

# CA Compress™ Data Compression

## User Guide

Release 5.5



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## CA Technologies Product References

This document references the following CA Technologies products:

- CA Compress™ Data Compression (CA Compress)
- CA Top Secret®
- CA ACF2™
- CA MIM™ Resource Sharing
- CA Disk™ Backup and Restore

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# Chapter 1: Introduction

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CA Compress is a mainframe software product that transparently compresses and expands the following type of data sets:

- VSAM KSDS and ESDS
- Physical Sequential
- Compressed data sets under CICS

CA Compress supports data sets under the control of the IBM Storage Management Subsystem (SMS). No special procedures are required to compress SMS-controlled data sets.

CA Compress offers the following advantages:

- A choice of compression routines
- Maximum compression (up to 80 percent)
- Custom compression routines for specific data sets to achieve increased compression.
- Performance enhancement feature that optimizes VSAM data sets to improve elapsed time for sequential and direct access operations.
- Significantly reduced DASD requirements
- Reduced backup and restore times
- Improved data security
- Easy-to-use and interactive ISPF interface
- Choice of maximum compression or minimum CPU overhead
- Transparency to application programs



# Chapter 2: System Overview

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This section contains the following topics:

[CA Compress Features](#) (see page 11)

[How CA Compress Works](#) (see page 12)

[System Restrictions](#) (see page 14)

## CA Compress Features

CA Compress has the following features:

### **Choice of Maximum Compression, Minimum CPU Overhead, or Points in Between**

CA Compress provides a wide choice of implementation methods. This flexibility enables you to select a compression algorithm and implementation mode best suited to the installation requirements. For example, you can meet the requirements for maximum convenience and minimum overhead by using the Super Express algorithm, and you can meet the requirements for maximum compressibility by custom tailoring a compression algorithm for a specific data set, and implementing compression immediately. A balance of overhead and compression can be achieved by selecting from a number of intermediate algorithms and implementation modes.

### **Fixed, Optimized Compression Tables**

Distributed with CA Compress are several standard Huffman tables. The Huffman tables were designed to offer a high degree of compression for the most common types of data. So, you do not need to create and maintain your own compression tables.

### **Standard IBM Hardware Compression Dictionaries**

Distributed with CA Compress are several standard dictionaries, built using different types of data.

### **Customized Compression Tables**

CA Compress lets you develop compression implementations specifically designed for your data sets. This customization takes into consideration the unique file and record characteristics of a data set. In addition, the data that is currently in the data set is used to develop the most efficient compression tables for that file. The compression analysis facilities let you experiment with the development process and fine-tune the compression implementation.

### **Data Integrity**

CA Compress helps ensure the accuracy of your data by performing an integrity check on every record during compression and expansion processing. CA Compress includes integrity checking in its implementation of IBM Hardware Compression, giving Hardware Compression additional integrity.

### **Transparent Support of Both VSAM and Physical Sequential Data Sets**

CA Compress provides fully transparent support of VSAM KSDS and ESDS data sets, and physical sequential data sets using QSAM or BSAM. Physical sequential data sets are also supported in an application-transparent mode through CA Compress Subsystem Services.

### **Enhanced VSAM Performance**

VSAM Performance Enhancement (VPE) reduces I/O overhead while processing VSAM data files. But it is a component of CA Compress and can be used independently also. As data are read and written by the application program it is expanded and compressed as necessary.

### **Interactive User Interface**

The CA Compress Interactive User Interface (IUI) lets you interactively select data sets, execute test compression, evaluate compression statistics, and implement compression on the data sets. And, the IUI provides a wide selection of maintenance and utility functions in support of data compression.

### **VSAM Space Release**

The VSAM space release function lets you free the DASD space gained by file compression, for other uses.

### **Compression Analysis Reporting**

Each test compression run generates a Compression Testing Report, which provides statistics for various compression algorithms and DASD utilization information. Analysis information is provided in a clear, concise format.

### **Exclusion Processing**

The exclusion processing feature lets you process compressed files without expanding the data. For example, CA Compress-controlled data sets are typically excluded from compression and expansion during backup and recovery processing.

### **Safeguards**

Safeguards prevent inadvertent access to compressed VSAM data sets when CA Compress is inactive, avoiding possible corruption.

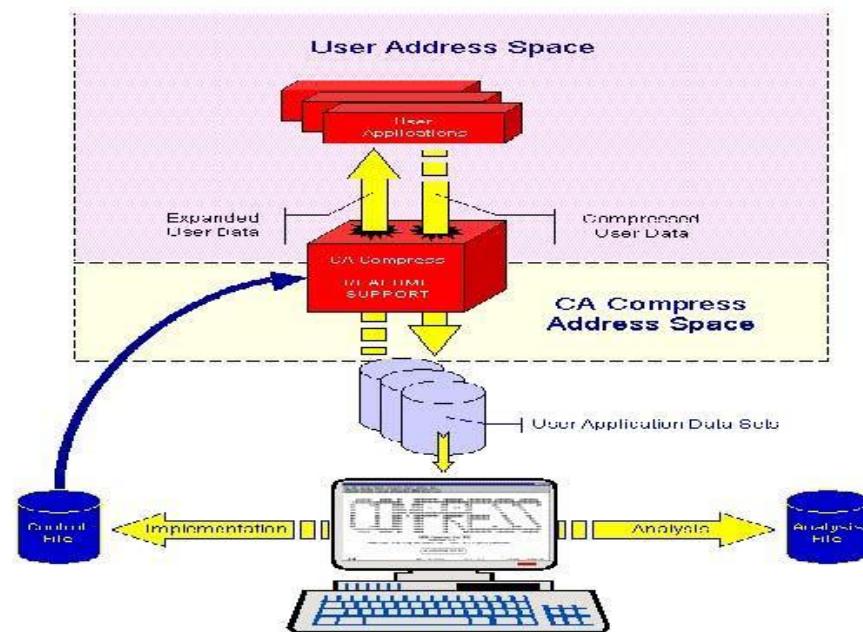
## How CA Compress Works

The following topics give an overview of the inner workings of CA Compress.

## Real time Compression Support

CA Compress provides real-time application data compression and expansion support using SVC intercepts and the MVS Subsystem interface. Data sets requiring data compression support are registered in the Compress Control File. As data sets are opened by the application programs, the Control File is checked to see if and how a data set is to be supported. As data is read and written by the application program it is expanded and compressed as needed. Compression and expansion support services are completely transparent to your application programs. CA Compress occupies both user and system address space for these services.

The following figure illustrates how CA Compress works.



## Analysis and Implementation

User data sets are registered to the Compress Control File as you perform compression analysis and implementation activities using the Compress IUI. The IUI provides a convenient means of testing various compression techniques. After you select the compression algorithm and implementation method best suited for the data set and its application, use the implementation facilities provided in the IUI to register your data set.

### Analysis File

When CA Compress analyzes a data set, the results are kept in the Analysis File. To help you select the appropriate method of data compression, review this information.

### Control File

CA Compress uses a file for data set registration information which helps ensure a high-speed facility for support of your real-time application needs. The Control file has a condensed list of all CA Compress-controlled data sets and the compression support information they require.

## System Restrictions

The following topics detail the system restrictions and requirements.

### Multiple Systems Sharing a Control File

When running CA Compress on multiple systems, share one Control File among the systems whenever possible, because synchronizing multiple Control Files manually is error prone and differences among the Control Files can lead to unexpected results.

**Note:** CA Compress can support eight concurrently running systems on each Control File.

## Storage Requirements

You can use the following formula to estimate the maximum storage placed in your address space:

$$\text{STORAGE} = 60 + (A/2) + (O \times 7) + ((B+1) \times R)$$

Where:

**A**

The number of compressed data sets allocated in a job step.

**O**

The number of compressed data sets OPEN in a job step.

**B**

The size of the data record AFTER expansion (in K).

**R**

The highest number of concurrent, outstanding requests against all compressed data sets.

## Storage Use

CA Compress uses storage in the user's address space and the Common Area (CSA/SQA).

In the Common Area, CA Compress uses about 204 KB. Of this amount, 79 KB is stored below the 16 MB line.

At initialization, the SHRKRES option requires an extra 17 KB below the line while giving corresponding relief to each user address space invoking CA Compress. The amount of storage used in the subsystem address space is about 30 KB, but can vary, based on OPEN activity.

To prevent excessive I/O against the Control File, the contents of the Control File are retrieved from auxiliary storage and retained within the CA Compress address space. The table created can increase the REGION needed by the CA Compress address space. As a rule, the information for each 100 data sets requires an additional 20 KB.

## Globally Shared Resource Control Products

CA Compress issues a RESERVE against the Analysis and Control files to prevent simultaneous updates from multiple systems. Global shared resource control products, such as GRS or MIM, can convert a RESERVE to a global ENQ, which can cause a reserve contention problem. The problem can be prevented by making the following changes:

- Add the major ENQ names (QNAME): SYSxxxx (where xxxx is the subsystem name) for the Control File, and SHRINKFE for the Analysis File.
- Add the minor ENQ names (RNAME): VSAMFILE for the Control File, and the data set name that was selected for the Analysis File.

## APF Authorized Programs from Unauthorized STEPLIB or JOBLIB

Without CA Compress, trying to execute an authorized module from STEPLIB or JOBLIB causes a 306 abend if the system is unable to find a copy of the module in linklist. If PST preallocation is involved, the 306 abend can occur before the search of linklist. Since an unexpected copy of the module is likely to be run when the 306 abend does not occur, ensure that JOBLIB or STEPLIB is authorized if you intend to run APF authorized programs.

A linklist library is NOT authorized in a STEPLIB or JOBLIB concatenation unless you explicitly APF authorize it.

## Programming Restrictions

CA Compress supports only QSAM and BSAM access to physical sequential data sets. Other access methods, notably EXCP and BDAM, result in no compression or expansion. SORT and some other programs can be forced to use BSAM by adding them to the SORT exclusion tables, which are described in the topic Exclusion Facility in the *CA Compress Reference Guide*.

CA Compress does not support the following options for VSAM, most notably control interval processing, so any program using this option is unable to access expanded data. The data are processed in compressed format.

### **MACRF=CNV or ICI or UBF**

These functions allow the program to read entire control intervals. Within the control interval are control fields that VSAM uses that cannot be compressed (and should not be modified outside of VSAM record management). The data within the control interval can be compressed, but only through the VSAM record management (GETs and PUTs for RECORDS) interface.



**MACRF=RLS (Record Level Sharing)**

This function permits VSAM record level sharing. CA Compress is unable to support this function, and RLS OPENS fail. RLS is incompatible with LSR and AMP=BUFND, so VPE detects the RLS specification and ignores the data set.

**MACRF=GSR**

GSR allows an APF-authorized program running in protect keys 0–7 to build a shared resource pool in CSA to be accessed by multiple address spaces.

**Control Blocks in Common (CBIC)**

The CBIC function lets an APF-authorized program have VSAM build the necessary control blocks in common storage so that the data set ACB can be used by multiple address spaces. The CBIC function is invoked by turning on the ACBCBIC bit in the field ACBINFL2 of the ACB.

## IDCAMS Considerations

IDCAMS works correctly for physical sequential transparent data sets.

Most IDCAMS functions work properly with CA Compress because they do not process data in the cluster. The PRINT and REPRO functions work correctly whether the data is accessed through the base cluster or an alternate index path because IDCAMS uses the correct key.

**Note:** The FASTVSAM product substitutes itself for IDCAMS to perform REPRO. If you use FASTVSAM 2.1 or later, add IDCAMS to the EXCLUDE-PGM-SORT exclusion table (described in Exclusion Facility in the *CA Compress Reference Guide*) to force FASTVSAM to use record level I/O and invoke the VSAM Transparency. FASTVSAM before Version 2.1 is not supported.

The way CA Compress Custom compression handles the key makes some IDCAMS functions behave abnormally due to mismatches between the logical key location in the expanded records and the physical key location in the compressed data set. Eliminate this mismatch by defining the area from the beginning of the record to the end of the last key as a single noncompressed field, but depending on key location compression can be greatly reduced.

### BLDINDEX

The BLDINDEX function can cause problems if the key is moved. To suppress key movement, always code LABEL=EXPDT=86060 on the DD statement describing the data set.

### DEFINE

If you define an alternate index, the KEYS parameter must reflect the location of the key data after compression, since in this case the KEYS parameter defines where in the record the key appears after it has been read. But when defining a cluster, you must specify the key location for the compressed record, since KEYS in this case describes where the keys really are in the data when the VSAM access method gets them for CA Compress.

### IMPORT and EXPORT

The IMPORT and EXPORT functions can give incorrect results in some situations. When the cluster is exported, the cluster characteristics are exported with the data. The data are exported in expanded mode, not compressed, so the key location in the exported characteristics does not match the actual key location. If the data set is imported into the same cluster, there is no problem. If the exported data is imported into a cluster with another name that CA Compress does not know about, a VSAM I/O error can occur because the data does not appear to be in ascending sequence.

### JCL SUBSYS Parameter

This parameter makes the data set look to IDCAMS like a SYSIN/SYSOUT data set. Some versions of IDCAMS incorrectly modify the DCB attributes in such cases, causing 013–34 abends and other problems. To correct this problem, you need to apply the appropriate IBM maintenance.

## ESDS Limitations

ESDS clusters should be compressed only under certain processing conditions. After a record is written in an ESDS, the ESDS is not allowed to change size and VSAM record management fails any request to do so. Changing compressed data in an existing record commonly changes its length, so any data in the record that could be updated must be defined as noncompressible. Good candidates for compression are ESDSs that are read-only or those where data are added only to the end of the data set.

