****

SQL diagnostic manager Metrics

Shekhar Vaidya 4/11/08

IderaLogo

Proprietary and Confidential to BBS Technologies, Inc.

**© 2006 BBS Technologies, Inc.; all rights reserved.**

# Revision history:

|  |  |  |
| --- | --- | --- |
| **When?** | **Who?** | **What?** |
| 4/11/08 | Shekhar | First draft |
|  |  |  |

# Table of Contents

Revision history: 1

Table of Contents 2

Real-Time Views 4

Mini-monitor Grid View 4

Server – Overview 9

Dashboard 9

Details 13

Configuration 21

Sessions 22

Summary 22

Details 24

Locks 28

Blocking 30

Queries 31

Resources 33

Summary 33

CPU 34

Memory 35

Disk 36

Procedure Cache 37

Databases 38

Summary 38

Configuration 39

Files 40

Backups & Restores 41

Tables & Indexes 42

Services 43

Summary 43

SQL Agent Jobs 44

Full-Text Search 45

Replication 46

Logs 47

# Real-Time Views

## Mini-monitor Grid View

These values are from the Repository tables ServerStatistics and OSStatistics.

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| SQL Server Version |  | xp\_msver – ProductVersion |  |
| SQL Server Status |  |  |  |
| SQL Agent Status |  | Not clustered – xp\_servicecontrol Clustered – WMI – Win32\_Service |  |
| DTC Status |  | Not clustered – xp\_servicecontrol Clustered – WMI – Win32\_Service |  |
| Full Text Search Status |  | Not clustered – xp\_servicecontrol Clustered – WMI – Win32\_Service |  |
| Available Memory (MB) |  | WMI – Win32\_PerfRawData\_PerfOS\_Memory=@ - AvailableBytes |  |
| Blocked Processes |  | Count of all non-self blocked processes in sysprocesses table. |  |
| Buffer Cache Hit Ratio |  | ‘buffer cache hit ratio’ from sysperfinfo |  |
| Checkpoint Writes |  | ‘checkpoint pages/sec’ from sysperfinfo |  |
| Client Computers |  | Count of processes from distinct computers in sysprocesses table. |  |
| CPU Activity |  | @@cpu\_busy |  |
| Disk Queue Length |  | WMI – Win32\_PerfRawData\_PerfDisk\_PhysicalDisk.Name=”\_Total” – AvgDiskQueueLength |  |
| % Disk Time | 100 – <Percent disk idle time> | <Percent disk idle time> : WMI – Win32\_PerfRawData\_PerfDisk\_PhysicalDiskName=”\_Total” – Percent IdleTime |  |
| Full Scans |  | ‘full scans/sec’ from sysperfinfo |  |
| Idle Time | IdleTime/(CpuTime + IdleTime + IOTime) | CPUTime - @@cpu\_busy delta between refreshes  IOTime - @@io\_busy delta between refreshes  IdleTime - @@idle delta between refreshes |  |
| I/O Activity | IOTime/(CpuTime + IdleTime + IOTime) | CPUTime - @@cpu\_busy delta between refreshes  IOTime - @@io\_busy delta between refreshes  IdleTime - @@idle delta between refreshes |  |
| Log Flushes |  | ‘log flushes/sec’ from sysperfinfo |  |
| Lazy Writer Writes |  | ‘lazy writes/sec’ from sysperfinfo |  |
| Lock Waits |  | ‘lock waits/sec’ from sysperfinfo |  |
| Logins |  | @@connections |  |
| Memory Allocated (MB) | In MB | ‘target server memory(kb)’ from sysperfinfo |  |
| Memory Used (MB) | In MB | ‘total server memory (kb)’ from sysperfinfo |  |
| Oldest Open Transactions (mins) | Oldest open transaction in a refresh. | * SQL 2000 – uses DBCC OPENTRAN to determine the oldest transaction for each database. For the oldest open transaction it gathers information from sysprocesses table. * SQL 2005 – collects information about the oldest transaction by querying sysprocesses, dm\_tran\_session\_transactions, and dm\_tran\_active\_transactions. |  |
| Open Transactions |  | Count of open transactions (open\_tran > 0) from sysprocesses |  |
| Packet Errors |  | @@pack\_errors |  |
| Packets Received |  | @@pack\_received |  |
| Packets Sent |  | @@pack\_sent |  |
| Page Errors |  | @@total\_errors |  |
| Page Life Expectancy |  | ‘page life expectancy’ from sysperfinfo |  |
| Page Lookups |  | ‘page lookups/sec’ from sysperfinfo |  |
| Page Reads |  | ‘page reads/sec’ from sysperfinfo |  |
| Pages Per Second |  | WMI – Win32\_PerfRawData\_PerfOS\_Memory=’@’ – PagesPersec |  |
| Page Splits |  | ‘page splits/sec’ from sysperfinfo |  |
| Page Writes |  | ‘page writes/sec’ from sysperfinfo |  |
| Privileged Time |  | WMI – Win32\_PerfRawData\_PerfOS\_Proessor=’\_Total’ - PercentPrivilgedTime |  |
| Procedure Cache Hit Ratio |  | Calculated from ‘cache hit ratio’ and ‘cache hit ratio base’ from sysperfinfo |  |
| Procedure Cache Size (KB) |  | ‘proc cache size’ – dbcc proccache |  |
| Procedure Cache Size Percent | Procedure cache size used as a percent of procedure cache size. | ‘proc cache size used’ – dbcc proccache |  |
| Processor Queue Length |  | WMI – Win32\_PerfRawData\_PerfOS\_System=@ - ProcessorQueueLength |  |
| Processor Time |  | WMI – Win32\_PerfRawData\_PerfOS\_Processor=’\_Total’ – PercentProcessorTime |  |
| Read Ahead Pages |  | ‘readahead pages/sec’ from sysperfinfo |  |
| Replication Latency |  |  |  |
| Replication Subscribed |  |  |  |
| Replication Undistributed |  |  |  |
| Replication Unsubscribed |  |  |  |
| Response Time (ms) |  | Time to process ‘select 1’ |  |
| SQL Compilations |  | ‘sql compilations/sec’ from sysperfinfo |  |
| SQL Recompilations |  | ‘sql re-compilations/sec’ from sysperfinfo |  |
| System Processes |  | Count of empty net\_address from sysprocesses |  |
| System Processes Consuming CPU |  | Count of empty net\_address from sysprocesses whose cpu is greater than 0 |  |
| Table Lock Escalations |  | ‘table lock escalations/sec’ from sysperfinfo |  |
| Tempdb Size (KB) | Sum of data, text and index sizes |  |  |
| Tempdb Size Percent | Tempdb Size as a percent of data file size and expansion size |  |  |
| Physical Memory (MB) |  | WMI – Win32\_ComputerSystem – TotalPhysicalMemory |  |
| Transactions |  | ‘batch requests/sec’ from sysperfinfo |  |
| User Processes |  | Count of non-empty net\_address from sysprocesses |  |
| User Processes Consuming CPU |  | Count of non-empty net\_address from sysprocesses whose cpu is greater than 0 |  |
| User Time |  | WMI – Win32\_PerfRawData\_PerfOS\_Processor=’\_Total’ – PercentUserTime |  |
| Work Files Created |  | ‘workfiles created/sec’ from sysperfinfo |  |
| Work Tables Created |  | ‘worktables created/sec’ from sysperfinfo |  |

