natural 2006

Since Version 2, Software AG Natural users have been able to speed their high-volume sort processing with a drop-in replacement for the Natural sort function. By making a simple change in Natural's Makefile to use CoSORT, sort functions can run up to 6 times faster, seamlessly. Link with any version this way:

```
make natural cosort=yes
```

and see what happens! Then, consider using CoSORT's other facilities outside Natural for: JCL sort and COBOL data migration, data warehouse ETL acceleration, Oracle and DB2 reorgs, multi-target and change reporting, web log analyses, and even test data generation!

CoSORT® Speeds Sorts, Sort Migrations, Data Conversions, ETL, and BI for Natural® Users

CoSORT: It's About Time

- **CoSORT is a fast parallel sort engine for UNIX**
  Customer benchmarks prove it: On 6-CPU Sun Fire 15K: 2.4GB in 39 seconds. On a 4-CPU IBM p690: 1GB in 12 seconds. On a 2-CPU Sun V440: 1GB in 26 seconds vs. 62 for the competitor.

- **CoSORT combines sorting with transforms and reports**
  CoSORT's Sort Control Language (*SortCL*) program can also simultaneously join (match), extract, clean, reformat, merge, aggregate, cross-calculate, type-translate, and report – all in one I/O pass.

- **CoSORT supports all data types and sizes**
  CoSORT can collate, convert, and display more than 100 data types and record formats, including EBCDIC, IP addresses, CSV, UNICODE, COBOL, VARCHAR, and timestamps.

- **CoSORT speeds database operations**
  CoSORT can 'select', 'join', 'order by', and 'group by' faster than an RDBMS. De-duping, sorting and aggregating millions of rows also speeds bulk loads, reducing DB index overhead and storage space.

- **CoSORT is easy to learn and use**
  CoSORT's *SortCL* is an explicit, high-level data definition and manipulation language familiar to mainframe sort and SQL users alike. *SortCL* is widely used for metadata repositories, data warehouse staging, legacy sort migrations, and reporting. It is leveraged in *FAst extraCT* and *RowGen*, and ETL tool users can automatically create *SortCL* data definition files through MIMB.

- **CoSORT offers multiple UIs and APIs**
  CoSORT's standalone utilities and program calls accommodate all levels of user expertise and job complexity. You can also use CoSORT's drop-in sort replacement for Natural (and conversion tools for legacy sort parms and metadata) to easily upgrade from slower third-party sort functions.

# Fast, Combinable Data Transforms in the File System

Calling CoSORT's SortCL program from batch scripts or programs can speed data staging, integration and reporting tasks (and tools).

Free converters and Meta Integration export bridges (for third-party metadata) to *SortCL*'s data definition file (DDF) format leverages existing field layouts! *SortCL* users can usually combine the tasks below in one I/O:

• **Extracting (Selecting)** – *SortCL* accepts any number and size of Vision or sequential files, pipes, DB feeds (e.g. Oracle via IRI's FAst extraCT), and/or custom input routines.

• **Cleansing (Filtering)** – *SortCL* conditionally includes or omits records through logical evaluation, and can filter by bytes, records, duplicates status and other criteria. Duplicate records can be discarded or saved. Such data reduction speeds downstream *SortCL* jobs:

• **Sorting (Permuting)** – *SortCL* employs CoSORT's parallel-processing, coroutine sort engine to rapidly reorder millions of records on specific keys and sequences. Results go to one or more formatted outputs, including: roll-up reports, joins, loads, BI tool hand-offs, etc.

• **Matching (Joining)** – *SortCL* can match two sorted files at I/O speed, using SQL join syntax and your condition logic. A *SortCL* join can run up to 20X faster than an RDBMS join.

• **Aggregating (Grouping)** – *SortCL* can count, summarize, average, and find the maximum and minimum values based on inter- and intra-record break conditions to drill-down multiple classes of field data. You can also display accumulating aggregates, and even aggregate on cross-calculated values.