## PS Data Set Limitations

CA Compress does not support updates to existing records. Replacing the entire data set or adding records to the end of an existing data set are the only output operations supported.

Because SAM-SI does not support reading backwards, data sets to be read backwards, for instance, some checkpoint data sets, should not be compressed.

## JCL Invoked SORT Calling COBOL User Exits from STEPLIB

CA Compress ensures proper processing of PST data sets by SORT and certain other programs by causing the JCL to invoke them transparently through a front-end program that first performs required preprocessing.

If you supply user exits such as E15 and E35 to the JCL invoked SORT through STEPLIB, interfaces like SYNC SORT's SYNCCOB can locate modules in the linklist instead of STEPLIB, and can encounter system 306 abends or other problems. Similar problems can arise when you create compressed sequential data sets with the ORACLE SQLPLUS facility.

If you experience any difficulties with such jobs, copy the CA Compress SORT front end module, ZSUSRTF, into one of the STEPLIB libraries to avoid problems with APF authorization and to ensure that program fetch loads modules from the expected libraries.

## SUBSYS Can Fail on VSAM Clusters

IBM maintenance has introduced an OC4 during subsystem OPEN when processing VSAM using the SUBSYS parameter. Because IBM is unwilling to fix the problem (APAR OW10331), jobs that have been working fail when this IBM maintenance is applied.

We strongly recommend that you change all uses of the SUBSYS parameter that process VSAM to the VSAM transparency as soon as possible.

## Idle Space Release VSAM

CA Compress cannot release idle space from VSAM data sets that are in 13 or more extents. This is a system limitation.

## System Determined Blocksize (SDB) Conflicts with SUBSYS

SDB is an IBM facility which chooses the optimum BLKSIZE for a physical sequential data set based on its device type when the user codes BLKSIZE=0 in JCL.

Because a SUBSYS data set looks to the system like a SYSIN/SYSOUT data set, SDB computes the BLKSIZE by adding four to the LRECL instead of choosing the BLKSIZE appropriate to the actual device. This leads to very poor blocking factors and defeats the purpose of compression.

Use PST, which works correctly, or code the actual BLKSIZE on the SUBSYS DD statement and its associated ddname.

If you code BLKSIZE=0 on the SUBSYS DD statement and the associated ddname, the job abends because the BLKSIZE is incompatibly calculated on the two DD statements.

## SMS Data Sets and SUBSYS

Although CA Compress fully supports SMS data sets, if you code SUBSYS you must use the associated ddname to avoid the IBM restriction against coding SUBSYS for SMS-controlled data sets. Failure to observe this restriction can lead to abend S002 and other unpredictable results.

## Passed or Temporary Data Sets and SUBSYS

Dynamic allocation (SVC 99) does not support PASS. Specifying a fully resolved temporary data set name with SVC 99 results in a permanent data set. For these reasons, you must use the associated ddname feature to specify either of these data set types when you code SUBSYS. If you do not use the associated ddname feature in these cases, passed data sets are considered permanent and kept, and they can be left on the volume when the job ends. Since PASS is not supported, the passed data set is not found by job steps that follow.

Although temporary data sets are not supported for PST, PST fully supports PASS for permanent data sets.

## Concatenated SUBSYS Data Sets

Under some circumstances, concatenated SUBSYS data sets encounter I/O errors after the first data set. To avoid this problem, code the concatenation on an associated ddname and refer to the concatenation with a single SUBSYS ddname. For example,

```
//INPUT    DD SUBSYS=(ZSAM,SHRK,SUPEREXP,INPUTA),  
//          DCB=(..... )  
//INPUTA   DD DSN=data.set.name1,DISP=SHR,  
//          DCB=(..... )  
//          DD DSN=data.set.name2,DISP=SHR,  
//          DCB=(..... )
```

This method is the safest and most efficient because it avoids multiple OPENs by SAM-SI.

## Temporary Data Sets and SUBSYS

Dynamic allocation does not support PASS and thinks the data set is permanent if the resolved temporary name is coded in the DSN text unit. Any data set that is passed or temporary must be specified using the associated ddname.



# Chapter 3: Concepts and Facilities

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CA Compress uses variations of three fundamental data compression methods. Run Length data compression basically eliminates repeating characters. A string of repeating characters is replaced by the character and the number of times it is repeated.

The Huffman method of data compression is fundamentally the substitution of bit codes for data characters. The codes are constructed such that frequently occurring characters have very short codes while those occurring less frequently or rarely have codes that are longer than the character being replaced. The net overall storage required to store the data is typically less after code substitution.

Hardware Compression Assist uses the IBM Hardware Compression facility, which uses Ziv-Lempel compression dictionaries.

In addition to other considerations, the generic algorithms—Super Express, Standard Tables, and Hardware Compression—do not use a user-defined FDT. For this reason, they require no serialization of their compression and expansion logic, and this increases I/O throughput in busy CICS systems or other instances in which there are many concurrent I/O requests.

This section contains the following topics:

[Data Compression Algorithms](#) (see page 23)

[Special Considerations](#) (see page 28)

## Data Compression Algorithms

The fastest CA Compress compression algorithm is Super Express. This algorithm is a Run Length compression method. Super Express achieves good data compression with minimal CPU overhead. The standard, Custom Huffman, SHRVL and tailored Huffman algorithms are all variations of the Huffman compression method. These algorithms, when matched properly to the data in a data set, can get high compression ratios.

The SHRVL algorithm is a CA proprietary implementation of the Huffman method. Use of the SHRVL algorithm generally results in the best compression but adds about 10% to CPU overhead.

## Data Compression Tables

Implementation of the Huffman data compression method for a data set involves the development and maintenance of a control table. Each table contains the substitution codes required to compress and expand the data. The tables can also contain information specific to the data set or file. The codes and file information required by the Huffman routines are maintained in File Descriptor Tables (FDTs).

The organization of data within a record can have a significant impact on the algorithm's ability to achieve good compression. The record layout for a data set is described for the Huffman algorithm using the CA Compress Record Definition Language (RDL). The TAILORED algorithm permits you to customize the RDL to achieve maximum compression. The RDL is maintained in the FDT along with the compression and expansion codes and other information.

An FDT can be custom generated for a specific data set or shared by several data sets. Standard FDTs are shared by many data sets. The RDL in a shared FDT must be specified in generic terms since it is used for compressing more than one data set. For more detailed discussions on developing custom RDLs and FDTs, see Record Definition Language and FDT Statement in the *CA Compress Reference Guide*.

## Standard Compression

CA Compress provides six algorithms that apply the Huffman compression method but with its own FDT. The unique FDTs are an integral part of each of the Standard Huffman algorithms. The standard FDTs have been designed to maximize compression for six of the most common data configurations. The Standard tables and the data configurations maximized are:

### **STDTBL01**

Alphanumeric Uppercase

### **STDTBL02**

Alphanumeric Upper and Lowercase



**STDTBL03**

Packed Decimal Data

**STDTBL04**

Alphanumeric, 45% Packed Decimal Data

**STDTBL05**

Upper and Lowercase, 35% Packed Decimal

**STDTBL06**

Alphanumeric, 20% Packed Decimal, Binary Data

## IBM Hardware Compression

CA Compress supplies several IBM Hardware Compression dictionaries and full support for standard compression and expansion. RDL is not supported. Integrity is assured by means of an ICB and a checkbyte, as with other CA Compress algorithms. CA supplied dictionaries are named HC#STDnn, and user-supplied dictionaries must be named HC#USRnn. Each dictionary should reside in the linklist, so that the transparency and the Interactive User Interface can find and recognize them. The load module must consist of the compression dictionary followed by the expansion dictionary. IBM requires the load module to be page aligned.

## Custom Compression

We recommend that you take advantage of CA Compress by allowing the standard and default features of the system to work for you. These features can simplify the task of selecting compression algorithms for your data sets. This approach eases the job of integrating data compression into your applications while you are becoming familiar with CA Compress.

As you work with more CA Compress features you can begin using the tools required to develop an algorithm that is customized specifically for a given data set. Under the right circumstances tuning an algorithm to a large or otherwise significant data set can be worthwhile in terms of reduced DASD requirements.

## Developing a Custom Algorithm

As noted previously, the distribution of data characters in your data set determines the potential for compression. Refining the process further requires consideration of the data set's record layout. Two processes, data characteristics analysis and record definition, are the key to developing a custom compression algorithm for your data set.

During the analysis process, CA Compress develops information about a data set's record layout and data. This information is combined in a variety of ways. The system develops a number of selections for custom implementation. CA Compress lets you further tune your algorithm by actually modifying the RDL, which is the most involved aspect of creating a Tailored Huffman algorithm. We recommend that you gain a firm understanding of the product and associated compression concepts before attempting a tailored implementation for a major data set.

## Super Express Compression

The Super Express Compression subroutines are:

### **SHRINKZ**

Converts an uncompressed record image to compressed form using the Super Express string compression algorithm.

### **EXPANDZ**

Converts a record image compressed using Super Express to its original uncompressed form. EXPANDZ also expands records compressed with the old EXPRESS algorithm.

## Huffman, SHRVL, and Tailored Algorithms

The compression analysis process automatically generates a custom Huffman and custom SHRVL algorithm. These custom implementations, even though finely tuned to a specific data set, are simple to use. CA Compress has generated compression code tables specifically designed for the data in this file. The analysis routines have examined the data set characteristics and built a customized RDL tuned for the records in the file. Since these algorithms are generated automatically, they are as convenient to select and implement as any of the generic algorithms.

If you do elect to develop and implement a Tailored algorithm, we suggest that you first read and become familiar with all of the associated compression concepts and facilities provided by CA Compress. The basic Tailored algorithm, developed by the analysis process before you tailored the RDL is identical to the Huffman algorithm.

## Scheduled and Batch Implementations

CA Compress provides two basic modes of implementing compression of VSAM data sets:

- Scheduled implementation immediately registers the data set and selected algorithm in the CA Compress Control File. The next time the data set is accessed by any application program, data compression support begins. Scheduled implementation is a method of immediately starting to realize the benefits of compression. As existing records are updated or new records added to the data set, they are written in compressed form. You get the benefits of reduced DASD requirements without having to take the data set offline to unload and reload it. Scheduled implementation can be configured to begin compression the next time the data set is opened or the next time CA Compress senses the data set is being loaded.
- Batch compression achieves all of the compression benefits at once. Some advantages are associated with taking a data set out of service and compressing all of the records in one cycle. CA Compress does all or most of the work required to prepare JCL and control information for Batch implementation. It automatically builds all the necessary steps—Unload, Delete, Registration, Redefine and Reload. The JCL generated can be edited, saved, or immediately submitted for execution.

For physical sequential transparent data sets, there is never key movement, and there should never be compressed and uncompressed records in the same data set. For these reasons, there is no explicit support for scheduled implementation for physical sequential transparent data sets, but future or immediate implementation is supported by means of the effective date, which you can supply through the IUI or the Control File Utility.

## Automatic Analysis and Implementation

A number of automatic and default features are built into CA Compress. For example, the way CA Compress handles a certain data set, using a given algorithm and implementation mode. You can select to identify the data set and proceed directly to implement compression for it. CA Compress looks to the Analysis File for information with which to implement the data set. If no information is found, the IUI performs the analysis process automatically and then proceeds with the implementation.

CA Compress has a powerful feature called AUTO-IMPLEMENT. The system's operating defaults can be set up so that as the analysis process completes for a data set, and compression implementation automatically starts if the data set achieves a specified level of compression with one of the generated algorithms.

**Note:** Make sure that you understand and test AUTO-IMPLEMENT before implementing it in full production. Data sets can be destroyed with improper use.

## System Operating Defaults

Many of the system defaults allow the system to proceed through a number of operations based on preset user responses. We mention some here, but see the chapter Maintenance and Administration in this guide for more details.

You can modify various system operating defaults to establish a pattern of operating characteristics or personality for the IUI, such as with AUTO-IMPLEMENT. AUTO-IMPLEMENT selects the algorithm achieving the best compression results unless you have set the ALGORITHM SELECTION BIAS to SPEED which forces the Super Express algorithm to be selected during AUTO-IMPLEMENT. In any event, AUTO-IMPLEMENT is not enabled unless the selected algorithm has achieved at least the value specified for AUTO-THRESHOLD.

You can set up the IMPLEMENTATION MODE to SCHEDULED. This automatically proceeds with the scheduled implementation after you have selected the compression algorithm for a data set and executed the implementation process.

**Note:** Setting the IMPLEMENTATION MODE to CHOICE, the system will always ask which implementation mode to use as each data set proceeds through implementation.

## Special Considerations

Not every VSAM data set is a good candidate for compression. An ESDS cluster should be compressed only under certain processing conditions. If an ESDS is compressed and the programs accessing it read a record, update the record and then write the record out, the ESDS is probably not a good candidate for compression because a record in an ESDS, once written, cannot change in size. Any request to change size is failed by VSAM record management. If any of the data in the record is changed, the record length probably changes too, unless the data being changed is defined as noncompressible. However, a read-only ESDS data set or an ESDS where data is only added to the end of the data set is a good candidate for compression.

Due to the nature of sequential access, and because EXCP access cannot be allowed for SORT, high overhead is unavoidable in processing compressed physical sequential data sets. As in the case of a VSAM ESDS, updates in place cannot be supported. If you need to update, or if the data set is read a great deal, compression cannot justify the overhead. Archival tapes and other large data sets which are seldom read are ideal selections.

