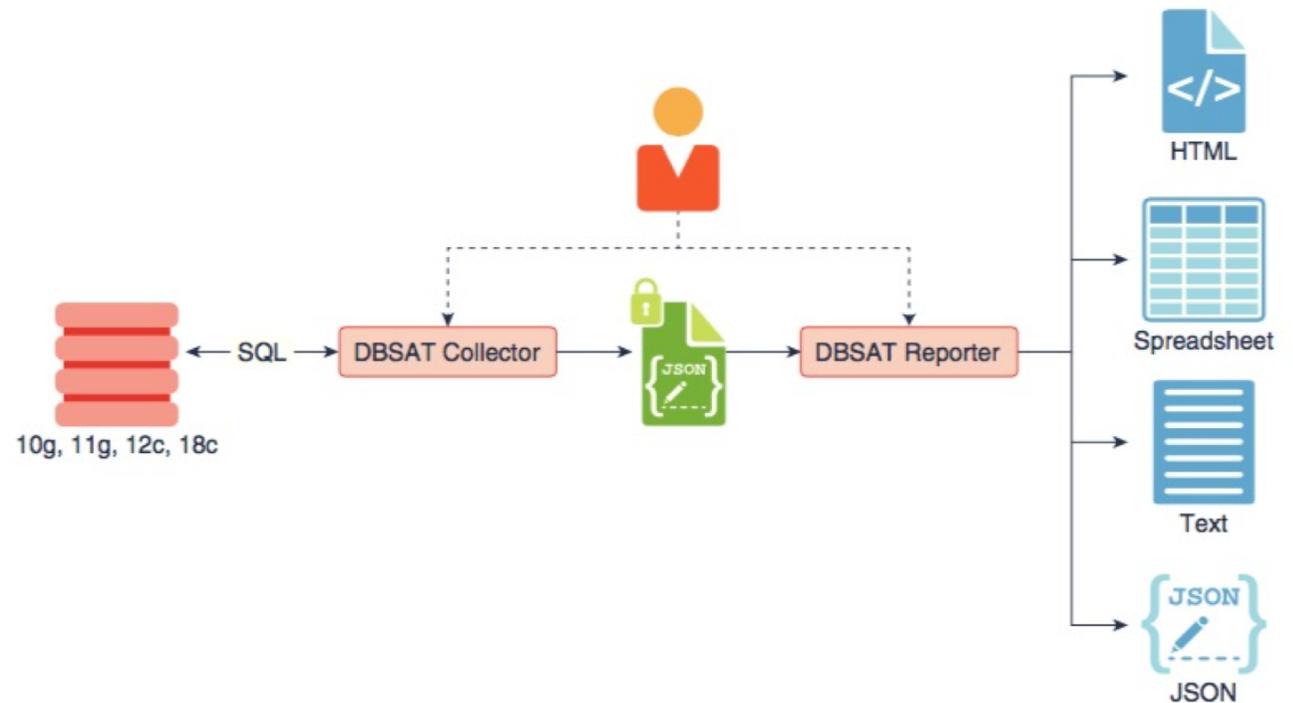
■ DBSAT - Introduction

- Database Security Assessment Tool
 - Checks database configuration for security issues
 - Can find sensitive data
 - Result: security recommendation report
- Available since June 2016
- Current version: 2.0.1 (December 2017)
- Download from MOS- note 2138254.1

■ DBSAT - Architecture

■ Components

- Collector
- Reporter
- Discoverer (Standalone-Tool)



■ DBSAT – CLI

```
oracle@kereru:~/ougn/dbsat/ [NCDB122] ./dbsat -help
Database Security Assessment Tool version 2.0.1 (December 2017)
Usage: dbsat collect [ -n ] <database_connect_string> <output_file>
       dbsat report [ -a ] [ -n ] [ -x <section> ] <input_file>
       dbsat discover [-n] -c <config_file> <output_file>

Options:
  -a Report about all user accounts, including locked,
     Oracle-supplied users
  -n No encryption for output
  -x Specify sections to exclude from report (may be repeated for
     multiple sections)
  -c Configuration file for discoverer
```