## Server – Overview

### Dashboard

Batches:

1. ServerOverview2000.sql or ServerOverview2005.sql
   1. SessionCount.sql
   2. LockCounterStatistics.sql
2. OSMetrics.sql

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Properties – Version |  | xp\_msver – ProductVersion |  |
| Properties – Edition |  | serverproperty(‘Edition’) |  |
| Properties – Running Since |  | select min(login\_time) from master..sysprocesses |  |
| Properties – Clustered |  | serverproperty(‘isclustered’) |  |
| Properties – Processors | Processor used out of total processors available. Calculated from total number of processors and the affinity mask. | * xp\_msver – ProcessorCount * syscurconfigs where config option 1535. |  |
| Properties – Host |  | serverproperty(‘MachineName’) |  |
| Properties – Host OS | Parse OS and SP. | @@version |  |
| Properties – Host Memory |  | WMI – Win32\_ComputerSystem – TotalPhysicalMemory |  |
| Properties – Databases |  | select count(\*) from sysdatabases |  |
| Properties – Data Size |  | SQL 2000 - Sum of ‘used’ from sysindexes table for all databases for index, table, text or image data.  SQL 2005 – Sum of ‘used\_pages ‘ from sys.allocation\_units catalog view for all databases. |  |
| Properties – Log Size |  | Sum of ‘Log Size’, for all databases, from DBCC SQLPERF (LOGSPACE) |  |
| Response Time (ms) |  | select 1 |  |
| % CPU Used – SQL Server | CPUTime/(CpuTime + IdleTime + IOTime) | CPUTime - @@cpu\_busy delta between refreshes  IOTime - @@io\_busy delta between refreshes  IdleTime - @@idle delta between refreshes |  |
| % CPU Used – Total |  | WMI – Win32\_PerfRawData\_PerfOS\_Processor=’\_Total’ – PercentProcessorTime |  |
| Memory Paging |  | WMI – Win32\_PerfRawData\_PerfOS\_Memory=@ - PagesPersec |  |
| % Disk Busy | Subtract idle time percent from 100. | WMI – Win32\_PerfRawData\_PerfDisk\_PhysicalDisk.Name=’\_Total’ - PecentIdleTime |  |
| Sessions – Response Time (ms) |  | select 1 |  |
| Sessions – Active Sessions |  | Count of all processes not sleeping in sysprocesses table. |  |
| Sessions – Blocked Sessions |  | Count of all non-self blocked processes in sysprocesses table. |  |
| Sessions – Client Computers |  | Count of processes from distinct computers in sysprocesses table. |  |
| Sessions – Packets Received/second | Calculated as rate between two refreshes. | @@packet\_received |  |
| Sessions – Batches Received/second | Calculated as rate between two refreshes. | ‘batch requests/sec’ from sysperfinfo |  |
| Sessions – Packets Sent/second | Calculated as rate between two refreshes. | @@packet\_sent |  |
| CPU – Status | Based on alerts. |  |  |
| CPU – Total Used |  | WMI – Win32\_PerfRawData\_PerfOS\_Processor=’\_Total’ – PercentProcessorTime |  |
| CPU – Used by SQL | CPUTime/(CpuTime + IdleTime + IOTime) | CPUTime - @@cpu\_busy delta between refreshes  IOTime - @@io\_busy delta between refreshes  IdleTime - @@idle delta between refreshes |  |
| CPU – Queue Length |  | WMI – Win32\_PerfRawData\_PerfOS\_System=@ - ProcessorQueueLength |  |
| Memory – Status | Based on alerts |  |  |
| Memory - Total Used | Difference between total and available memory as percent of total. | * Total – WMI – Win32\_ComputerSystem.Name=’system’ - TotalPhysicalMemory * Available – WMI – Win32\_PerfRawData\_PerfOS\_Memory=@ - AvailableBytes |  |
| Memory – Used by SQL Server | Total server memory as a percent of total physical memory | * ‘total server memory (kb)’ from sysperfinfo * Total physical memory – WMI – Win32\_ComputerSystem.Name=’system’ - TotalPhysicalMemory |  |
| Memory – Memory Paging |  | WMI – Win32\_PerfRawData\_PerfOS\_Memory=@ - PagesPersec |  |
| Memory – Buffer Cache Hit % |  | ‘buffer cache hit ratio’ from sysperfinfo |  |
| Memory – Proc. Cache Hit % |  | ‘cache hit ratio’ from sysperfinfo |  |
| Databases – Status | Based on alerts |  |  |
| Databases – Data Used | Used as a percent of total allocated. | * Total allocated   + SQL 2005 – sum of ‘size’ from sys.master\_files when type is 0   + SQL 2000 – sum of ‘size’ from sysfiles for all databases for data files * Used   + SQL 2005 – sum of ‘used\_pages’ from sys.allocation\_units for all databases   + SQL 2000 – sum of ‘used’ from sysindexes for all databases for index, data, text and blob. |  |
| Databases – Log Used | Used as a percent of total allocated. | * Total allocated   + SQL 2005 – sum of ‘size’ from sys.master\_files when type is 1   + SQL 2000 - sum of ‘size’ from sysfiles for all databases for log * Used   + SQL 2005 – DBCC SQLPERF (LOGSPACE)   + SQL 2000 – DBCC SQLPERF (LOGSPACE) |  |
| Databases – Log Flushes | Delta of value between refreshes divided by time between refreshes. | ‘log flushes/sec’ from sysperfinfo |  |
| Disk – Disk Queue Length |  | WMI – Win32\_PerfRawData\_PerfDisk\_PhysicalDisk.Name=”\_Total” – AvgDiskQueueLength |  |
| Disk – Page Reads | Delta of value between refreshes divided by time between refreshes. | ‘page reads/sec’ from sysperfinfo |  |
| Disk – Page Writes | Delta of value between refreshes divided by time between refreshes. | ‘page writes/sec’ from sysperfinfo |  |