Use the following guidelines when selecting VSAM data sets for compression:

- Random primary access is preferred, as is the normal case in an online operation.
- Sequential primary access can be used, but must be carefully considered. The runtime can be unacceptable, unless the file is seldom accessed in its compressed format.
- Files with very short records, less than 20 bytes of compressible area, often cost more in compression and expansion overhead than can be justified by the amount of DASD space saved.

## Exclusion Feature

The Exclusion feature lets you specify jobs, programs, and modules to be excluded from compression or expansion processing. This feature prevents backup/restore products from double compressing or unnecessarily expanding data. Ideal examples are the backup and restore functions of CA Disk or the IBM program DFDSS. You can also use the Exclusion feature to force programs performing Control Interval (CI) access or EXCP processing, such as SYNC SORT, to process transparent data sets using record management access, since

CA Compress does not expand or compress data when invoked by a program performing CI or EXCP processing.

When specifying DCB parameters for compressed PS data sets being processed with the exclusion feature, be sure to specify the compressed attributes, since you are processing compressed data sets without CA Compress. Likewise, SORT control statements must be based on the compressed record descriptions.

## File Descriptor Table (FDT) and the Archive Process

When a compressed data set is used for archival or off-site storage purposes, place a copy of the FDT used to compress the data set on the archive medium with the archive data set. If the FDT is lost, or modified for any reason, the data set is unusable. You can use IEBCOPY to unload the FDT load module.

## Interface Between CA Disk and CA Compress

CA Compress and CA Disk work together during the archival and restoration process to enable you to maintain compressed data sets. During the archival process, CA Disk also archives the CA Compress compression data for any data set designated for archival and reestablishes the compression environment for all such data sets at restore time. When CA Disk deletes a compressed data set (because of archival), it also deletes the data set's cluster entry from the CA Compress Control File.

## CA Compress and Disaster Recovery

If the CA Compress Subsystem becomes unavailable, users are unable to access compressed data sets. In this event, you can use the File Expansion Utilities to expand these data sets. For more information, see Expansion Utilities in the *CA Compress Reference Guide*.

## Data Set Renaming

It is sometimes necessary to rename a physical sequential data set or a VSAM path or cluster component name. When a compressed data set is renamed, CA Compress must be informed of the change. You can inform CA Compress of the changes by running the Control File Maintenance Utility and using the ALTER command with the NEWNAME operand. Repeat this process for all changed names. If you do not, applications using the new names can receive compressed data. Further, when changing a cluster component name, you also need to separately perform the same process on the data component to change the name. This ensures that Safeguards processing is performed on the data set.

## Control File Size

The default RECORDSIZE value for the Control File should be large enough when you first implement CA Compress. But if you intend to generate an FDT with an RDL specification using all three Huffman tables (C1, C2, and C3), you must increase the RECORDSIZE. The RECORDSIZE value can be from 1-6 KB, depending on your installation.

The default CYLINDERS value for the Control File should also be large enough when you first implement CA Compress. As you bring more VSAM data sets and FDTs under CA Compress control, you may need to increase the CYLINDERS value.

## SMS Support

CA Compress supports SMS-controlled data sets. However, if you use the SUBSYS facility, you must use the associated ddname because IBM does not permit the SUBSYS keyword for SMS-controlled data sets.

## Changing the Key of a Compressed VSAM Data Set

To avoid unpredictable results, never compress keys. If you increase the key length or change the RKP, or if you add an alternate key that includes any compressible area in the record, you must expand the data set, delete it from CA Compress using the Control File Maintenance Utility (CFMU), and reimplement it with the new values.

If you reduce the key length or make other changes to the key structure in which all keys still refer only to noncompressible area, reimplementing is not needed. However, if your change significantly reduces the area that must be noncompressible, for example, if you delete an alternate key that is well beyond the beginning of the record, you can get better compression by reimplementing the data set. In some cases, you can eliminate FDT compression in favor of Super Express, a Standard Table, or Hardware Compression, resulting in better performance, especially under CICS.

## Reimplement a Data Set

To accommodate a key change, you can reimplement a data set.

### To reimplement a data set

1. Expand the data set to an uncompressed backup. An IDCAMS REPRO or SORT OPTION COPY to an uncompressed tape is usually best for a large data set.
2. Delete the data set, then use the CFMU to delete it from CA Compress. If you first delete a VSAM data set from CA Compress, Safeguards processing will no longer be performed, and you will then need to use IDCAMS ALTER RVOL to remove the @ZSAM@ candidate volume from the data component before you can delete the data set.
3. Reimplement the data set, using the IUI or the CFMU, as you prefer. If you are using your own FDT, you should normally create a new one with a new name. If you reuse the same FDT name, any other data set using that FDT, or compressed backups of the present data set made using the old FDT, will be unreadable using the new FDT.

If you are using your own FDT, now is the time to consider whether you should go to a noncustom algorithm, whether Super Express, a Standard Table, or Hardware Compression. If compression is comparable, these offer several significant advantages. Especially under CICS, they give better performance as the system gets busier. The noncustom algorithms require much less region, and they eliminate the danger of user error in the RDL. They also reduce or eliminate performance degradation over time caused by changes to the data since the data were analyzed, because the more specific the RDL is to the data, the worse the RDL performs as the data changes.

## Changing the Record Length of Compressed Data Sets

If you are using a noncustom algorithm, or if your FDT uses RDL that specifies VER (Variable to End of Record), there is no need to reimplement the data set. However, if the RDL specifies a total noncompressible area greater than the length of the shortest record, compression fails with message SHR015I, unless you use the Transparency User Exit to handle this condition.

If your FDT's RDL expects a minimum record length and you have shorter records in the data set, whether it is VSAM or PS, you need to reimplement the data set as explained in the previous topic. Considerations specific to VSAM do not apply to PS. In particular, Safeguards is not supported for PS data sets, and they do not have data components, paths, or keys.



# Chapter 4: Subsystem Activation and Operation

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This section discusses issues related to the activation and operation of the CA Compress Subsystem. The discussion covers the EXEC parameter values and operator commands.

This section contains the following topics:

[EXEC Parameter Values](#) (see page 33)

[Using Operator Commands](#) (see page 36)

## EXEC Parameter Values

CA Compress controls Safeguards, discussed in the topic Safeguards in the *CA Compress Reference Guide*, and other features through the PARM keyword in the EXEC statement of the started task. Some of the possible values for the PARM Parameter are: NOGUARD, RESET, SHRKRES, and NOSDB. These can be freely combined.

## NOSDB Parameter

NOSDB specifies that compressed data sets should not be reblocked using System Determined Block size to calculate the optimum block size of the compressed data set. The default is for CA Compress to return the user-specified uncompressed block size, but for the compressed data to be actually written with optimum blocks. This improves compression and I/O performance, but this may cause problems if you specify the smaller BLKSIZE in JCL when you read the data set. NOSDB is intended as a conversion aid while correcting such JCL. You may specify or override NOSDB for individual data sets by specifying SDB=NO or SDB=YES on the ADD or ALTER CFMU control statement. When you code the SUBSYS parameter, you may code SDB=YES or SDB=NO as a subparameter of SUBSYS to control the option for that execution.

```
//ZSAMSTC PROC SPARM='NOSDB'
```

## NOSLIP Parameter

The CA Compress started task by default sets a SLIP trap to catch any abend occurring in the ZSURSHRK module. This is extremely valuable in diagnosing problems caused by abends in CA Compress I/O code. We strongly recommend that you accept this default, but to prevent CA Compress from setting the trap and generating a SVC dump on an abend in ZSURSHRK, specify NOSLIP.

```
//ZSAMSTC PROC SPARM='NOSLIP'
```

## NORLSE Parameter

The CA Compress started task by default tries to load the space release module, ZSURRLSE, from the linklist. If not successful, the started task comes down to make you fix the problem so that this failure does not abend user jobs and onlines when they try to load the ZSURRLSE module. If you know that you are not using CA Compress space release, you can specify NORLSE to tell

CA Compress to ignore the problem. The error generally indicates an installation problem. You may also be missing ZSURSHRK or VPE modules or be getting wrong versions, so you should normally take a load error on ZSURRLSE quite seriously, even if you are not using it. We provide NORLSE so you can test flexibly without ZSURRLSE or temporarily get around a known problem.

```
//ZSAMSTC PROC SPARM='NORLSE'
```

## NOGUARD Parameter

NOGUARD can be used at startup to specify that no Safeguards be added to any data set under CA Compress control, but jobs accessing them still run correctly.

```
//ZSAMSTC PROC SPARM='NOGUARD'
```

For more information about Safeguards, see the *CA Compress Reference Guide*.

## NOSGPRT Parameter

NOSGPRT specifies that Safeguards messages be issued only to the console and not to SYSPRINT data sets.

## RESET Parameter

Use RESET only when the subsystem fails to start and the following message displays:

```
"ZSUR098I  xxxx  SUBSYSTEM  INTERFACE  NOT  DORMANT"
```

The message means that the CA Compress address space failed to terminate because of a CPU interrupt or power failure, or because CA Compress was canceled instead of being terminated properly with a STOP command. Because CA Compress failed to stop normally, abends and other unpredictable results in the restarted task may require an IPL.

## RPTCOMP Parameter

The RPTCOMP parameter activates message ZSUR072I to be issued at OPEN whenever a compressed data set is opened to be loaded. This allows you to track compression of every data set and the algorithm or FDT used to compress it.

```
//ZSAMSTC  PROC  SPARM='RPTCOMP'
```

## SHRKRES Parameter

SHRKRES loads module ZSURSHRK, the CA Compress I/O module, into the CSA at initialization, rather than loading it into the user's address space at execution. If ZSURSHRK is loaded into CSA, the copy of the module in the linklist is not used.

```
//ZSAMSTC  PROC  SPARM='SHRKRES'
```

## ADJVMAXRECSZ Parameter

To support IBM and other vendor changes, CA Compress by default no longer assumes that the compressed VSAM maximum RECORDSIZE is 8 bytes greater than the *real* uncompressed maximum RECORDSIZE. This adjustment is made only if the maximum is exactly eight more than the specified average, in which case CA Compress assumes it was originally fixed length with the maximum equal to the average. If you have applications that always expect CA Compress to make this adjustment as in the past, you may need to specify ADJVMAXRECSZ to satisfy them. This is a conversion aid until you fix all such applications. Making this adjustment when it should not happen may cause problems with other applications

```
//ZSAMSTC  PROC  SPARM=' ADJVMAXRECSZ '
```

## Using Operator Commands

The MVS console operator controls CA Compress using the MVS START, MODIFY, and STOP commands. Various options are allowed for the START and MODIFY commands.

### START Command

To use CA Compress, issue the START (S) command to start the CA Compress subsystem:

```
S ZSAMT
```

**Note:** Throughout this section, we assume that the started task JCL member is ZSAMT, as shipped. If you have chosen a different name, adjust the example accordingly.

After subsystem initialization, CA Compress issues the following message:

```
ZSUR000I ZSAMT NOW ACTIVE - VERSION x.x.x, y.y.y HBBnnnn, DFSMS z.z.z
```

**Note:** JES2 users: Because a job can be interpreted on any system, CA Compress must be started on all systems in a Multi-Access Spool configuration, and on the system where the job using CA Compress is running.

JES3 users: CA Compress must be started on the global CPU, on any system on which a job can be interpreted, and on the system where the job using CA Compress is running.

## MODIFY Command

The MODIFY (F) command reports system status, including open compressed data sets; receives dumps; or refreshes the exclusion list. You may need to know which data sets are open, and to which jobs, before stopping CA Compress.

CA Compress data sets under control of CICS or other online systems should be closed by the operator before CA Compress is stopped. Otherwise, abends in the online system are likely.

### STATUS Option

The STATUS option shows how many compressed data sets are open. The format of the command is:

```
F ZSAMT,STATUS
```

### LIST Option

The LIST option shows the names of compressed data sets being accessed, and the names of the jobs accessing them. The format of the command is:

```
F ZSAMT,LIST
```

### REFRESH Option

The REFRESH option refreshes the exclusion tables from the sequential data set or member specified in the started task JCL so you do not have to restart the started task to refresh the tables. The format of the command is:

```
F ZSAMT,REFRESH,EXCLUSION
```

## STOP Command

The STOP (P) command is used to terminate the CA Compress subsystem:

```
P ZSAMT
```

However, avoid using the STOP command to force CA Compress to terminate while compressed data sets are being accessed. Doing so can result in data corruption, and is quite likely to cause OC4 abends, which can be disastrous in online systems. To protect you when compressed data sets are open, CA Compress issues warning messages and requires the requestor to confirm that CA Compress should stop. To stop the VPE component without stopping CA Compress, submit the batch job \$VPEOUT provided in the CA Compress JCL distribution file.

When the STOP (P) command is issued, CA Compress checks if compressed data sets are being accessed, and:

- If no compressed data sets are being accessed, CA Compress terminates as requested.
- If compressed data sets are being accessed, CA Compress writes a message to the operator. The message gives the number of data sets being accessed, and requests that the STOP command be entered again. To terminate CA Compress, the operator must reissue the STOP command within one minute.
- System termination takes about one minute and should be permitted to run to completion. If you cancel the task while cleanup is in progress, abends and other problems can require an IPL to correct.

# Chapter 5: Interactive User Interface

---

This section familiarizes you with the use of the CA Compress IUI. The interface has been developed using the IBM ISPF Dialog Management Facility, so your interaction with the panel displays is familiar. For example, you can request help using PF1 or you can return to the previous screen with PF3. To further enhance usability, the IUI incorporates a number of Common User Access (CUA) concepts, including action bars with menus and windows.

