

SSD Analyzer Tool for 5.4 and 6.1

The SSD Analyzer Tool for 5.4 and 6.1 is designed to help you determine if SSDs could help improve performance on your system(s). The tool works with the performance data that is collected on your system and works with releases V5R4 and V6R1. You will download a save file and restore the library QIBMSSD from the save file to your system. If you are currently at V5R4, you need to run a SETUP step before you start collecting performance data to use with the tool.

V5R4 Installation Instructions

1. Download the save file QIBMSSD.SAVF.
2. Restore the library QIBMSSD from the QIBMSSD save file.

Note: if you receive a result of anything other than “24 objects restored from QIBMSSD to QIBMSSD.” You will need to follow these special instructions:

1. Change system value QVfyOBJRST to a value of 3, 2, or 1 (3 is shipped default)
record your setting here _____
 2. Change system value QALWObjRST to a value of *ALL or *ALWPGMADP
(*ALL is shipped default)
record your setting here _____
 3. DLTLIB QIBMSSD
 4. Run the restore again
 5. Change the system values QVfyOBJRST and QALWObjRST back to their previous settings.
3. From a command line, run QIBMSSD/SETUP.

V5R4 NOTE: Only performance data collected **after** SETUP is run can be used with the SSD analysis tool.

V5R4 NOTE: SETUP must be run after each IPL.

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V6R1 Instructions

1. Download the save file QIBMSSD.SAVF.
2. Restore the library QIBMSSD from the QIBMSSD save file.

Note: You may receive the message (CPF3773) 23 objects restored. 1 not restored to QIBMSSD. This is nothing to be concerned about. The single object that is not restored in this case is the program object QIBMSSDC which is not used on V6R1 and later releases.

Using the SSD Analyzer Tool

To use the tool, you need to run the ANZSSDDTA command. It can be run interactively or in batch. To run it interactively, type QIBMSSD/ANZSSDDTA on the command line and press F4.

```
MAIN                               System i Main Menu

Select one of the following:

    1. User tasks
    2. Office tasks
    3. General system tasks
    4. Files, libraries, and folders
    5. Programming
    6. Communications
    7. Define or change the system
    8. Problem handling
    9. Display a menu
   10. Information Assistant options
   11. System i Access tasks

    90. Sign off

Selection or command
===> qibmssd/anzssddta

F3=Exit   F4=Prompt   F9=Retrieve   F12=Cancel   F13=Information
Assistant
F23=Set initial menu
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```

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```
SSD ANALYZER TOOL (ANZSSDDTA)

Type choices, press Enter.

PERFORMANCE MEMBER . . . . . *DEFAULT      Name, *DEFAULT
LIBRARY . . . . .                _____  Name

                                Additional Parameters

REPORT TYPE . . . . . *SUMMARY      *DETAIL, *SUMMARY, *BOTH
TIME PERIOD::
START TIME AND DATE::
BEGINNING TIME . . . . . *AVAIL      Time, *AVAIL
BEGINNING DATE . . . . . *BEGIN      Date, *BEGIN
END TIME AND DATE::
ENDING TIME . . . . . *AVAIL      Time, *AVAIL
ENDING DATE . . . . . *END          Date, *END
DETAIL REPORT SORT ORDER . . . . *DISKTOT  *JOBNAME, *CPUTOT...
NUMBER OF RECORDS IN REPORT . .  50          0 - 9999, *ALL

                                                Bottom
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
F24=More keys
```

On the ANZSSDDTA command screen, the command will default to the library specified by CFGPFCOL and the most current collection. You have the option to enter the performance member and library.

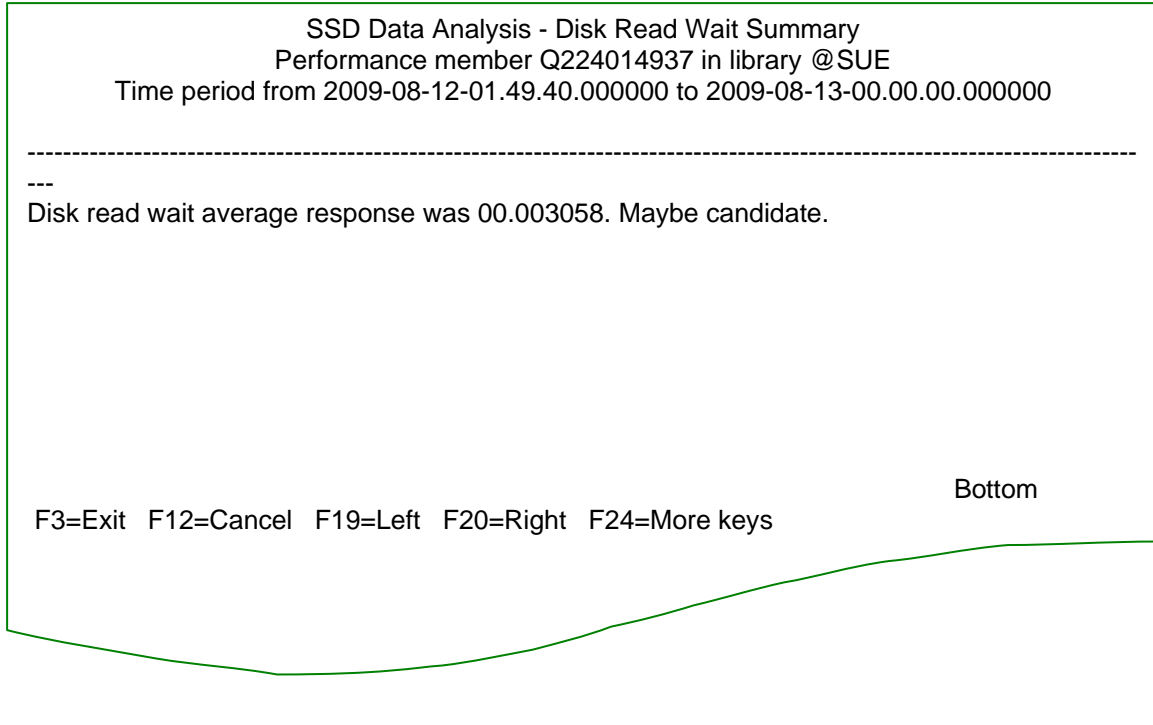
After entering the performance member and library, you have the option of *DETAIL, *SUMMARY, and *BOTH for the report type. Choosing *DETAIL or *SUMMARY will produce one spool file. If you choose *BOTH, you will produce two spool files; one with summary information and one with detailed information. It is recommended to run the *SUMMARY report first to see if the workload is a good candidate, then run the *DETAIL report. The *DETAIL report is more compute intensive.

