Frequent OLDEST_PAGE for change LogReuseWaitDesc in SQL managed instance

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Contents

Issue

Customer is constantly seeing 'OLDEST_PAGE' for change 'LogReuseWaitDesc' on their Azure SQL Managed Instance and would like to minimize/eliminate it.

Sample output from customer:

PerfChangeId	CollectionDate	DatabaseIdFk	InstanceIdFk	Type	Name	ChangeName
2750	18:36.9	6	5	DB	<DBName1>	LogReuseWa
2751	18:36.9	6	5	DB	<DBName1>	LogReuseWa
2752	18:36.9	9	5	DB	<DBName2>	LogReuseWa
2753	18:36.9	9	5	DB	<DBName2>	LogReuseWa
2754	18:36.9	14	5	DB	<DBName3>	LogReuseWa
2755	18:36.9	14	5	DB	<DBName3>	LogReuseWa

Investigation/Analysis

If a database is configured to use indirect checkpoints, the oldest page on the database might be older than the checkpoint log sequence number (LSN). In this case, the oldest page can delay log truncation. (All recovery models). For information about indirect checkpoints, see Database Checkpoints.

MonRecoveryTrace can show the issue occurring:

```
MonRecoveryTrace
| where LogicalServerName =~ {MIName}
//| where database_name =~ {DBName}
| where TIMESTAMP >= {startTime} and TIMESTAMP <= {endTime}
| where trace_message contains "current log space"
| project TIMESTAMP, NodeName, database_id, trace_message
| order by TIMESTAMP asc
```

Sample Output:

TIMESTAMP	NodeName	database_id	trace_message
2022-05-12 16:32:18.9974623	DB8C.2	32763	About to log Checkpoint begin on dbid 32763, current log space used 1 MB, hold up by OLDEST_PAGE
2022-05-12 16:35:31.0187869	DB8C.2	1	About to log Checkpoint begin on dbid 1, current log space used 0 MB, hold up by ACTIVE_TRANSACTION
2022-05-12 16:37:07.0214530	DB8C.2	7	About to log Checkpoint begin on dbid 7, current log space used 52 MB, hold up by OLDEST_PAGE
2022-05-12 16:37:07.0214530	DB8C.2	5	About to log Checkpoint begin on dbid 5, current log space used 14 MB, hold up by OLDEST_PAGE
2022-05-12 16:37:08.0219703	DB8C.2	10	About to log Checkpoint begin on dbid 10, current log space used 18 MB, hold up by OLDEST_PAGE

Mitigation

If a database is configured to use indirect checkpoints, the oldest page on the database might be older than the checkpoint log sequence number (LSN).

Indirect Checkpoint is the default in Azure SQL Managed Instance.

OLDEST_PAGE would only be a reason for concern if the log cannot get truncated and keeps growing for a longer period of time.

The fact that there are some log sequence numbers that have not yet been checkpointed should not, in and of itself, be an issue.

Public Doc Reference

https://www.mssqltips.com/sqlservertip/2652/indirect-checkpoints-in-sql-server-2012/

https://docs.microsoft.com/en-us/answers/questions/75232/sysdm-db-log-stats-log-truncate-holdup-reason-olde.html

Factors that can delay log truncation

Database Checkpoints

Internal Reference

ICM 308488715

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