

SarCheck v7 sarcheck_parms file keywords

The sarcheck_parms file is a flat file in the /opt/sarcheck/etc directory. The keywords entered in the file will change SarCheck's default behavior and enable you to customize SarCheck's behavior. The file is not included as part of the SarCheck distribution and you'll need to create it if you want to use it. It can be created with any text editor like vi or emacs, and the syntax for the sarcheck_parms file is very simple. Create a line in the file with the keyword and its new default value, separated by a space. Any line that starts with something other than a valid keyword is treated as a comment and is ignored.

The sarcheckagent for Unix systems read and collect kernel parameters that are saved in the ps data files. The ps data files can get pretty large so the following keyword will allow compression by the ps2 script. The compressed file will then be used in the analysis.

PSCOMPRESS y

The sarcheckagent for Linux systems read and collect kernel parameters that are saved in the procstat data files. The data files can get pretty large so the following keyword will allow compression by the prst2 script. The compressed file will then be used in the analysis. Note: The compressed files can be concatenated together and then be analyzed but cannot be combined with non-concatenated files.

PRSTCOMPRESS y

Other keywords can modify the defaults of the SarCheck script, modify the defaults when running the analyze command, change the defaults used to generate HTML output, modify the thresholds used in the algorithms, prevent specific recommendations from being produced, or control the amount of time that data is retained.

Modifying the SarCheck script (menu option):

For example, if you want the output of SarCheck to include a tabular summary at the end of the report, here is the menu selection that you will see:

```
Tabular Summary?      y Print a tabular summary at the
                        end of the report
                        i Print a tabular summary instead of
                        the report
                        n Print the report without a summary
                        * Accept remaining defaults
                        x exit sarcheck
```

(keyword = TABULAR, default = n):

You can see the name of the keyword and the options available. To change the default from 'n' to 'y' for this menu item, add the following line to the sarcheck_parms file:

TABULAR y

After those two fields are parsed by the SarCheck script, the rest of the line is ignored and is available as a comment.

Keywords to customize the SarCheck script (menu option):

For a list of the keyword values, run the sarcheck script and valid options will be displayed on the screen.

DR	On Unix systems this is to whether to analyze sar data or a sar report. For Linux systems this refers to a /proc data file. The default is 'd'.
OPT	How to format the report. The default is 'n'.
VERBOSE	Whether the output should be verbose or quiet. The default is 'v'.
PSELFOP	How verbose the ps -elf output should be. This option is used primarily to increase the SarCheck's sensitivity to

DISKFLTR	problems in the ps -elf data. The default is 'y'. Whether or not to filter the disk analysis. Filtering the sar disk data is useful on large system with many disks when you're not using the HTML disk table option. The default is 'y'.
TABULAR	Whether or not to print a tabular summary at the end of the report or print a tabular summary instead of the report. The default is 'n'.
OUTOPT	This option controls where the output of the sarcheck script should go. The default is '1'.
PAGER	The pager to be used to display the analysis on the screen. The default is more, but pg or less are common alternatives.
LPS	The command for printing the analysis. The default is lp -s.
ST	The starting time for the analysis. The default is 08:00 and this should be entered in 24 hour format.
EN	The ending time for the analysis. The default is 17:00 and this should be entered in 24 hour format.

Modifying the defaults when running the analyze command

The analyze command enables you to include switches to produce customized SarCheck reports. The sarcheck_parms keywords will enable you to include some of these options by using keywords. If the keyword is used then you do not need to include the corresponding switch in the 'analyze' command.

For example: If you are using GNUPLOT Version 4.0 and not the default version of 3.7 enter the following in the /opt/sarcheck/etc/sarcheck_parms file:

```
GNUPLOT 4.0
```

Another example is to specify a different location for ps -elf data files by using the PSELFDIR keyword:

```
PSELFDIR /systemxps
```

Here is a list to customize the SarCheck report when using the 'analyze' command.