### Details

Batches:

1. ServerOverview2000.sql or ServerOverview2005.sql
   1. SessionCount.sql
   2. LockCounterStatistics.sql
2. OSMetrics.sql

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Available Memory |  | WMI – Win32\_PerfRawData\_PerfOS\_Memory=@ - AvailableBytes |  |
| Batches |  | ‘batch requests/sec’ from sysperfinfo |  |
| Batches Per Second | Batches rate calculated based on time elapsed between refreshes. |  |  |
| Blocked Sessions |  | Count of all non-self blocked processes in sysprocesses table. |  |
| Buffer Cache Hit Ratio |  | ‘buffer cache hit ratio’ from sysperfinfo |  |
| Buffer Cache Size |  | ‘total pages’ from sysperfinfo |  |
| Checkpoint Writes |  | ‘checkpoint pages/sec’ from sysperfinfo |  |
| Checkpoint Writes Per Second | Checkpoint Writes rate calculated based on time elapsed between refreshes. |  |  |
| Client Computers |  | Count of processes from distinct computers in sysprocesses table. |  |
| Connections |  | @@connections |  |
| Connections Per Second | Connections rate calculated based on time elapsed between refreshes. |  |  |
| Data File Count |  | * SQL 2000 – count of data files from sysfiles table of each database. * SQL 2005 – count of data files from sys.master\_files |  |
| Data File Space Allocated |  | * SQL 2000 – sum of ‘size’ from sysfiles for all databases for data files * SQL 2005 – sum of ‘size’ from sys.master\_files for data files |  |
| Data File Space Used |  | * SQL 2000 – sum of ‘used’ from sysindexes for all databases for index, data, text and blob. * SQL 2005 – sum of ‘used\_pages’ from sys.allocation\_units for all databases |  |
| Database Count |  | count(\*) from sysdatabases |  |
| Disk Queue Length |  | WMI – Win32\_PerfRawData\_PerfDisk\_PhysicalDisk.Name=”\_Total” – AvgDiskQueueLength |  |
| Disk Time (Percent) | 100 – idle time | WMI – Win32\_PerfRawData\_PerfDisk\_PhysicalDisk.Name=”\_Total” - PercentIdleTime |  |
| DTC Service Status |  | Not clustered – xp\_servicecontrol  Clustered – WMI – Win32\_Service |  |
| Full Scans |  | ‘full scans/sec’ from sysperfinfo |  |
| Full Scans Per Second | Full Scans rate calculated based on time elapsed between refreshes. |  |  |
| Full-Text Service Status |  | Not clustered – xp\_servicecontrol  Clustered – WMI – Win32\_Service |  |
| Lazy Writer Writes |  | ‘lazy writes/sec’ from sysperfinfo |  |
| Lazy Writer Writes Per Second | Lazy Writer Writes rate calculated based on time elapsed between refreshes. |  |  |
| Lead Blockers |  | Count of lead blockers (blocked = 0) from sysprocesses |  |
| Lock Waits |  | ‘lock waits/sec’ from sysperfinfo |  |
| Lock Waits Per Second | Lock Waits rate calculated based on time elapsed between refreshes. |  |  |
| Log File Count |  | * SQL 2000 – count of log files from sysfiles table of each database. * SQL 2005 – count of log files from sys.master\_files |  |
| Log File Space Allocated |  | * SQL 2000 - sum of ‘size’ from sysfiles for all databases for log * SQL 2005 – sum of ‘size’ from sys.master\_files when type is 1 |  |
| Log File Space Used |  | * SQL 2000 – DBCC SQLPERF(LOGSPACE) * SQL 2005 – DBCC SQLPERF(LOGSPACE) |  |
| Log Flushes |  | ‘log flushes/sec’ from sysperfinfo |  |
| Log Flushes Per Second | Log Flushes rate calculated based on time elapsed between refreshes. |  |  |
| Maintenance Mode | Retrieved from repository MonitoredSQLServers table |  |  |
| OLE Automation Status | Status determined when OS Metrics are being collected |  |  |
| Open Transactions |  | Count of open transactions (open\_tran > 0) from sysprocesses |  |
| OS CPU Privileged Activity |  | WMI – Win32\_PerfRawData\_PerfOS\_Processor=’\_Total’ – PercentPrivilegedTime |  |
| OS CPU User Time |  | WMI – Win32\_PerfRawData\_PerfOS\_Processor=’\_Total’ – PercentUserTime |  |
| OS Metrics Availability | Status determined when OS Metrics are being collected. |  |  |
| OS Total Processor Activity |  | WMI – Win32\_PerfRawData\_PerfOS\_Processor=’\_Total’ – PercentProcessorTime |  |
| Packet Errors |  | @@packet\_errors |  |
