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# Health Checks and Diagnosability for the Oracle Cloud

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# Agenda

- Introduction
- ORAChk
- Collection Manager
- TFA Collector
- Q&A



# 70%

Of SRs logged with Scalability Support are **Rediscoveries of Known Issues**

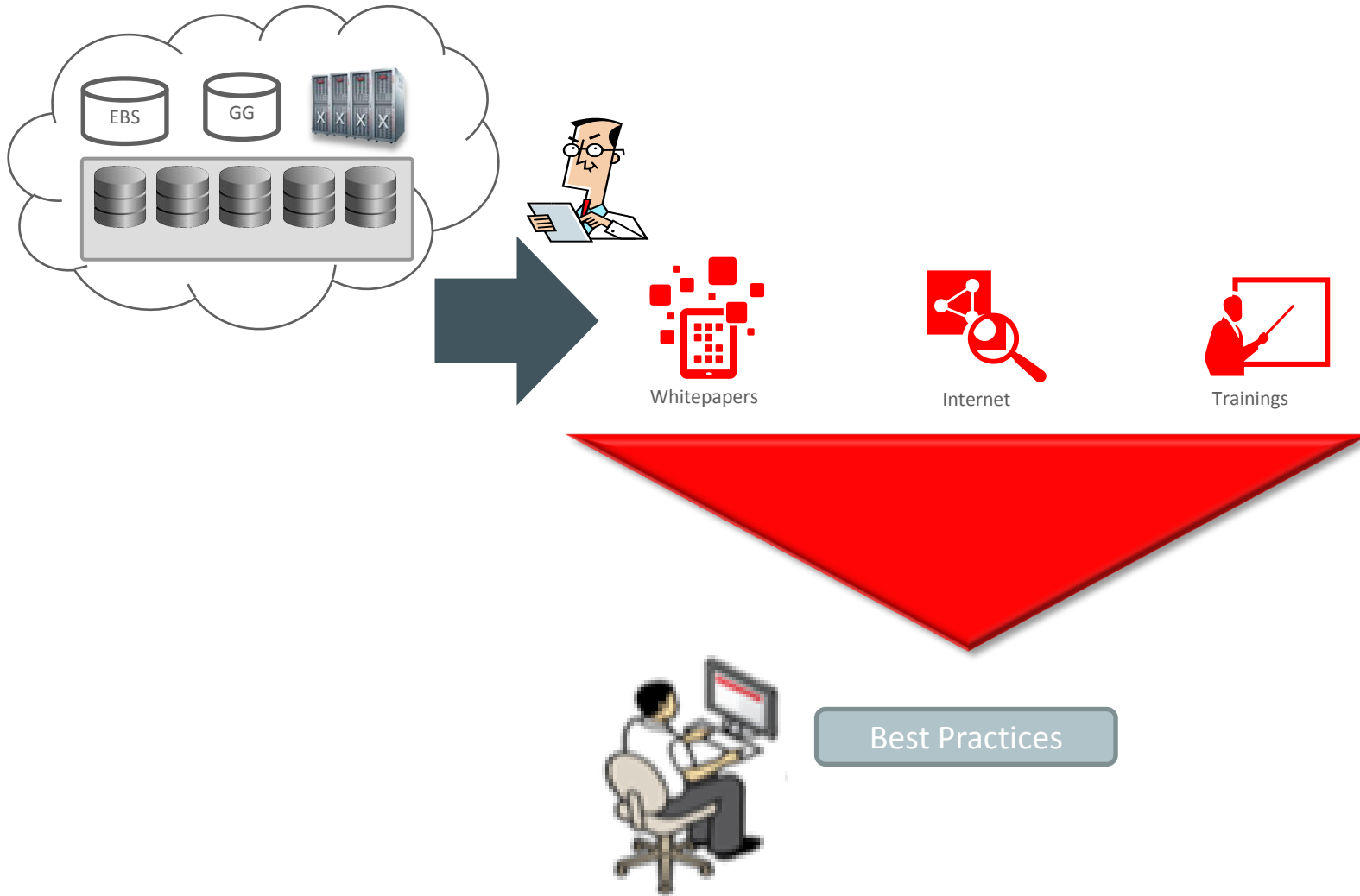
# Frequently

SRs having **Extended Resolution Times** are the result of insufficient diagnostic data