PSELFDIR	The directory where SarCheck will look for the ps -elf data. The analyze program and the ps1 and ps2 scripts will use this new directory. <i>WARNING!</i> Please pick a directory that contains nothing but ps -elf data! The ps2 script will use the find command to remove any file in the specified directory which is more than 14 days old. We have tried to limit the potential damage by adding the -name switch to the find command but you should still be very careful with this. (Example: PSELFDIR /systemxps) The corresponding switch is -pd.
GNUPLOT	The version of gnuplot present on your system. The default value is 3.7. (Example: GNUPLOT 4.0 or GNUPLOT 4.2)
GNUPLOTDIR	The directory in which you've installed gnuplot. The default is /usr/local. (Example: GNUPLOTDIR /usr/systemx)
GRAPHDIR	The directory in which the graphs will be stored. The default is /tmp. (Example: GRAPHDIR /graphs) The corresponding switch is -gd.
CTD	The presence of the CTD keyword will display disk devices using the c0t0d0 naming convention as well as the sd334 convention used in the sar report. No value is needed after the CTD keyword (Solaris only). The corresponding switch is -ctd.
STATICDIR	The directory in which you save the static data files. The default is /opt/sarcheck/static. (Example: STATICDIR /static/systemx) The corresponding switch is -staticdir. (Solaris only)
WIDE	Change the width of graphs generated by gnuplot from 0.7 to 1.3. No value is needed after the WIDE keyword. The corresponding switch is -wide.
HSIZE	Change the default width of the graphs generated by gnuplot. If you want to see graphs that are wider than the ones produced by the default width of 0.7, this keyword can be used to produce wider graphs. (Example: HSIZE .75)
HTMLGRAPHDIR	The directory referenced in the HTML tag. (Example: HTMLGRAPHDIR /images) The corresponding switch is -hgd.

SARCHECKDIR	The directory where the SarCheck programs reside. This can be changed from the default directory of /opt/sarcheck/bin. If this is used, all other entries in the file named /opt/sarcheck/etc/sarcheck_parms will be ignored and the sarcheck_parms file in the specified directory will be used instead. Refer to the section 'How to move SarCheck to another directory'.
DMY	Change the default date format to dd/mm/yyyy. The corresponding switch is -dmy.
YMD	Change the default date format to yyyy/mm/dd. The corresponding switch is -ymd.
ST	The starting time for the analysis. Enter the keyword followed by a time entered in a 24 hour format. (Example: ST 09:00) The corresponding switch is -st.
EN	The ending time for the analysis. Enter the keyword followed by a time entered in a 24 hour format. (Example: EN 13:00) The corresponding switch is -en.
LP	To allow the analysis of both legacy and persistent disk names in 11.3 data. This will result in SarCheck pre-I 7.01.07 behavior. The corresponding switch is -lp.
PRP	Suppress warnings about possible runaway processes. The corresponding switch is -prp.
PML	Suppress warnings about possible memory leaks. The corresponding switch is -pml.
PLP	Suppress warnings about suspiciously large processes. The corresponding switch is -plp.
DBRP	Suppress warnings about runaway database processes. The corresponding switch is -dbrp.
DBML	Suppress warnings about possible memory leaks in database processes. The corresponding switch is -dbml.
DBLP	Suppress warnings about suspiciously large database processes. The corresponding switch is -dblp.
FSDIR	The directory where SarCheck will look for filesystem data (AIX only). The corresponding switch is -fsd.
NONICE	Ignore niced CPU statistics (Linux only).
NOAIOO	The scaixagent will not collect aioo data (AIX only).
NOARP	The scaixagent will not collect arp data (AIX only).
NOTCP	The scaixagent will not collect tcp data (AIX only).
NOUDP	The scaixagent will not collect udp data (AIX only).
NORMSS	The scaixagent will not collect rmss data (AIX only).
trMTU ignore	Ignore Token Ring statistics in collecting minimum MTU values (AIX only).
en1MTU only	Only use "en1 interface" data in collecting minimum MTU values (AIX only).
en0MTU only	For "en0 interface" data only (AIX only).
tr0MTU only	For "tr0 interface" data only (AIX only).
MINMTU 16384	Set the minimum MTU size to 16384 (AIX only).
SCDIR	The directory where the analyze program resides. This can be changed from the default of /opt/sarcheck/bin.
ETCDIR	The location of the file analyze.dlr. This file will be used if we ever use resellers who want to offer their own support. There is no point in changing this parameter at this time.

Modifying the defaults used to generate HTML output

The sarcheck_parms file can also be used to change the defaults used to generate **HTML output**.