This section contains the following topics:

[Action Bars](#) (see page 40)

[Action Items](#) (see page 40)

[Menus](#) (see page 41)

[Pop-Up Windows](#) (see page 42)

[Help—PF1](#) (see page 42)

[Return—PF3](#) (see page 42)

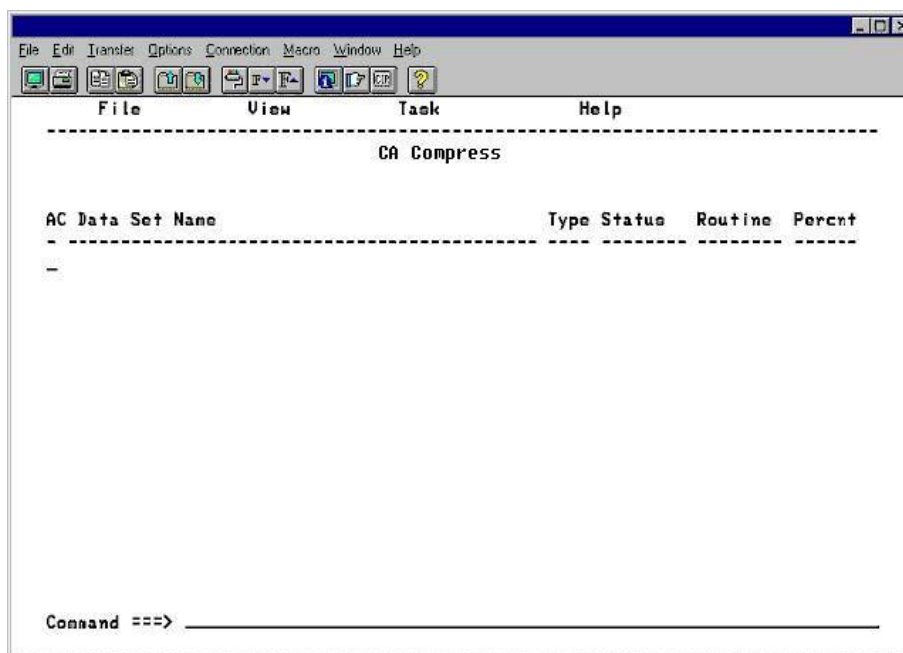
[Identifying a Data Set](#) (see page 43)

[Entering Line Commands](#) (see page 45)

## Action Bars

Action bars with menus of available services and options let you quickly select and navigate through the steps required to perform your task. The UI primary panel, shown following, shows the main action bar at the top of the screen.

The action items listed let you build a file work list, view the list, begin data analysis and compression activities, perform maintenance, and administrative functions or access help facilities.



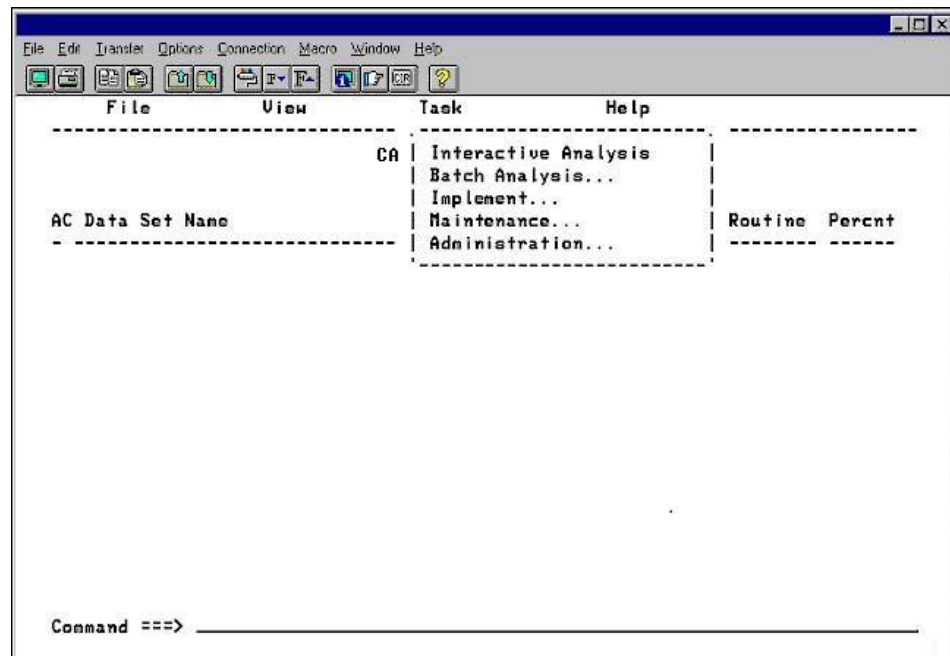
## Action Items

To select an action item, use Tab to move to the item you want. The current action item is highlighted. Action items are highlighted in a rotating fashion. You can tab forward or backward. Press Enter to select the current action item. Selecting an action item presents a menu of subfunctions from which to select.



## Menus

The following panel shows the Task menu that appears when you select the Task action item. Use Tab to highlight a subfunction and press Enter to complete the selection.

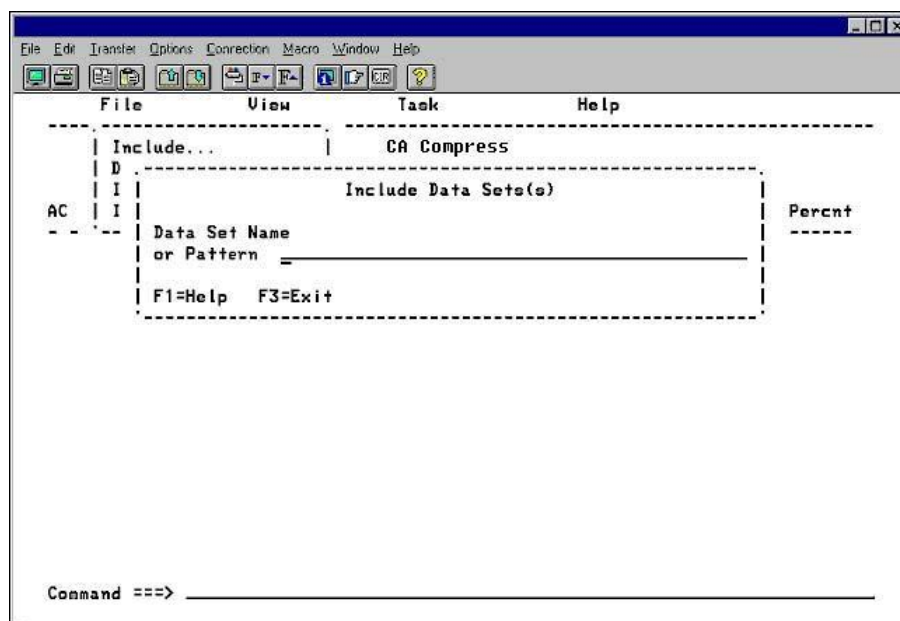


## Pop-Up Windows

The primary panel of the File function is shown in the following panel. At this point you:

- Select the File action item
- Select Include from the File menu

Your input is required at this point in the task to select a data set name for compression analysis.



## Help—PF1

To open Help, press PF1 or select the menu item *Help* and then select the kind of help you need. PF1 also works when the UI displays error or information messages. In these circumstances, pressing PF1 displays context-sensitive help related to the message.

## Return—PF3

Pressing PF3 returns you to the previous screen.

## Identifying a Data Set

In many of the Compress functions, you are asked to specify a data set or a group of data sets. This input can be requested in a window as shown in the previous panel or can be required in an input field on a panel. The window allows a number of different ways to identify data sets to be processed: a single data set name, a data set name mask with special characters, a data set name pattern with special characters, or a relative generation data set name.

If a single data set or a group of data sets is allowed as input, the input field indicates that you can enter a Data Set Name or Pattern. A group of data sets can be represented by specifying a mask or pattern. The method used to identify a group of data sets is very similar to the method used frequently in the TSO and ISPF environments, but CA Compress has some additional capabilities. Following is a full description of the file selection facility used when special characters are specified in a data set name mask or pattern.

## Special Characters

Special characters can represent explicit characters or character strings in data set names, volume names, or catalog names. A pattern name consists of the usual alphanumeric and national characters allowed in a data set name, but also the following special characters:

- Asterisk (\*)
- Question mark (?)
- Slash (/)
- Exclamation point (!)

### Asterisk (\*)

The asterisk (\*) represents any variable index level or simple name.

**\***

Selects all single-level data set names.

**\*.\***

Selects all two-level data set names.

### **A.\*.PROD**

Selects all three-level names that have A as their first index, any second-level, and a third-level index of PROD.

### **A\*.PROD**

Selects all data sets having a first-level index beginning with the letter A followed by any other characters, and a second-level index of PROD.

### Question Mark (?)

The question mark (?) represents any single character within an index level or simple name. Multiple occurrences can be used within each level or simple name.

**?**

Selects all single-character data set names.

### A.TEST??

Selects all two-level data set names with a first-level index of A and a simple name six characters in length, the first four of which must be TEST—for example, TEST01, TEST02, TEST1A, and so on.

### Slash (/)

The slash (/) represents any variable character from that position to the end of the name. The portion of the name that precedes the slash is referred to as a prefix name.

**A/**

Selects all data sets that begin with the character A.

### A.TEST/

Selects all data sets beginning with the character string A.TEST followed by any characters.

### A.\*.C?./

Selects all data sets beginning with an index of A followed by any second-level index, and a two-character third-level index starting with C followed by any string.

### Exclamation Point (!)

The exclamation point (!) represents any variable character up to the character string following the exclamation point; that is, the exclamation point defines the beginning of a character string (terminated by the next pattern character or the end of data) that can be found anywhere within the name.

**!TEST**

Selects all data sets that contain TEST somewhere in the name.

### A?.!DEPT2

Selects all data sets that have a two-character first-level index that starts with an A and contains DEPT2 somewhere in the remainder of the name.

### !TEST!VSAMFILE

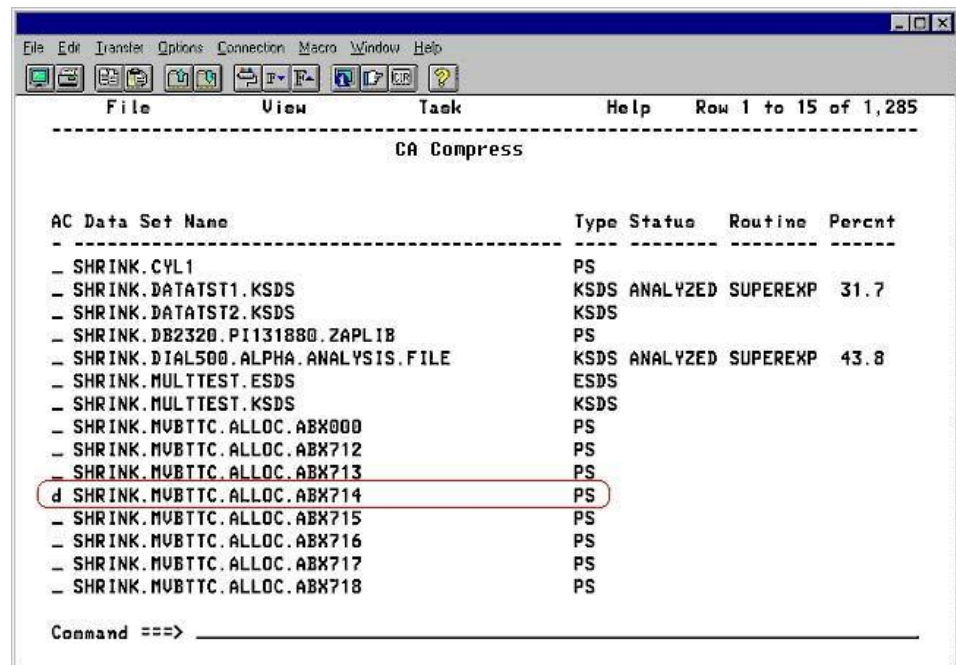
Selects all data sets that contain TEST somewhere in the name and VSAMFILE somewhere following TEST.

## Entering Line Commands

The Delete panel following shows the primary screen listing several data sets. To eliminate one or more entries from the list you can use the Delete menu item from the File action. However, doing so with a line command is much more convenient. Most of the panels in the UI that display lists of items provide a line command entry field at the beginning of each item in the list.

**Note:** Since patterns are not data sets, they cannot be deleted with the *d* line command. A pattern can only be deleted through batch.

The list displayed on the panel provides for line commands, one of which is *d* to delete the entry from the list. To delete an item from this list, place the cursor in the line command field, enter *d* and press Enter.





# Chapter 6: Compression Analysis and Implementation

---

This section contains the following topics:

[Overview](#) (see page 47)

[The Work List](#) (see page 49)

[Analysis](#) (see page 55)

## Overview

The UI discussed in the section Interactive User Interface provides access to the functions necessary for data compression. This section guides you through these functions.

The two fundamental processes required for data compression with CA Compress are:

- Data Analysis and Data set Analysis
- Compression Implementation

Data set analysis provides the system with the file characteristics specific to a data set. Data analysis examines the data within the data set. Data analysis compiles compression statistics that can be reviewed and used to make decisions about implementing compression for the data set.

Compression implementation is the process of selecting a compression algorithm, selecting an implementation mode and executing system functions that place the data set under the control of CA Compress.