# Preventing Known Issues

# Best Practices - Challenges

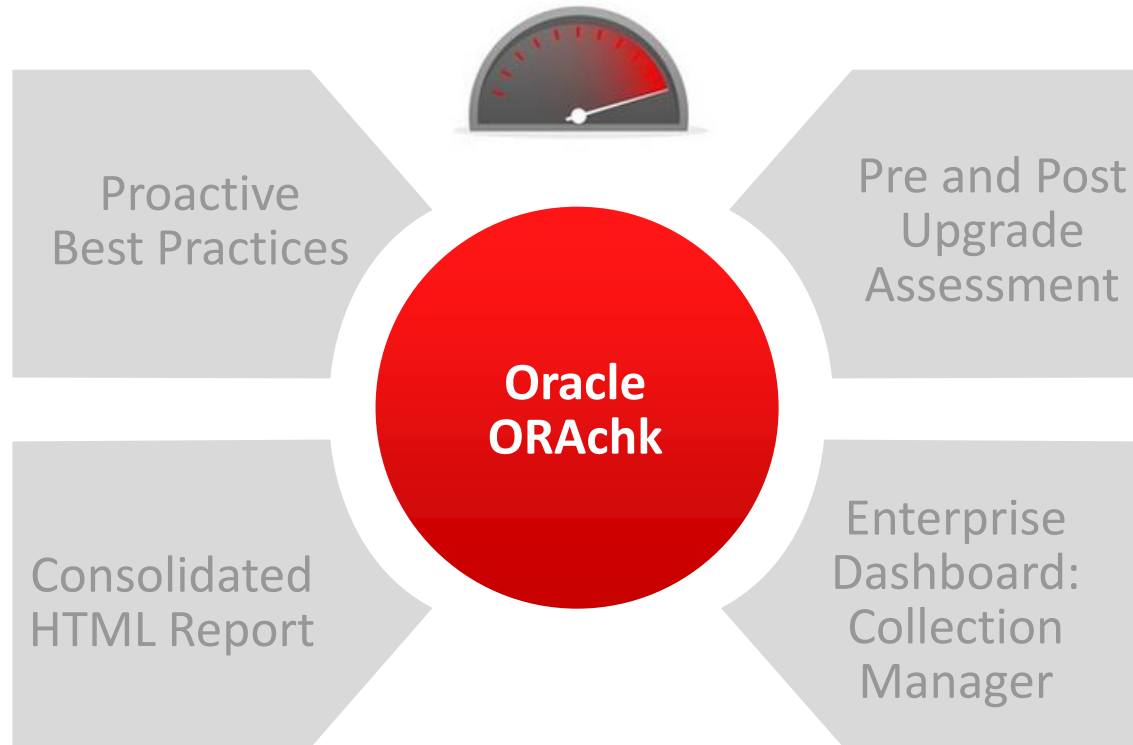


How healthy is my system ?



- Complex IT environments
- Software stack has many components
- Requires greater skill-set and effort to analyze whole system.
- Keeping systems up-to-date with latest best practices
- Planning maintenance and upgrade activities

# Solution : ORAchk

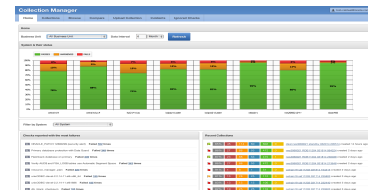


**Oracle RAC Assessment Report**  
System Health Score is 91 out of 100 (detail)

Cluster Summary	
Cluster Name	chao01sp1cu08
OS/Kernel Version	LINUX.X86_64 OELRHHEL 6 2.6.39-400.109.1.el6uak.x86_64
CRS Home - Version	/u01/app/12.1.0/grid - 12.1.0.1.0
DE Home - Vers	
Number of nodes	
Database Serv	
orachk Version	
Collection	
Duration	
Collection Date	

**Table of Contents**

- Findings Needing Attention
  - On Database Server
  - Maximum Availability Architecture (MAA) Scorecard
- Findings Passed
  - On Database Server
  - Cluster Wide
- CRID and RDBMS patch recommendation Summary report
- CRID and RDBMS patch recommendation Detailed report
- Top 10 Time Consuming Checks



- Easy to Install, Easy to Execute
- Consolidated HTML Report
- System Health Score
- Findings Documented with Hyper-linked References
- Proactive Patch Recommendations
- Report Compare and Merge Functionality
- Periodic runs using daemon
- Collection Manager



# ORAchk – Oracle Configuration Audit Tool

- **Proactive self-service** method for customers to perform **Health Checks** on their RAC and Single Instance systems
- Validation and System-specific feedback on:
  - Configuration issues that can impact the system
  - Best Practices/Success Factors that are not being adhered
  - Documentation on checks for ease of knowledge transfer
- Upgrade Validation for 11.2.0.3+ upgrades



# ORAchk – Easy to Install, Easy to Execute

Are you on 11.2.0.4+ and 12.1.0.2+

**Yes** , Run `$ORACLE_HOME/suptools/orachk/orachk`

**No** ,

- **Download** latest ORAchk version – MOS Note: 1268927.1
- **Transfer** orachk.zip to a single node
- **Extract** orachk.zip
- **Execute** orachk
- **Follow** the prompts

**Execution times are generally less than 15 min for a 2 node cluster!**

```
$> ./raccheck

CRS stack is running and CRS_HOME is not set. Do you want to set CRS_HOME to /
u01/app/11.2.0/grid? [y/n] [y]y

Checking ssh user equivalency settings on all nodes in cluster

Node cetrain02 is configured for ssh user equivalency for oracle user
```

```
-----
Host Name  CRS Installed  ASM HOME      RDBMS Installed  CRS UP   ASM UP
RDEMS UP  DB Instance Name
-----
cetrain01  Yes           Yes           Yes              Yes      Yes
Yes       ORCL1
cetrain02  Yes           Yes           Yes              Yes      Yes
Yes       ORCL2
-----

9 of the included audit checks require root privileged data collection . If su
do is not configured or the root password is not available, audit checks which
require root privileged data collection can be skipped.

1. Enter 1 if you will enter root password for each host when prompted
2. Enter 2 if you have sudo configured for oracle user to execute root_racchec
k.sh script
3. Enter 3 to skip the root privileged collections
4. Enter 4 to exit and work with the SA to configure sudo or to arrange for r
oot access and run the tool later.

Please indicate your selection from one of the above options[1-4][1]:-
```

# ORAchk – Supported Environments

## Supported Systems

- Single Instance, GI, RAC, Solaris
- Oracle Engineered Systems, Exadata, ODA, Exalogic, ZDLRA, Exalytics, BDA, Supercluster

## Supported Platforms

- Linux x86-64 (OEL, RedHat and SuSE 9, 10, 11)
- Oracle Solaris (SPARC and x86-64)
- IBM AIX (must have the BASH 3.2 shell installed)
- HP-UX (must have the BASH 3.2 shell installed)
- MS Windows x64 (2008 and 2012, Cygwin Required)

## Supported Oracle Releases

- 10gR2, 11gR1, 11gR2, 12cR1



# ORAchk – When to run ?

- After initial Oracle deployment
- Grid Infrastructure w/ at least one DB running for RAC
- Non-RAC with at least one database running
- Before planned maintenance activities
- After planned maintenance activities
- At least once every three months
- For upgrade planning to 11.2.0.3, 11.2.0.4, 12.1.0.1 and 12.1.0.2
- Use daemon mode for automation and scheduling