| Packet Errors Per Second | Packet Errors rate calculated based on time elapsed between refreshes. |  |  |
| Packets Received |  | @@pack\_received |  |
| Packets Received Per Second | Packets Received rate calculated based on time elapsed between refreshes. |  |  |
| Packets Sent |  | @@pack\_sent |  |
| Packets Sent Per Second | Packets Sent rate calculated based on time elapsed between refreshes. |  |  |
| Page Life Expectancy |  | ‘page life expectancy’ from sysperfinfo |  |
| Page Lookups |  | ‘page lookups/sec’ from sysperfinfo |  |
| Page Lookups Per Second | Page Lookups rate calculated based on time elapsed between refreshes. |  |  |
| Page Reads |  | ‘page reads/sec’ from sysperfinfo |  |
| Paged Reads Per Second | Page Reads rate calculated based on time elapsed between refreshes. |  |  |
| Page Splits |  | ‘page splits/sec’ from sysperfinfo |  |
| Page Splits Per Second | Page Splits rate calculated based on time elapsed between refreshes. |  |  |
| Page Writes |  | ‘page writes/sec’ from sysperfinfo |  |
| Page Writes Per Second | Page Writes rate calculated based on time elapsed between refreshes. |  |  |
| Pages Per Second |  | WMI – Win32\_PerfRawData\_PerfOS\_Memory=’@’ – PagesPersec |  |
| Physical Memory |  | WMI – Win32\_ComputerSystem – TotalPhysicalMemory |  |
| Procedure Cache Hit Ratio |  | ‘cache hit ratio’ from sysperfinfo |  |
| Procedure Cache Size |  | ‘proc cache size’ – dbcc proccache |  |
| Processor Queue Length |  | WMI – Win32\_PerfRawData\_PerfOS\_System=@ - ProcessorQueueLength |  |
| Read Ahead Pages |  | ‘readahead pages/sec’ from sysperfinfo |  |
| Read Ahead Pages Per Second | Read Ahead Pages rate calculated based on time elapsed between refreshes. |  |  |
| Read Write Errors |  | @@total\_errors |  |
| Response Time |  | select 1 |  |
| Running Since |  | select min(login\_time) from master..sysprocesses |  |
| Server Version |  | xp\_msver – ProductVersion |  |
| SQL Compilations |  | ‘sql compilations/sec’ from sysperfinfo |  |
| SQL Compilations Per Second | SQL Compilations rate calculated based on time elapsed between refreshes. |  |  |
| SQL CPU Activity | CPUTime/(CpuTime + IdleTime + IOTime) | CPUTime - @@cpu\_busy delta between refreshes  IOTime - @@io\_busy delta between refreshes  IdleTime - @@idle delta between refreshes |  |
| SQL Memory Allocated |  | ‘target server memory (kb)’ from sysperfinfo |  |
| SQL Memory Used |  | ‘total server memory (kb)’ from sysperfinfo |  |
| SQL Memory Used Percent | ‘SQL Memory Used’ as percent of ‘Physical Memory’ |  |  |
| SQL Recompilations |  | ‘sql re-compilations/sec’ from sysperfinfo |  |
| SQL Recompilations Per Second | SQL Recompilations Per Second rate calculated based on time elapsed between refreshes. |  |  |
| SQL Server Agent Service Status |  | Not clustered – xp\_servicecontrol  Clustered – WMI – Win32\_Service |  |
| SQL Server Service Status | Uses WMI to tell SQL Server service status. |  |  |
| System Processes |  | Count of empty net\_address from sysprocesses |  |
| System Processes Consuming CPU |  | Count of empty net\_address from sysprocesses whose cpu is greater than 0 |  |
| Used Memory (Percent) | (‘Physical Memory’ – ‘Available Memory’) / ‘Physical Memory \* 100 |  |  |
| User Connections Percent | ‘User Processes’ as a percent of Max connections | Max connections – syscurconfigs (103) or @@max\_connections |  |
| User Processes |  | Count of non-empty net\_address from sysprocesses |  |
| Users Processes Consuming CPU |  | Count of non-empty net\_address from sysprocesses whose cpu is greater than 0 |  |
| WMI Service Status |  |  |  |
| Workfiles Created |  | ‘workfiles created/sec’ from sysperfinfo |  |
| Workfiles Created Per Second | Workfiles Created rate calculated based on time elapsed between refreshes. |  |  |
| Worktables Created |  | ‘worktables created/sec’ from sysperfinfo |  |
| Worktables Created Per Second | Worktables Created rate calculated based on time elapsed between refreshes. |  |  |

