

SQL-DBA-Concepts-PocketGuide

S1	Description		SQLTalk-Comment/Solution
106	Calculates average stalls per read, per write, and per total input/output		<p>Tech target Microsoft</p> <p>https://technet.microsoft.com/en-us/library/jj643251.aspx</p> <pre>-- Calculates average stalls per read, -- per write, and per total input/output -- for each database file. SELECT DB_NAME(database_id) AS [Database Name] , file_id , io_stall_read_ms , num_of_reads , CAST(io_stall_read_ms / (1.0 + num_of_reads) AS NUMERIC(10, 1)) AS [avg_read_stall_ms] , io_stall_write_ms , num_of_writes , CAST(io_stall_write_ms / (1.0 + num_of_writes) AS NUMERIC(10, 1)) AS [avg_write_stall_ms] , io_stall_read_ms + io_stall_write_ms AS [io_stalls] , num_of_reads + num_of_writes AS [total_io] , CAST((io_stall_read_ms + io_stall_write_ms) / (1.0 + num_of_reads + num_of_writes) AS NUMERIC(10,1)) AS [avg_io_stall_ms] FROM sys.dm_io_virtual_file_stats(NULL, NULL)ORDER BY avg_I -- Look at pending I/O requests by file SELECT DB_NAME(mf.database_id) AS [Database] , mf.physical_name ,r.io_pending , r.io_pending_ms_ticks , r.io_type , fs.num_of_reads , fs.num_of_writesFROM sys.dm_io_pending_io_requests AS r INNER JOIN sys.dm_io_virtual_file_stats(NULL, NULL) AS fs ON r.io_handle = fs.file_handle INNER JOIN sys.master_files AS mf ON fs.database_id = mf.database_id AND fs.file_id = mf.file_idORDER BY r.io_pending , r.io_pending_ms_ticks DESC ;</pre>

107	Log contents		select * from fn_dblog(NULL,NULL)
108	Query to get the table size		<pre> ;with cte as (SELECT sch.name as SchemaName, t.name as TableName, SUM (s.used_page_count) as used_pages_count, SUM (CASE WHEN (i.index_id < 2) THEN (in_row_data_page_count + lob_used_page_count + row_overflow_used_page_count) ELSE lob_used_page_count + row_overflow_used_page_count END) as pages FROM sys.dm_db_partition_stats AS s JOIN sys.tables AS t ON s.object_id = t.object_id JOIN sys.indexes AS i ON i.[object_id] = t.[object_id] AND s.index_id = i.index_id JOIN sys.schemas AS sch ON sch.schema_id = t.schema_id GROUP BY sch.name,t.name) select cte.SchemaName, cte.TableName, cast((cte.pages * 8.)/1024 as decimal(10,3)) as TableSizeInMB, </pre>

			<pre> cast(((CASE WHEN cte.used_pages_count > cte.pages THEN cte.used_pages_count - cte.pages ELSE 0 END) * 8./1024) as decimal(10,3)) as IndexSizeInMB from cte order by 2 desc </pre>
109	Last stats update		<pre> SELECT DISTINCT OBJECT_NAME(s.[object_id]) AS TableName, c.name AS ColumnName, s.name AS StatName, s.auto_created, s.user_created, s.no_recompute, s.[object_id], s.stats_id, sc.stats_column_id, sc.column_id, STATS_DATE(s.[object_id], s.stats_id) AS LastUpdated FROM sys.stats s JOIN sys.stats_columns sc ON sc.[object_id] = s.[object_id] AND sc.stats_id = s.stats_id </pre>

			<pre> JOIN sys.columns c ON c.[object_id] = sc.[object_id] AND c.column_id = sc.column_id JOIN sys.partitions par ON par.[object_id] = s.[object_id] JOIN sys.objects obj ON par.[object_id] = obj.[object_id] WHERE OBJECTPROPERTY(s.OBJECT_ID,'IsUserTable ') = 1 AND (s.auto_created = 1 OR s.user_created = 1); </pre>