# ORAchk – How To

- As oracle user download and stage the ORAchk kit on one database server
  - \$ unzip orachk.zip
  - Review the readme.txt and UserGuide shipped as part of the orachk kit

```
-rw-rw-r-- 1 oradb oinstall 17448200 Nov  7 03:23 collections.dat
-rwxr-xr-x 1 oradb oinstall  1185278 Nov  7 03:23 orachk
-rw-r--r-- 1 oradb oinstall  4142512 Nov  7 08:29 orachk.zip
-rwxr-xr-x 1 oradb oinstall  1185278 Nov  7 03:23 raccheck
-rw-r--r-- 1 oradb oinstall    2213 Nov  7 03:23 readme.txt
-rw-rw-r-- 1 oradb oinstall  4439878 Nov  7 03:23 rules.dat
-rw-r--r-- 1 oradb oinstall    296 Nov  7 03:23 UserGuide.txt
```



raccheck maintained for  
backward compatibility

- Run the ORAchk tool as oracle (rdbms owner) on one database server  
\$ ./orachk

```
CRS stack is running and CRS_HOME is not set. Do you want to set CRS_HOME to /u01/app/11.1.0/crs?[y/n] [y]
```

- The tool should derive the correct clusterware home (CRS\_HOME)
  - If so accept the default prompt (y)
  - If not, respond No and then enter the correct path

# ORAchk – How To

- The tool will check ssh user equivalency among db server nodes
  - If user equivalency is missing on any nodes the tool can correct

```
Checking ssh user equivalency settings on all nodes in cluster  
Node sclczdb02 is configured for ssh user equivalency for oracle user
```

- The tool derives list of databases registered in OCR
  - Select All, number of a single database, or enter comma separated list

```
Searching for running databases . . . . .  
. . . . .  
List of running databases registered in OCR  
1. RATDB1  
2. R111CF  
3. All  
Select respective number to choose database for checking best practices. For multiple databases, select 3 for All  
or comma separated number like 1,2 etc [1-3][3].
```

# ORAchk – How To

- The tool will probe the environment to determine the status of the stack

```
Checking Status of Oracle Software Stack - Clusterware, ASM, RDBMS
. . . . .
-----
                        Oracle Stack Status
-----
Host Name   CRS Installed   ASM HOME       RDBMS Installed   CRS UP   ASM UP   RDBMS UP   DB Instance Name
-----
bburton-us  Yes             Yes            Yes               Yes      Yes      Yes        RATDB11
bblinux2    Yes             Yes            Yes               Yes      Yes      Yes        RATDB12
-----
```



# ORAchk – How To

## Database server root privileged data collection options

```
148 of the included audit checks require root privileged data collection . If sudo is not configured or the root
password is not available, audit checks which require root privileged data collection can be skipped.

1. Enter 1 if you will enter root password for each host when prompted
2. Enter 2 if you have sudo configured for oracle user to execute root_raccheck.sh script
3. Enter 3 to skip the root privileged collections
4. Enter 4 to exit and work with the SA to configure sudo or to arrange for root access and run the tool later.
Please indicate your selection from one of the above options[1-4] [1]:-
Is root password same on all nodes?[y/n] [y]
Enter root password :-
```

- User should choose the default (1) to enter the root password, (2) if sudo is configured for RDBMS software owner (eg., oracle), or as a last resort to skip the root privileged checks altogether (3).



# ORAchk – How To

- Tool collects configuration data for database servers for later analysis

```
Performing SQL collections for use with audit checks on RATDB1...please stand by.
I
.....

Log file for collections and audit checks are at
/home/oracle/bc/stage/newkit/raccheck_051711_115145/raccheck.log

=====
                        Node name - bburton-us
=====
Collecting - ASM Disk I/O stats
Collecting - ASM Disk Groups
Collecting - ASM disk partnership imbalance
Collecting - ASM diskgroup attributes
Collecting - ASM initialization parameters
Collecting - Active sessions load balance for RATDB1 database
Collecting - Archived Destination Status for RATDB1 database
Collecting - CONNECT Role Grantees for RATDB1 database
Collecting - Cluster Interconnect Config for RATDB1 database
Collecting - DB Diagnostic Destination for RATDB1 database
Collecting - Data Files In Backup Mode for RATDB1 database
Collecting - Database Archive Destinations for RATDB1 database
Collecting - Database Component Status for RATDB1 database
Collecting - Database Files for RATDB1 database
Collecting - Database Instance Settings for RATDB1 database
Collecting - Database Parameters for RATDB1 database
Collecting - Database Properties for RATDB1 database
```

# ORAchk – How To

- Run time analysis as rules are applied to the collected data

```
Data collections completed. Checking best practices on bburton-us.
-----
I
WARNING => SYS.IDGEN1$ sequence cache size < 1,000 for RATDB1
INFO => $CRS_HOME/log/hostname/client directory has too many older log files.
INFO => user_dump_dest has trace files older than 30 days for RATDB1
INFO => background_dump_dest has files older than 30 days for RATDB1
INFO => At some times checkpoints are not being completed for RATDB1
WARNING => One or more read/write errors found for ASM disks. for RATDB1
INFO => audit_file_dest has audit files older than 30 days for RATDB1
WARNING => One or more redo log groups are NOT multiplexed for RATDB1
INFO => db_ultra_safe parameter is NOT configured OFF on RATDB11 instance
INFO => local_listener parameter is NOT specified on RATDB11 instance
INFO => oracleasm (asmlib) module is NOT loaded
WARNING => Shell limit soft nproc for GI is NOT configured according to recommendation
WARNING => Shell limit soft nofile for GI is NOT configured according to recommendation
WARNING => kernel.shmmax parameter is NOT configured according to recommendation
WARNING => Open file limit for root user (ulimit -n) is NOT >= 65536 or unlimited
WARNING => pam_limits NOT configured properly for shell limits
WARNING => Remote listener is not set to SCAN name for RATDB1
WARNING => Local listener init parameter is not set to local node VIP. for RATDB1
WARNING => VKTM is not running in real time scheduling class for RATDB1
WARNING => NIC bonding is NOT configured for public network (VIP)
WARNING => OSWatcher is not running as is recommended.
INFO => Jumbo frames (MTU 9000) are not configured for interconnect
```

# ORAchk – How To

- Clusterwide checks are deferred to the end

```
-----  
CLUSTERWIDE CHECKS  
-----  
WARNING => Timezone does not match for current user across cluster.  
WARNING => Time zone does not match for root user across cluster  
-----
```

