

SyncSort for z/OS

TECHNICAL SPECIFICATIONS

INTRODUCTION

SyncSort for z/OS is a high performance sort/merge/copy utility. It is designed to exploit the advanced facilities of the z/OS operating system and zSeries 900 computers. SyncSort z/OS also supports the OS/390 operating system and S/390 and compatible computers. SyncSort provides significant savings in CPU time and I/O activity.

PERFORMANCE

SyncSort is designed to provide significant performance benefits and operate efficiently in 31-bit or 64-bit environments.

SyncSort exploits system characteristics to achieve significant reductions in total CPU time, problem state CPU time (TCB time), and EXCPs.

Performance techniques include optimization for specific computer make and model and specific I/O devices, proprietary sorting algorithms, and advanced access methods. SyncSort also exploits parallel access volume (PAV) technology on IBM 2105 (Shark) devices and EMC Symmetrix devices. Dynamic optimization responds to system activity such as CPU utilization, DASD contention, controller caching, real and virtual storage availability, and paging rates. SyncSort records system activity in its database and optimizes processing based on historical patterns.

In benchmark tests of SyncSort for z/OS against z/OS V1 DFSORT, SyncSort saves up to 35 percent total CPU time, 30 percent TCB time, and 50 percent EXCPs.

SORT/MERGE/COPY PROCESSING

- EBCDIC, ASCII, user-defined, or locale-defined collating sequence.
- Up to 128 control fields, with total length up to 4092 bytes. Fields in fixed length records can be anywhere in the record.
- Standard field formats, including character, binary, packed decimal, zoned decimal, fixed point, floating point, Y2K date formats, and various signed formats.
- High performance MERGE processing of up to 100 presequenced data sets into one sorted output data set.

- High performance COPY function (SORT FIELDS=COPY), used alone or with data editing.

RESOURCE MANAGEMENT FEATURES

- **Dynamic Storage Management.** Optimizes resource use by directing SyncSort to select sortwork devices with the least contention and highest transfer rates and by allocating address space and data space to concurrently running sort jobs based on a balance between their needs, system load, and the needs of other jobs on the system.
- **Dynamic Sortwork Allocation.** Minimizes DASD resources used for sorting by acquiring sortwork incrementally throughout the sort step.
- **MAXSORT.** Sorts large data sets on limited DASD space. Includes automatic breakpoint/restart.
- **PARASORT.** Cuts elapsed time for sorts that read multiple volume or concatenated tape SORTIN data sets by processing the input volumes in parallel. Elapsed time reductions of up to 20 percent for 2-way input and 33 percent for 4-way input can be achieved.

Visual SyncSort for z/OS

SyncSort for z/OS incorporates functionality to integrate Visual SyncSort with SyncSort for z/OS mainframe processing. Visual SyncSort for z/OS is a separately available PC application that is designed to allow programmers and non-programmers alike to easily create and manage SyncSort applications for the mainframe environment. With Visual SyncSort, you can create new sort, merge, and copy applications, or you can import and modify existing ones. Visual SyncSort saves programmer time while taking full advantage of the processing power of SyncSort for z/OS.

DATA UTILITY FEATURES

- **DB2 Query.** Allows SyncSort SORT or COPY operations to directly retrieve data from a DB2 database based on a query specified by an SQL SELECT statement. The DB2 Query feature improves performance by eliminating the need for setup steps and user-written exits. Most SyncSort data manipulation and report functions can be applied to the records created by the query operation.

SyncSort for z/OS

- **Multiple Output.** Output data from a single sort pass can be directed to multiple SORTOUT data sets (OUTFIL). Each data set can be uniquely grouped, selected, and edited.
- **SortWriter.** Creates full-featured reports, without the need for COBOL.
- **Data Editing.** Permits easy selection and formatting of records:
 - INCLUDE/OMIT selects input records based on comparisons between fields or between fields and constants. Supports cultural environment locales, bit-level processing, and complex logical conditions.
 - INREC/OUTREC reformats and edits input/output records: Adds, removes, and reorders fields; inserts spaces, characters, binary zeros, hex digits; positions fields with column alignment; converts numeric data to printable format or other common data formats; edits numeric data with supplied or user-defined editing masks; supports editing and arithmetic calculations of Y2K date formats; inserts sequence numbers; supports repetition factors up to 4095; splits records into multiple records; converts variable length input records to fixed length output records; changes specified strings based on a lookup table; allows arithmetic calculations among fields within a record, among fields and constants, and among constants and constants.
 - SUM consolidates records with equal sort keys and optionally totals values in specified fields. Optionally writes eliminated records to a separate data set.
 - SKIPREC/STOPAFT processes or skips a specified number of records. Useful for testing.

INPUT/OUTPUT

- BSAM, VSAM, and BDAM formats and devices.
- Hiperbatch, BatchPipes/MVS.
- Variable length record validity testing, and processing of variable length records shorter than SORT/MERGE control fields or INCLUDE/OMIT compare fields.
- Automatic secondary allocation, space release, system determined block size support on SORTOUT.

INTERMEDIATE FILES

- Disk or tape.
- Supports up to 255 intermediate work files, either in JCL or through dynamic allocation.
- Dynamic allocation supports SMS STORCLASS.

- Automatic space release, secondary allocation.

EXIT SUPPORT

- Supports many user exits, including E15 and E35 exits written in C, COBOL, Assembler, or REXX.
- Supports FASTSRT parm of VSCOBOL II compiler.

UTILITY PROGRAMS

- High performance replacement for IEBGENER (BetterGener).
- Variable length record analysis (HISTOGRM).
- Default options report (SYNCLIST).

INVOCATION

- Invoked through JCL or through programs written in COBOL, PL/1, Assembler, or FORTRAN.
- Supports 24-bit and 31-bit parameter lists.
- \$ORTPARM facility can override parameters and control statements passed by invoking programs.
- Supports IDCAMS BLDINDEX interface.

COMPATIBILITY

- Executes on all zSeries 900 and 390 Architecture computers with z/OS, OS/390, or MVS/ESA (plus equivalent Amdahl and Hitachi computer systems).
- Compatible with existing applications written for IBM's DFSORT or for prior SyncSort releases. Requires no changes to current JCL, control statements, parameter lists, exits, and all installed system software, including DB2 and IMS utility sorts.
- Exploits current hardware and operating system features, including data space, hiperspace, Parallel Sysplex architecture, and the additional central storage made available by 64-bit z/Architecture (zSeries 900) processors.

INSTALLATION

- Provides an easy-to-use interactive installation program (SYNCINIT). Can be installed with or without SMP/E. Non-interactive installation also available.
- Can be installed in a non-reentrant or reentrant configuration.

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