### Configuration

SQL Server 2005 – this data is collected from sys.configurations.

SQL Server 2000 – this data is collected from master...spt\_values, master…sysconfigures and master…syscurconfigs

## Sessions

### Summary

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Response Time |  | Time to process ‘select 1’ |  |
| Sessions – Active | User Processes Consuming CPU. | Count of non-empty net\_address from sysprocesses whose cpu is greater than 0 |  |
| Sessions – Idle | ‘All User Processes’ – ‘User Processes Consuming CPU’ | All user processes - count of non-empty net\_address from sysprocesses |  |
| Sessions – System | All System Processes | Count of empty net\_address from sysprocesses |  |
| Lock Statistics – Average Wait Time |  | From master..sysperinfo where object\_name is “sqlserver:latches” or “sqlserver:locks”   * AllocUnit (2005 only) * HoBT (2005 only) * Metadata (2005 only) * Object (2005 only) * Application * Database * Extent * File * Key * Page * RID * Table * Latch |  |
| Lock Statistics – Deadlocks |  | From master..sysperinfo where object\_name is “sqlserver:locks”   * AllocUnit (2005 only) * HoBT (2005 only) * Metadata (2005 only) * Object (2005 only) * Application * Database * Extent * File * Key * Page * RID * Table |  |
| Lock Statistics – Requests |  | From master..sysperinfo where object\_name is “sqlserver:locks”   * AllocUnit (2005 only) * HoBT (2005 only) * Metadata (2005 only) * Object (2005 only) * Application * Database * Extent * File * Key * Page * RID * Table |  |
| Lock Statistics – Timeouts |  | From master..sysperinfo where object\_name is “sqlserver:locks”   * AllocUnit (2005 only) * HoBT (2005 only) * Metadata (2005 only) * Object (2005 only) * Application * Database * Extent * File * Key * Page * RID * Table |  |
| Lock Statistics – Waits |  | From master..sysperinfo where object\_name is “sqlserver:latches” or “sqlserver:locks”   * AllocUnit (2005 only) * HoBT (2005 only) * Metadata (2005 only) * Object (2005 only) * Application * Database * Extent * File * Key * Page * RID * Table * Latch |  |
| Lock Statistics – Wait Time |  | From master..sysperinfo where object\_name is “sqlserver:latches” or “sqlserver:locks”   * AllocUnit (2005 only) * HoBT (2005 only) * Metadata (2005 only) * Object (2005 only) * Application * Database * Extent * File * Key * Page * RID * Table * Latch |  |
| Blocked Sessions – Blocked Sessions |  | Count of all non-self blocked processes in sysprocesses table. |  |
| Blocked Sessions – Lead Blockers |  | Count of lead blockers (blocked = 0) from sysprocesses |  |

### Details

##### Grid

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Session ID |  | spid from master..sysprocesses |  |
| Type | System process if net\_address is empty or null, else it’s a user process | net\_address from master..sysprocesses |  |
| User |  | loginname from master..sysprocesses |  |
| Host |  | hostname from master..sysprocesses |  |
| Database |  | db\_name(dbid from master..sysprocesses) |  |
| Status |  | status from master..sysprocesses |  |
| Open Transactions |  | open\_tran from master..sysprocesses |  |
| Command |  | cmd from master..sysprocesses |  |
| Application |  | program\_name from master..sysprocesses |  |
| Wait Time (ms) |  | waittime from master..sysprocesses |  |
| Wait Type |  | lastwaittype from master..sysprocesses |  |
| Wait Resource |  | waitresource from master..sysprocesses |  |
| CPU (ms) |  | cpu from master..sysprocesses |  |
| CPU Delta (ms) | Change in ‘CPU (ms)‘ since last refresh |  |  |
| Physical I/O |  |  |  |
| Physical I/O Delta | Change in ‘Physical I/O’ since last refresh |  |  |
| Memory Usage (kb) |  | memusage from master..sysprocesses |  |
| Login Time |  | login\_time from master..sysprocesses |  |
| Last Batch |  | For SPIDs less than 5, it’s the current time.  For others its last\_batch from master..sysprocesses |  |
| Blocked By |  | blocked from master..sysprocesses |  |
| Blocking | True if ‘Blocking Count’ is greater than 0, else false. |  |  |
| Blocking Count | Number of processes in master..sysprocesses blocked by SPID |  |  |
| Net Library |  | net\_library from master..sysprocesses |  |
| Net Address |  | net\_address from master..sysprocesses |  |