- Tool produces .zip output file for upload to Support if needed
- An HTML based report will also be available for review

```
→ Detailed report (html) - /tmp/raccheck_scr/raccheck_R111CF_120111_163436/raccheck_R111CF_120111_163436.html  
  
UPLOAD(if required) - /tmp/raccheck_scr/raccheck_R111CF_120111_163436.zip
```

# ORAchk – Post Processing Data Validation

- If questions come up about some of the findings
- How to validate the findings?
  - Review orachk\_\*.html report file in your favorite browser
    - On execution node file system in the orachk\_\* output directory

```
$ ls -ltr
total 15444
-rw-r--r-- 1 oracle oinstall 1935054 Mar 22 19:11 rules.dat
-rw-r--r-- 1 oracle oinstall 6401061 Mar 22 19:11 collections.dat
-rw-r--r-- 1 oracle oinstall 26908 Mar 22 19:11 readme.txt
-rw-r--r-- 1 oracle oinstall 897545 May 3 13:00 orachk_VIS_050311_124436.zip
```

1.  `-drwxr-xr-x 3 oracle oinstall 20480 May 3 13:00 orachk_VIS_050311_124436`

```
$ cd orachk_VIS_050311_124436
```

2.  `$ ls -l orachk*.html`

```
-rw-r--r-- 1 oracle oinstall 22862 May 3 13:00 orachk_VIS_050311_124436.html
```

- Copy the orachk\_\*.html report to a workstation with a browser
- Identify findings for validation if any considered questionable
- Compare rationale with data derived from system

# ORAchk – Post Processing Data Validation

## Findings Needing Attention

FAIL, WARNING, ERROR and INFO findings should be evaluated. INFO status is considered a significant finding and details for those should be

Status	Type	Message	Status On	Details
WARNING	Cluster Wide Check	Time zone does not match for root user across cluster	Cluster Wide	<a href="#">View</a>
WARNING	OS Check	NTP is not running with correct setting	bblinux2	<a href="#">View</a>
WARNING	OS Check	OSWatcher is not running as is recommended.	All Database Servers	<a href="#">View</a>
WARNING	OS Check	NIC bonding is NOT configured for public network (VIP)	All Database Servers	<a href="#">View</a>
WARNING	OS Check	pam_limits NOT configured properly for shell limits	All Database Servers	<a href="#">View</a>
WARNING	OS Check	Open file limit for root user (ulimit -n) is NOT > = 65536 or unlimited	All Database Servers	<a href="#">View</a>
WARNING	OS Check	kernel.shmmax parameter is NOT configured according to recommendation	All Database Servers	<a href="#">View</a>
WARNING	OS Check	Shell limit soft nofile for GI is NOT configured according to recommendation	All Database Servers	<a href="#">View</a>
WARNING	OS Check	Shell limit soft nproc for GI is NOT configured according to recommendation	All Database Servers	<a href="#">View</a>
WARNING	SQL Parameter Check	Database Parameter parallel_execution_message_size is NOT set to the recommended value	All Instances	<a href="#">View</a>
INFO	OS Check	OS parameter vm.swappiness is NOT set to the recommended value	All Database Servers	<a href="#">View</a>
INFO	OS Check	Jumbo frames (MTU 9000) are not configured for interconnect	All Database Servers	<a href="#">View</a>
INFO	SQL Parameter Check	db_ultra_safe parameter is NOT configured OFF	All Instances	<a href="#">View</a>
INFO	OS Check	\$CRS_HOME/log/hostname/client directory has too many older log files.	All Database Servers	<a href="#">View</a>

## Database Parameter `parallel_execution_message_size` is NOT set to the recommended value

Success Factor	CONFIGURE <code>PARALLEL_EXECUTION_MESSAGE_SIZE</code> FOR BETTER PARALLELISM PERFORMANCE
Recommendation	<p>Critical</p> <p>Benefit / Impact:</p> <p>Experience and testing has shown that certain database initialization parameters should be set at specific values. These are the best practice values set at deployment time. By setting these database initialization parameters as recommended, known problems may be avoided and performance maximized.</p> <p>The parameters are common to all database instances. The impact of setting these parameters is minimal.</p> <p>The performance related settings provide guidance to maintain highest stability without sacrificing performance. Changing the default performance settings can be done after careful performance evaluation and clear understanding of the performance impact.</p> <p>Risk:</p> <p>If the database initialization parameters are not set as recommended, a variety of issues may be encountered, depending upon which initialization parameter is not set as recommended, and the actual set value.</p> <p>Action / Repair:</p> <p><code>PARALLEL_EXECUTION_MESSAGE_SIZE = 16384</code> Improves Parallel Query performance</p>
Links	<p>3. <a href="#">Note: 280939.1 - Checklist for Performance Problems with Parallel Execution - Parallel execution message size from Oracle Docs</a></p>
Needs attention on	RATDB11,R111CF1,RATDB12

1. Read the details of the Rationale for Recommended Value

3.

Status on RATDB11: WARNING => Database Parameter `parallel_execution_message_size` is NOT set to the recommended value  
`RATDB11.parallel_execution_message_size = 2152` ← 2. Status section has data retrieved from system

Status on R111CF1: WARNING => Database Parameter `parallel_execution_message_size` is NOT set to the recommended value  
`R111CF1.parallel_execution_message_size = 2152` ←

Status on RATDB12: WARNING => Database Parameter `parallel_execution_message_size` is NOT set to the recommended value  
`RATDB12.parallel_execution_message_size = 2152` ←

