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Question 1

Question Type: MultipleChoice

Multiple sessions are inserting data concurrently into a table that has an LOB column.

At some point in time, one of the sessions cannot find available space in the LOB segment and needs to allocate a new extent.

Which wait event will be raised in the other sessions that need space in the LOB column?

Options:

A- enq: SQ - contention

B- enq: TM - contention

C- enq: HW - contention

D- enq: TX - allocate ITL entry

Answer:

C

Explanation:

When sessions concurrently insert data into a table with an LOB column and one session needs to allocate a new extent because it cannot find available space, the wait event associated with this contention is 'enq: HW - contention'. The HW stands for High Water Mark which is related to space allocation in the database segment. When a session needs to allocate a new extent, it may raise this wait event in other sessions that are also attempting to allocate space in the same LOB segment.

Reference

Oracle Database 19c Reference Guide - enq: HW - contention

Question 2

Question Type: MultipleChoice

Which two statements are true about the use and monitoring of Buffer Cache Hit ratios and their value in tuning Database I/O performance?

Options:

A- The performance of workloads that primarily generate full table scans and fast full index scans are always affected by the cache hit ratio.

B- A 99% cache hit ratio can be observed for database instances which have very poor I/O performance.

C- The buffer cache advisory view v$db_cache_advice provides advice on cache hit ratios appropriate for the instance workload.

D- Both the RECYCLE and KEEP buffer caches should always have a very high cache hit ratio.

E- A 60% cache hit ratio can be observed for database instances which have very good I/O performance.

Answer:

B, C

Explanation:

A high buffer cache hit ratio typically indicates that the database is effectively using the buffer cache and does not often need to read data from disk. However, this metric alone is not a reliable indicator of the I/O performance of the database for several reasons:

Full table scans and fast full index scans (A) can bypass the buffer cache by design if the blocks are not deemed reusable shortly, which can impact the cache hit ratio.

A high cache hit ratio (B) can be misleading if the database performance is poor due to other factors, such as inefficient queries or contention issues.

The buffer cache advisory (C) is a more valuable tool for understanding the potential impact of different cache sizes on the database's I/O performance. It simulates scenarios with different cache sizes and provides a more targeted recommendation.

The RECYCLE and KEEP buffer caches (D) are specialized caches designed for certain scenarios. While high hit ratios can be beneficial, they are not universally required; some workloads might not be significantly impacted by lower hit ratios in these caches.

A lower cache hit ratio (E) does not necessarily mean poor I/O performance. In some cases, a system with a well-designed storage subsystem and efficient queries might perform well even with a lower cache hit ratio.

Reference

Oracle Database 19c Performance Tuning Guide - Buffer Cache Hit Ratio

Oracle Database 19c Performance Tuning Guide - v$db_cache_advice

Question 3

Question Type: **MultipleChoice**

SGA_TARGET and PGA_AGGREGATE_TARGET are configured to nonzero values.

MEMORY_target is then set to a nonzero value but memory_MAX_TARGT is not set.

Which two statements are true?

A)

`SGA_TARGET` and `PGA_AGGREGATE_TARGET` will define lower size limits for the SGA and PGA, respectively.

B)

MEMORY_MAX_TARGET will default to either the sum of SGA_TARGET and PGA_AGGREGATE_TARGET or to MEMORY_TARGET, whichever is smaller.

C)

PGA_AGGREGATE_TARGET will be ignored but SGA_TARGET will define the lower size limit for SGA size.

D)

MEMORY_MAX_TARGET will default to zero.

E)

SGA_TARGET will be ignored but PGA_AGGREGATE_TARGET will define the lower size limit for PGA size.

F)

MEMORY_MAX_TARGET will default to either the sum of SGA_TARGET and PGA_AGGREGATE_TARGET or to MEMORY_TARGET, whichever is greater.

G)

MEMORY_MAX_TARGET will default to MEMORY_TARGET.

