

# SyncSort VSE

## TECHNICAL SPECIFICATIONS

RELEASE 3.6

### INTRODUCTION

SyncSort VSE is a high performance sort/merge/copy utility designed for IBM z/VSE and VSE/ESA operating systems. SyncSort provides significant savings in program and supervisor CPU time, elapsed time and I/O activity.

### PERFORMANCE

In benchmark tests of SyncSort VSE against competitive products, SyncSort saves up to 30-40% of total CPU time, 25-35% of elapsed time, and 40-50% of SIOs.

SyncSort achieves superior performance through optimization for specific computer make and model, proprietary sorting algorithms, advanced access methods, and Data Space utilization. SyncSort dynamically responds to system activity, such as real and virtual storage availability and paging rates, to ensure optimum performance.

SyncSort VSE exploits Data Space technology with two unique features — “virtual library” and “virtual sortwork.” These capabilities maximize the use of high speed virtual memory, minimizing resource consumption and reducing elapsed time. SyncSort also exploits multiprocessing and the Turbo Dispatcher.

SyncSort VSE's Dynamic Storage Manager ensures that all sorts attain optimum performance by intelligently managing a Data Space so that concurrent sorts can exploit virtual sortwork.

### SORT/MERGE/COPY PROCESSING

- EBCDIC, culturally sensitive, or user-defined collating sequences.
- Up to 64 control fields, with total length up to 4,092 bytes. Fields may be located anywhere in the record, which can be up to 65,535 bytes long.
- All standard field formats, including character, binary, packed decimal, zoned decimal, fixed point, floating-point, and various signed formats.
- Additional field formats used in conjunction with a fixed or sliding century window to correctly sequence 2-digit year data.
- High performance MERGE combines up to 32 presequenced data sets into one output data set sequenced identically to the input data sets.
- High performance copy function (MERGE FIELDS=COPY) can be used alone or with data editing.
- Dictionary\_names can be associated with the data

elements of your records and provide the position, length and data format of the data elements. The dictionary\_names then can be used as synonyms in SyncSort control statements.

### INPUT/OUTPUT

SyncSort supports:

- SAM, VSAM, and VSAM-managed SAM formats and devices, including devices connected via the ESCON or FICON architecture and VSAM data compression.
- Fixed-length and variable-length records.
- Processing of variable-length records shorter than SORT/MERGE control fields.
- Up to 32 input and output files. Separate INPFIL and OUTFIL control for each.

### INTERMEDIATE FILES

- Data Space and/or disk.
- Automatic secondary sortwork allocation with up to 63 volumes.
- Automatic space release for DASD output files via Disk Space Manager.
- Optional erase of work file contents opened by the sort.
- Release of unused SORTWK space (BIM-EPIC™ only).

### RESOURCE MANAGEMENT FEATURES

- **Dynamic Storage Manager.** Automatically monitors and controls memory utilization, and reduces or eliminates physical sortwork I/O for concurrent sorts. Optimizes the use of a Data Space by allowing up to 15 concurrent sorts running in different partitions to use the virtual sortwork area. Maximizes sort performance while optimizing overall system throughput. Exploits multiprocessors.
- **Disk Space Manager Interface.** Minimizes DASD resources used for sorting while preventing “sortwork capacity exceeded” abends. Compatible with all disk space managers.
- **The SyncSort-EPIC® Interface.** Provides enhanced support for EPIC®/VSE disk and tape management. The enhanced support includes:
  - Automatic re-blocking of SORTIN/SORTOUT.
  - Support for concatenated SORTIN.
  - Improved performance for EPIC®-controlled SORTIN.

## DATA UTILITY FEATURES

- **Multiple Input.** Multiple INPFIL statements can be used to read up to 32 SORTIN data sets in one sort, merge or copy. Data can be uniquely selected and edited from each input file.
- **Multiple Output.** Directs output to up to 32 SORTOUT data sets. Requires only one sort pass. Data can be grouped, uniquely selected and edited, and sent to the same or different output devices.
- **SortWriter.** Creates high performance report writing applications without the need for COBOL. Reports can include report, page, and section headers and trailers; totals and subtotals; maximum, minimum, and average calculations; record counts and subcounts; page numbering and automatic dating; conversion/editing of numeric data fields.
- **Data Editing.** Permits easy selection and formatting of records using simple control statements:
  - INCLUDE/OMIT selects specific input records based on comparisons between fields or between fields and constants. Supports substring comparisons. Supports complex logical conditions with multiple nesting levels.
  - INREC/OUTREC reformats and edits input/output records: Adds, removes, and reorders fields; inserts spaces, characters, binary zeros, hexadecimal digits, sequence numbers; positions fields with column alignment; converts numeric data to printable format or numerical format; edits numeric data with supplied or user-defined editing masks; supports string match and replacement; allows arithmetic calculations among fields within a record and among fields and constants; converts variable-length input records to fixedlength output records and vice versa.
  - SUM consolidates records with equal sort keys and optionally totals values in specified fields. Eliminates duplicate-keyed records (SUM FIELDS=NONE). Records deleted by SUM processing may be written to a separate file (XSUM). All numerical formats supported, including floating-point.
  - DUPKEYS performs SUM functions and also calculates average, maximum, minimum or sum values in specified fields.
  - JOINKEYS, JOIN and REFORMAT establish the Join facility, which provides the ability to pair records from two source files. Each record from the first file with a given value in a specified field (the Join key) is paired to each record from the second file with the identical value in a specified field in that record. Options are provided to control the disposition of both paired and unpaired records. A new record can be created from selected fields in each of the paired records. The unpaired records can also be retained for subsequent processing.

## EXIT SUPPORT

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

## UTILITY PROGRAMS

- Default options report (SYNCLIST).
- High performance creation of VSAM alternate index files (SYNCBIX).
- Multiple concurrent sorting (SSRAM).
- Variable-length record analysis (SYNCHSTO).

## INVOCATION

- Invoked through JCL or through programs written in COBOL, PL/1, or Assembler.

## COMPATIBILITY

- Executes on all IBM System/370, System/390 and z/Architecture computers (and equivalent computers) with z/VSE, VSE/ESA or MVT/VSE (Software Pursuits) systems.
- Compatible with existing applications written for IBM's DFSORT, SM2, or for prior SyncSort releases. Requires no changes to current JCL, control statements, parameter lists, or exits. No need to recompile COBOL programs.
- Supports and exploits current hardware and operating system features, including Data Space, ECKD device architecture, and virtual storage and real storage above 16M.
- Supports and exploits any device processed by SAM and VSAM access methods, including all currently available DASD from IBM and equivalent devices, 34xx and 3590 tape units, and IDRC.

## INSTALLATION

- An easy-to-use interactive program creates customized installation JCL. The installation process simply requires executing the customized JCL.
- Can be installed from Virtual Tape.
- Provides PROCs to add SyncSort VSE messages to the system Online Message Repository for use by the EXPLAIN function.