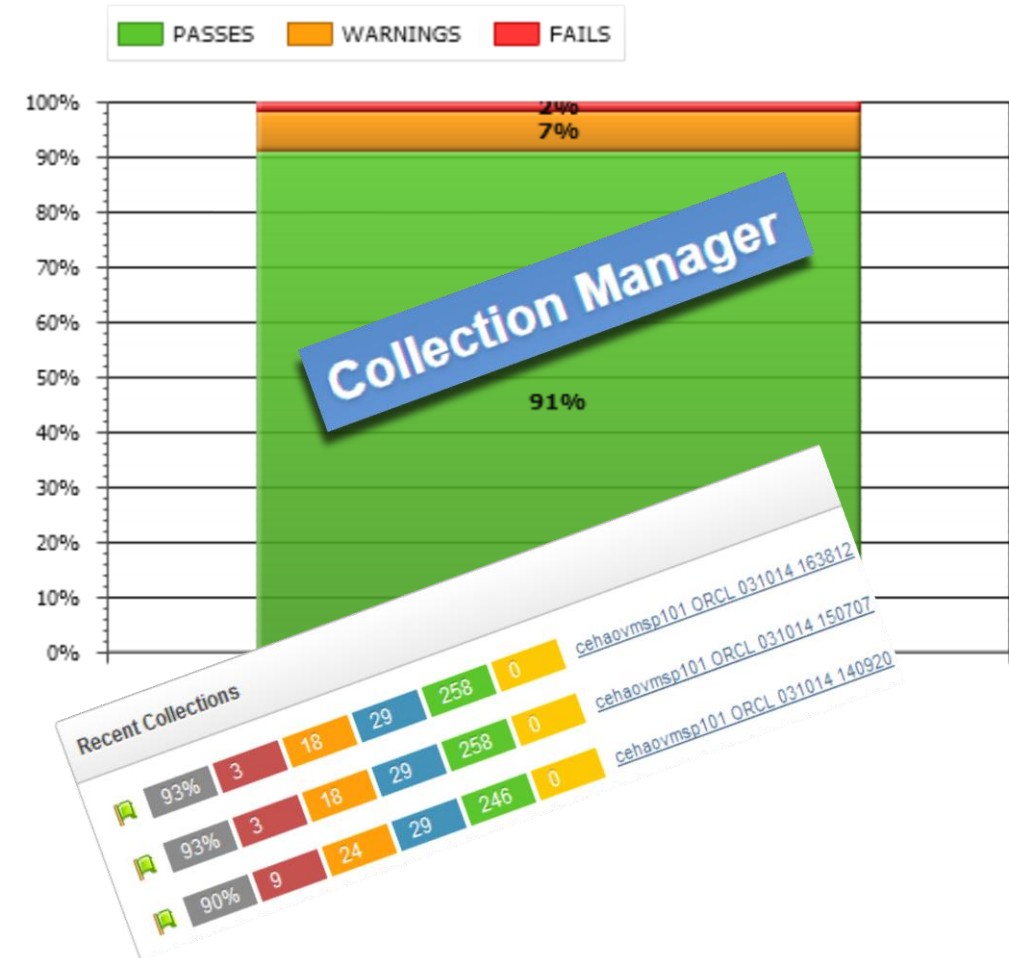
# ORAchk – Usage Cheat sheet

Proactive Health Checks	
Check everything	<code>./orachk -a</code>
Check a component	<code>./orachk -profile [sysadmin dba ...]</code>
Pre-Upgrade	
Pre-Upgrade assessment	<code>./orachk -u -o pre</code>
Post-Upgrade	
Post-Upgrade assessment	<code>./orachk -u -o post</code>
Daemon	
Starting Daemon	<code>./orachk -d start</code>
Stop Daemon	<code>./orachk -d stop</code>
Setup Daemon config to schedule runs on tuesday and friday at 8 and 20 hour and send notification email.	<code>./orachk -set 'AUTORUN_SCHEDULE=8,20 * * 2,5'</code> <code>./orachk -set 'NOTIFICATION_EMAIL=admin@company.com'</code>
Reports	
Compare reports from old and new run	<code>./orachk -diff &lt;Old Report&gt; &lt;New Report&gt; [-outfile &lt;Output HTML&gt;]</code>

- Run `./orachk -h` for detailed help.