Keyword	Allowed range	Default
BGCOLOR	Any valid color	#FFEE88
TEXTCOLOR	Any valid color	black
REDCOLOR	Any valid color	#FF9999
PINKCOLOR	Any valid color	#FFCC99

BGCOLOR: The background color specified in the bgcolor attribute of the HTML <BODY> tag.

TEXTCOLOR: The text color specified in the text attribute of the HTML <BODY> tag.

REDCOLOR: The background color specified in the bgcolor attribute of certain <td> tags. The color used to highlight the cells of an HTML table when the values exceed certain thresholds. The default color is a shade of red and this keyword exists to give you an option if you want to use the color red as the text or background color.

PINKCOLOR: The background color specified in the bgcolor attribute of certain <td> tags. The color used to highlight the cells of an HTML table when the values exceed certain thresholds. The default color is a shade of pink and this keyword exists to give you an option if you want to use the color pink as the text or background color.

Modifying the thresholds used in the algorithms

Here is a list of **thresholds** which can be overridden and the meaning of each is described below:

Keyword	Allowed range	AIX Default	Solaris Default	HP-UX Default	Linux Default
AVGCPU	50 - 100	80	70	80	80
MAXCPU	50 - 100	95	70	95	95
AVGWIO	1 - 70	7	15	7	n/a
AVGRQ	1 - 50	3.5	3.0	3.5	n/a
MAXRQ	1 - 500	5.0	5.0	5.0	n/a
AVGRC1	10-99	n/a	90	90	n/a
AVGRC2	10-99	n/a	96	96	n/a
AVGWC1	10-99	n/a	65	70	n/a
AVGWC2	10-99	n/a	80	80	n/a
AVGDSK	10-100	n/a	50	n/a	n/a
CAPCPU	25 - 100	90	90	90	90
CAPDSK	10 - 100	75	75	75	n/a
CAPTBL	25-100	n/a	80	80	n/a
AVSWPQ	0.01 - 100	1.0	n/a	n/a	n/a
AVSWPT	0.01 - 100	n/a	n/a	1.5	n/a
AVSWOC	1 - 100	n/a	n/a	5	n/a
PSPGOUT	0.01+	10	n/a	n/a	n/a
CPULIM	0.05 - 100	20	20	20	20
MLRATE	1+	200	200	200	200
LGPROC	32+	formula	formula	formula	formula
DCALL	any	n/a	10	10	10
DCLP	any	n/a	10	10	10
DCML	any	n/a	10	10	10
DCRP	any	n/a	10	10	10
SYSUSR	0-999	n/a	2.5	2.5	2.5

AVGCPU: When average CPU utilization exceeds this value, SarCheck considers the system to be busy enough to cause concern.

MAXCPU: When Peak CPU Utilization exceeds this value, SarCheck assumes that performance degradation is likely.

AVGWIO: When the average value of the sar -u %wio column exceeds this value, SarCheck looks for evidence to corroborate an I/O bottleneck. The %wio data should not be used as a sole indicator of an I/O bottleneck.

AVGRQ: When the average length of the run queue exceeds this value, SarCheck considers it to be an indication of a CPU bottleneck.

MAXRQ: When the maximum length of the run queue exceeds this value, SarCheck assumes that performance degradation is likely.

AVGRC1: The lowest acceptable value for the buffer cache read hit ratio. Note that several other factors are used to evaluate buffer cache effectiveness (Solaris and HP-UX).

AVGRC2: The lowest acceptable value for the buffer cache read hit ratio when I/O is heavy. Note that several other factors are used to evaluate buffer cache effectiveness (Solaris and HP-UX).

AVGWC1: The lowest acceptable value for the buffer cache write hit ratio. Note that several other factors are used to evaluate buffer cache effectiveness (Solaris and HP-UX).

AVGWC2: The lowest acceptable value for the buffer cache write hit ratio when I/O is heavy. Note that several other factors are used to evaluate buffer cache effectiveness (Solaris and HP-UX).

AVGDSK: When the average value of the `sar -d %busy` column exceeds this value, SarCheck will consider the disk's activity to be sufficient to cause a performance bottleneck. (Solaris only)

CAPCPU: The value used to calculate the increase in CPU load that the system can support at peak times.

CAPDSK: The value used to calculate the increase in I/O load on the busiest disk that the system can support at peak times.