■ DBSAT – Create a security report

- Collect information from the database

```
./dbsat collect "/" as sysdba" dbsat_demo_ncdb122
```

- Result is an (encrypted) JSON-file

- Create a HTML report from the JSON file

```
./dbsat report dbsat_demo_ncdb122
```

- Result is a password protected ZIP-file

■ DBSAT-Report

Oracle Database Security Assessment							
Highly Confidential							
Assessment Date & Time							
Date of Data Collection	Date of Report	Reporter Version					
Sun Mar 04 2018 20:39:00	Sun Mar 04 2018 20:41:39	2.0.1 (December 2017) - d526					
Database Identity							
Name	Platform	Database Role	Log Mode	Created			
NCDDB122	Linux x86 64-bit	PRIMARY	NOARCHIVELOG	Sun Mar 04 2018 15:43:00			
Summary							
Section	Pass	Evaluate	Advisory	Low Risk	Medium Risk	High Risk	Total Findings
Basic Information	1	0	0	0	0	0	1
User Accounts	9	0	0	2	1	0	12
Privileges and Roles	5	14	0	0	0	0	19
Authorization Control	0	0	2	0	0	0	2
Data Encryption	0	1	1	0	0	0	2
Fine-Grained Access Control	0	1	4	0	0	0	5
Auditing	3	4	2	0	3	0	12
Database Configuration	7	4	0	1	1	0	13
Network Configuration	1	0	0	1	3	0	5
Operating System	1	1	0	2	1	0	5
Total	27	25	9	6	9	0	76

■ DBSAT – find sensitive data

- Helpful when preparing for GDPR
- DBSAT checks the data dictionary against a list of column names

■ Excerpt:

```
[FULL_NAME]
COL_NAME_PATTERN = ^(PERSON|FULL).*NAME$
COL_COMMENT_PATTERN = (Full|Person).*Name
SENSITIVE_CATEGORY = PII

[FIRST_NAME]
COL_NAME_PATTERN = (^FNAME$)|((FIRST|GIVEN).*NAME$)
COL_COMMENT_PATTERN = (First|Given|Cust).*Name
SENSITIVE_CATEGORY = PII
```

- You can create your own file with column names

■ DBSAT – Sensitive Data Report

Summary

Sensitive Category	# Sensitive Tables	# Sensitive Columns	# Sensitive Rows
JOB DATA	5	11	55955
PII	4	13	55930
PII - ADDRESS	7	26	55895
PII - IT DATA	5	6	666
PII-LINKED	2	4	55819
PII-LINKED - BIRTH DETAILS	1	1	319
TOTAL	14*	61	56359**

* Number of unique Tables with Sensitive Data.

** Number of unique Rows with Sensitive Data.

Sensitive Data

Schemas with Sensitive Data

Risk Levels	High Risk, Medium Risk
Summary	Found 5 schemas with sensitive data.
Location	Schemas with sensitive data: HR, IX, OE, PM, SH

Summary

■ Summary

- Oracle provides a lot of tools to keep a database in a healthy state
- DBSAT is very helpful when preparing your systems for GDPR
- TFA is very helpful when dealing with Oracle support
- Unfortunately, there are multiple sources for the same tool; tracking the versions can be an issue

Further Information



MOS-Notes:

- Oracle Database Security Assessment Tool (DBSAT)(Doc ID 2138254.1)
- Security Checklist: 10 Basic Steps to Make Your Database Secure from Attacks(Doc ID 1545816.1)
- TFA Collector - TFA with Database Support Tools Bundle(Doc ID 1513912.1)
- ORAck - Health Checks for the Oracle Stack(Doc ID 1268927.2)
- ORAck Upgrade Readiness Assessment(Doc ID 1457357.1)

Identify sensitive data with DBSAT - <http://christian-gohmann.de/2018/01/26/identify-sensitive-data-with-dbsat/>

Questions and Answers

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Download the slides from <https://www.slideshare.net/markusflechtner>

Please don't forget the session evaluation – Thank you!