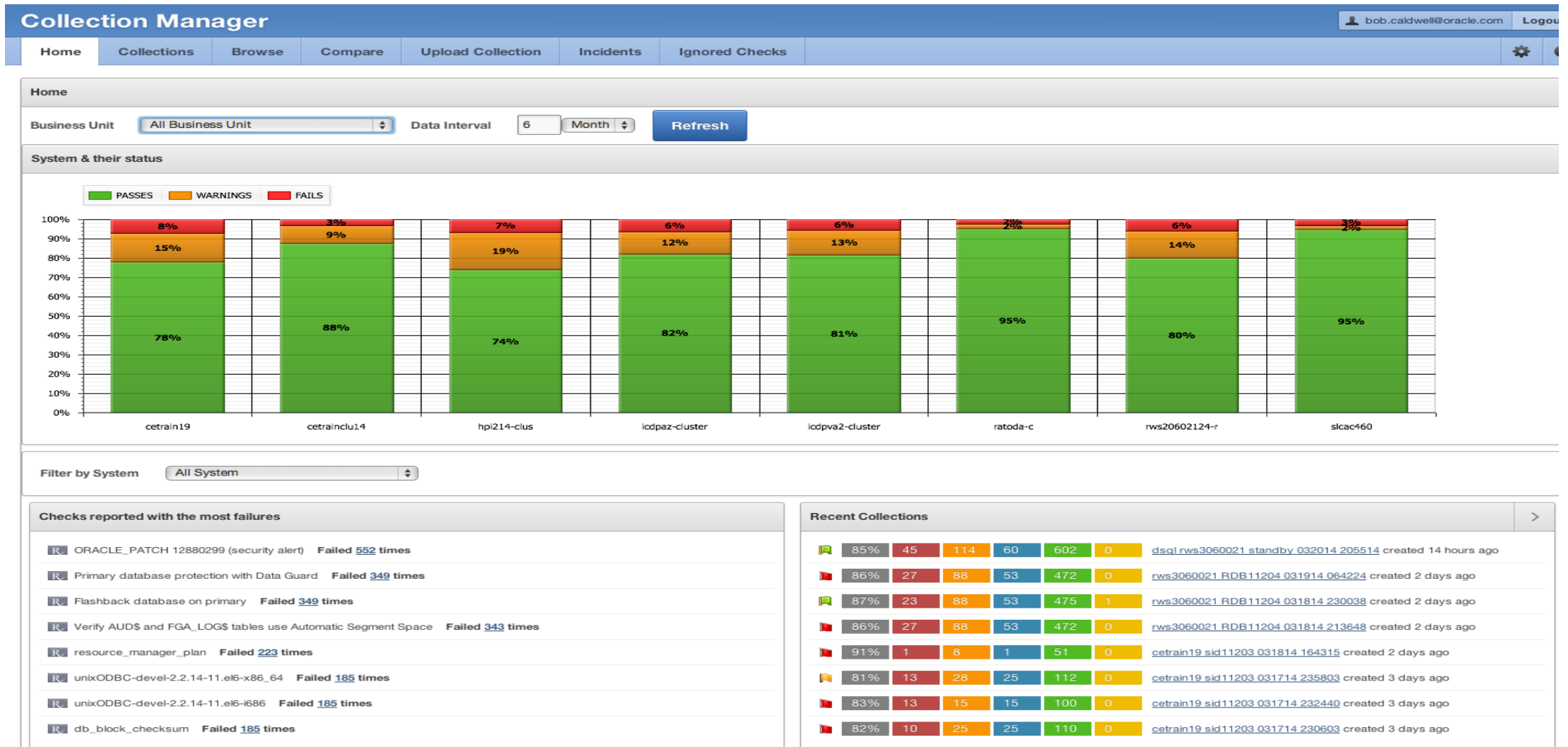
# ORAchk Collection Manager

- Companion Application to ORAchk
- Dashboard Interface to track ORAchk Collections
- Central Repository for ORAchk Collections
- Trending of Findings Over Time
- Automatic Result Comparison
- Incident Tracking System
- Oracle Application Express 4.2 required
- Available via MOS Note: 1602329.1





# ORAchk – Collection Manager Dashboard



# ORAchk – Support

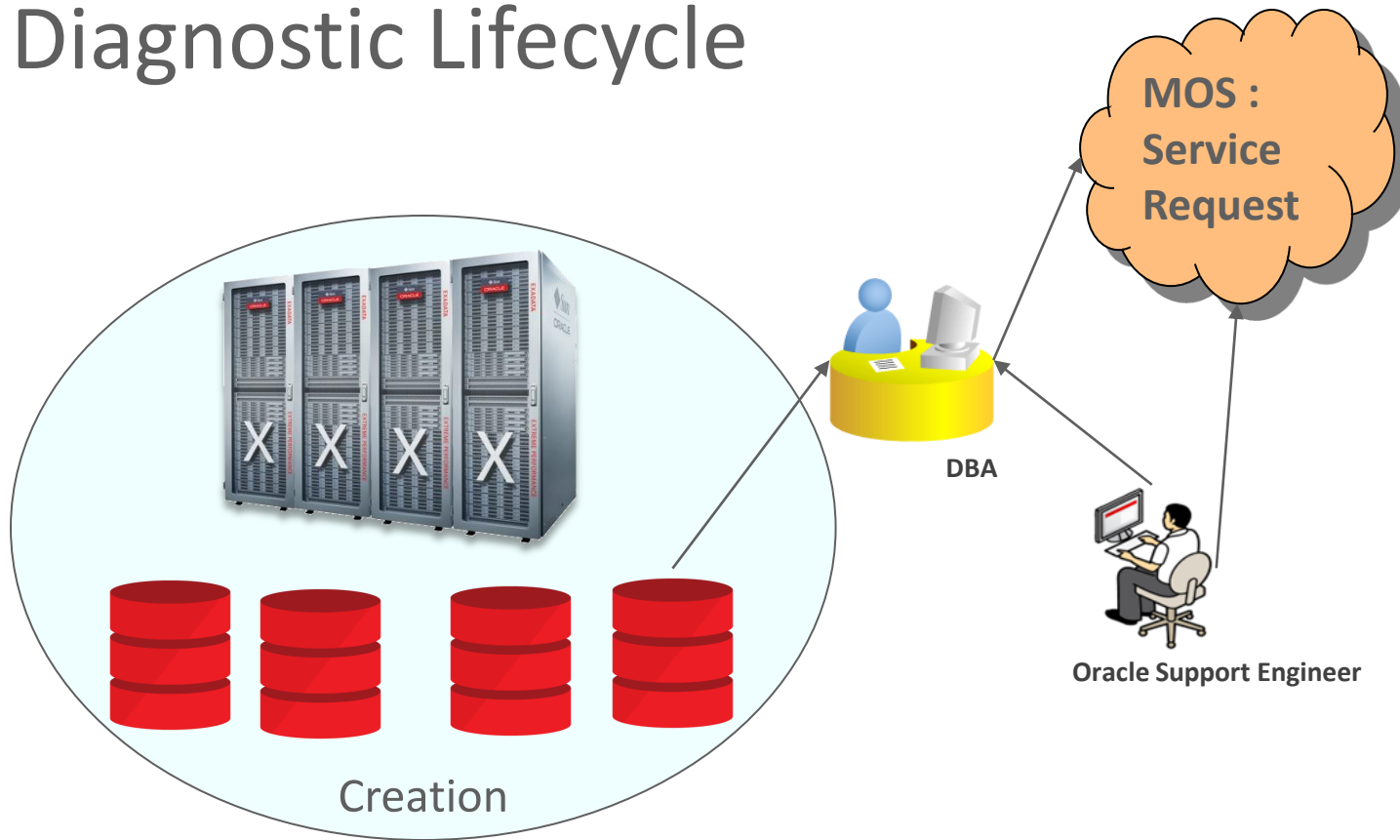
If questions remain or other problems please report the problem in the My Oracle Support Community ORAchk thread

[My Oracle Support Community](#)

A woman with long brown hair and glasses is sitting at a wooden table in a cafe. She is wearing a brown leather jacket over a blue patterned scarf. She is holding a black mobile phone to her ear with her right hand and looking down at a large open book or document on the table with her left hand. The background is a blurred cafe interior with other tables and chairs.

# Being Prepared for Reactive Issues

# Diagnostic Lifecycle



**System is not working as expected.**

**How to troubleshoot ?**

- Contact Oracle support, open service request
- Collect data around the problem time from all nodes and upload.
- Collect more data and upload again
- Download tools/scripts, run and upload data
- Did anything change in system, around problem time ?
- Logs are rotated. Not enough data for problem analysis.