The typical steps involved in analysis and implementation are:

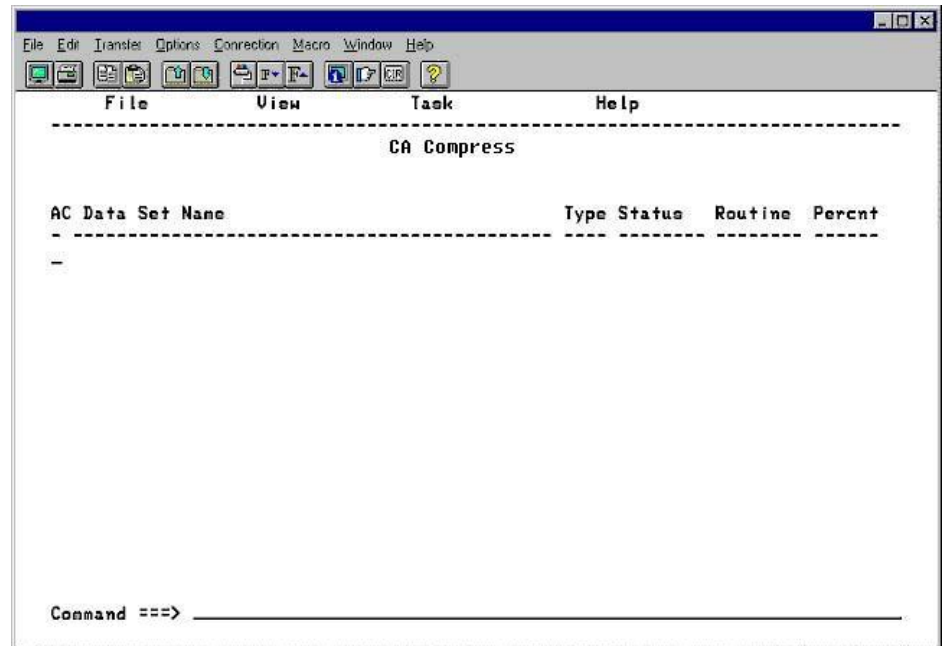
- Build a work list by selecting one or more data sets for analysis or implementation.
- Analyze the data sets. Later you can select to bypass explicitly invoking the analysis function. If a data set has not already been analyzed, invoking the implementation process automatically activates analysis .
- Evaluate the effectiveness of each compression algorithm and select the most appropriate one for each data set.
- Implement compression for selected data sets.

The following sections provide the procedures necessary for each of these steps.

When CA Compress completes initialization, the system displays the primary work list panel as shown in the following panel. The action items available from this panel are File, View, Task, and Help.

The File action item is used to add, delete, and identify patterns in the work list. View is used during your evaluation of the results of the analysis process. Task initiates analysis and implementation functions, and provides access to maintenance and administration functions. The Help action item can be used at any time for more information.

The following panel displays the list of data sets you are currently working on. The list is initially empty until you begin to build it up by adding data sets to it. This panel is named the Work List.





## The Work List

The work list is used to identify one or more data sets that are to be analyzed, reviewed or implemented. The list is built by specifying a data set name or the partial name of a group of data sets. The system attempts to locate qualified data sets by the name you have specified and add them to the list. You can continue to modify the list by adding more data sets or by deleting a data set or group of data sets.

Each entry in the work list shows the name of the data set, its status and (if already analyzed) a compression percentage for the data set. If already implemented, the compression routine used to implement the data set is also shown.

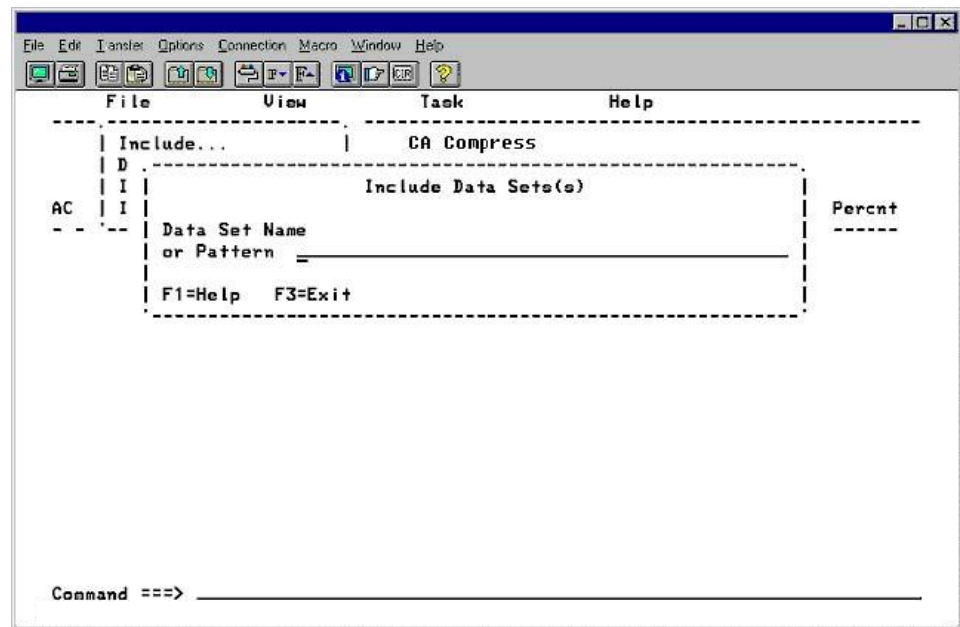
At the beginning of each entry in the list is an Action field where special function line commands can be entered. Line commands are discussed individually throughout this chapter. The topic, Selecting Data Sets for Implementation, in this chapter shows all of the line commands available for the Work List.

## Build a Work List

Selecting the File action item shows a menu containing the options for building the work list. Include allows you to select data sets to be added to the list. Names or partial names entered through the Delete option removes data sets from the list. Identify Pattern lets you use pattern criteria to implement compression for multiple data sets.

### To build a work list:

1. Select the File action item to display the option menu
2. Select Include to display the Data set Name Selection panel



3. Type the data set name or name mask and press Enter to display a list of the data set names selected. For more information see the chapter Interactive User Interface in this guide.

CA Compress searches the system for the specified data sets and when found, adds them to the list. In addition to searching the system catalogs for the requested name, CA Compress looks for the specified data set name in the Control File to determine if this data set has already been implemented. If the data set has been implemented, it is noted in the status field.

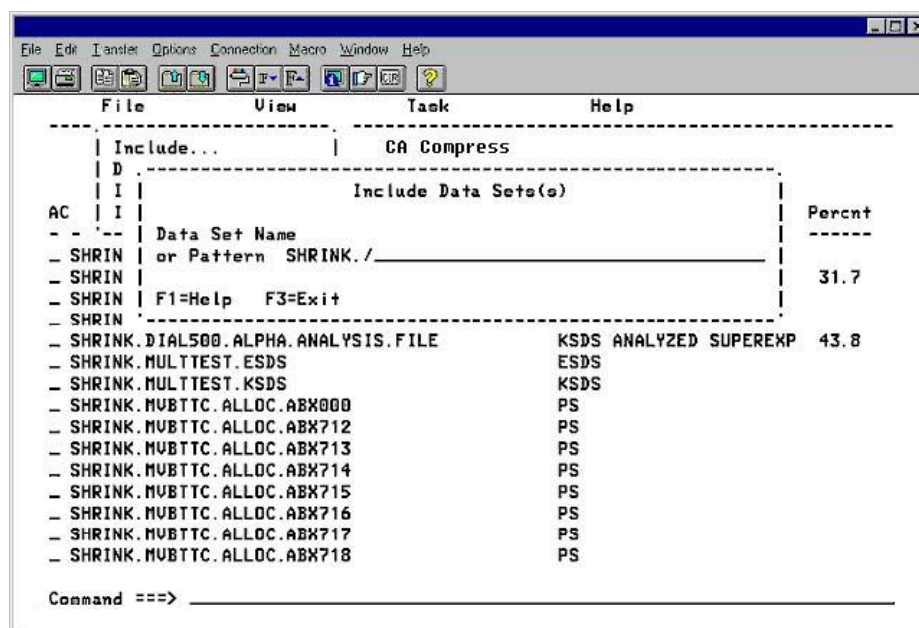
Physical sequential data sets, compressed and implemented in earlier versions using the SUBSYS parameter, do not appear in the Control File. The UI examines any sequential data set on the work list to determine whether it is compressed and if so, how. Data sets compressed with FDTs generated by the Prepass utility cannot be recognized with certainty. So we strongly recommend that you do not use the old style Prepass FDTs for sequential data sets.

Sequential data sets compressed with Standard Tables or Super Express, or with an FDT generated by the IUI, are marked compressed in the status field. These can be implemented, but cannot be reanalyzed. If the algorithm or FDT name is recognized, it is displayed in the status list, and the data set can be implemented only with that name. If the FDT name is not found on the Analysis File, and the user supplies a name, the data set is implemented if that FDT exists on the Control File and the ICB is correct.

**Note:** Implemented data sets cannot be reanalyzed or reimplemented through the IUI.

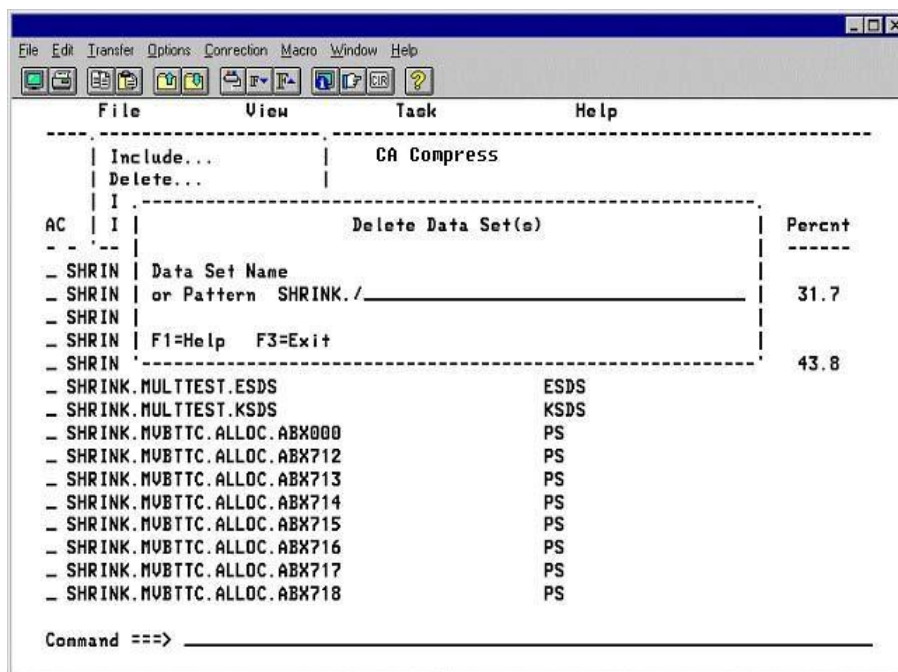
If the data set has already been analyzed and registered in the Analysis File, compression statistics for the algorithm, that are currently the default, appear. The *b* Browse line command (discussed in more detail following) can be used to review all of the prior analysis results for the data set.

You can continue to add items to the list by selecting the Include option from the File action menu.



## Delete a Data Set Name

While building a list you can select the Delete option as many times as necessary to remove data set names from the list. The following panel shows the work list panel with the File menu and the Delete panel open. A single data set can be specified or a group of data sets can be deleted by specifying a data set name mask.



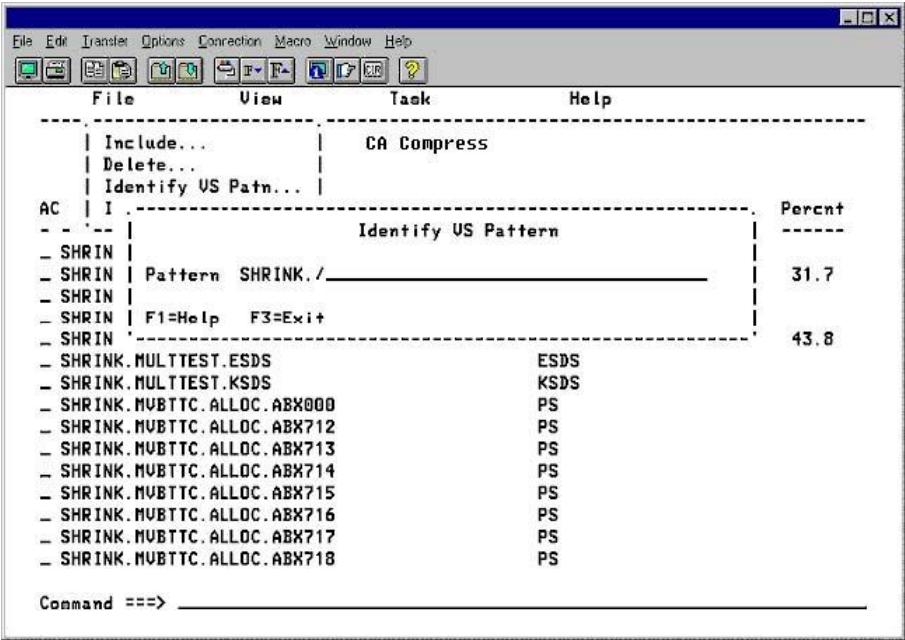
**Note:** Since patterns are not data sets, they cannot be deleted with the *d* line command. A pattern can only be deleted through batch.