AVSWPQ: When the average length of the swap queue reported by `sar` exceeds this value, SarCheck considers memory pressure to be excessive. (AIX only)

PSPGOUT: The value used to decide that the page out rate to the paging spaces is high enough to indicate a shortage of memory. Some people believe that any page outs to the paging spaces indicate a lack of memory but a small value is likely to indicate a brief problem that may not have a noticeable impact on performance. (AIX only)

AVSWPT: When the number of swap-outs per second reported by `sar` exceeds this value, SarCheck considers memory pressure to be excessive. (HP-UX)

AVSWOC: When the percentage of time the swap queue is occupied exceeds this value, SarCheck considers memory pressure to be excessive. (HP-UX)

CAPTBL: The value used to calculate how much additional load can be supported before the process and open file tables become full. (Solaris and HP-UX)

CPULIM: The threshold in computed CPU utilization SarCheck uses to decide if a runaway process has been detected in `ps -elf` data.

MLRATE: The threshold in kb of memory per hour used by SarCheck to decide if a memory leak has been detected in `ps -elf` data.

MLTIME: The amount of time in seconds of memory per hour used by SarCheck to decide if a memory leak has been detected in `ps -elf` data (Linux).

LGPROC: The minimum size of a process which SarCheck will report as being suspiciously large. The formula used to calculate the default threshold is 256 megabytes or one quarter the size of memory, whichever is smaller.

DCALL: Disable the feature which limits the number of suspiciously large processes, memory leaks, and runaway processes.

DCLP: Disable the feature which limits the number of suspiciously large processes that are reported or change the number being reported. Using the keyword `DCLP` without a second field will disable the limit. Using a second field (for example: `DCLP 25`) will change the limit to the value in the second field.

DCML: Disable the feature which limits the number of processes with memory leaks that are reported or change the number being reported. Using the keyword `DCML` without a second field will disable the limit. Using a second field (for example: `DCML 25`) will change the limit to the value in the second field.

DCRP: Disable the feature which limits the number of runaway processes that are reported or change the number being reported. Using the keyword `DCRP` without a second field will disable the limit. Using a second field (for example: `DCRP 25`) will change the limit to the value in the second field.

SYSUSR: The threshold used to decide if it's worth mentioning if there is an unusual amount of `%sys` activity relative to `%usr` activity. The default of 2.5 means that `%sys` activity needs to be at least 2.5 times greater than `%usr` activity for this to be reported. (Solaris, Linux and HP-UX)

These changes can be implemented using the /opt/sarcheck/etc/sarcheck_parms file. It is possible to set these parameters to values which can make SarCheck's recommendations meaningless or incorrect. Please override the default values with care.

Suppressing specific recommendations

The following keywords give you the ability to turn off some specific recommendations. These changes can be implemented using the /opt/sarcheck/etc/sarcheck_parms file.

AIX

For example: if you wanted to suppress the recommendations for minfree you would enter the keyword MINFREE followed by the word "ignore" in the /opt/sarcheck/etc/sarcheck_parms file.

MINFREE ignore

This entry would also include suppressing recommendations for those parameters that are associated with minfree. For example the following would be also ignored; MAXFREE, MINPGAHEAD, MAXPGAHEAD, J2_MINPAGEREADAHEAD and J2_MAXPAGEREADAHEAD

A second group of parameters that are related are MINPERM, MAXPERM, MAXCLIENT, LRU_FILE_REPAGE, LRU_POLL_INTERVAL, STRICT_MAXPERM and STRICT_MAXCLIENT

A third group includes the MINPOUT and MAXPOUT parameters.

The following keywords are standalone or independent of each other; NPSKILL, NPSWARN, NUMCLUST, MAXPIN, NUMFSBUFS, PVMINBUF, MAXRANDWRT, J2_DYNAMICBUFFERPREALLOCATION, J2_NBUFFERPERPAGERDEVICE, J2_NRANDOMCLUSTER and J2_MAXRANDOMWRITE.

The format is to enter the keyword followed by the word "ignore".

NPSKILL ignore

SOLARIS

For example: if you wanted to suppress the recommendations for maxpgio you would enter the keyword MAXPGIO followed by the word "ignore" in the /opt/sarcheck/etc/sarcheck_parms file

MAXPGIO ignore

A second example would be to suppress the recommendations for nautoup. You would enter the keyword NAUTOUP followed by the word "ignore" in the /opt/sarcheck/etc/sarcheck_parms file.