##### SELECTED SESSION Details

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Connection – User/System Session |  | spid from master..sysprocesses |  |
| Connection – Status |  | status from master..sysprocesses |  |
| Connection – Host |  | hostname from master..sysprocesses |  |
| Connection – Net Library |  | net\_library from master..sysprocesses |  |
| Connection – Network Address |  | net\_address from master..sysprocesses |  |
| Connection – User |  | loginname from master..sysprocesses |  |
| Connection – Execution Context |  | ecid from master...sysprocesses |  |
| Connection – Application |  | program\_name from master..sysprocesses |  |
| Connection – Database |  | db\_name(dbid from master..sysprocesses) |  |
| Usage – Login Time |  | login\_time from master..sysprocesses |  |
| Usage –Last Activity |  | For SPIDs less than 5, it’s the current time.  For others its last\_batch from master..sysprocesses |  |
| Usage –Physical I/O |  | physical\_io from master..sysprocesses |  |
| Usage –CPU (ms) |  | cpu from master..sysprocesses |  |
| Usage –Memory (kb) |  | memusage from master..sysprocesses |  |
| Usage –Open Transactions |  | open\_tran from master..sysprocesses |  |
| Lock Information – Wait Time (ms) |  | waittime from master..sysprocesses |  |
| Lock Information –Wait Type |  | lastwaittype from master..sysprocesses |  |
| Lock Information –Resource |  |  |  |
| Lock Information –Blocking | True if ‘Blocking Count’ is greater than 0, else false | . |  |
| Lock Information –Blocked By |  | blocked from master..sysprocesses |  |
| Lock Information –Blocking Count | Number of processes in master..sysprocesses blocked by SPID |  |  |
| Last Command |  | dbcc inputbuffer |  |

##### SESSION TRACE

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Status |  |  |  |
| Trace Overview – CPU Time (ms) |  |  |  |
| Trace Overview – Row Count |  |  |  |
| Trace Overview – Physical Reads |  |  |  |
| Trace Overview – Physical Writes |  |  |  |
| Trace Overview – Open Transactions |  |  |  |
| Trace Overview – Cursor Fetch Status |  |  |  |
| Trace Overview – Cursor Set Rows |  |  |  |
| Trace Overview – Last Error Number |  |  |  |
| Trace Overview – Line Number |  |  |  |
| Trace Overview – Text Size |  |  |  |
| Trace Overview – Nesting Level |  |  |  |
| Trace Overview – Lock Wait Timeout |  |  |  |
| Trace Overview – Language |  |  |  |
| Trace Overview – Deadlock Priority |  |  |  |
| Trace Overview – Transaction Isolation Level |  |  |  |
| Trace Overview – Current Command |  |  |  |
| Options In Effect |  |  |  |
| Last Command |  |  |  |
| SQL Server Statements | Time, Status, Duration (ms), CPU Time (ms), Reads, Writes, Command |  |  |

### Locks

##### GRID

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Session ID |  | * SQL 2000   – req\_spid from syslockinfo   * SQL 2005   – request\_session\_id from sys.dm\_tran\_locks |  |
| Object | Combines database, schema and object name. In SQL 2000, schema is the owner name. | * SQL 2000   Database – rsc\_dbid from syslockinfo  Schema – owner of the object from sysobjects for rsc\_objid from syslockinfo  Object –   * SQL 2005   Database –  Schema –  Object – |  |
| Lock Count |  | * SQL 2000   A   * SQL 2005   S |  |
| Wait Time (ms) |  | * SQL 2000   A   * SQL 2005   S |  |
| Request Mode |  | * SQL 2000   A   * SQL 2005   S |  |
| Request Type |  | * SQL 2000   A   * SQL 2005   S |  |
| Request Status |  | * SQL 2000   A   * SQL 2005   S |  |
| Blocked |  | * SQL 2000   A   * SQL 2005   S |  |
| Blocked By |  | * SQL 2000   A   * SQL 2005   S |  |
| Blocking |  | * SQL 2000   A   * SQL 2005   S |  |
| User |  | * SQL 2000   A   * SQL 2005   S |  |
| Host |  | * SQL 2000   A   * SQL 2005   S |  |
| Application |  | * SQL 2000   A   * SQL 2005   S |  |
| Command |  | * SQL 2000   A   * SQL 2005   S |  |

##### CHART

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Lock Statistics – Average Wait Time |  | From master..sysperinfo where object\_name is “sqlserver:latches” or “sqlserver:locks”   * AllocUnit (2005 only) * HoBT (2005 only) * Metadata (2005 only) * Object (2005 only) * Application * Database * Extent * File * Key * Page * RID * Table * Latch |  |
| Lock Statistics – Deadlocks |  | From master..sysperinfo where object\_name is “sqlserver:locks”   * AllocUnit (2005 only) * HoBT (2005 only) * Metadata (2005 only) * Object (2005 only) * Application * Database * Extent * File * Key * Page * RID * Table |  |
| Lock Statistics – Requests |  | From master..sysperinfo where object\_name is “sqlserver:locks”   * AllocUnit (2005 only) * HoBT (2005 only) * Metadata (2005 only) * Object (2005 only) * Application * Database * Extent * File * Key * Page * RID * Table |  |
| Lock Statistics – Timeouts |  | From master..sysperinfo where object\_name is “sqlserver:locks”   * AllocUnit (2005 only) * HoBT (2005 only) * Metadata (2005 only) * Object (2005 only) * Application * Database * Extent * File * Key * Page * RID * Table |  |
| Lock Statistics – Wait |  | From master..sysperinfo where object\_name is “sqlserver:latches” or “sqlserver:locks”   * AllocUnit (2005 only) * HoBT (2005 only) * Metadata (2005 only) * Object (2005 only) * Application * Database * Extent * File * Key * Page * RID * Table * Latch |  |
| Lock Statistics – Wait Time |  | From master..sysperinfo where object\_name is “sqlserver:latches” or “sqlserver:locks”   * AllocUnit (2005 only) * HoBT (2005 only) * Metadata (2005 only) * Object (2005 only) * Application * Database * Extent * File * Key * Page * RID * Table * Latch |  |