**What if a single command could collect everything and uploaded to SR !**

# TFA

## Trace File Analyzer Collector

- Diagnostic Collection utility that **simplifies** diagnostic **data collection**
- A **single command** performs clusterwide diagnostic collection for ALL components
- Diagnostic files “**trimmed**” around the incident time
- Collected diagnostics are **consolidated** on a single node
- Increased efficiency of admin staff
- Packaged with 11.2.0.4/12.1.0.2 – standalone available
- Note: 1513912.1



# TFA vs Traditional Diagnostics Collection

## Traditional Diagnostics Collection

### Node Reboot (All Nodes)

- diagcollection.sh output
- OSWatcher
- CHMOS output

### Instance Eviction (All Nodes)

- ASM/DB Alert Logs
- ASM/DB Trace Files
- diagcollection.sh output
- OSWatcher
- CHMOS output

- **Manual** copying/archiving files from multiple locations on a given system and must be repeated for ALL nodes
- Diagnostics for a given node often exceed 350MB, for a 4 node cluster this is **1.4 GB** of data to **upload** to MOS.
- The customer needs to manually get the **correct data** covering the **correct time**
- If the data was not properly gathered during the first outage we must “wait” for a re-occurrence of the issue

# TFA vs Traditional Diagnostics Collection

## TFA Approach

### All Scenarios

```
# tfactl diagcollect -for <time>
```

**Note:** Alternatively enable Real Time Automatic Diagnostic Collection

- **Proper diagnostics** for an incident **collected, trimmed and packaged** around the incident time with a single command
- **One .zip file** per cluster node generated and each are consolidated on a single node
- Greatly **reduced file size** containing only data for a particular incident for ease of upload
- Optionally perform diagnostic collection automatically when an incident is detected by TFA

# TFA - Requirements

## Supported Platforms

- Oracle Engineered Systems, Exadata, ZDLRA, ODA
- Linux x86/x86-64 (OEL, RedHat and SuSE 9, 10, 11)
- Oracle Solaris (SPARC and x86-64)
- IBM AIX
- HP-UX
- zLinux

## Supported Oracle Releases

- All – TFA is written outside the GI/RAC/RDBMS product lines and as such could be used for any type of trace/diagnostic file collection



### **Note:**

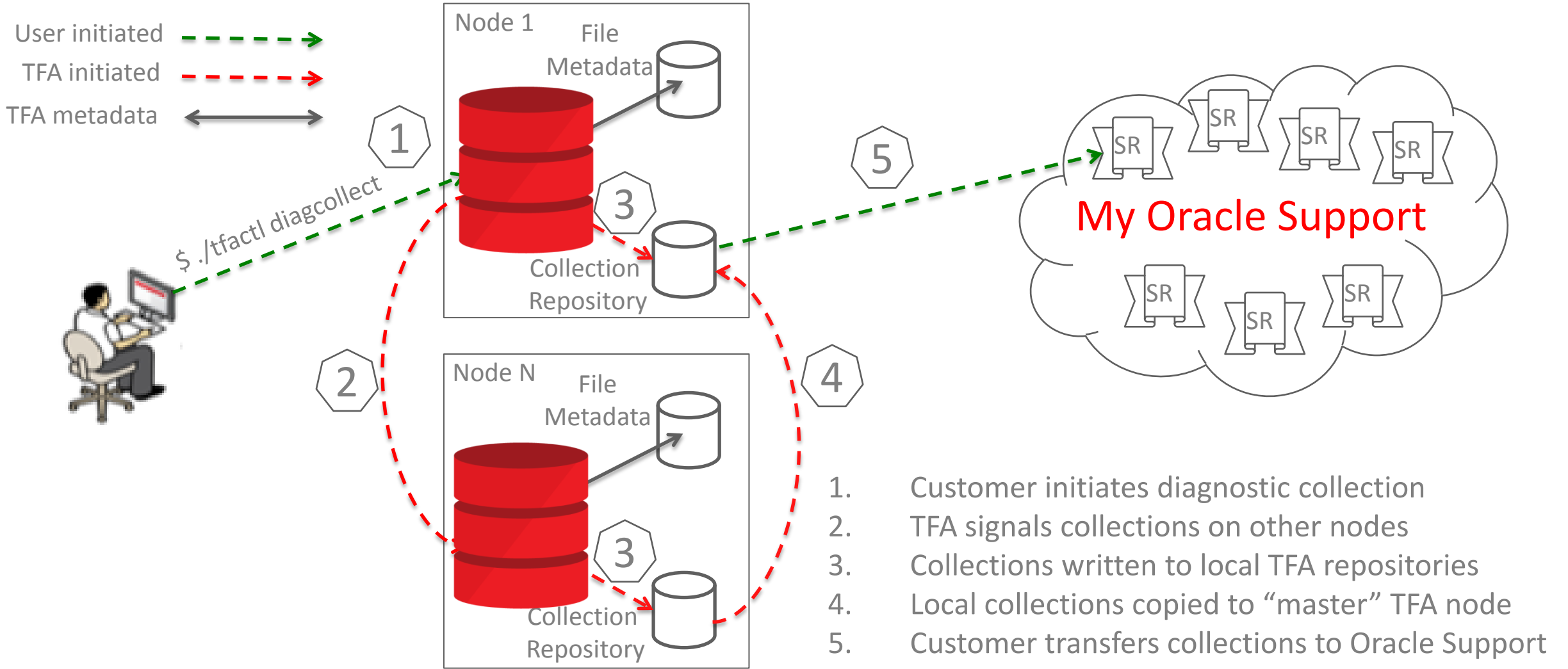
BASH shell and JRE 1.5 or higher are required on ALL platforms



# Basic Functionality

- Are you on 11.2.0.4+ and 12.1.0.2+
  - Yes , `$GI_HOME/bin/tfactl diagcollect` (collects 4 hours of data from all nodes)
  - No , Download from MOS note 1513912.1 and install
- TFA Collections
  - On-demand (default) - when problems occur
  - Auto-collection (configurable) – triggered by list of events
    - ORA-600
    - ORA-7445
    - Node evictions
- TFA Collector “always on”

# TFA Collector Process Flow



1. Customer initiates diagnostic collection
2. TFA signals collections on other nodes
3. Collections written to local TFA repositories
4. Local collections copied to "master" TFA node
5. Customer transfers collections to Oracle Support



