Based on z/OS V2.T1

Tuning for improved performance

- Merge, copy, analysis, and reporting product for.z/OS

ICEEXIT can examine:
- Whether the application is a sort, merge, or copy
- Whether DFSORT was invoked directly or through a program
- Whether the blockset technique is being used

ICEEXIT can change certain run-time options, but keep in mind that DFSORT might override them because of conflicts between options, technique, or function restrictions, or for performance considerations.

Several run-time options can be changed:
- Maximum storage to be used
- Storage to be reserved
- Action for critical error
- Sequence checking of output records
- Use of Hiperspace for Hipersorting
- Use of data space for dataspace sorting
- Use of a memory object for memory object sorting

Out-of-core data set buffer space

 DFSORT allows you to maintain separate sets of installation defaults for different environments.

Note: Any ICEEXIT changes to run-time options override all changes to these options by installation defaults, option statements, or an EFS file.

Running DFSORT with IBM's Enterprise Storage Server subsystems

DFSORT offers a rich set of fast, efficient productivity features. These features can eliminate the up-front costs of writing and debugging your code to perform various tasks, & will perform those tasks efficiently.

Improving the performance of DFSORT consists of a number of activities, including:
- Tuning on a site-wide or system level
- Tuning of individual applications
- Designing efficient applications

Using initialization and termination exits

- You can use user-written, installation-wide termination exits to perform miscellaneous functions.

Initializing an installation

ICEEXIT and ICEXTFILE can be used as jobname samples in the SICEREK library to install an ICEEXIT using SMPE. Note: The sample SMPE used in ICEXREC will place your ICEEXIT in the SORTLP library.

Termination exits
- You can use sample jobs ICEXRC and ICEXAPP in the SICEREK library to implement an ICEEXIT using SMPE where the sample SMPE used in ICEXREC will place your ICEEXIT in the SORTLP library.

Running DFSORT resident
- By running DFSORT resident, that is, with DFSORT's SORTLIB library in LPALST and DFSORT's SICLEGN library in LKRLST, you can gain three performance benefits:
  - You can use DFSORT in main storage at the same time.
  - This enables central storage to be used more efficiently and cuts down on system paging.
  - The DFSORT load modules do not have to be loaded each time DFSORT is run.

- This also saves unnecessary paging and time. This is especially noticeable for the smaller DFSORT applications, which tend to make up the bulk of DFSORT jobs at most sites.

- The space for the DFSORT load modules is not charged against the virtual storage limits of individual applications.

- This saves storage that can be used by DFSORT to do a more efficient sort.

Making the DFSORT SVC available

DFSORT can run authorized functions without itself being authorized.

- In particular, the following performance-related functions are impaired if DFSORT's SVC is not available:
  - SMF type-16 record contains useful information for analyzing the performance of DFSORT Without the SVC, DFSORT cannot write the SMF record to an SMF system data set, although the record can still be obtained through an ICEEXIT routine. If DFSORT's SVC feature is activated (installation or run-time option SVC=SHORT or SVC=LONG), a private SMF system data set will be used.
  - The installation-wide initial exit (ICEIEXIT) is not properly installed and is not properly associated with the exit.

Cache fast write (CFW) enables DFSORT to save elapsed time because DFSORT is able to write its intermediate data into storage control cache, and read it from the cache.

Without the SVC, DFSORT cannot use CFW, and issues message ICE191I, although processing continues with possibly degraded elapsed time performance.

Caching mode
- For storage control units that support cache, DFSORT selects the caching mode that appears to be the best for the circumstances. Without the SVC, DFSORT cannot set these caching modes, and issues message ICE1911.

- This results in the default modes being selected, with possibly degraded system and DFSORT elapsed time performance.

- Note: In addition to the functions described previously, there are other performance enhancements that are available to DFSORT through use of the SVC.

Recommendations:
- Make the DFSORT SVC available for best performance.

ICEGENER - DFSORT's ICEGENER facility allows qualifying ICEGENER jobs to be routed to the more efficient IMS storage for processing.

- In most cases, using the DFSORT copy function instead of ICEGENER requires less CPU time, less elapsed time, and results in fewer EXCPs, although there are circumstances where ICEGENER will not be invoked.

Examples - A SYSIN DD statement other than SYSIN DD DUMMY is present; detection of an error before DFSORT has started the copy operation; a condition listed in DFSORT message ICE160A.

Listing the installation defaults with ICEoutil

You use either of the following commands to list the merged PARMLIB/ICE/ICEMC installation defaults actually in use at your site for the installation environment(s).

Plan ahead when designing new applications

- You should consider several factors when designing new applications.

- Some factors are highlighted here. Whenever possible:
  - Use either EBCDIC character or binary control fields
  - Place binary control fields so they start and end on byte boundaries
  - Avoid using the alternative collating sequence character translation
  - If you know that a fixed-point control field always contains positive values, specify it as a binary field.
  - If a contiguous character or binary control field's fractional part contains all zeros, specify it as a binary field.
  - Avoid using packed decimal format rather than zoned decimal
  - Avoid overlapping control fields.

- Certain options can adversely affect performance and should be used only when necessary.

- Use intelligent processing when your SORT, MERGE, INCLUDE, or OMIT character fields can be processed using the binary encoding of the data.

Extended format data sets have features that can:

- Significantly reduce the elapsed time DFSORT spends reading and writing data

- Assist in managing the space requirements of very large data sets.

- When installed and activated, ICEEXIT receives control in the initialization phase of DFSORT after all scanning and cross-checking of options is complete. DFSORT passes a set of installation-time options and a set of run-time options to ICEEXIT.

- Note: Two examples of ICEEXITs are available.

- Whether the Blockset technique is being used
- Whether storage was allocated above 16 MB virtual
- The options SIZE/MAINSIZE, RESALL/RESINV, ABEND/RC16, VERIFY/NOVERIFY, HIPRMAX, DSPSIZE, ODMAXBF, and MOSIZE.