110	Stats last update		<pre> select a.id as 'ObjectID', isnull(a.name,'Heap') as 'IndexName', b.name as 'TableName', stats_date (id,indid) as stats_last_updated_time from sys.sysindexes as a inner join sys.objects as b on a.id = b.object_id where b.type = 'U' </pre>
111	, the query plans , total workertime, sps, reads/writes etc---		<pre> ----- ----- ----- ----- SELECT top 200 OBJECT_NAME(qt.objectid), qs.total_worker_time CPU, qs.last_worker_time Last_CPU, qs.last_execution_time, qs.execution_count, qs.total_logical_reads, qs.total_physical_reads, qp.query_plan </pre>

			<pre> FROM sys.dm_exec_query_stats qs CROSS APPLY sys.dm_exec_sql_text(qs.sql_handle) qt CROSS APPLY sys.dm_exec_query_plan(qs. plan_handle) qp where query_plan is not NULL ORDER BY qs.total_worker_time DESC -- CPU -- ORDER BY last_elapsed_time_in_S DESC -- CPU -- ORDER BY qs.total_logical_reads DESC -- logical reads -- ORDER BY qs.total_logical_writes DESC -- logical writes ----- ----- ----- </pre>
112	<pre> ----- To get only the query plans , CPU , exec count , last CPU ----- ----- </pre>		<pre> ----- SELECT qt.text, qs.total_worker_time CPU, qs.last_worker_time, qp.query_plan, qs.last_execution_time, qs.execution_count FROM sys.dm_exec_query_stats qs CROSS APPLY sys.dm_exec_sql_text(qs.sql_handle) qt CROSS APPLY sys.dm_exec_query_plan(qs. plan_handle) qp where qt.text like '%USP_CREATEDACCOUNTS_COUNT_ BY_RETAILER%' -- and qs.execution_count > 10 ORDER BY qs.total_worker_time DESC -- CPU -- ORDER BY last_elapsed_time_in_S DESC -- CPU -- ORDER BY qs.total_logical_reads DESC -- logical reads -- ORDER BY qs.total_logical_writes DESC -- logical writes </pre>

113	to get top SP's , pl, worker time, reads etc		<pre> SELECT SUBSTRING(qt.TEXT, (qs.statement_start_offset/2)+ 1, ((CASE qs.statement_end_offset WHEN -1 THEN DATALENGTH(qt.TEXT) ELSE qs.statement_end_offset END - qs.statement_start_offset)/2)+ 1), qs.execution_count, qs.total_logical_reads, qs.last_logical_reads, qs.total_logical_writes, qs.last_logical_writes, qs.total_physical_reads, qs.last_physical_reads, qt.dbid, qs.total_worker_time CPU, qs.last_worker_time, qs.total_elapsed_time/1000000 total_elapsed_time_in_S, qs.last_elapsed_time/1000000 last_elapsed_time_in_S, qs.last_execution_time, qp.query_plan FROM sys.dm_exec_query_stats qs CROSS APPLY sys.dm_exec_sql_text(qs.sql_handle) qt CROSS APPLY sys.dm_exec_query_plan(qs. plan_handle) qp where qs.execution_count > 10 ORDER BY last_elapsed_time_in_S DESC -- CPU -- ORDER BY qs.total_worker_time DESC - - CPU -- ORDER BY qs.total_logical_reads DESC -- logical reads -- ORDER BY qs.total_logical_writes DESC -- logical writes </pre>
114	Last stats		<pre> select STATS_DATE(OBJECT_ID , index_id) --as stats-updated from sys.indexes </pre>