The *d* (Delete) line command is a convenient method for deleting entries from the work list. To use this facility enter a **d** in the action field of one or more entries in the list and press Enter.

## Add a VSAM Pattern to the Work List

VSAM patterns can also be added to the work list, and provide a shortcut for applying a single routine to many data sets. Be aware of the difference between adding data sets to the list using a data set name mask or filter pattern versus adding a pattern to the list. For more information about patterns, see Pattern Implementation in this chapter.

Adding a VSAM pattern to the work list is done using the Identify VS Patn... function. The Identify VS Pattern panel is shown in the following figure:



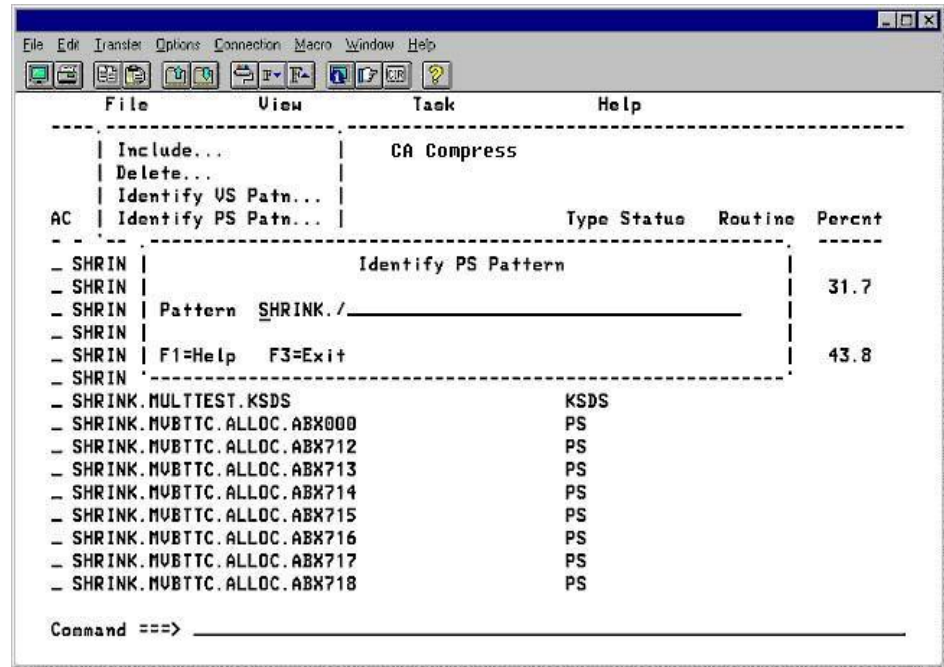
### To add a VSAM pattern to the work list

1. From the Work List panel, select File to display the menu and select Identify VS Patn... to display the VS Pattern panel.
2. Enter the pattern name using the same rules described in the topic Identifying a Data Set in the chapter Interactive User Interface. Press Enter to add the pattern to the work list.

## Add a Physical Sequential Pattern to the Work List

Physical sequential patterns can also be added to the work list. Patterns are a shortcut for applying a single routine to many data sets. Be aware of the difference between adding data sets to the list using a data set name mask or filter pattern versus adding a pattern to the list. For more information about patterns, see Pattern Implementation in this chapter.

Adding a physical sequential pattern to the work list is done using the Identify PS Pattern function. The Identify PS Pattern panel is shown in the following figure:



### To add a physical sequential pattern to the work list

1. From the Work List panel, select File to display the menu and select Identify PS Pattern to display the PS Pattern panel.
2. Enter the pattern name using the same rules described in the topic Identifying a Data Set in the chapter Interactive User Interface. Press Enter to add the pattern to the work list.

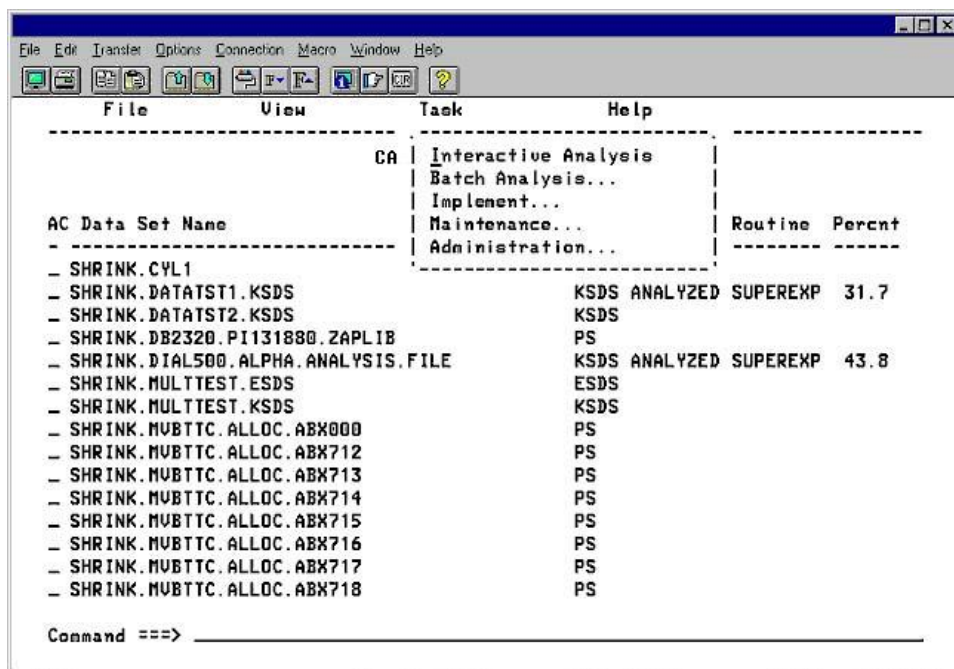
## Analysis

Compression analysis is performed by the Test Compression Facility (TCF) of CA Compress. The UI provides two modes of compression analysis, both of which use TCF. Compression analysis can be done on one or more data sets by invoking TCF interactively, but interactive analysis is not appropriate in all circumstances. For example, you can analyze a large number of data sets, or you can analyze all of the records in a large data set. The UI provides a facility to set up and submit a job to your batch processing facilities. The results of a batch TCF compression analysis are recorded in the Analysis File and can be reviewed through the UI as if they had been analyzed interactively.

### Interactive Analysis

The interactive mode of analysis attempts to process each eligible entry in the work list. Patterns are not eligible for analysis. Also ineligible are data sets already compressed or implemented for compression and data sets that have been marked for exclusion from CA Compress processing. After a data set is implemented or excluded, the code in the Routine field does not change.

To initiate interactive analysis, select the Task action item, then select Interactive Analysis from the menu.



The work list is updated with the results and redisplayed as the analysis of each data set completes. The system keeps track of the amount of time that the analysis process takes. If the analysis time exceeds a specified threshold a panel warns you and lets you proceed, quit or submit the list for batch processing.

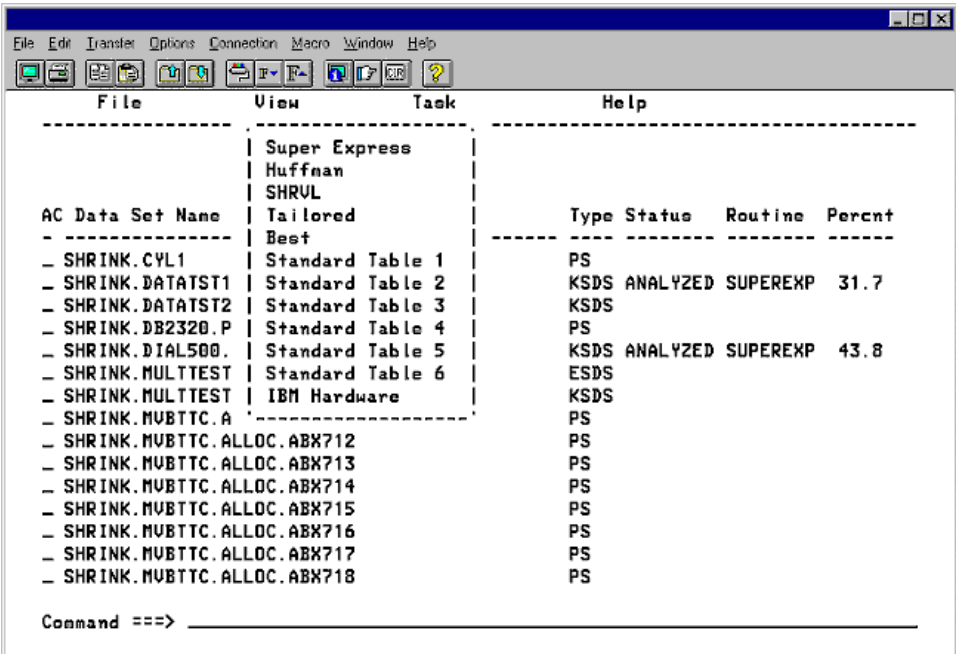
## Reviewing Analysis Results

The status field for work list entries that have been processed is marked ANALYZED. You can review the compression analysis results from either of two perspectives. By reviewing the work list, you see the test compression percentage achieved by one of the compression algorithms for each data set analyzed. To see the results for all algorithms for a given data set, you can focus on that data set with the Browse function.

View Function—by default, the test compression percentage displayed in the work list is for the Super Express algorithm. You can use the View function to change the default algorithm for the work list. After a data set is implemented the routine name does not change.

The View function does not influence implementation, which you must specify through implementation line commands. View affects only the display.

To change the default algorithm, select the View action item.



AC Data Set Name	Type	Status	Routine	Percent
SHRINK.CYL1	PS			
SHRINK.DATATST1	KSDS	ANALYZED	SUPEREXP	31.7
SHRINK.DATATST2	KSDS			
SHRINK.DB2320.P	PS			
SHRINK.DIAL500.	KSDS	ANALYZED	SUPEREXP	43.8
SHRINK.MULTTEST	ESDS			
SHRINK.MULTTEST	KSDS			
SHRINK.MVBTTTC.A	PS			
SHRINK.MVBTTTC.ALLOC.ABX712	PS			
SHRINK.MVBTTTC.ALLOC.ABX713	PS			
SHRINK.MVBTTTC.ALLOC.ABX714	PS			
SHRINK.MVBTTTC.ALLOC.ABX715	PS			
SHRINK.MVBTTTC.ALLOC.ABX716	PS			
SHRINK.MVBTTTC.ALLOC.ABX717	PS			
SHRINK.MVBTTTC.ALLOC.ABX718	PS			

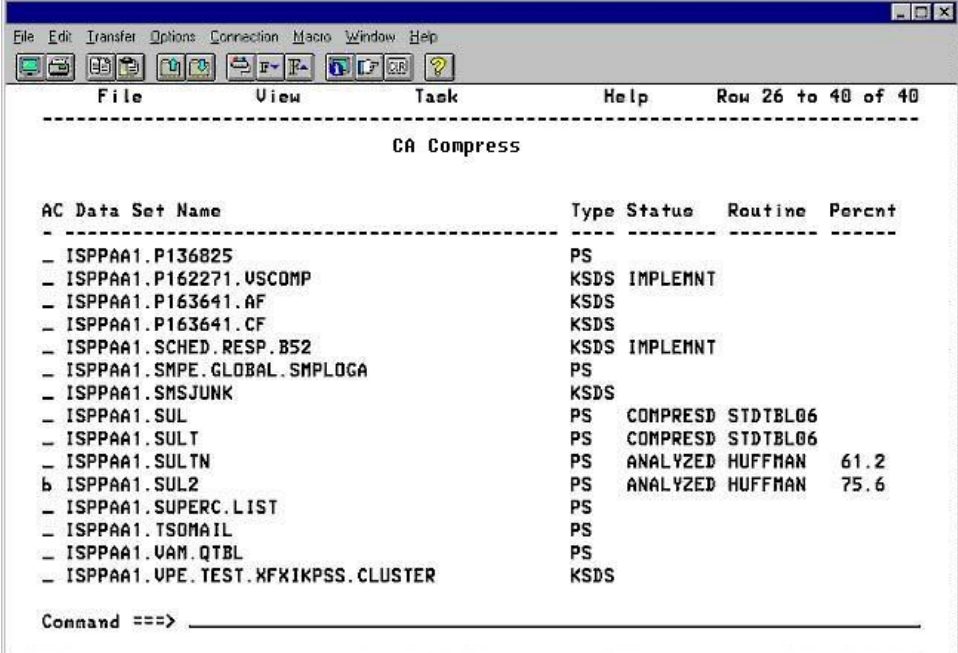
Command ==> \_\_\_\_\_



Select the option from the menu for the compression algorithm that you want displayed for each list entry. The compression percentage for the selected algorithm is displayed for each analyzed data set. The routine and percent for implemented data sets do not change. Also, the percent figure remains at zero for data sets that have not been analyzed. The previous panel shows the work list displaying the compression percentage for the Huffman algorithm.

Selecting Best displays the compression percentage for the algorithm or routine that achieved the best results.

Browse Function—you can see all of the analysis results for a given data set by using the *b* Browse line command function. To display the Browse panel for a data set enter a *b* in the line command field of the work list entry for that data set. Press Enter to display the Browse panel.