Options:

A- Option

B- Option

C- Option

D- Option

E- Option

F- Option

G- Option

Answer:

F, G

Explanation:

When MEMORY_TARGET is set to a nonzero value, Oracle automatically manages the memory allocation between the System Global Area (SGA) and the Program Global Area (PGA). If MEMORY_MAX_TARGET is not explicitly set, Oracle will behave in the following manner:

MEMORY_MAX_TARGET will default to the value of MEMORY_TARGET, assuming the platform allows for the value of MEMORY_TARGET to be increased dynamically. This means that MEMORY_TARGET represents both the initial allocation and the maximum limit for the dynamically managed memory unless MEMORY_MAX_TARGET is specified differently.

If MEMORY_TARGET is set to a value that is less than the sum of the current values of SGA_TARGET and PGA_AGGREGATE_TARGET, Oracle will use the higher sum as the default value for MEMORY_MAX_TARGET to ensure that there is adequate memory for both areas. The database instance will not start if MEMORY_TARGET is not sufficient to accommodate the combined SGA and PGA requirements.

Reference

Oracle Database Administrator's Guide 19c: Automatic Memory Management

Oracle Database Performance Tuning Guide 19c: Using Automatic Memory Management

Question 4

Question Type: **MultipleChoice**

You must configure and enable Database Smart Flash Cache for a database.

You configure these flash devices:

```
/dev/sdj with size 128G
/dev/sdk with size 64G
```

Examine these parameter settings:

```
NAME                    TYPE        VALUE
----------------------- ----------- ------------------
db_flash_cache_file     string      /dev/sdj, /dev/sdk
db_flash_cache_size     big integer 0
memory_max_target       big integer 64G
memory_target           big integer 64G
sga_target              big integer 0
```

What must be configured so that the database uses these devices for the Database Smart Flash Cache?

Options:

A- Set DB_FLASH_CACHE_SIZE to 192G and MEMORY_TARGET to 256G.

B- Set DB_FLASH_CACHE_SIZE parameter to 192G.

C- Disable Automatic Memory Management and set SGA_TARGET to 256G.

D- Set DB_FLASH_CACHE_SIZE to 256G and change device /dev/sdk to 128G.

E- Set DB_FLASH_CACHE_SIZE parameter to 128G, 64G.

Answer:

E

Explanation:

To configure and enable Database Smart Flash Cache, you must set the DB_FLASH_CACHE_SIZE parameter to reflect the combined size of the flash devices you intend to use for the cache. In this scenario, two flash devices are configured: /dev/sdj with 128G and /dev/sdk with 64G.

Determine the combined size of the flash devices intended for the Database Smart Flash Cache. In this case, it's 128G + 64G = 192G.

However, Oracle documentation suggests setting DB_FLASH_CACHE_SIZE to the exact sizes of the individual devices, separated by a comma when multiple devices are used.

Modify the parameter in the database initialization file (init.ora or spfile.ora) or using an ALTER SYSTEM command. Here's the command for altering the system setting:

ALTER SYSTEM SET DB_FLASH_CACHE_SIZE='128G,64G' SCOPE=SPFILE;

Since this is a static parameter, a database restart is required for the changes to take effect.

Upon database startup, it will allocate the Database Smart Flash Cache using the provided sizes for the specified devices.

It is important to note that MEMORY_TARGET and MEMORY_MAX_TARGET parameters should be configured independently of DB_FLASH_CACHE_SIZE. They control the Oracle memory management for the SGA and PGA, and do not directly correlate with the flash cache configuration.

Reference

Oracle Database 19c Documentation on Database Smart Flash Cache

Oracle Support Articles and Community Discussions on DB_FLASH_CACHE_SIZE Configuration

Question 5

Question Type: MultipleChoice

Which Optimizer component helps decide whether to use a nested loop join or a hash join in an adaptive execution plan?