• **Reformatting (Reporting)** – *SortCL* can: re-map, resize, relocate, and convert data types; reformat entire file process types (e.g., MF-ISAM to Vision, Line Sequential to CSV); re-use, write or strip header and footer data; find, replace, and process sub-strings; insert special formatting characters and environment variables (including HTML statements for web reports); find and replace values, and, cross-calculate between field and constant values.

• **Type Converting (Translating)** -- *SortCL* can also convert field data from one type to another, such as EBCDIC to ASCII, or mixed packed decimal to signed and zoned decimal, ISO to Japanese timestamp, and so on. Many mainframe binary forms are undesirable for data propagation, mining and access tools (like dashboards) on open systems -- which is also why *SortCL* processes and creates CSV-formatted records as well.

• **Loading/Indexing (Piping/Sequencing)** -- *SortCL* can sequence outbound records and pipe them directly to a loading operation. In some databases -- CA-IDMS, Cincom Supra and IBM DB2 -- CoSORT has been called directly to speed table or index population. In Oracle, Sybase, Red Brick and MS SQL Server environments, pre-sorted loads are up to 90% faster than unsorted bulk loads.
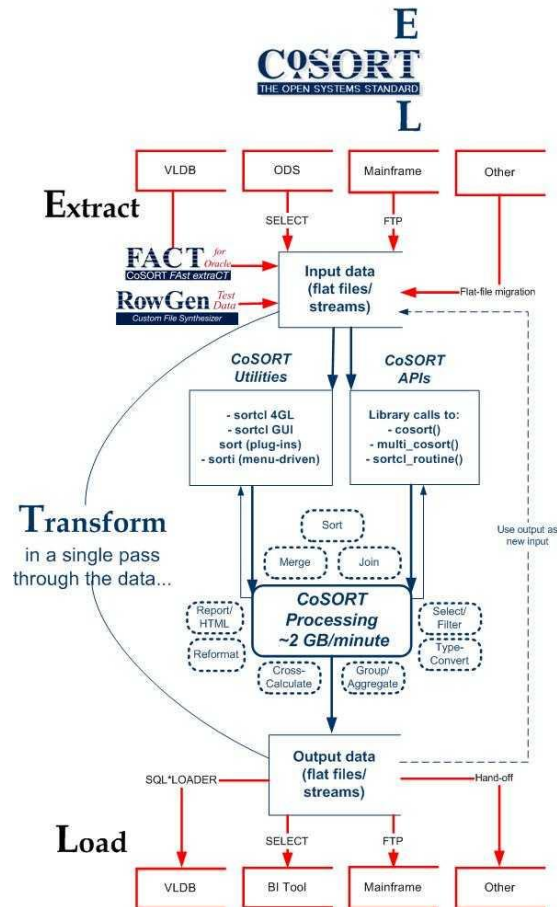
CoSORT Collates, Converts and Creates Legacy Data

In addition to sequential and index file sorting, CoSORT's SortCL program converts between these formats and their data types, and creates multiple, custom file layouts while sorting or reporting.

Did you know that CoSORT can sort Micro Focus ISAM and ACUCOBOL Vision files, VSAM, and other mainframe record types on open systems? In many cases, CoSORT users can also convert from these formats into files that are more suitable to relational databases and workstation applications like spreadsheets and BI dashboards.