115	Important DB admin queries		<pre> Blocks - bottlenecks ----- SELECT dm_qp.query_plan, dm_es.program_name, dm_ws.wait_duration_ms, dm_ws.session_ID, dm_ws.blocking_session_id, dm_ws.wait_type, dm_es.status, --dm_t.TEXT, dm_es.cpu_time, dm_es.memory_usage, dm_es.logical_reads, dm_es.total_elapsed_time, DB_NAME(dm_r.database_id) DatabaseName, -- Optional columns dm_r.wait_resource, dm_es.login_name, dm_r.command FROM sys.dm_os_waiting_tasks dm_ws INNER JOIN sys.dm_exec_requests dm_r ON dm_ws.session_id = dm_r.session_id INNER JOIN sys.dm_exec_sessions dm_es ON dm_es.session_id = dm_r.session_id CROSS APPLY sys.dm_exec_sql_text (dm_r.sql_handle) dm_t CROSS APPLY sys.dm_exec_query_plan (dm_r.plan_handle) dm_qp WHERE dm_es.is_user_process = 1 GO -----Disk Bottlenecks----- ----- select * -- database_id,file_id,io_stall,io_pending _ms_ticks,scheduler_address from sys.dm_io_virtual_file_stats(NULL,NULL) IOVFS, sys.dm_io_pending_io_requests ioprior where iovfs.file_handle=ioprior.io_handle ----- ----- </pre>
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			<pre> select * from sys.dm_exec_requests - - where command like '%backup%' select * from sys.dm_exec_sessions where session_id = 1403 select * from sys.dm_exec_connections where session_id = 1403 DBCC INPUTBUFFER(89) sp_who2 SP_lock ----- To check sessions from management studio ----- ----- SELECT dm_ws.session_ID, dm_es.program_name, dm_r.last_wait_type FROM sys.dm_os_waiting_tasks dm_ws INNER JOIN sys.dm_exec_requests dm_r ON dm_ws.session_id = dm_r.session_id INNER JOIN sys.dm_exec_sessions dm_es ON dm_es.session_id = dm_r.session_id CROSS APPLY sys.dm_exec_sql_text (dm_r.sql_handle) dm_t CROSS APPLY sys.dm_exec_query_plan (dm_r.plan_handle) dm_qp WHERE dm_es.is_user_process = 1 and program_name like '%Microsoft%' GO ----- Summary of the blocks ----- SELECT db.name DBName, tl.request_session_id, wt.blocking_session_id, OBJECT_NAME(p.OBJECT_ID) BlockedObjectName, tl.resource_type, h1.TEXT AS RequestingText, h2.TEXT AS BlockingTest, tl.request_mode FROM sys.dm_tran_locks AS tl INNER JOIN sys.databases db ON db.database_id = tl.resource_database_id INNER JOIN sys.dm_os_waiting_tasks AS </pre>
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			<pre> wt ON tl.lock_owner_address = wt.resource_address INNER JOIN sys.partitions AS p ON p.hobt_id = tl.resource_associated_entity_id INNER JOIN sys.dm_exec_connections ec1 ON ec1.session_id = tl.request_session_id INNER JOIN sys.dm_exec_connections ec2 ON ec2.session_id = wt.blocking_session_id CROSS APPLY sys.dm_exec_sql_text(ec1.most_recent_sq l_handle) AS h1 CROSS APPLY sys.dm_exec_sql_text(ec2.most_recent_sq l_handle) AS h2 GO ----- ----- ----- ----- ----- ----- Buffer Usage ----- -- find out how big buffer pool is and determine percentage used by each database DECLARE @total_buffer INT; SELECT @total_buffer = cntr_value FROM sys.dm_os_performance_counters WHERE RTRIM([object_name]) LIKE '%Buffer Manager' AND counter_name = 'Total Pages'; ;WITH src AS(SELECT database_id, db_buffer_pages = COUNT_BIG(*) FROM sys.dm_os_buffer_descriptors -- WHERE database_id BETWEEN 5 AND 32766 GROUP BY database_id)SELECT [db_name] = CASE [database_id] WHEN 32767 THEN 'Resource DB' ELSE DB_NAME([database_id]) </pre>