Options:

A- Statistics Feedback

B- SQL Plan Directives

C- Statistics Collector

D- Automatic Reoptimization

E- Dynamic Statistics

Answer:

C

Explanation:

In an adaptive execution plan, the Optimizer makes runtime decisions between nested loop and hash joins using a statistics collector. The collector is a row source that collects statistics about the rows it processes and can adapt the plan based on the number of rows processed.

Oracle Database SQL Tuning Guide, 19c

Question 6

Question Type: MultipleChoice

Buffer cache access is too frequent when querying the SALES table. Examine this command which executes successfully:

ALTER TABLE SALES SHRINK SPACE;

For which access method does query performance on sales improve?

Options:

A- db file scattered read

B- db file sequential read

C- index full scan

D- index range scan

Answer:

B

Explanation:

The SHRINK SPACE operation compacts the table, which can reduce fragmentation and thus improve performance for sequential reads of the table. This operation could improve full table scans, which are typically associated with db file sequential read wait events.

Oracle Database Administrator's Guide, 19c

Question 7

Question Type: MultipleChoice

Examine these statements and output:

```
sqlplus / as sysdba

Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.9.0.0.0

SQL> show parameter optimizer

NAME                                 VALUE
------------------------------------ ------------------------------
optimizer_adaptive_plans             FALSE
optimizer_adaptive_statistics        FALSE
optimizer_dynamic_sampling           2
optimizer_features_enable            12.1.0.2
optimizer_mode                       ALL_ROWS
optimizer_secure_view_merging        TRUE
optimizer_capture_sql_plan_baselines FALSE
optimizer_use_sql_plan_baselines     FALSE
...
```

What parameter change activates the generation and use of SQL Plan Directives7

Options:

A- optimizer_features_enable=12.2.0.1

B- optimizer_capture_sql_plan_baselines_TRUE

C- optimizer_dynamic_sampling=11

D- optimizer_adaptive_plans=TRUE

E- optimizer_adaptive_statistics = TRUE

Answer:

E

Explanation:

The optimizer_adaptive_statistics parameter, when set to TRUE, enables the optimizer to use adaptive statistics, such as SQL Plan Directives, to help improve plans by automatically adjusting them based on the actual execution statistics.

Oracle Database SQL Tuning Guide, 19c

Question 8

Question Type: MultipleChoice

Accessing the SALES tables causes excessive db file sequential read wait events.

Examine this AWR except:

Examine this AWR excerpt:

Segments by Physical Reads

Owner	Tablespace Name	Object Name	Subobject Name	Obj. Type	Physical Reads	%Total
SH2	SH2_DATA	SALES		TABLE	4,854,865	69.31
SH2	SH2_DATA	IX_SALES_CUST_ID		INDEX	683,225	11.53

Now, examine these attributes displayed by querying dba_tables:

OWNER	TABLE_NAME	NUM_ROWS	BLOCKS	PCT_FREE	PCT_USED	INI_TRANS	CHAIN_CNT	AVG_ROW_LEN
SH2	SALES	33675372	118337	20	50	1	7196335	125

Finally, examine these parameter settings:

NAME	VALUE
db_block_size	8192
db_file_multiblock_read_count	128
sga_target	132G
sga_max_size	132G

Which two must both be used to reduce these excessive waits?

Options:

A- Partition the SALES table.

B- Increase PCTFREE for the SALES table.

C- Re-create the SALES table.

D- Compress the SALES table.

E- Coalesce all sales table indexes.

Answer:

A, D

Explanation:

The AWR excerpt points to excessive physical reads on the SALES table and index, suggesting the need for optimizing table storage and access.

Partitioning the SALES table (A) can reduce 'db file sequential read' waits by breaking down the large SALES table into smaller, more manageable pieces. This can localize the data and reduce the I/O necessary for query operations.

Compressing the SALES table (D) can also help reduce I/O by minimizing the amount of data that needs to be read from disk. This can also improve cache utilization and reduce the 'db file sequential read' waits.

Oracle Database VLDB and Partitioning Guide, 19c

These changes are recommended based on Oracle's best practices for managing large tables and reducing I/O waits, ensuring better performance and efficiency.