You can choose the sort order for the detailed report, default *DISKTOT, which is descending order for the total disk read wait time for the job. Other selections are:

- *JOBNAME – sorts in ascending order based on job name
- *CPUTOT – sorts in descending order of total CPU seconds used by the job
- *DISKAVG – sorts in descending order of average disk read wait time for the job

You can choose the number of jobs to list on the detail report by entering a number between 0 and 9999 or *ALL. Default is 50.

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The summary report is shown above. The report tells you what member was used for input and if the Disk Read Wait data indicates SSDs might help performance. The Disk Read Wait Average response is shown in seconds. If the Disk Read Wait average is

- greater than 3.5 milliseconds, then the workload is considered a good candidate
- between 1.5-3.5 milliseconds, then it may be a good candidate
- less than 1.5 milliseconds, it is likely the reads are utilizing read cache on the disk controller and SSDs may not provide a performance improvement.

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The Detailed report presents you with a list of jobs sorted by Disk Read Wait time.

Job Name	CPU Total Seconds	Disk Read Wait Total Seconds	Disk Read Wait Average Seconds	Disk Read Wait /CPU
QSPRC00001/QSYS/448980	38.010	4,276.730	.004677	113
DELSMBQPR/SUEBA02/455198	67.096	3,551.437	.004724	53
QSPMAINT/QSYS/448961	23.377	2,820.571	.004547	121
PERFNAVDS/SUEBA01/451039	15.865	862.070	.001861	54
WCSMBB01/SUEBAK/456767	144.285	774.387	.002174	5
WCSMBB02/SUEBAK/456856	49.446	589.355	.003625	12
QPADEV000F/SUEBA01/451414	7.612	544.305	.004620	72
SB055J/SUEBA01/453231	690.375	482.659	.002527	1
QCLNSYSPRT/QPGMR/456926	5.232	459.801	.005025	88
DELSMBQPR/SUEBA02/455585	12.035	431.057	.004763	36

The information listed in the first four columns is self explanatory and is displayed as seconds. The number in the last column, Disk Read Wait/CPU represents the number of Disk Read Wait seconds per each second of CPU time. When the ratio of disk read wait seconds to CPU seconds is high, the data used by the job may be a candidate for placement on SSD to improve the disk read wait to CPU ratio.

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V5R4 Only

The SETUP command must be run at V5R4 in order to map the collection wait buckets correctly for performance collection. The settings changed by SETUP do not survive an IPL. Only data collected **after** SETUP is run can be used with the ANZSSDDTA command. If you attempt to use data collected prior to running SETUP, you will receive the following error:

```
Additional Message Information

Message ID . . . . . : CPF9898          Severity . . . . . : 40
Message type . . . . . : Diagnostic
Date sent . . . . . : 09/15/09          Time sent . . . . . :
05:57:31

Message . . . . . : PERFORMANCE MEMBER Q244000026 IN LIBRARY @SUE HAS
INCORRECT WAIT BUCKET MAPPINGS OR HAS NO DATA FOR TIME PERIOD
2009-09-01-00.00.00.000000 TO 2009-09-02-23.59.59.000000. RUN SETUP TO
MAP
THE BUCKETS CORRECTLY AND CREATE A NEW PERFORMANCE MEMBER, SPECIFY A
DIFFERENT PERFORMANCE MEMBER, OR TRY A DIFFERENT TIME PERIOD.
Cause . . . . . : This message is used by application programs as a
general
escape message

Bottom
Press Enter to continue.

F3=Exit   F6=Print   F9=Display message details
F10=Display messages in job log   F12=Cancel   F21=Select assistance
level
```

The ANZSSDDTA command can be run multiple times against performance collections. If you determine that you have workloads that may be good candidates for performance improvement with SSDs, the next step is to contact your IBM hardware provider for more information.

Common problems

ANZSSDDTA results in CPF9815 Member &5 file &2 in library &3 not found.

- Usually, this means the collection services task for the specified collection either has not written any data to the database files yet or the CRTPFRDTA command must be run to populate the database files.
- Recommendation, wait for 5 to 15 minutes and try again or use CRTPFRDTA to create the database files needed.

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