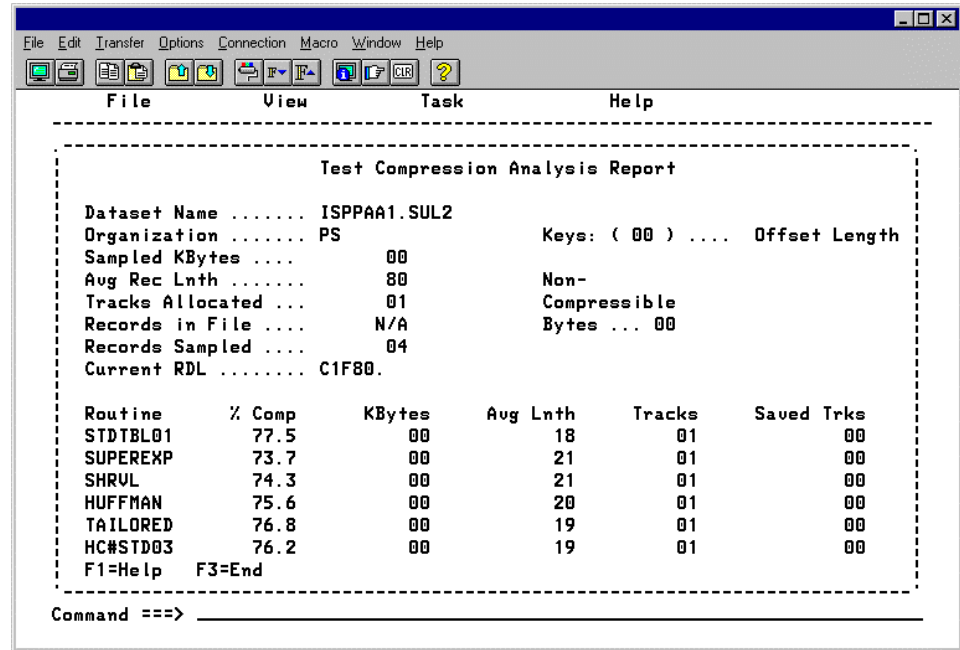


The screenshot shows the CA Compress application window. The title bar includes menu items: File, Edit, Transfer, Options, Connection, Macro, Window, Help. Below the title bar is a toolbar with icons for various functions. The main window has a menu bar with File, View, Task, Help, and a status bar indicating 'Row 26 to 40 of 40'. The main content area is titled 'CA Compress' and displays a table of data sets.

AC Data Set Name	Type	Status	Routine	Percent
- ISPPAA1.P136825	PS			
- ISPPAA1.P162271.VSCOMP	KSDS	IMPLEMNT		
- ISPPAA1.P163641.AF	KSDS			
- ISPPAA1.P163641.CF	KSDS			
- ISPPAA1.SCHED.RESP.B52	KSDS	IMPLEMNT		
- ISPPAA1.SMPE.GLOBAL.SMPLOGA	PS			
- ISPPAA1.SMSJUNK	KSDS			
- ISPPAA1.SUL	PS	COMPRESD	STDIBL06	
- ISPPAA1.SULT	PS	COMPRESD	STDIBL06	
- ISPPAA1.SULTN	PS	ANALYZED	HUFFMAN	61.2
b ISPPAA1.SUL2	PS	ANALYZED	HUFFMAN	75.6
- ISPPAA1.SUPERC.LIST	PS			
- ISPPAA1.TSDMAIL	PS			
- ISPPAA1.UAM.QTBL	PS			
- ISPPAA1.UPE.TEST.XFXIKPSS.CLUSTER	KSDS			

At the bottom of the window, there is a 'Command ==>' field with a cursor.

The Browse panel shows information about the data set and a comparison of five compression routines: the best of Standard Tables, Super Express, SHRVL, Huffman, and Tailored RDL. The following panel shows the Browse panel for the data set selected in the previous panel. The list following provides details about the fields displayed in the Browse panel.



The following section describes the field names displayed in the Browse panel and the contents.

#### Dataset Name

The data set name being analyzed.

#### Organization

Data set organization (KSDS,ESDS,PS).

#### Keys

Number of keys in the record.

#### Sampled KBytes

Number of KB of sampled data.

#### Avg Rec Lnth

Average record length before compression.

#### Non-compressible Bytes

Number of noncompressible bytes.

**Tracks Allocated**

Number of tracks allocated before compression.

**Records in File**

Number of records in the file for VSAM files only.

**Records Sampled**

Number of records sampled.

**Current RDL**

Current Record Description Language.

**Routine**

Name of the compression routine used.

**% Comp**

Estimated percentage of file compressed.

**KBytes**

Estimated KB used after compression.

**Avg Lnth**

Estimated average record length after compression.

**Tracks**

Estimated number of tracks used after compression.

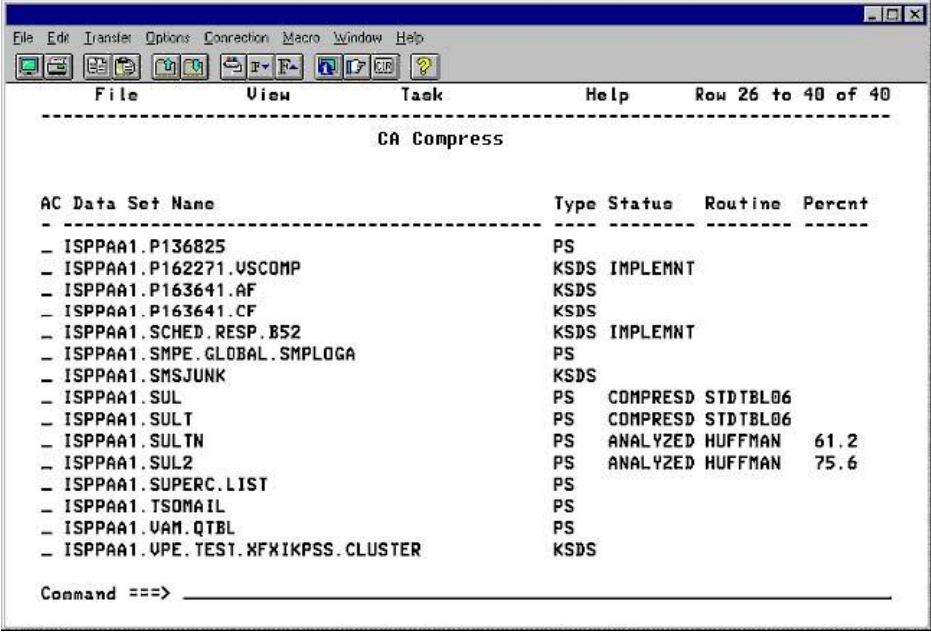
**Saved Trks**

Estimated number of tracks saved after compression.

## Batch Analysis

The process described below creates the JCL and control statements needed to run TCF Batch Analysis. The process can be started with or without a list created using the File option. For more information about TCF Batch Analysis, see the chapter Test Compression Facility in the *CA Compress Reference Guide*.

**Note:** If AUTO IMPLEMENT is specified in SYSTEM DEFAULTS and the default criteria are met, the data set is automatically implemented using mode SCHEDULED OPEN.



AC Data Set Name	Type	Status	Routine	Percent
ISPPAA1.P136825	PS			
ISPPAA1.P162271.USCOMP	KSDS	IMPLEMNT		
ISPPAA1.P163641.AF	KSDS			
ISPPAA1.P163641.CF	KSDS			
ISPPAA1.SCHED.RESP.B52	KSDS	IMPLEMNT		
ISPPAA1.SMPE.GLOBAL.SMPLOGA	PS			
ISPPAA1.SMSJUNK	KSDS			
ISPPAA1.SUL	PS	COMPRESD	STDITBL06	
ISPPAA1.SULT	PS	COMPRESD	STDITBL06	
ISPPAA1.SULTN	PS	ANALYZED	HUFFMAN	61.2
ISPPAA1.SUL2	PS	ANALYZED	HUFFMAN	75.6
ISPPAA1.SUPERC.LIST	PS			
ISPPAA1.TSOMAIL	PS			
ISPPAA1.UAM.QTBL	PS			
ISPPAA1.UPE.TEST.XFXIKPSS.CLUSTER	KSDS			

Command ==>

1. On the Work List panel, select Task to display the menu.
2. Select Batch Analysis to display the Scan Command panel, shown in the following panel. If you have a list when you make this selection, SCAN control statements are created for each data set name. Select one of the following methods:
  - Press Enter to accept the default entries and display the SET Command panel. The Data set field must be filled.
  - Type the data set name or the catalog name, one of which is required, and any other optional information, and press Enter to accept the entries and redisplay the Set Command panel.

The following section describes the field names displayed in the Set Command panel and the contents.

#### Scan Catalog

The name of the catalog to scan. Select catalog or data set to scan, but not both.

#### Scan Data set

The name of the data set to scan. If a list was created, this field contains the first data set name from the list.

**BEGINDSN**

Bypass all selected data sets prior to the one specified.

**PREEXIT**

Access a user-created routine before analysis of a data set begins.

**POSTEXIT**

Access a user-created routine after analysis of a data set is complete.

**Exclude (EXCATS)**

Exclude the catalog names listed in the previous figure.

**CATLG 01–10**

Exclude these catalog names.

In the Set Command Panel, select one of the following methods:

- Press Enter to accept the default entries and display the Select Command (1) panel.
- Type the security, user exit, and sampling information, and press Enter to display the Select Command (1) panel.

The screenshot shows a window titled "SET Command" with a menu bar (File, Edit, Transfer, Options, Connection, Macro, Window, Help) and a toolbar. The main area is divided into two sections. The top section, labeled "CA", contains "Interactive Analysis" and "Batch Analysis...". The bottom section, labeled "SET Command", contains a list of settings: Security (NONE), PREEXIT, POSTEXIT, Percent (100), Bypass (0), Extract (0), and Skip (0). To the right of these settings are labels: "Type of security (NONE, RACF, TOPSEC, ACF2)", "Name of PRE Compression user exit", and "Name of POST Compression user exit". At the bottom of the SET Command section are the labels "F1=Help" and "F3=End". Below the SET Command section is a "Command ==>" prompt followed by a line for input.

CA	Interactive Analysis
	Batch Analysis...

SET Command	
Security .... NONE	Type of security (NONE, RACF, TOPSEC, ACF2)
PREEXIT ....	Name of PRE Compression user exit
POSTEXIT ....	Name of POST Compression user exit
Percent .... 100	
Bypass .... 0	(In Thousands)
Extract .... 0	
Skip .... 0	
F1=Help F3=End	

Command ==> \_\_\_\_\_

The following section describes the field names displayed in the Command (1) panel and the contents.

**Security**

Verify that the user has READ authority for the data set to be processed. The valid entries are: NONE, RACF, TOPSEC, or ACF2. When one of the last three is specified, TCF checks with the security system to verify authorization to the data set.

**PREEXIT**

Access a user-created routine before analysis of a data set begins.

**POSTEXIT**

Access a user-created routine after analysis of a data set is complete.

**Percent**

The percentage of records sampled during the test compression. Reducing the number of records test compressed lessens the impact on system resources. When Percent is used, the Bypass, Skip, and Extract parameters are ignored even if coded by the user.

**Bypass**

The number of records to bypass at the start of a data set before the first record is test compressed.

**Extract**

The maximum number of records, in thousands, to be tested for any given data set. A value of zero indicates there is no limit.

### Skip

Process every nth record encountered. For example, if SKIP=4 is specified, records one, two, and three are skipped and the fourth record is test compressed. Then records five, six, and seven are skipped and the eighth record is processed.

In the Select Command (1) panel, select one of the following methods:

- Press Enter to accept the default entries and display the Select Command (2) panel.
- Type the data set organization, MB range, and data set names and press Enter to display the Select Command (2) panel.

The screenshot shows a window titled 'CA Interactive Analysis' with a menu bar and toolbar. The main area displays the 'SELECT Command (1)' panel. This panel contains the following text:

```

DSORG ..... A ( A - All, U - VSAM Only, P - Physical sequential only)
MBYTESRANGE: Low ... (0-2048) High ... (0-2048)
DSNAME 01 ....
DSNAME 02 ....
DSNAME 03 ....
DSNAME 04 ....
DSNAME 05 ....
DSNAME 06 ....
DSNAME 07 ....
DSNAME 08 ....
DSNAME 09 ....
DSNAME 10 ....
F1=Help F3=End
  
```

At the bottom of the panel, there is a prompt 'Command ==>' followed by a line for input.

The following section describes the field names displayed in the Command (2) panel and the contents.

### DSORG

Select data sets for processing based on one of the following: A (All data sets), V (VSAM data sets only), P (Physical sequential data sets only).

### MBYTESRANGE

Select data sets to be processed based on relative size. The MB value is based on the number of tracks or cylinders allocated to the data set, not the number of data bytes contained within the data set. If one size range limiter is used, both High and Low must be used, even if a value of zero is used.



**Low**

The smallest data set eligible for selection. Data sets smaller than this minimum number will not be selected for processing.

**High**

The largest data set eligible for selection. Data sets larger than this maximum number will not be selected for processing.

**DSNAME 01–10**

Select for processing the names of up to 10 data sets.

In the Select Command (2) panel, select one of the following methods:

- Press Enter to accept the default entries and display the Exclude Command (1) panel.
- Type the volume information and press Enter to display the Exclude Command (1) panel.

CA | Interactive Analysis  
| Batch Analysis... |

SELECT Command (2)

VOLUME 01 ....	VOLUME 02 ....	VOLUME 03 ....
VOLUME 04 ....	VOLUME 05 ....	VOLUME 06 ....
VOLUME 07 ....	VOLUME 08 ....	VOLUME 09 ....
VOLUME 10 ....	VOLUME 11 ....	VOLUME 12 ....
VOLUME 13 ....	VOLUME 14 ....	VOLUME 15 ....
VOLUME 16 ....	VOLUME 17 ....	VOLUME 18 ....
VOLUME 19 ....	VOLUME 20 ....	VOLUME 21 ....
VOLUME 22 ....	VOLUME 23 ....	VOLUME 24 ....
VOLUME 25 ....	VOLUME 26 ....	VOLUME 27 ....
VOLUME 28 ....	VOLUME 29 ....	VOLUME 30 ....