# Automatic Diagnostic Discovery

- Automatic Discovery of components during the installation
- Periodically checks trace directories to classify exceptions
- Does a cluster-wide collection of all relevant files given a problem date and time.
- Smaller files compared to old collection methods due to data trimming
- tfactl
  - Used for all management requests in TFA – Run as root (sudo supported)
  - Non-root users are able to take collections 11.2.0.4 PSU3 onwards
  - Analyze alert logs (DB, ASM,CRS, /var/log/message) and OSW files

# Collection Commands

## tfactl diagcollect [examples]

1. `tfactl diagcollect`
2. `tfactl diagcollect -since 8h`
3. `tfactl diagcollect -database hrdb,fdb -since 1d`
4. `tfactl diagcollect -crs -os -node node1,node2 -since 6h`
5. `tfactl diagcollect -asm -node node1 -from Jan/4/2015 -to "Feb/5/2015 21:00:00"`
6. `tfactl diagcollect -for "Feb/2/2015"`
7. `tfactl diagcollect -for "Feb/2/2015 21:00:00"`
8. `tfactl diagcollect -crs -collectdir /tmp_dir1,/tmpdir_2`

# Trace File Analyzer Collector Features Support Tools Bundle

- Formerly maintained as simply a ZIP downloadable from MOS Note: 1594347.1 which contained:

**Note:** All tools are local only in TFA 12.1.2.3.0

- ORAchk
  - OSWatcher (started automatically if not already running)
  - Procwatcher
  - ORATOP
  - SQLT
  - DARDA
- All tools now integrated into TFA as of version 12.1.2.3.0 (MOS only)

# Trace File Analyzer Collector Features

## Support Tools Bundle

- Command line execution of each of the tools available via TFA Shell
  - Provides a centralized method to execute each tool through a common interface
  - Provides a centralized repository to store the output of each tool
    - Output is contained in TFA Repository when executed through TFA Shell
  - Allows for the tool(s) output to be gathered via TFA Diagcollect

# OSWatcher

- Shell script to collect and archive OS Metrics
- Executes standard UNIX utilities (e.g. vmstat, iostat, ps, etc) on regular intervals
- Built in Analyzer functionality to summarize, graph and report upon collected metrics
- **Output is Required** for node reboot and performance issues
- Simple to install, extremely lightweight
- Runs on ALL platforms (Except Windows)
- MOS Note: 301137.1 – OS Watcher Users Guide



# Procwatcher

- Tool to continuously monitor and examine Oracle Database and RAC processes at a specified interval
- Generates session wait, lock and latch reports as well as call stacks from any **problem** process(s)
- Ability to collect stack traces of specific processes using Oracle Tools and OS Debuggers
- Typically reduces SR resolution for performance related issues
- Runs on ALL major UNIX Platforms
- MOS Note: 459694.1 – Procwatcher Install Guide





# oratop

- Near real-time monitoring of databases, RAC and Single Instance (MOS Note: 1500864.1)

```
tfactl> db ratoda
```

```
Set db to RATODA
```

```
RATODA tfactl> oratop
```

```
Oracle 11g - Primary RATODA 21:51:00 up: 130d, 2 ins, 0 sn, 0 us, 32G mt, 10% fra, 0 er, 0.2% 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
1	3	3	0	0	0	0	0	0	0	0	0	26	3m	50	0	0	11	225M	234M	0	29	567u	27	72	68.1
2	2	2	0	0	0	0	0	0	0	0	0	3	490u	3	0	0	14	221M	184M	0	12	568u	64	35	31.9

EVENT (C)	TOTAL WAITS	TIME(s)	AVG_MS	PCT	WAIT_CLASS
<b>DB CPU</b>		232797		39	
Streams AQ: qmn coordinator waiting for slave to start	22690	125218	5518.5	21	Other
db file parallel write	5897150	112297	19.1	19	System I/O
control file parallel write	7804845	66997	8.6	11	System I/O
<b>control file sequential read</b>	74637423	55050	0.7	9	System I/O

ID	SID	SPID	USERNAME	PROGRAM	SRV	SERVICE	PGA	SQLID/BLOCKER	OPN	E/T	STA	STE	WAIT_CLASS	EVENT/*LATCH	W/T
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# CHM

## Cluster Health Monitor

- Installed on ALL platforms (except HPUX) with Grid Infrastructure 11.2.0.3+
- Collects OS Metrics in **Real Time** at 5 second intervals
- OS Metrics include Memory, CPU, Swap, I/O, etc
- Data retention < 1 day (dependent on cluster size) and may be increased – See MOS Note: 1921105.1
- Output Required for Node Reboot and Performance Issues
- Both CHM and OSW are recommended where available
- MOS Note: 1328466.1 – CHM FAQ



# Trace File Analyzer Collector Features

## DBA Tools

### Tools accessible via TFA Shell :

- Navigation and lookup
  - ls : Search files in TFA
  - grep : Grep for input string in logs
  - tail : Tail log files
  - vi : Search and open files in vi editor
  - param : Prints parameter value
- Analytics
  - alertsummary : Prints summary of important events in database/ASM alert logs
  - analyze : Summarize and search important timeline files in system.
  - changes : Prints system changes
  - events : Lists all important events in system
  - ps : Find a process
  - pstack : Run pstack on a process
  - summary : Prints system summary

# Trace File Analyzer Collector TFA Download/Training

- For pre 11.2.0.4 and 12.1.0.1 Customers
  - MOS Note: TFA Collector- The Preferred Tool for Automatic or ADHOC Diagnostic Gathering Across All Cluster Nodes [ID 1513912.1]
- For Patching
  - MOS Note: TFA Collector- The Preferred Tool for Automatic or ADHOC Diagnostic Gathering Across All Cluster Nodes [ID 1513912.1]
- Training Video on Youtube
  - <https://www.youtube.com/watch?v=oK71nWsyWIo>

# Diagnosability – What's Next ?

- First Failure Diagnostics
- Diagnostic Collection Framework
- Diagnostic/Analytical Tools



Thank You !  
Questions ?