### Blocking

##### GRID

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Session ID |  |  |  |
| System Processes |  |  |  |
| Status |  |  |  |
| Logged In |  |  |  |
| Last Activity |  |  |  |
| Database |  |  |  |
| Open Transactions |  |  |  |
| Blocking Count |  |  |  |
| Wait Time |  |  |  |
| Wait Type |  |  |  |
| Wait Resource |  |  |  |
| CPU |  |  |  |
| Physical I/O |  |  |  |
| Memory |  |  |  |
| Command |  |  |  |
| Execution Context |  |  |  |
| Application |  |  |  |
| User |  |  |  |
| Host |  |  |  |

##### CHART

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Blocked Sessions – Blocked Sessions |  | Count of all non-self blocked processes in sysprocesses table. |  |
| Blocked Sessions – Lead Blockers |  | Count of lead blockers (blocked = 0) from sysprocesses |  |

## Queries

##### GRID

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Event Type |  |  |  |
| SQL Text |  |  |  |
| Duration (ms) ∑ |  |  |  |
| CPU Time (ms) ∑ |  |  |  |
| Reads ∑ |  |  |  |
| Writes ∑ |  |  |  |
| Application |  |  |  |
| Database |  |  |  |
| Windows User |  |  |  |
| SQL User |  |  |  |
| Client Computer |  |  |  |
| Start Time |  |  |  |
| End Time |  |  |  |
| SQL Text |  |  |  |

##### CHART

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Event Occurrences – SQL Statements |  |  |  |
| Event Occurrences – Stored Procedures |  |  |  |
| Event Occurrences – SQL Batches |  |  |  |

## Resources

### Summary

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| CPU Usage – SQL Server |  |  |  |
| CPU Usage – Total |  |  |  |
| Call Rates – Compiles |  |  |  |
| Call Rates – Re-Compiles |  |  |  |
| Call Rates – Batches |  |  |  |
| Memory Usage – SQL Used |  |  |  |
| Memory Usage – SQL Allocated |  |  |  |
| Memory Usage – Total Used |  |  |  |
| Cache Hit Ratios – Buffer Cache |  |  |  |
| Cache Hit Ratios – Procedure Cache |  |  |  |
| Disk Busy |  |  |  |
| SQL Server Physical I/O – Checkpoint Writes |  |  |  |
| SQL Server Physical I/O – Lazy Writer Writes |  |  |  |
| SQL Server Physical I/O – Read Ahead Pages |  |  |  |
| SQL Server Physical I/O – Read Ahead Reads |  |  |  |
| SQL Server Physical I/O – Synchronous Reads |  |  |  |
| SQL Server Physical I/O – Synchronous Writes |  |  |  |

### CPU

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| CPU Usage – SQL Server |  |  |  |
| CPU Usage – Total |  |  |  |
| Processor Queue Length |  |  |  |
| Processor Time – Privileged Time |  |  |  |
| Processor Time – User Time |  |  |  |
| Call Rates – Compiles |  |  |  |
| Call Rates – Re-Compiles |  |  |  |
| Call Rates – Batches |  |  |  |

### Memory

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Memory Usage – SQL Used |  |  |  |
| Memory Usage – SQL Allocated |  |  |  |
| Memory Usage – Total Used |  |  |  |
| Paging |  |  |  |
| Memory Areas – Procedure Cache |  |  |  |
| Memory Areas – Connections |  |  |  |
| Memory Areas – Locks |  |  |  |
| Memory Areas – Database |  |  |  |
| Memory Areas – Optimizer |  |  |  |
| Memory Areas – Sort, Hash, Index |  |  |  |
| Memory Areas – Free |  |  |  |
| Cache Hit Ratios – Buffer Cache |  |  |  |
| Cache Hit Ratios – Procedure Cache |  |  |  |
| Buffer Cache – Free Pages |  |  |  |
| Buffer Cache – Active Pages |  |  |  |
| Procedure Cache – Free Pages |  |  |  |
| Procedure Cache – Active Pages |  |  |  |

### Disk

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Disk Busy |  |  |  |
| Average Disk Queue Length |  |  |  |
| SQL Server Physical I/O – Checkpoint Writes |  |  |  |
| SQL Server Physical I/O – Lazy Writer Writes |  |  |  |
| SQL Server Physical I/O – Read Ahead Reads |  |  |  |
| SQL Server Physical I/O –Synchronous Reads |  |  |  |
| SQL Server Physical I/O – Synchronous Writes |  |  |  |
| SQL Server Physical I/O Errors |  |  |  |

### PROCEDURE CACHE

##### Grid

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Type |  |  |  |
| Size (KB) |  |  |  |
| Usage |  |  |  |
| References |  |  |  |
| User/Schema |  |  |  |
| SQL Text |  |  |  |