Did you also know that *SortCL* sort, join, and report application scripts can also perform data type conversions simultaneously? By specifying the input data type as EBCDIC and declaring the same-named field as ASCII on output, you can convert the data type while remapping the field. Do the same for Packed Decimal to Numeric and any other data type.

```
/INFILE=chiefs_sep
   /PROCESS=VISION
   /FIELD=(lname, POSITION=1, SEPARATOR='|')
   /FIELD=(fname, POS=2, SEP='|', EBCDIC)
   /FIELD=(years, POS=3, SEP='|', PACKED)
   /FIELD=(party, POS=4, SEP='|')

/SORT
   /KEY=years
   /KEY=(lname, DESCENDING)

/OUTFILE=$chiefs.out
   /PROCESS=RECORD
   /LENGTH=44
   /FIELD=(lname, POSITION=1, SIZE=20)
   /FIELD=(fname, POS=22, SIZE=10, ASCII)
   /FIELD=(years, POS=33, SIZE=4.2, NUMERIC)
   /FIELD=(party, POS=40, SIZE=3)
```

CoSORT Converts Legacy Sort Parms and Metadata

Free command-line utilities in the CoSORT package can translate batch sort steps written in MVS and VSE JCL job streams. You can also leverage the file layout definitions you have.

Are you over-invested in another sort tool? If your sort is too slow or costs too much, consider that CoSORT not only offers fast, proven, and affordable alternatives for high-volume data manipulation, but it can help you replace the sort interface you have now. Whether it's the Natural sort or hundreds of JCL or other sort steps, CoSORT offers the tools and services to upgrade your DP technology and downgrade your expenses.

In addition to sort parm conversion utilities, CoSORT includes metadata converters to leverage your record layout information in:

- COBOL Data Dictionaries (FDs)
- Oracle SQL*Loader Control Files
- W3C Extended Web Logs
- Microsoft CSV Files

Meta Integration Model Bridge (MIMB) can convert XML and other file layouts defined in third-party ETL and BI tools directly into CoSORT *SortCL* data definition file format.

COSORT
THE OPEN SYSTEMS STANDARD

**TECHNICAL SPECIFICATIONS**

Supported Platforms:
UNIX (AIX, HP-UX, Solaris, Tru64 & more); all Linux flavors on x86, Itanium, IBM x/p/i/z; FreeBSD; Windows (XP, NT, 2000/3 Server)

Supported Functions:
- Sort, Merge, Select, Check, Join, Type-Convert, Cross-Calculate, Aggregate (Sum), Reformat, Sequence, Report
- MVS/VSE JCL sort parm conversion
- Third-party sort tool replacements
- Third-party file metadata conversion

Data Sources & Targets:
- DBMS: Oracle 7.1-10G – via FACT
- Sequential (Flat) Files
- Micro Focus Var. Length & ISAM Files
- ACUCOBOL-GT Vision Index Files
- VSAM (for Clerity MBM)
- Unisys Variable Blocked Format
- Microsoft Comma-Separated Values
- W3C Common & Extended Log (Web)
- ACUCOBOL-GT, MF and Liant COBOL
- US, Europe, Japan, ISO Timestamps
- IP Addresses, Whole Number

CoSORT / IRI, Inc. is Located In the heart of the Florida Space Coast
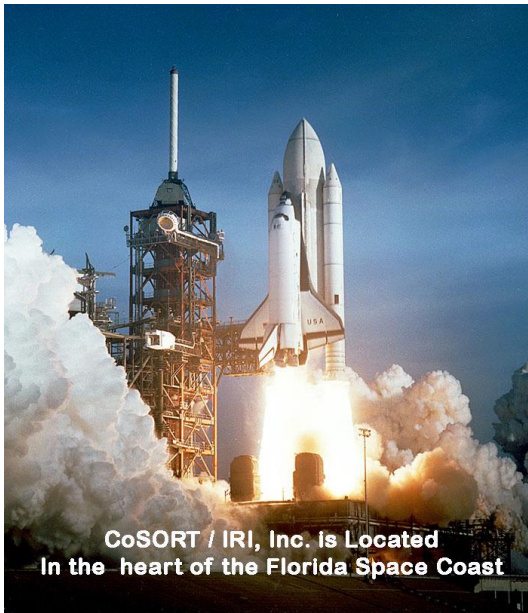
For more details on CoSORT, as well as FAst extraCT for Oracle and RowGen test data and file synthesis, please call us:

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