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			<pre> END, db_buffer_pages, db_buffer_MB = db_buffer_pages / 128, db_buffer_percent = CONVERT(DECIMAL(6,3), db_buffer_ pages * 100.0 / @total_buffer) FROM src ORDER BY db_buffer_MB DESC; --then drill down into memory used by objects in database of your choice USE DBNAME; WITH src AS(SELECT [Object] = o.name, [Type] = o.type_desc, [Index] = COALESCE(i.name, ''), [Index_Type] = i.type_desc, p.[object_id], p.index_id, au.allocation_unit_id FROM sys.partitions AS p INNER JOIN sys.allocation_units AS au ON p.hobt_id = au.container_id INNER JOIN sys.objects AS o ON p.[object_id] = o.[object_id] INNER JOIN sys.indexes AS i ON o.[object_id] = i.[object_id] AND p.index_id = i.index_id WHERE au.[type] IN (1,2,3) AND o.is_ms_shipped = 0) SELECT src.[Object], src.[Type], src.[Index], src.Index_Type, buffer _pages = COUNT_BIG(b.page_id), buffer_mb = COUNT_BIG(b.page_id) / 128 FROM src INNER JOIN sys.dm_os_buffer_descriptors AS b ON src.allocation_unit_id = b.allocation_unit_id WHERE b.database_id = DB_ID() GROUP BY src.[Object], src.[Type], src. [Index], src.Index_Type ORDER BY buffer_pages DESC; Connections ----- select * from sys.dm_exec_connections Sessions </pre>
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			<pre> ----- select * from sys.dm_exec_sessions Index Usage Stats ----- SELECT -- row_number() over(order by user_seeks,user_lookups,user_scans), -- [Database] = <u>d.name</u>, -- [Schema]= <u>s.name</u>, -- [Table]= <u>o.name</u>, -- [Index]= <u>x.name</u>, -- [Scans] = user_scans, -- [Seeks] = user_seeks, -- [Lookups] = user_lookups, -- [Last Scan] = last_user_scan, -- [Last Seek] = last_user_seek, -- [Last lookUp]= last_user_lookup, -- [System Scans] = system_scans FROM sys.dm_db_index_usage_stats u INNER JOIN sys.sysdatabases d on u.database_id = d.dbid INNER JOIN sys.sysindexes x on u.object_id = <u>x.id</u> and u.index_id = x.indid INNER JOIN sys.objects o on u.object_id = o.object_id INNER JOIN sys.schemas s on s.schema_id = o.schema_id where <u>x.name</u> is not null and u.database_id=14 order by 1 desc Memory clerks , rings ----- SELECT * FROM sys.dm_os_memory_clerks ORDER BY (single_pages_kb + multi_pages_kb + awe_allocated_kb) desc select * from sys.dm_os_ring_buffers; Top running ----- SELECT SUBSTRING(qt.TEXT, (qs.statement_start_offset/2)+1, ((CASE qs.statement_end_offset WHEN -1 THEN DATALENGTH(qt.TEXT) ELSE qs.statement_end_offset </pre>
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			<pre> END - qs.statement_start_offset)/2)+1), qs.execution_count, qs.total_logical_reads, qs.last_logical_reads, qs.total_logical_writes, qs.last_logical_writes, qs.total_physical_reads, qs.last_physical_reads, qt.dbid, qs.total_worker_time CPU, qs.last_worker_time, qs.total_elapsed_time/1000000 total_elapsed_time_in_S, qs.last_elapsed_time/1000000 last_elapsed_time_in_S, qs.last_execution_time, qp.query_plan FROM sys.dm_exec_query_stats qs CROSS APPLY sys.dm_exec_sql_text(qs.sql_handle) qt CROSS APPLY sys.dm_exec_query_plan(qs.plan_handle) qp where qs.execution_count > 10 ORDER BY last_elapsed_time_in_S DESC -- CPU -- ORDER BY qs.total_worker_time DESC - - CPU -- ORDER BY qs.total_logical_reads DESC -- logical reads -- ORDER BY qs.total_logical_writes DESC -- logical writes ----- To get only the query plans , CPU , exec count , last CPU ----- SELECT qt.text, qs.total_worker_time CPU, qs.last_worker_time, qp.query_plan, qs.last_execution_time, qs.execution_count FROM sys.dm_exec_query_stats qs CROSS APPLY sys.dm_exec_sql_text(qs.sql_handle) qt CROSS APPLY sys.dm_exec_query_plan(qs.plan_handle) qp </pre>
