LIVINGSTON

Oracle Active Monitoring

Version: 1.0

Table of Contents

1 DOCUMENT CONTROL

The document control section describes the revision history and summary of the changes made to the document.

1.1 Distribution List

Name	Role	Representing

1.2 Document History

Version	Date	Who	Summary of Changes
1.0	Mar, 8th 2016	Ramiz Sarah	Initial Draft

1.3 Document Location

The source of the document will be found under the KEC ALLIANCE Documentation section

2 SUMMARY

This document identifies the oracle events that are monitored by the Oracle Active Monitoring script for any running oracle instance.

The script uses the native OS level commands as well as Oracle SQL and PL/SQL. The automation of the script is handled via the operating system crontab utility.

3 MONITORING EVENTS

The following is a list of the events that are monitored by Active Monitoring. Additional items can be added as needed.

The list of items are controlled by an enable/disable switch and individual events can be switch on/off as deemed necessary even though it is recommended to report on all the mentioned events.

Appendix A contains a list of the events as well as their baseline threshold.

3.1 Instance Availability

Monitors database instance up/down status. (“Database state”, “database status”).

3.2 Listener Availability

Checks if the oracle listener(s) are running and accepting connections (“Listener status”) on a particular server.

3.3 Alert Log Errors

Monitors oracle errors written to the Oracle Alert Log. The script keeps track of the latest unreported errors and will only email the DBAs if errors are detected.

3.4 Session Information

Monitors the current session utilization and report if within 10% of max utilization of. Session limit is found under the “V$RESOURCE_LIMIT”

3.5 Process Information

Monitors the current process utilization and report if within 10% of max utilization of. Process limit is found under the “V$RESOURCE_LIMIT” (“processes” resource name).

3.6 Tablespaces ONLINE Status

Monitors tablespaces and report if any have been offlined.

3.7 Tablespaces in BACKUP mode

Monitors any tablespaces that are in backup mode. Tablespaces in backup mode, puts a load on the database and generates a lot of oracle redo information/logs.

3.8 Datafiles AVAILABLE Status

Monitors all the datafiles within the running instance and report otherwise.

3.9 Sufficient Free Space in the Archivelog/Flashback Directories

Monitors free space availability with Archivelog/Flashback directories. Warning and Critical thresholds can be set.

3.10 User objects in SYSTEM tablespace

Monitors and report on any user objects created in the system tablespace or have the SYSTEM tablespace as their default/temporary tablespace.

3.11 Redo Latch Contention

Monitors Oracle redo latch contention and possible issues with the Redo Buffer.

3.12 Memory and Disk Sorts (< 5%)

Monitors the ratio of disk to memory sorts –report if disk-to-memory sorts ratio exceeds 5%.

3.13 Data Dictionary Hit Ratio (> 90%)

Monitors the ratio of logical reads to physical disk reads. As the hit ratio approaches 100 percent, more data blocks are found in memory, resulting in fewer disk I/Os and faster overall database performance.

3.14 Buffer Hit Ratio (> 90%)

Monitors data in the database buffer cache. Generally, higher buffer hit ratio provides better database performance.

3.15 Library Cache Miss Ratio (< 1%)

Monitors the oracle library cache hit ratio for the oracle database (the library cache hit ratio indicates how often Oracle can retrieve a parsed SQL or PL/SQL statement from memory).

3.16 Un-usable and Invalid Indexes

Monitors any invalid or unusable index(es). These effect DB/application performance.

3.17 Locking and Blocking Issues

Monitors sessions being blocked over consecutive monitoring cycles and/or if there are any sessions that are blocking other sessions.

3.18 Users Objects Not Analyzed Within X days

Monitors any user(s) tables and indexes that have not been analyzed within the last X number of days. These effect DB/application performance.

3.19 Database/Tablespace Utilization

Monitors tablespace space usage; check if any tablespace is running out free space or if a tablespace is approaching the critical threshold.

3.20 Invalid Objects

Monitors any objects that have become invalid due to definition changes since the last monitoring run. The script will keep track of such objects so that they don't appear in subsequent runs.

3.21 Wait Events (Wait % > 40%)

Monitors the top wait events in the database and report if any particular wait time exceeds the threshold (of %40 of the total database time). Excessive waits on system events can indicate a variety of issues that can cause slowdowns within the database.

4 SETUP

To setup Active Monitoring, we need to download the scripts, setup the required directory structure(s) and objects, and schedule monitoring to run periodically to perform the required database health check.

Setup the “script” and “sql” directories under the Oracle user and/or the user with the appropriate permissions to access the oracle binaries.

- Create the “script” directory under the Oracle user’s home directory.
- Create the “sql” directory under the Oracle user’s home directory.

Download the Active Monitoring scripts from knownet and place the “active_dba_db_mon.bash” under the “script” directory setup above. This is the main driving script for Oracle Active Monitoring. There are a number of parameters that are used by the script, these are defined under the “db_monENV” parameter file. This file has to be placed in the same directory as the main script.

Place the “active_db_mon_main.sql” sql script under the “sql” directory setup above. This script is called by “active_dba_db_mon.bash” and performs the database health checks.

The monitoring schema has to be setup in the database as well as other objects required for active monitoring. Follow the instructions under “active_dba_mon_setup.sql” to create the required tablespace, setup dbmon schema, and create the necessary objects.

The “dbmon” schema has dba privilege; for system security, mask the “dbmon” schema password so that it’s not visible to other users on the box. Follow the instructions provided under “dbmon_password_setup.txt" to mask the “dbmon” password.

Finally, schedule the “active_dba_db_mon.bash“ script to run under crontab. Ideally the script has to run “actively” to be able to identify issues within the running instance. Hence, scheduling the script to run every 5~10mins is ideal. The following shows the crontab settings to run the script once every 10 mins:

```
*/10 * * * * /home/oracle/script/active_dba_db_mon.bash kec1testdb > /dev/null 2>&1
```

5 APPENDIX A: EVENT THRESHOLD TABLE

Summary of Baseline Events and their associated threshold

Event	Threshold
Instance Availability	N/A
Listener Availability	N/A
Alert Log Errors	N/A
Session Information	Within 10% of Max Util.
Process Information	Within 10% of Max Util.
Tablespaces ONLINE Status	N/A
Tablespaces in backup mode	N/A
Datafiles AVAILABLE Status	N/A
Sufficient Free Space in the Archivelog/Flashback Directories	20% (free space available)
User objects in SYSTEM tablespace	N/A
Redo Latch Contention	> 1%
Memory and Disk Sorts	< 5%
Data Dictionary Hit Ratio (> 90%)	> 90%
Buffer Hit Ratio (> 90%)	> 90%
Library Cache Miss Ratio	< 1%
Un-usable and Invalid Indexes	N/A
Locking and Blocking Issues	N/A
Users Objects Not Analyzed Within X days	7 Days
Database/Tablespace Utilization	Free space < 10%
Invalid Objects	N/A
Wait Events	Wait > 40%