##### Chart

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Cache Size by Object Type |  | * Adhoc Query * Check Constraint * Default Constraint * Extended Procedure * Prepared Statement * Replication Procedure * Rule * Stored Procedure * System Table * Trigger * User Table * View |  |
| Object Types – Use Rate |  | * Adhoc Query * Check Constraint * Default Constraint * Extended Procedure * Prepared Statement * Replication Procedure * Rule * Stored Procedure * System Table * Trigger * User Table * View |  |
| Object Types – Hit Ratio |  | * Adhoc Query * Check Constraint * Default Constraint * Extended Procedure * Prepared Statement * Replication Procedure * Rule * Stored Procedure * System Table * Trigger * User Table * View |  |
| Object Types – Object Count |  | * Adhoc Query * Check Constraint * Default Constraint * Extended Procedure * Prepared Statement * Replication Procedure * Rule * Stored Procedure * System Table * Trigger * User Table * View |  |

## Databases

### Summary

##### GRID

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Status |  |  |  |
| Database Name |  |  |  |
| Type |  |  |  |
| Status |  |  |  |
| Recovery Model |  |  |  |
| Data File Size (MB) |  |  |  |
| Data Table (MB) |  |  |  |
| % Data Tables |  |  |  |
| Data Indexes (MB) |  |  |  |
| % Data Indexes |  |  |  |
| Data Text (MB) |  |  |  |
| % Data Text |  |  |  |
| Data Unused (MB) |  |  |  |
| % Data Unused |  |  |  |
| % Data Free |  |  |  |
| % Data Full |  |  |  |
| Data Potential Growth (MB) |  |  |  |
| Log File Size (MB) |  |  |  |
| Log Used (MB) |  |  |  |
| % Log Used |  |  |  |
| Log Unused (MB) |  |  |  |
| % Log Unused |  |  |  |
| % Log Full |  |  |  |
| Log Potential Growth (MB) |  |  |  |
| Oldest Open Transaction |  |  |  |
| Oldest Open Transaction Start Time |  |  |  |
| Last Backup |  |  |  |
| Date Created |  |  |  |
| Compatibility Level |  |  |  |
| User Tables |  |  |  |
| File Groups |  |  |  |
| Files |  |  |  |
| Data Autogrowth |  |  |  |
| Log Autogrowth |  |  |  |
| Active Sessions |  |  |  |

##### Chart

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Capacity Usage – Data Megabytes |  |  |  |
| Capacity Usage – Data Percent |  |  |  |
| Capacity Usage – Log Megabytes |  |  |  |
| Capacity Usage – Log Percent |  |  |  |
| Recent Trends – Active Sessions |  |  |  |
| Recent Trends – Transactions/sec |  |  |  |
| Recent Trends – Data Size (MB) |  |  |  |
| Recent Trends – Log Size (MB) |  |  |  |
| Recent Trends – Log Flushes |  |  |  |

### Configuration

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Database Name |  |  |  |
| Collation |  |  |  |
| Recovery Model |  |  |  |
| Compatibility Level |  |  |  |
| ANSI NULL Default |  |  |  |
| ANSI NULLS Enabled |  |  |  |
| ANSI Padding Enabled |  |  |  |
| ANSI Warnings Enabled |  |  |  |
| Arithmetic Abort Enabled |  |  |  |
| Auto Close |  |  |  |
| Auto Create Statistics |  |  |  |
| Auto Shrink |  |  |  |
| Auto Update Statistics |  |  |  |
| Close Cursors On Commit Enabled |  |  |  |
| Cross-database Ownership Chaining Enabled |  |  |  |
| Fulltext Enabled |  |  |  |
| In Standby |  |  |  |
| Local Cursors Default |  |  |  |
| Merge Published |  |  |  |
| NULL Concat |  |  |  |
| Numeric Round Abort Enabled |  |  |  |
| Published |  |  |  |
| Quoted Identifiers Enabled |  |  |  |
| Recursive Triggers Enabled |  |  |  |
| Subscribed |  |  |  |
| Sync With Backup |  |  |  |
| Torn Page Detection Enabled |  |  |  |
| Status |  |  |  |
| Read-Only |  |  |  |
| Restrict Access |  |  |  |
| Version |  |  |  |

### Files

##### GRID

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Status |  |  |  |
| Database Name |  |  |  |
| Type |  |  |  |
| Data File Size (MB) |  |  |  |
| % Data Used |  |  |  |
| % Data Full |  |  |  |
| Log File Size (MB) |  |  |  |
| % Log Used |  |  |  |
| % Log Full |  |  |  |
| User Tables |  |  |  |
| File Groups |  |  |  |
| Files |  |  |  |

##### DATA FILES

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Logical File Name |  |  |  |
| Database |  |  |  |
| File Group |  |  |  |
| Size (MB) |  |  |  |
| % Current Used |  |  |  |
| % Current Free |  |  |  |
| % Potential Used |  |  |  |
| Auto Growth |  |  |  |
| Potential Growth (MB) |  |  |  |
| Disk Free (MB) |  |  |  |
| File Path |  |  |  |

##### DAta files – chart – File usage

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
| Current Megabytes |  |  |  |
| Current Percent |  |  |  |
| Potential Megabytes |  |  |  |
| Potential Percent |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

### Backups & Restores

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

### Tables & Indexes

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

## Services

### Summary

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

### SQL Agent Jobs

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

### Full-Text Search

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

### Replication

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

## Logs

|  |  |  |  |
| --- | --- | --- | --- |
| Metric | Comments | Source | Collection Service Batch |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |