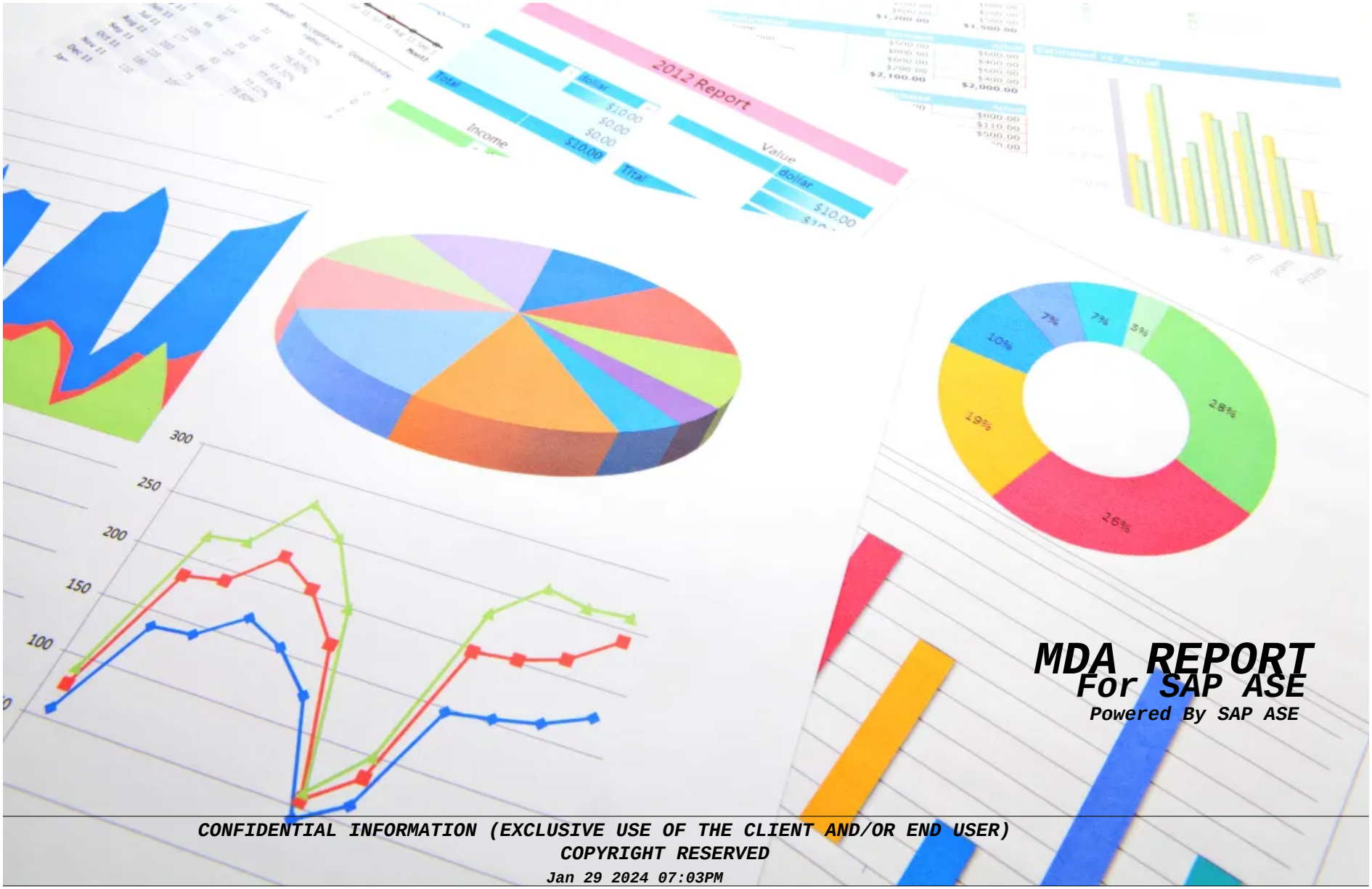

MDA REPORT
For SAP ASE
Powered By SAP ASE

Jan 29 2024 07:03PM

By: Gerardo Triana Gómez - Gerardo.Triana@MazterTools.com & Giovanni Blanco Gutierrez - Giovanni.Blanco@MazterTools.com

MDA REPORT
INTRODUCCION

The purpose of this service is facilitate the monitoring of the SAP ASE behavior in such a way that the organization can make timely decisions based on the information and possible recommendations presented here.

Next, the analysis of the most relevant items referring to the configuration and management of resources of the SAP ASE instance analyzed. Additionally and when it is the case, the recommendations of the case will be made.

The MDA REPORT development team hopes that the information presented here will be useful to keep this SAP ASE working within performance and reliability standards in accordance with the organization's requirements.

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MDA REPORT
FORMALITY

CONFIDENTIALITY
All the information shown here is owned by the client/customer/contractor, so it is the client/customer/contractor who decides to share it in whole or in part according to their interests. MDA REPORT and/or its developers and/or associates have no influence or decision in this regard.

SENSITIVITY
The information used here as input for this study is delivered automatically by SAP ASE, which strictly implies technical aspects related to its behavior. For this reason, such information is not sensitive to the business and/or organization, client/customer/contractor.

ACCURACY
It should be noted that due to the fact that the source of said inputs (data) is of an automatic nature, MDA REPORT has no responsibility for possible inconsistencies and/or inaccuracies that may arise due to SAP ASE failures and/or manufacturing defects of the SAP ASE product (BUG's).

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MDA REPORT

After the analysis of the data collected from the system, including the MDA tables of the SAP ASE instance under study, MDA REPORT exposes the following document with the findings regarding the behavior of this instance for the given date range.

Generalities Of The Studied Instance

Next some indicators that show a good part of the definition / identification of the SAP ASE instance studied here.

SAP ASE Instance Name:	SRVDBSYBPROD
SAP ASE Version:	16.0.04.01
Architecture:	powerpc
Platform:	AIX 7.1.5.31
Page Size:	2048
Last data SAP ASE start (startsterver):	May 20 2023 04:38PM
Errorlog Path:	/sybase/ASE-16_0/install/SRVDBSYBPROD.log
Ejecution Mode (Kernel Mode):	threaded
Lenguage:	us_english
Enough configuration to support up to:	65519 concurrent connections
Primary optimization goal:	allrows_mix
Maximum number of days running (Since last reboot):	26
Maximum number of reported connections:	2384
Maximum time used in the recovery of a DB:	5 Minutes

Query And Data Manipulation

The graphic on the next page shows the average distribution of Select, Insert, Update and Delete for the instance studied in the given time range.

It should be noted that these values are expressed as an average (AVG).

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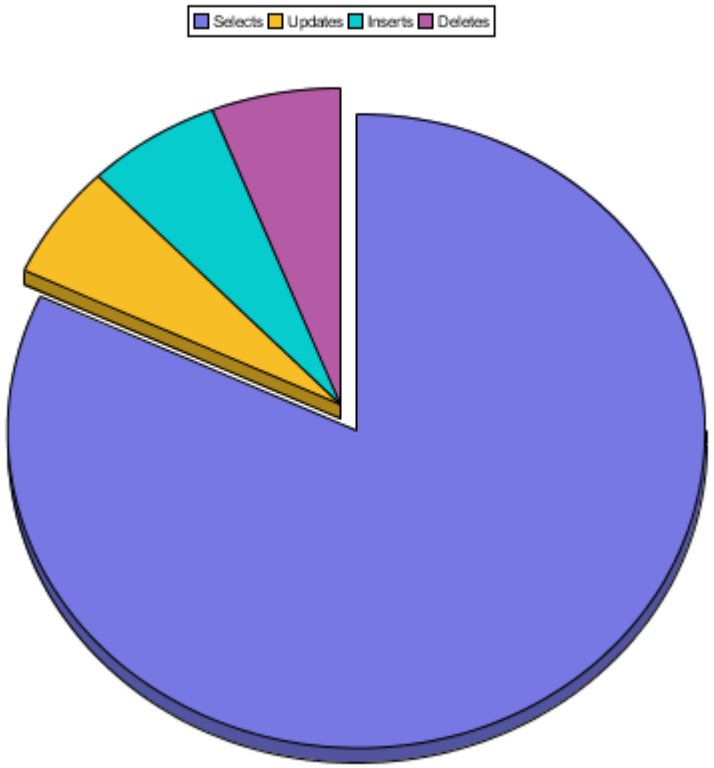
MDA REPORT

Query And Data Manipulation

Select's & DML (Data Manipulation Language)



The following averaged data show in quantitative terms the activity reported in this instance during the evaluated period:

Select's:	9.995.850.684
Updates's:	726.459.791
Insert's:	749.298.270
Delete's:	734.618.447

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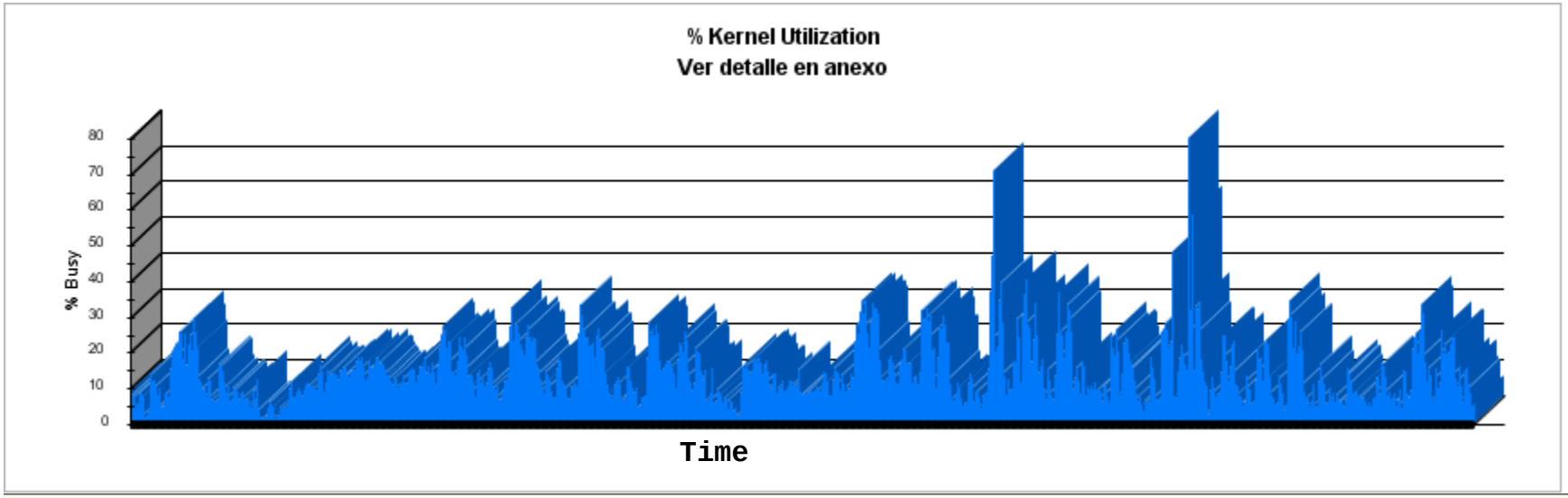
MDA REPORT

Cpu Utilization Percentage (syb_default_pool)

Minimum CPU Utilization Percentage:	**0,46 %**
Maximum CPU Utilization Percentage:	**79,92 %**
Average CPU Utilization Percentage:	**12,72 %**

Finding - Recommendation

Because there is a sustained trend in the 12,72% which is below the considered range as appropriate (60%) of use of this resource, it is recommended to decrease this resource.



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Errorlog Analysis - Stack Traces Search

It is likely that SAP ASE presents errors that depending on their 'Status' may or may not be harmful for its funtionability. SAP ASE identifies a bug with an ID (number), severity, and text of the same. Errors with severity less than or equal to 17 are not classified as critical and they are usually easy to fix. However, those errors with severity 99 can sue special attention, so they are accompanied by a 'Stack Trace' printed recurrently on the errorlog. This 'Stack Trace' is a memory dump with detailed information (addresses memory and functions sed, among others) of the error/anomaly in progress. Usually these 'Stack Trace' are sent to SAP Support for analysis and treatment.

Next, the detail of the errors with status = 99 (Stack Trace) and the date of appearance.

Warning:

Given the nature of the 'Stack Trace', these can occur quite frequently, we will show only the Top 10, if there is any error of this type.
More information in this regard, please see the errorlog of this SAP ASE instance.

Error ID	Severity	Date	Error Message
0	99	Jun 12 2023 08:14PM	pc: 0x0000000000000000 ()
0	99	Jun 12 2023 08:14PM	pc: 0x0000000102461110 execproc+0x744()

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Error ID	Severity	Date	Error Message
0	99	Jun 12 2023 08:14PM	pc: 0x0000000102469240 sequencer+0x4fc()
0	99	Jun 12 2023 08:14PM	pc: 0x0000000102487de0 exec_lava+0x388()
0	99	Jun 12 2023 08:14PM	pc: 0x00000001024888c0 LePlanOpen+0x100()
0	99	Jun 12 2023 08:14PM	pc: 0x000000010339cf34 ucbacktrace+0xc4()
0	99	Jun 12 2023 08:14PM	pc: 0x00000001020ae23c ucstkgentrace+0x3c0()
0	99	Jun 12 2023 08:14PM	pc: 0x000000010242e558 tdsrecv_language+0x244()
0	99	Jun 12 2023 08:14PM	pc: 0x00000001020ad270 pcstkwalk.fdpr.chunk.1+0x8()
0	99	Jun 12 2023 08:14PM	pc: 0x00000001017c4934 sequencer.fdpr.chunk.4+0x58()

CONFIGURATION PARAMETERS WITH VALUES OTHER THAN DEFAULT

Parameter Name	Parameter Value	Default Value	Type
SQL batch capture	1	0	dynamic
aggressive task stealing	0	1	dynamic
allow memory grow at startup	0	1	static
allow resource limits	1	0	static
cis rpc handling	1	0	dynamic
configuration file	/sybase/ASE-16_0/SRVDBSYBPROD.cfg	0	dynamic
configuration file	0	0	dynamic
cpu grace time	1.500	500	dynamic
current audit table	3	1	dynamic
deadlock pipe active	1	0	dynamic
deadlock pipe max messages	1.000	0	dynamic
disable disk mirroring	0	1	static
disk i/o structures	65.536	256	dynamic
dump on conditions	1	0	dynamic
enable dump history	1	0	dynamic
enable housekeeper GC	4	1	dynamic
enable literal autoparam	1	0	dynamic
enable logins during recovery	0	1	dynamic
enable monitoring	1	0	dynamic
enable spinlock monitoring	1	0	dynamic
enable stmt cache monitoring	1	0	dynamic
enable xact coordination	0	1	static
enable xml	1	0	dynamic
errorlog pipe active	1	0	dynamic
errorlog pipe max messages	10.192	0	dynamic
executable codesize + overhead	738.155	0	read-only

Continue...

CONFIGURATION PARAMETERS WITH VALUES OTHER THAN DEFAULT

Parameter Name	Parameter Value	Default Value	Type
heap memory per user	65.536	4.096	dynamic
housekeeper free write percent	5	1	dynamic
kernel resource memory	976.128	6.396	dynamic
lock hashtable size	4.096	2.048	static
max SQL text monitored	131.072	0	static
max cis remote connections	3.072	0	dynamic
max memory	148.480.000	167.936	dynamic
max online engines	48	1	static
number of alarms	1.600	400	dynamic
number of aux scan descriptors	2.048	456	dynamic
number of devices	128	10	dynamic
number of disk tasks	2	1	dynamic
number of large i/o buffers	256	6	dynamic
number of locks	41.000.000	10.000	dynamic
number of mailboxes	1.024	30	dynamic
number of network tasks	2	1	dynamic
number of open databases	32	12	dynamic
number of open indexes	205.000	500	dynamic
number of open objects	205.000	500	dynamic
number of open partitions	205.000	500	dynamic
number of remote connections	2.048	20	static
number of sort buffers	8.192	500	dynamic
number of user connections	5.000	25	dynamic
o/s file descriptors	65.534	0	read-only
object lockwait timing	1	0	dynamic
optimize dump for faster load	25	0	dynamic

Continue...

CONFIGURATION PARAMETERS WITH VALUES OTHER THAN DEFAULT

Parameter Name	Parameter Value	Default Value	Type
per object statistics active	1	0	dynamic
permission cache entries	2.048	64	dynamic
plan text pipe active	1	0	dynamic
plan text pipe max messages	32.000	0	dynamic
print deadlock information	1	0	dynamic
procedure cache size	6.815.744	14.000	dynamic
process wait events	1	0	dynamic
runnable process search count	3	2.000	dynamic
session tempdb log cache size	4.096	2.048	static
sql text pipe active	1	0	dynamic
sql text pipe max messages	7.000	0	dynamic
stack guard size	8.192	4.096	static
stack size	772.096	514.048	static
start xp server during boot	1	0	static
statement pipe active	1	0	dynamic
statement pipe max messages	10.000	0	dynamic
statement statistics active	1	0	dynamic
suspend audit when device full	0	1	dynamic
total data cache size	202.286.748	0	read-only
total logical memory	121.834.312	167.936	read-only
total physical memory	121.115.934	0	read-only
user log cache size	81.920	8.192	static
wait event timing	1	0	dynamic
xp_cmdshell context	0	1	dynamic

CACHE ANALYSIS - Configured Caches

Memory areas in SAP ASE are called caches and there are basically two families:

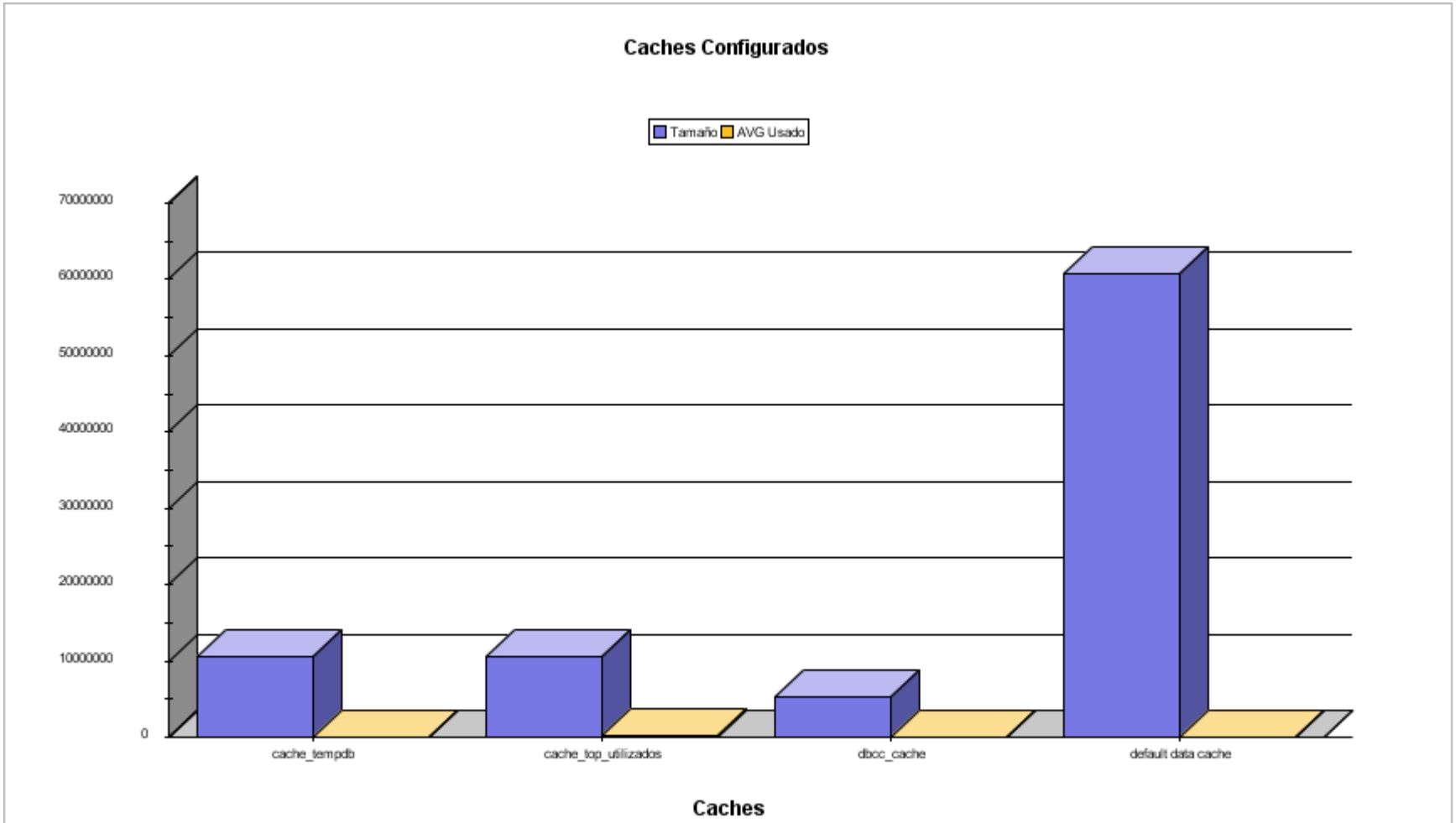
System Cache's:
Typically Default Data Cache and Procedure Cache. These areas are of mixed use, since they are visited by user processes, as well as by the system.

User Caches's (Named Cache):
These areas are created and configured by the user. Its size and properties are defined according to its expectation of use.

Below are the findings of the use of caches, according to information found in the system tables:

CACHE NAME	SIZE (KB)	AVERAGE USED (KB)
cache_tempdb	20.971.520	394
cache_top_utilizados	20.971.520	248.399
dbcc_cache	10.485.760	3
default data cache	121.634.816	9.580

CACHE ANALYSIS - Configured Caches



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CACHE ANALYSIS - Pool's

The caches are memory areas whose minimum read/write unit is defined at SAP ASE installation. This is known as the SAP ASE page size. Usually the size chosen for the SAP ASE page size, is 2K although the installer proposes by default to use a 4K page size.

All caches are made up of at least one Pool that is the size of the SAP ASE Database server. page. A cache can have several Pool's defined within it. That is, a cache can have memory areas of 2K,4K, 8K or 16K, these definitions are known as Pool's.
The page size of this server is: 2048

Next are the findings related to the use of caches, according to information in system tables.

Name Cache	Pool Size	AVG Pool Used (%)	Recomendation*
cache_tempdb	2K	0,82	N/A
cache_tempdb	16K	100,00	N/A
cache_top_utilizados	2K	16,28	N/A
cache_top_utilizados	4K	84,90	N/A
dbcc_cache	2K	0,01	N/A
dbcc_cache	16K	0,00	N/A
default data cache	2K	33,07	N/A
default data cache	4K	51,68	N/A
default data cache	16K	0,00	Delete

Recomendation*

It is recommended to eliminate those Pool's that are below 5% of use. However, it is possible that these Pools be used in periods of time outside of the data sample collection. A classic example of this are Pool's that were designed to be used exclusive at end of year processes which will show usage rates of 0% during the months other than December.
The 5% tip does not apply to Caches for dbcc objects or Pool's of the same SAP ASE page size (@@maxpagesize).

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CACHE ANALYSIS - Procedure Cache

There is a cache area reserved for compiled objects such as stored procedures and triggers, among others. This area is called the Procedure Cache. More recent versions of SAP ASE use this cache for various system tasks, so it important avoid that this resource is exhausted.

The purpose of this system area is to keep in memory the optimal execution plan of the stored procedures that have been called for execution. As long as an SP is not invoked, it will remain in the system tables. Once an Stored Procedure is called for execution, the SAP ASE optimizer builds an optimal execution plan that will remain in memory. This process is known as compilation.A stored procedure will not compile if it is in memory, unless explicitly stated.

Configuration Parameter:
The configuration parameter with which the size of the area is adjusted is the Procedure Cache Size that we will describe below.

Procedure Cache Size

Default Value (2K):	14.000
Default Value (MB):	27
Type:	dynamic
Unit:	memory pages(2k)
Config Value (MB):	13.312
Minimal Used (MB):*	28

*Value calculated since the last SAP ASE restart

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CACHE ANALYSIS - Statement Cache

We found that the SAP ASE configuration parameter 'statement cache size' has a value of 0 (zero), for this reason there are no data to evaluate for this section.

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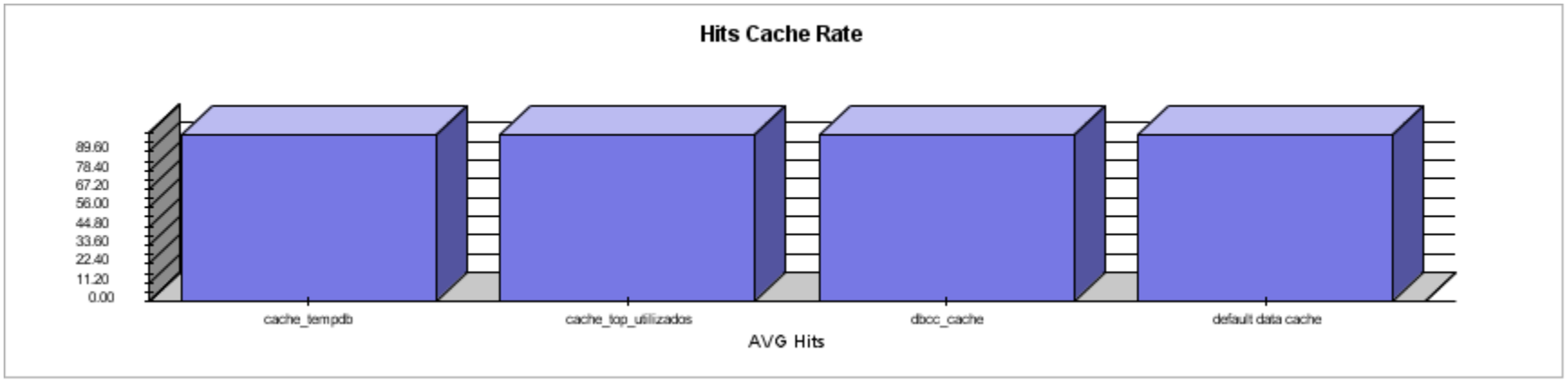
CACHE ANALYSIS - Hits Rate Cache

One of the indicators that allows evaluating the effectiveness of a cache is the 'Hits Rate. Cache'. This indicator is the percentage measure of hits of cached searches. A value of 100% should be understood as all data searches were found in memory (cache). If this indicator falls below 80% it is prudent to evaluate its characteristics, including size, pools, etc.

Next, an executive summary of the behavior of the caches for the period evaluated.

Nombre Cache	AVG Hits %	Recomendación
cache_tempdb	99,95	N/A
cache_top_utilizados	99,79	N/A
dbcc_cache	100,00	N/A
default data cache	99,76	N/A



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Average Memory Usage - Memory Usage (bytes)

The following list shows how the memory is distributed in terms of parameters of setting. Only configuration parameter information is displayed here. Cache values and other areas of the SAP ASE system are not considered here.

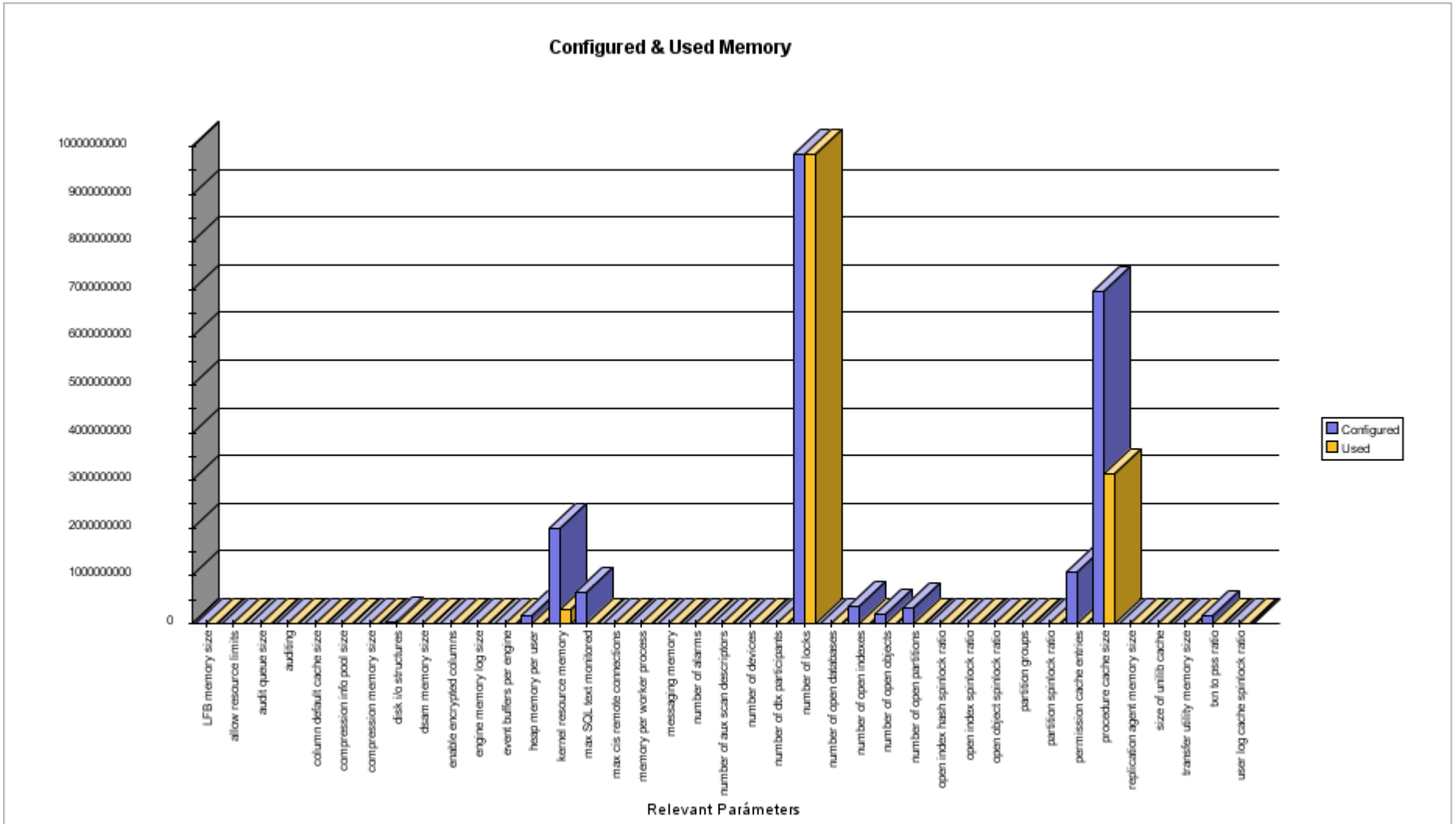
As a base suggestion, we recommend increasing the setting value of the parameter, if its use (Used Value) exceeds 90% of the Configured Value.

Parameter	Config Value(bytes)	Used (bytes)	Recomendation
LFB memory size	11.589.632	0	N/A
allow resource limits	7.300.720	0	N/A
audit queue size	41.476	0	N/A
auditing	4.096	2.672	N/A
column default cache size	2.099.200	264.000	N/A
compression info pool size	15.286.272	668	N/A
compression memory size	0	0	N/A
disk i/o structures	22.546.032	0	N/A
dsam memory size	4.196.352	3.568	N/A
enable encrypted columns	9.750.102	723.173	N/A
engine memory log size	2.048	464	N/A
event buffers per engine	577.136	0	N/A
heap memory per user	171.025.235	11.475.208	N/A
kernel resource memory	1.999.110.144	300.914.688	N/A
max SQL text monitored	655.640.176	0	N/A
max cis remote connections	2.877.040	0	N/A
memory per worker process	4.096	128	N/A
messaging memory	0	0	N/A
number of alarms	1.195.632	0	N/A

Continue...

Memory Usage Averages (bytes)

Parameter	Config Value(bytes)	Used(bytes)	Recomendation
number of aux scan descriptors	5.373.552	0	N/A
number of devices	263.792	0	N/A
number of dtx participants	81.520	0	N/A
number of locks	9.843.519.488	9.843.519.328	Consider +20%
number of open databases	3.911.769	3.337	N/A
number of open indexes	352.193.136	0	N/A
number of open objects	180.259.443	0	N/A
number of open partitions	324.720.240	0	N/A
open index hash spinlock ratio	28.272	0	N/A
open index spinlock ratio	83.568	0	N/A
open object spinlock ratio	83.568	0	N/A
partition groups	558.704	0	N/A
partition spinlock ratio	833.136	0	N/A
permission cache entries	1.094.066.096	0	N/A
procedure cache size	6.974.686.208	3.149.957.025	N/A
replication agent memory size	8.390.656	464	N/A
size of unilib cache	1.005.568	4.132	N/A
transfer utility memory size	8.390.656	81.422	N/A
txn to pss ratio	159.174.256	0	N/A
user log cache spinlock ratio	11.888	0	N/A



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CONTEXT SWITCH

When SAP ASE executes a task, it uses a set of objects and structures named 'Context'. Having said this, we will say that a process can stop its execution by various reasons, among which is the lack of a resource or the need to wait for a situation to be resolved, for example, the dissolution of a lock.

When the process excution is paused, the context with which it is executed must be 'saved'. In addition to the objects that are part of the 'Context', SAP ASE must save the execution point at which said execution was stopped, so that once it is resolved situation or resource becomes available, the task resumes its execution at the point at it was.

Some of these situations are named in the sp_sysmon in the 'Task Context Switches Due To' section, but with more 'common' names. An example of this is 'Cache Search for Misses' which is really a Wait Event that at the system level is known as 'waiting for regular buffer read to complete'.

Below are the 'top 5' of the events that had a wait of more than 10 minutes. This issue is not necessarily counterproductive or requires any action in this regard, because it simply refers to the normal behavior of an RDBMS. More detail in the Analysis of Wait Events section - Wait Events.

Event#	WT*	Description (Interpretation)
260	10,00	Waiting for date or time in waitfor command (Transact SQL waitfor command)
251	10,00	Waiting for network send to complete (Measures the amount of time a job waits while sending a reply packet back to a client)
57	13,00	checkpoint process idle loop
780	14,00	Bucket pool manager consolidator sleep
596	14,00	Wait until heartbeat or check interval expires

WT* = Wait Time on minutes

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IO ANALYSIS

By Device Name

I/O (Input/Output) activity occurs in several areas of SAP ASE. One of these areas are the database devices. Below is the analysis of the average OI per device.

The suggestion regarding the IO time for the Database devices is that it not exceed the 10MS. This cannot be taken as a facto rule because they are many factors that influence this, including platform, cloud, virtualization, RAM Disk, type and revolutions of HDD, type of SDD, etc.

Given the large amount of information, we allow ourselves to provide an analysis of IO AVG with the purpose of offering a global perspective of the behavior of this resource.

Device Name	IO Time (MS)	Status
control_dat01	3,18	Ok
control_log01	1,90	Ok
dbccdb_dat	2,09	Ok
dbccdb_log	1,05	Ok
dbmedios_dat01	55,08	**WARNING**
dbmedios_log01	1,77	Ok
gene_dat01	1,88	Ok
gene_dat02	2,23	Ok
gene_dat03	2,18	Ok
gene_dat04	1,31	Ok
gene_dat05	3,26	Ok
gene_dat06	3,50	Ok

Continue...

IO ANALYSIS

By Device Name

Device Name	IO Time (MS)	Status
gene_dat07	0,89	Ok
gene_dat08	2,89	Ok
gene_dat09	3,57	Ok
gene_dat10	3,04	Ok
gene_dat11	3,02	Ok
gene_dat12	2,34	Ok
gene_dat13	2,23	Ok
gene_log01	0,00	Ok
genehis_dat01	1,40	Ok
genehis_dat02	1,57	Ok
genehis_dat03	0,00	Ok
genehis_dat04	0,00	Ok
genehis_log01	0,80	Ok
master	2,22	Ok
sybsecurity01_dat	0,64	Ok
sybsecurity01_log	0,51	Ok
sybsecurity02_dat	0,39	Ok
sybsecurity03_dat	1,02	Ok
sysprocsdev	0,67	Ok
systemdbdev	0,00	Ok
tempdb1_dat	30,21	**WARNING**
tempdb1_log	157,89	**WARNING**
tempdb2_dat	0,35	Ok
tempdb2_log	4,18	Ok

Continue...

IO ANALYSIS

By Device Name

Device Name	IO Time (MS)	Status
tempdb_batch1_dat	241,77	**WARNING**
tempdb_batch1_log	0,00	Ok
tempdb_sa_dat	16,06	**WARNING**
tempdb_sa_log	338,05	**WARNING**
tempdbdev	0,10	Ok
tempdbdev01_dat	4,19	Ok
tempdbdev01_log	11,75	**WARNING**
tempgene_dat01	16,66	**WARNING**
tempgene_log01	2,93	Ok
tempvida_dat01	6,73	Ok
tempvida_log01	1,71	Ok
vida_dat01	2,13	Ok
vida_dat02	0,00	Ok
vida_dat03	5,65	Ok
vida_log01	4,23	Ok

****WARNING** - Recomendation**

If there were to be any **ALERT** in the Status of any device listed here, the recommendation is to review the IO system configuration at the operational system level and/or hardware. It also implies check the balance of the load I/O on the different disks, because SAP ASE can use very fast disks such as RAM Disk and/or SSD but the behavior could be erratic. This situation is usual in memory areas used for storage.

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IO ANALYSIS

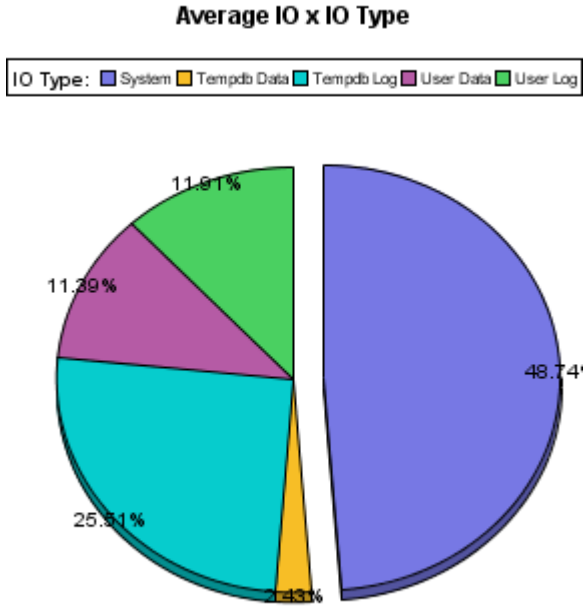
IO Type

There are the following types of IO's for database devices:

System:	System exclusive information.
Tempdb Data:	Data from tempdb's in temporary system/user DB's.
Tempdb Log:	Tempdb's log in temporary system/user DB's.
User Data:	User data.
User Log:	User transactions.

Below is the distribution of IO by type:

IO TYPE	AVG IO Time (MS)
System	12,28
Tempdb Data	0,61
Tempdb Log	6,43
User Data	2,87
User Log	3,00



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DATABASE ANALYSIS

System Databases

The Databases on which SAP ASE relies for its administration, control and monitoring are called System Databases and in essence they are master, model and tempdb. Without these three Databases the SAP ASE system is unstable or simply not viable.

Other Databases such as sybsystemprocs and sybsystemdb are also considered system, but their absence or malfunction rarely affect system availability.

Below is the general information of these Databases:

Database	DB Size (MB)	% Used	Date Creation	Recomendation
master	810,00	8,20	Mar 30 2022 08:22PM	N/A
model	3,00	59,50	Mar 30 2022 08:22PM	N/A
sybsystemdb	503,00	0,80	Mar 30 2022 08:22PM	N/A
sybsystemprocs	830,00	16,40	Mar 30 2022 08:23PM	N/A
tempdb	13.316,00	1,30	May 20 2023 04:38PM	N/A

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DATABASE ANALYSIS

User and Utility DB's - Sizes

The following is the list of the Databases with their names and size specifications according to, information found in the system tables of the SRVDBSYBPROD instance.

The information shown here has a registration date: 2023-06-18 23:59

		DATA (Default Segment)		Log (Log Segment)	
Database	**Size DB (MB)**	**Total (MB)**	**% Used**	**Total (MB)**	**% Used**
control	71.996,00	65.534,00	63,90	6.462,00	0,40
db_medios	40.956,00	32.766,00	35,00	8.190,00	0,40
dbccdb	71.676,00	65.534,00	73,70	6.142,00	0,40
generales	3.456.484,00	3.327.974,00	97,40	128.510,00	0,40
generales_his	1.345.588,00	1.279.990,00	86,10	65.598,00	0,40
sybsecurity	40.950,00	32.760,00	51,80	8.190,00	0,40
temp_gene	39.164,00	32.766,00	25,00	6.398,00	0,40
temp_vida	11.261,00	10.238,00	7,90	1.023,00	0,40
tempdb1	24.576,00	12.288,00	0,40	12.288,00	0,40
tempdb2	24.576,00	12.288,00	0,40	12.288,00	0,40
tempdb_batch	40.960,00	20.480,00	10,80	20.480,00	0,40
tempdb_sa	13.312,00	8.192,00	0,40	5.120,00	0,40
vida	819.192,00	767.994,00	83,80	51.198,00	0,40

Alerts / Recomendations

Those values that have reached +80% occupancy are presented with shading, either in Data or Log area. We recommended to take some action in this regard. This actions could be erase data or alter alter Database (alter database...) on a new database device. If the alert is generated in the Log area, in most cases the strategy is to take a transaction log backup, whenever possible and this does not alter other processes such as Replication Server, for example AlwaysOn

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DATABASE ANALYSIS

User DB's And Utilities - Generalities

Database	Date Creation	Last Date Transactional Backup	Durability
control	Mar 31 2022 06:02AM	Jun 15 2023 07:12AM	Full
db_medios	Mar 31 2022 06:02AM	Jun 15 2023 07:12AM	Full
dbccdb	Apr 12 2022 05:32PM	Jun 15 2023 07:12AM	Full
generales	Mar 31 2022 06:03AM	Jun 15 2023 07:10AM	Full
generales_his	Mar 31 2022 06:02AM	Jun 15 2023 07:12AM	Full
sybsecurity	Dec 09 2022 03:04PM	Jun 15 2023 07:12AM	Full
temp_gene	Mar 31 2022 06:02AM	Jun 15 2023 07:12AM	Full
temp_vida	Mar 31 2022 06:02AM	Jun 15 2023 07:12AM	Full
tempdb1	May 20 2023 04:39PM	Jun 15 2023 07:12AM	No_recovery
tempdb2	May 20 2023 04:39PM	Jun 15 2023 07:12AM	No_recovery
tempdb_batch	May 20 2023 04:39PM	Jun 15 2023 07:12AM	No_recovery
tempdb_sa	May 20 2023 04:42PM	Jun 15 2023 07:12AM	No_recovery
vida	Mar 31 2022 06:02AM	Jun 15 2023 07:10AM	Full

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DATABASE ANALYSIS

Growth

To keep the information system functional, it is required, among other requirements, that all Databases have available space.

Next, the Databases that presented some novelty in their size.

Database	2023-05-18 00:00	2023-06-18 23:59	Coments

There were no growth news in the evaluated period.

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DATABASE ANALYSIS

Space Alerts

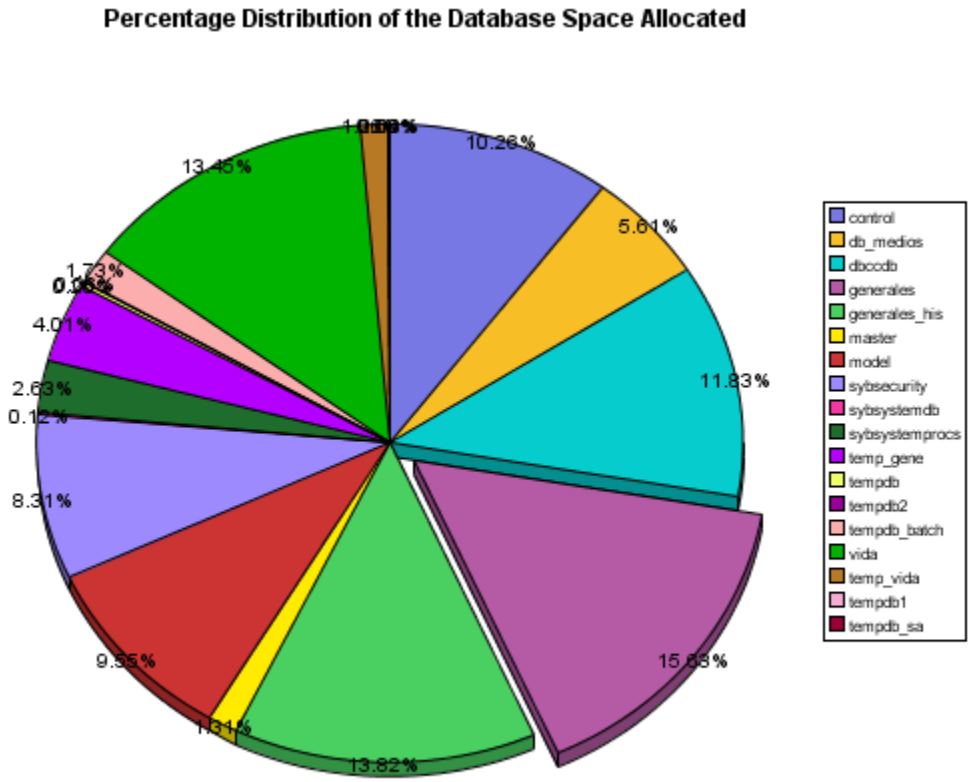
Below are the Databases that during the period of time studied reported a space busy in data (Default Segment) or in transaction log (Log Segment) greater than or equal to 80%.

Database	Data Space Used	Log Space Used
generales	97,40 %	
generales_his	86,10 %	
vida	83,80 %	

DATBASE ANALYSIS

Graph Space Databases

Here we show the distribution of space used by the Databases expressed graphically.



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ANALYSIS OF OBJECTS AND STRUCTURES

Unused Indices

Although the use of indices is the way optimal to quickly solve most of the Querys, a balance must be sought between utility and performance. I mean, if a table has many indexes, surely queries will be resolved promptly, however, if against the table in question write operations are performed (Insert, Update or Delete) SAP ASE must recalculate the index of the table penalizing the performance.

That said, the recommendation is to put in observation those indices that do not report use. If it is observed that the index listed here are not used, the action to follow could be to delete them.

WARNING:
It may happen that the data capture here don't 'catch' the use of these indexes, so caution must be exercised.Consult with your functional and/or app leaders before deciding to delete indexes.

Database Name	Object Name
vida	pv_amortiza_comis
generales	ttasa_interes_factores
generales	ttasa_interes_factores_frac
vida	trel_tarifa_ramo_reas
vida	tdias_max_renovacion
vida	testruct_secciones
vida	hist_mcb
control	conexiones
control	actividad_ase
control	control_aux_cuentas
vida	tmp_l_balance_recaudo
control	dba_monProcessStatement
vida	di_cober_au_coas
vida	di_cober_deduc_coas
vida	di_pagador_coas
control	repetidos_actividad
vida	plan_pago
vida	tmp_perfil_cartera_sumas_ini
vida	ch_bco
vida	hist_cierre_cobranzas_import
generales	tsobrecomis_suc
vida	ttasa_interes_factores_frac
generales	b2b_errores_mensajeria
vida	tmp_l_cartera_clientes_super
control	script

Top 25 Unused Objects

PROCEDURAL ANALYSIS

Recommendations and Comments

Performance is affected by many factors, but the most relevant is IO.
Situations that imply configuration failures at the level of the Operational System or SAP ASE configuration are decisive when it comes to obtaining good response times. Some of the practices that help mitigate very high IO effort rates are:

- -Configuration: At the balancing level in the IO system. This can be definitive if high levels of IO stress are observed permanently.
- -SAP ASE Tuning: If tuning efforts at the operational system level and / or the hardware configuration do not show problem lights, it is time to check the configuration from SAP ASE. For this issue the sp_sysmon is very useful.
- -Caches: The use of memory spaces dedicated to keeping small but frequently used objects can be interesting from a performance perspective, especially in those situations where the objects (tables) are so small that it is not practical to add indexes.
- -Index: These objects help keep IO and response times within appropriate values. However, there are several items that must be considered in this regard, including:

-Proper declaration: It is important to include the appropriate fields.
-Exact and ordered invocation: Although the SAP ASE optimizer always does its best to use the appropriate indexes, the appropieated index use (invocation) can help to optimizer. This avoids unnecessary steps when building the optimal plans of execution.
-Maintenance: Given the dynamic nature of the applications, the indices tend to lose 'accuracy', which is why it is need to keep them up to date. To quantify how unbalanced the indices are, SAP ASE Optdiag utility is useful with its corresponding analysis.
-Quantity and sizes: Keep the indexes 'thin' and also only keep those that are really essential can mark one difference.

Below is the list of the top 20 processes that exceed 1,000,000 IO's. The recommendation is to evaluate the above mentioned points to minimize the IO effort.

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PROCEDURAL ANALYSIS

Top 20

Below is the list of the 20 processes / programs with an IO greater than 1,000,000 of IO's sorted ascending by the number of IOs:

Date Loggin	DB	User	Program	Process	Line#	Command	#IOs	TempDB	Hostname	Address IP
Jun 9 2023 12:20PM	generales	batch_sise	isql	spi_grabar_historico	56	INSERT	1.013.848	tempdb_batch	srvdbsybprod	10.40.10.15
May 19 2023 4:58PM	generales	marthamendez	ProcEspCartera	spi_notas_credito	92	INSERT	1.018.988	tempdb	marthamendez	10.37.126.26
May 21 2023 6:07AM	generales	usrDataWh	diawp.exe	GIspEmiFianzas	271	INSERT	1.029.460	tempdb_batch	SRVIRPROD01	10.10.9.229
Jun 6 2023 8:38AM	generales	claudiamrodriguez	LisProducc	sp_list_pol_vig_ram_	105	INSERT	1.044.706	tempdb	claudiamrodriguez	10.37.126.53
May 29 2023 11:44AM	generales	mariamejia	CuentaCorriente	sp_generar_op_comisi	147	INSERT	1.073.023	tempdb	mariamejia	10.37.126.53
May 21 2023 6:00AM	generales	usrDataWh	diawp.exe	GIspPolizasXUsuario	58	INSERT	1.074.780	tempdb_batch	SRVIRPROD01	10.10.9.229
May 30 2023 11:53AM	generales	geraldinsanchez	SIE	sp_CargarCartera_Sie	390	INSERT	1.083.129	tempdb1	geraldinsanchez	10.37.126.33
May 23 2023 8:06AM	generales	angelalinares	SisEmiDanos	usp_rpt_CumFut	267	INSERT	1.086.274	tempdb	angelalinares	10.37.126.66
May 25 2023 12:12PM	generales	heidyrobles	ProcEspCartera	spi_notas_credito	92	INSERT	1.106.768	tempdb1	heidyrobles	10.37.126.46
May 26 2023 6:41PM	generales	anyelatavera	ReportesContabilid	sp_grabar_gastos_x_c	1680	UPDATE	1.191.637	tempdb1	anyelatavera	10.37.126.58
May 26 2023 8:36AM	generales	misaelgarzon	CierresContables	sp_registro_comision	95	INSERT	1.266.369	tempdb	misaelgarzon	10.37.126.59
Jun 4 2023 10:40AM	generales	andrescanas	ProcEspCartera	spi_notas_credito	92	INSERT	1.312.081	tempdb1	andrescanas	10.37.126.65
Jun 4 2023 6:00AM	generales	usrDataWh	diawp.exe	GIspPolizasXUsuario	58	INSERT	1.338.786	tempdb_batch	SRVIRPROD01	10.10.9.229
Jun 3 2023 5:22AM	generales	usrDataWh	diawp.exe	sp_datos_generales_f	464	INSERT	1.343.044	tempdb_batch	SRVIRPROD01	10.10.9.229
May 25 2023 10:08AM	generales	marthamendez	ProcEspCartera	spi_notas_credito	92	INSERT	1.358.811	tempdb1	marthamendez	10.37.126.50
Jun 5 2023 3:01AM	vida	usrDataWh	diawp.exe	sp_perfiles_cartera	154	INSERT	1.387.595	tempdb_batch	SRVIRPROD01	10.10.9.229
May 29 2023 10:34AM	generales	gloriacifuentes	ProcEspCartera	spi_notas_credito	92	INSERT	1.412.708	tempdb1	gloriacifuentes	10.37.126.67
May 28 2023 6:00AM	generales	usrDataWh	diawp.exe	GIspPolizasXUsuario	58	INSERT	1.437.615	tempdb_batch	SRVIRPROD01	10.10.9.229
May 24 2023 6:00AM	generales	usrDataWh	diawp.exe	GIspPolizasXUsuario	58	INSERT	1.449.838	tempdb_batch	SRVIRPROD01	10.10.9.229
Jun 13 2023 6:00AM	generales	usrDataWh	diawp.exe	GIspPolizasXUsuario	58	INSERT	1.455.783	tempdb_batch	SRVIRPROD01	10.10.9.229

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IMPROVEMENT OPPORTUNITIES

Analysis of Wait Events

A very high percentage of performance problems are caused by delay times wait. If these times are minimized, the imminent result will be to observe an improvement general in the behavior of SAP ASE, especially in relation to response times and use of resources such as IO, CPU and memory. This section of the study focuses on the search for excessive wait events and recommendations to counter them.

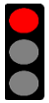
There are quite a few 'events' that can cause waits in SAP ASE, which is why here we will explore those most relevant to the OLTP and DSS operation of SAP ASE.

NOTAS:
1. The analysis of waiting events is based on averages calculated from the study dates.
2. As its name indicates, the recommendations presented here are strictly that, recommendations, so we suggest testing them in test environments before implementing them in productive environments.

Next, the list of the most relevant events found in the time range studied, together with its 'status', as follows:

Normal:
No action required, indicators within expected ranges.

Information:
The occurrence of the event don't represent a problem.



Warning:
The event requires attention.

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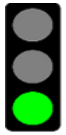
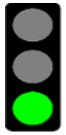
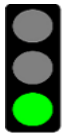
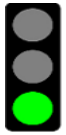
Eventos De Espera Listados Por ID (#)

#	Descripción	Recomendación* - Comentario	Status
29	Waiting for regular buffer read to complete	N/A	
31	Waiting for buf write to complete before writing	N/A	
32	Waiting for an APF buffer read to complete	N/A	
36	Waiting for MASS to finish writing before changing.	N/A	

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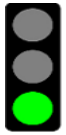
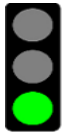
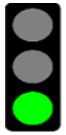
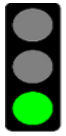
Eventos De Espera Listados Por ID (#)

#	Descripción	Recomendación* - Comentario	Status
41	Wait to acquire latch	N/A	
51	Waiting for last i/o on MASS to complete	N/A	
52	Waiting for i/o on MASS initiated by another task	N/A	
53	Waiting for MASS to finish changing to start i/o	N/A	

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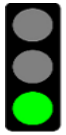
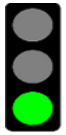
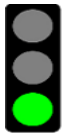
Eventos De Espera Listados Por ID (#)

#	Descripción	Recomendación* - Comentario	Status
54	Waiting for write of the last log page to complete.	High wait values for this event, regardless of its average time, may indicate contention on the last page of the log. Increase the size of the ULC (User Log Cache) to reduce contention or group write operations to avoid a commit for each record.	
57	Checkpoint process idle loop.	N/A	
61	House Keeper: Pause for some time.	N/A	
70	Waiting for device semaphore	N/A	

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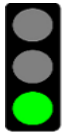
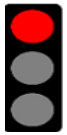
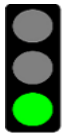
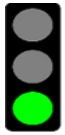
Eventos De Espera Listados Por ID (#)

#	Descripción	Recomendación* - Comentario	Status
83	Wait for DES state is changing	N/A	
85	Wait for flusher to queue full DFLPIECE	Check for problems with the 'dump database' process and/or try adding more memory to the Backup SRVR.	
99	Wait for data from client	N/A	
124	Wait for mass read to finish when getting page	N/A	

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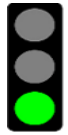
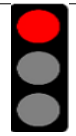
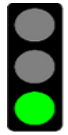
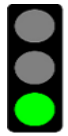
Eventos De Espera Listados Por ID (#)

#	Descripción	Recomendación* - Comentario	Status
214	Waiting on run queue after yield	N/A	
215	Waiting on run queue after sleep	Event 215 is a common wait event that occurs due to processes waiting for the SAP ASE 'Runnable' queue for a long time. Reduce the value of the SAP ASE configuration parameter 'time slice' to allow more processes to access the CPU (this also reduces the average time some processes spend on the CPU) or, if there are enough CPUs available on the machine host, increase the number of engines online.	
250	Waiting for incoming network data	N/A	
251	Waiting for network send to complete	N/A	

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Eventos De Espera Listados Por ID (#)

#	Descripción	Recomendación* - Comentario	Status
780	Bucket pool manager consolidator sleep	The occurrence of this event does not affect the SAP ASE performance.	

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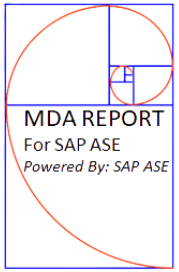

End Analysis

More information, please write us: MdaReport@MazterTools.com
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