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			<pre> where qt.text like '%USP_CREATEDACCOUNTS_COUNT_BY_RETAILER %' -- and qs.execution_count > 10 ORDER BY qs.total_worker_time DESC -- CPU -- ORDER BY last_elapsed_time_in_S DESC -- CPU -- ORDER BY qs.total_logical_reads DESC -- logical reads -- ORDER BY qs.total_logical_writes DESC -- logical writes ----- ----- ----- ----- - , the query plans , total workertime, sps,reads/writes etc--- SELECT top 100 OBJECT_NAME(qt.objectid), qs.total_worker_time CPU, qs.last_worker_time Last_CPU, qs.last_execution_time, qs.execution_count, qs.total_logical_reads, qs.total_physical_reads, qs.total_logical_writes, qp.query_plan FROM sys.dm_exec_query_stats qs CROSS APPLY sys.dm_exec_sql_text(qs.sql_handle) qt CROSS APPLY sys.dm_exec_query_plan(qs.plan_handle) qp where query_plan is not NULL ORDER BY qs.total_worker_time DESC -- CPU -- ORDER BY last_elapsed_time_in_S DESC -- CPU ORDER BY qs.total_logical_reads DESC -- logical reads -- ORDER BY qs.total_logical_writes DESC -- logical writes ----- ----- ----- </pre>
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			<pre> Wait Stats ----- select * from sys.dm_os_wait_stats -- where wait_type like 'PAGEIOLATCH%' or wait_type like 'LCK_M%' or wait_type like 'ASYNC_IO_COMPLETION%' or wait_type like 'IO_COMPLETION%' or wait_type like 'ACCESS_METHODS_DATASET_PARENT%' or wait_type like 'ACCESS_METHODS_SCAN_RANGE_GENERATOR%' or wait_type like 'SOS_SCHEDULER_YIELD%' or wait_type like 'LATCH%' or wait_type like 'CXPACKET%' or wait_type like 'EXECSYNC%' or wait_type like 'ASYNC_NETWORK_IO%' ORDER BY wait_type asc; ----- ----- WITH [Waits] AS (SELECT [wait_type], [wait_time_ms] / 1000.0 AS [WaitS], ([wait_time_ms] - [signal_wait_time_ms]) / 1000.0 AS [ResourceS], [signal_wait_time_ms] / 1000.0 AS [Signals], [waiting_tasks_count] AS [WaitCount], 100.0 * [wait_time_ms] / SUM ([wait_time_ms]) OVER() AS [Percentage], ROW_NUMBER() OVER(ORDER BY [wait_time_ms] DESC) AS [RowNum] FROM sys.dm_os_wait_stats WHERE [wait_type] NOT IN (N'BROKER_EVENTHANDLER', N'BROKER_RECEIVE_WAITFOR', N'BROKER_TASK_STOP', N'BROKER_TO_FLUSH', N'BROKER_TRANSMITTER', N'CHECKPOINT_QUEUE', N'CHKPT', N'CLR_AUTO_EVENT', </pre>
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			N'CLR_MANUAL_EVENT', N'CLR_SEMAPHORE', N'DBMIRROR_DBM_EVENT', N'DBMIRROR_EVENTS_QUEUE', N'DBMIRROR_WORKER_QUEUE', N'DBMIRRORING_CMD', N'DIRTY_PAGE_POLL', N'DISPATCHER_QUEUE_SEMAPHORE', N'EXESYNC', N'FSAGENT', N'FT_IFTS_SCHEDULER_IDLE_WAIT', N'FT_IFTSHC_MUTEX', N'HADR_CLUSAPI_CALL', N'HADR_FILESTREAM_IOMGR_IOCOMPLETION', N'HADR_LOGCAPTURE_WAIT', N'HADR_NOTIFICATION_DEQUEUE', N'HADR_TIMER_TASK', N'HADR_WORK_QUEUE', N'KSOURCE_WAKEUP', N'LAZYWRITER_SLEEP', N'LOGMGR_QUEUE', N'MEMORY_ALLOCATION_EXT', N'ONDEMAND_TASK_QUEUE', N'PREEMPTIVE_XE_GETTARGETSTATE' ', N'PWAIT_ALL_COMPONENTS_INITIALIZED', N'PWAIT_DIRECTLOGCONSUMER_GETNEXT', N'QDS_PERSIST_TASK_MAIN_LOOP_SLEEP', N'QDS_ASYNC_QUEUE', N'QDS_CLEANUP_STALE_QUERIES_TASK_MAIN_LOOP_SLEEP', N'QDS_SHUTDOWN_QUEUE', N'REDO_THREAD_PENDING_WORK', N'REQUEST_FOR_DEADLOCK_SEARCH', N'RESOURCE_QUEUE', N'SERVER_IDLE_CHECK', N'SLEEP_BPOOL_FLUSH', N'SLEEP_DBSTARTUP', N'SLEEP_DCOMSTARTUP', N'SLEEP_MASTERDBREADY', N'SLEEP_MASTERMDREADY', N'SLEEP_MASTERUPGRADED', N'SLEEP_MSDBSTARTUP', N'SLEEP_SYSTEMTASK', N'SLEEP_TASK', N'SLEEP_TEMPDBSTARTUP',
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			<pre> N'SNI_HTTP_ACCEPT', N'SP_SERVER_DIAGNOSTICS_SLEEP', N'SQLTRACE_BUFFER_FLUSH', N'SQLTRACE_INCREMENTAL_FLUSH_SLEEP', N'SQLTRACE_WAIT_ENTRIES', N'WAIT_FOR_RESULTS', N'WAITFOR', N'WAITFOR_TASKSHUTDOWN', N'WAIT_XTP_RECOVERY', N'WAIT_XTP_HOST_WAIT', N'WAIT_XTP_OFFLINE_CKPT_NEW_LOG', N'WAIT_XTP_CKPT_CLOSE', N'XE_DISPATCHER_JOIN', N'XE_DISPATCHER_WAIT', N'XE_TIMER_EVENT') AND [waiting_tasks_count] > 0) SELECT MAX ([W1].[wait_type]) AS [WaitType], CAST (MAX ([W1].[WaitS]) AS DECIMAL (16,2)) AS [Wait_S], CAST (MAX ([W1].[ResourceS]) AS DECIMAL (16,2)) AS [Resource_S], CAST (MAX ([W1].[SignalS]) AS DECIMAL (16,2)) AS [Signal_S], MAX ([W1].[WaitCount]) AS [WaitCount], CAST (MAX ([W1].[Percentage]) AS DECIMAL (5,2)) AS [Percentage], CAST ((MAX ([W1].[WaitS]) / MAX ([W1].[WaitCount])) AS DECIMAL (16,4)) AS [AvgWait_S], CAST ((MAX ([W1].[ResourceS]) / MAX ([W1].[WaitCount])) AS DECIMAL (16,4)) AS [AvgRes_S], CAST ((MAX ([W1].[SignalS]) / MAX ([W1].[WaitCount])) AS DECIMAL (16,4)) AS [AvgSig_S] FROM [Waits] AS [W1] INNER JOIN [Waits] AS [W2] ON [W2].[RowNum] <= [W1].[RowNum] GROUP BY [W1].[RowNum] HAVING SUM ([W2].[Percentage]) - MAX([W1].[Percentage]) < 95; -- percentage threshold GO </pre>
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			<pre> Qry for Exec Count ----- SELECT DB_NAME(st.dbid) DBName ,OBJECT_SCHEMA_NAME(st.objectid,db id) SchemaName ,OBJECT_NAME(st.objectid,dbid) StoredProcedure ,max(cp.usecounts) Execution_count ,sum(qs.total_worker_time) total_cpu_time ,sum(qs.total_worker_time) / (max(cp.usecounts) * 1.0) avg_cpu_time FROM sys.dm_exec_cached_plans cp join sys.dm_exec_query_stats qs on cp.plan_handle = qs.plan_handle CROSS APPLY sys.dm_exec_sql_text(cp.plan_handle) st where DB_NAME(st.dbid) is not null and cp.objtype = 'proc' and DB_NAME(st.dbid)=db_name(db_id()) AND OBJECT_NAME(st.objectid,dbid) in ('USP_CONFIGURABLE_ALERTTYPES_GET_BYACC OUNTNO') group by DB_NAME(st.dbid),OBJECT_SCHEMA_NAME(obj ectid,st.dbid), OBJECT_NAME(objectid,st.dbid) PLE ----- SELECT * FROM sys.dm_os_performance_counters WHERE counter_name = 'Page life expectancy' AND OBJECT_NAME = 'SQLServer:Buffer Manager' </pre>
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			<pre>SP Mem Stats ----- SELECT TEXT ,query_plan ,requested_memory_kb ,granted_memory_kb ,used_memory_kb FROM sys.dm_exec_query_memory_grants emg CROSS APPLY sys.dm_exec_sql_text(sql_handle) CROSS APPLY sys.dm_exec_query_plan(emg.plan_handle) ORDER BY emg.requested_memory_kb DESC</pre>
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