NAUTOUP ignore

This entry would also include suppressing recommendations for those parameters that are associated with nautoup. For example, fsflushr recommendations would be also ignored.

RESTRICTED ignore

Beginning with SarCheck for AIX 7.01.43, the RESTRICTED keyword will suppress recommendations for all restricted tunable parameters and all parameters that are associated with them. This will prevent the recommendation of changes to a large number of tunable parameters and might be seen as being somewhat draconian. The corresponding switch is -ir.

The following keywords are associated with each other and ignoring one will cause the others to be ignored:

NAUTOUP and FSFLUSHR
NCSIZE and UFS_NINODE
FASTSCAN, SLOWSCAN, and HANDSPREADPAGES
LOTSFREE, DESFREE, MINFREE, and CACHEFREE
SEGMAPSIZE and SEGMAP_PERCENT

HP-UX

For example: if you wanted to suppress the recommendations for maxvgs you would enter the keyword MAXVGS followed by the word "ignore" in the /opt/sarcheck/etc/sarcheck_parms file

MAXVGS ignore

The following keywords are standalone or independent of each other;
TIMESLICE, MAXUPRC, NPROC, NINODE and NFILE.

A second example would be to prevent the calculation of recommendations for filecache. You would enter the keyword FILECACHE followed by the word "ignore" in the /opt/sarcheck/etc/sarcheck_parms file.

FILECACHE ignore

This entry would also suppress recommendations for those parameters that are associated with filecache. For example, filecache_min and filecache_max recommendations would be also ignored.

The following keywords are associated with each other and ignoring one will cause the others to be ignored:

DBC do not calculate recommendations for nbuf, bufpages, dbc_min_pct or dbc_max_pct values.

SEMAPHORE do not calculate recommendations for semaphore values: any tunable name that starts with "sem".

MESSAGE do not calculate recommendations for message values: any tunable name that starts with "msg".

LINUX

For example: if you wanted to suppress the recommendations for kswapd you would enter the keyword SWAPPINESS followed by the word "ignore" in the /opt/sarcheck/etc/sarcheck_parms file

SWAPPINESS ignore

A second example would be to suppress the recommendations for bdflush. You would enter the keyword BDFLUSH followed by the word "ignore" in the /opt/sarcheck/etc/sarcheck_parms file.

BDFLUSH ignore

This entry would also include suppressing recommendations for those parameters that are associated with bdflush. For example, the following recommendations would be also ignored:

NFRACT, NDIRTY, NREFILREC, NFRACT_SYNC, NFRACT_STOPREC, AND INTERVAL.

The following keywords are associated with each other and ignoring one will cause the others to be ignored:

FREEPAGE: MINFREEPAGE, FREEPGELOW and FREEPGEHIGH.
KSWAPD: TRIES_BASE, TRIES_MIN and SWAP_CLUSTER.

FASTSCAN: SLOWSCAN, and HANDSPREADPAGES
TIMESLICE: MAXTS and MINTS
FS and SUPER_MAX

Additional keywords to control the retention of data collected by SarCheck's agents:

The following keywords can be used to control the length of time that data collected by SarCheck's agents will be retained. The keywords vary by operating system and take effect beginning with the following versions of SarCheck:

SarCheck for AIX 7.01.41
SarCheck for HP-UX 7.01.23
SarCheck for Linux x86 7.01.18
SarCheck for Solaris SPARC & x86/x64 7.01.28

PS_REPORT_RETENTION is used on all operating systems to control the number of days that data in /opt/sarcheck/ps is retained. To retain data for 60 days, add the line "PS_REPORT_RETENTION 60" to the sarcheck_parms file.

FS_REPORT_RETENTION is used on AIX systems to control the number of days that data in /opt/sarcheck/fs is retained. To retain data for 60 days, add the line "FS_REPORT_RETENTION 60" to the sarcheck_parms file.

ST_REPORT_RETENTION is used on Solaris systems to control the number of days that data in /opt/sarcheck/static is retained. To retain data for 60 days, add the line "ST_REPORT_RETENTION 60" to the sarcheck_parms file.

PRST_REPORT_RETENTION is used on Linux systems to control the number of days that data in /opt/sarcheck/procstat is retained. To retain data for 60 days, add the line "PRST_REPORT_RETENTION 60" to the sarcheck_parms file.