ENTER The VOLUME SERIAL Number(s) to include in the TCF test compression.

F1=Help F3=End

Command ==> \_\_\_\_\_

The following section describes the field names displayed in the Exclude Command (1) panel and the contents.

#### VOLUME 01-30

Select data sets for processing based on volume serial number.

In the Exclude Command (1) panel that follows, select one of the following methods:

- Press Enter to accept the default entries and display the Exclude Command (2) panel.
- Type the data set organization, MB range, and data set names and press Enter to display the Exclude Command (2) panel.

```

File Edit Transfer Options Correction Macro Window Help
File View Task Help
-----
CA | Interactive Analysis |
  | Batch Analysis...   |
-----
EXCLUDE Command (1)
-----
DSORG ..... P (A - ALL, U - VSAM ONLY, P - PHYSICAL SEQUENTIAL ONLY)
MBYTESRANGE: LOW ... (0-2048) HIGH ... (0-2048)
DSNAME 01 ....
DSNAME 02 ....
DSNAME 03 ....
DSNAME 04 ....
DSNAME 05 ....
DSNAME 06 ....
DSNAME 07 ....
DSNAME 08 ....
DSNAME 09 ....
DSNAME 10 ....
F1=Help F3=End
-----
Command ==>
  
```

The following section describes the field names displayed in the Exclude Command (2) panel and the contents.

#### DSORG

Exclude data sets from processing based on one of the following: A (All data sets), V (VSAM data sets only), P (Physical Sequential data sets only).

#### MBYTESRANGE

Exclude data sets from processing based on relative size. The megabyte value is based on the number of tracks or cylinders allocated to the data set, not the number of data bytes contained within the data set. If one size range limiter is used, both High and Low must be used, even if the value is zero.

**Low**

The smallest data set eligible for exclusion. Data sets smaller than this minimum number will not be excluded from processing.

**High**

The largest data set eligible for exclusion. Data sets larger than this maximum number will not be excluded from processing.

**DSNAME 01–10**

Exclude from processing the names of up to 10 data sets.

In the Exclude Command (2) panel, select one of the following methods:

- Press Enter to accept the default entries and display the Default ISPF Library Names and Job Card panel.
- Type the volume information and press Enter to display the Default ISPF Library Names and Job Card panel.

CA | Interactive Analysis  
| Batch Analysis... |

-----

EXCLUDE Command (2)

VOLUME 01 ....	VOLUME 02 ....	VOLUME 03 ....
VOLUME 04 ....	VOLUME 05 ....	VOLUME 06 ....
VOLUME 07 ....	VOLUME 08 ....	VOLUME 09 ....
VOLUME 10 ....	VOLUME 11 ....	VOLUME 12 ....
VOLUME 13 ....	VOLUME 14 ....	VOLUME 15 ....
VOLUME 16 ....	VOLUME 17 ....	VOLUME 18 ....
VOLUME 19 ....	VOLUME 20 ....	VOLUME 21 ....
VOLUME 22 ....	VOLUME 23 ....	VOLUME 24 ....
VOLUME 25 ....	VOLUME 26 ....	VOLUME 27 ....
VOLUME 28 ....	VOLUME 29 ....	VOLUME 30 ....

ENTER The VOLUME SERIAL Number(s) to include in the TCF test compression.

F1=Help F3=End

Command ==> \_\_\_\_\_

The following section describes the field names displayed in the Default ISPF Library Names and Job Card panel and the contents.

### VOLUME 01–30

Exclude data sets from processing based on volume serial number.

In the Default ISPF Library Names and Job Card panel, check the default ISPF Library Names, change them if necessary, type the job card information, move the cursor to the command line, and select one of the following commands:

### SUBMIT

To submit the JCL without saving it, type **SUBMIT** and press Enter.

### SAVE

To save the JCL to a data set name you specify, type **SAVE** and press Enter. Type the name of the data set and member and press Enter.

### EDIT

To save the JCL to a data set name you specify and invoke the ISPF editor, type **EDIT** and press Enter. Type the name of the data set name and member and press Enter. The member is displayed in an ISPF edit session.

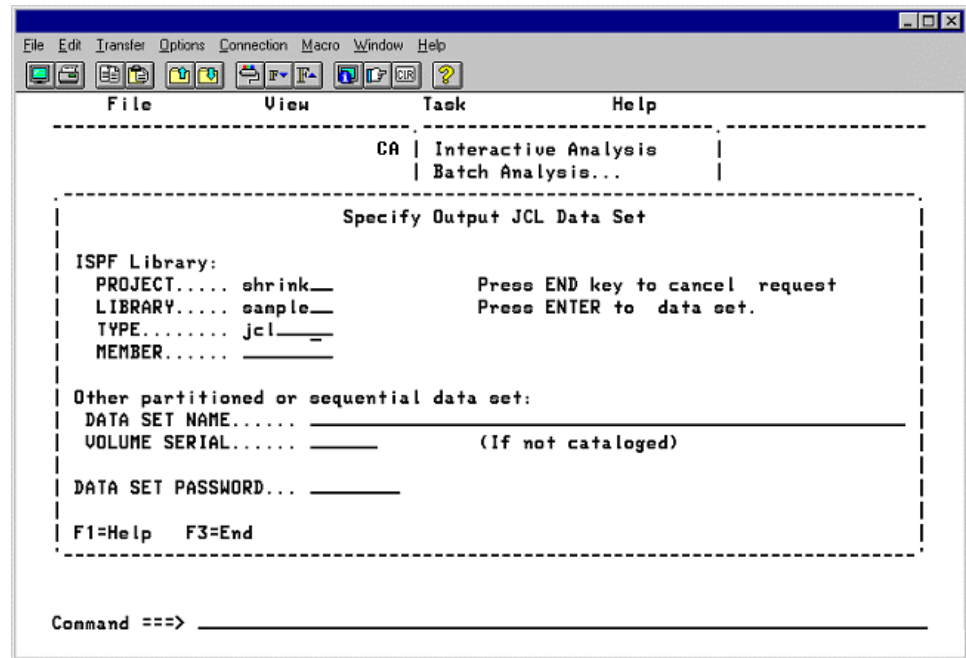
### END

To exit without saving the JCL, type **END** and press Enter, or press PF3.

The screenshot shows the 'Generate JCL' panel in an ISPF environment. The panel has a menu bar at the top with 'File', 'Edit', 'Transfer', 'Options', 'Connection', 'Macro', 'Window', and 'Help'. Below the menu bar is a toolbar with icons for various functions. The main area of the panel is titled 'Generate JCL' and contains the following sections:

- ISPF LIBRARY NAMES:** This section lists several library names with their corresponding data set names and members:
  - ISPTLIB ..... SYS1.SISPTENU
  - ISPLIB ..... CMUS520I.DEVL.ISPLIB
  - ISPLIB ..... CMUS520I.DEVL.ISPLIB
  - ISPLIB ..... CMUS520I.DEVL.ISPLIB
  - ISPLIB ..... CMUS520I.DEVL.ISPLIB
  - ISPLIB ..... CMUS520I.DEVL.ISPLIB
- JOB STATEMENT INFORMATION:** This section contains several lines of text, likely representing the job card information, with some lines being blank or partially filled.
- Footer:** At the bottom of the panel, there is a line that reads 'F1=Help F3=End' and a 'Command ==>' prompt.

To save the JCL to a data set name you specify and invoke the ISPF editor, type **EDIT** and press Enter.



## Implementing Compression

For VSAM data sets, CA Compress supports Scheduled or Immediate compression. Scheduled compression specifies that compression is to take place as a future event, either when the data set is opened for output or loaded. Because nothing has to be done to the data set itself at implementation, the IUI is able to perform scheduled implementation online, by simply updating the Control File. Immediate compression means that the entire data set is compressed at the time it is implemented. Key position and maximum record length can change, and the data set must be redefined and reloaded. Because the data set, which can be large, must be backed up and reloaded, the IUI performs this multistep operation by creating a batch job for you to submit.

For Physical Sequential data sets, unlike VSAM, there are no keys and therefore no change in key position. Records cannot be updated in place, and fixed and variable records are not compatible in the same data set so that CA Compress cannot consistently support compressed and uncompressed records together. For these reasons, scheduled compression in the VSAM sense is not appropriate for Physical Sequential data sets, but deferred and immediate compression are still supported through the effective date (EFFDATE parameter or ANYDATE).

If you specify or default a nonzero EFFDATE, the data set is compressed the next time it is loaded, at or after the effective date, like VSAM SCHEDULED=LOAD. If you specify ANYDATE, the IUI builds JCL to back up and reload the data set, much as it does for VSAM Immediate compression.

A third possibility with Physical Sequential data sets is that the data set is already compressed, having been implemented under an older version with the SUBSYS JCL parameter. Such a data set is marked COMPRES in the work list. If you select to implement it, the IUI implements it online with ANYDATE, using the FDT or algorithm it was compressed with, and it is immediately treated as compressed under the Physical Sequential Transparency (PST).

The IUI performs implementation in one of two modes, CHOICE and SCHEDULED, as determined by your system administrator. As distributed, the system default is CHOICE.

CHOICE lets you control how each data set is implemented. For both VSAM and Physical Sequential data sets, in addition to selecting deferred or immediate compression, you can specify various optional parameters. SCHEDULED defaults to SCHEDULED=LOAD for VSAM and EFFDATE=today for Physical Sequential. The result in each case is that the data set is compressed the next time it is loaded, and the IUI takes defaults for parameters you can control under CHOICE.

The following table shows the implementation process that takes place based on the type of routine being implemented and the setting of the System Default field. The table assumes normal operation and that the user enters all required information correctly. The simplest process is when Scheduled is the System Default and the user wants to implement compression with a standard routine, Standard Table, or Super Express. In this case CA Compress just implements compression for the selected data sets and no further action by the user is required. On the other hand, the most involvement is required when Choice is the System Default and you want to implement compression with a custom routine; Huffman, SRHVL, or Tailored. In this case, you must provide an FDT name and a mode type before CA Compress implements compression.

System Default Setting	Routine Type	Implementation Process
Scheduled	Standard	1. Implements Compression.
	Custom	1. Prompts for FDT Name. 2. Implements Compression.
Choice	Standard	1. Prompts for Mode. 2. Implements Compression.
	Custom	1. Prompts for FDT Name. 2. Prompts for Mode. 3. Implements Compression.

## Selecting Data sets for Implementation

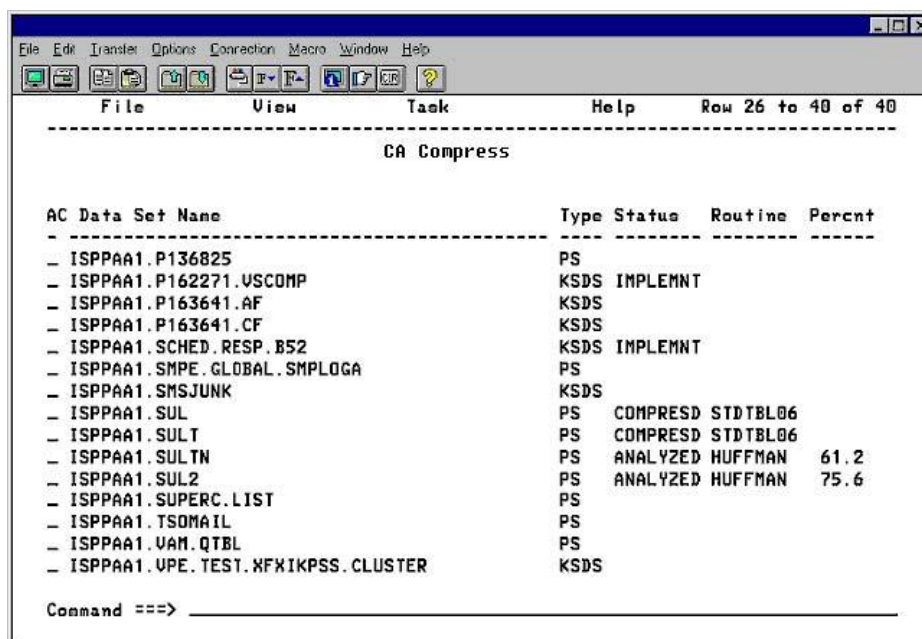
Once a work list has been created one or more of the data sets in the list can be selected for compression implementation.

From the Work List panel, use any of the following Implementation line commands to implement compression on one or more data sets.

Code	Meaning	Function
1	Standard Table 1	Selects Standard Table 1 for compression implementation.
2	Standard Table 2	Selects Standard Table 2 for compression implementation.
3	Standard Table 3	Selects Standard Table 3 for compression implementation.
4	Standard Table 4	Selects Standard Table 4 for compression implementation.
5	Standard Table 5	Selects Standard Table 5 for compression implementation.
6	Standard Table 6	Selects Standard Table 6 for compression implementation.
S	Super Express	Selects Super Express for compression implementation.
H	Huffman	Selects Huffman for compression implementation.
V	SHRVL	Selects SHRVL for compression implementation.
T	Tailored RDL	Selects Tailored RDL for compression implementation.

Code	Meaning	Function
Z	Hardware Compression	Selects IBM Hardware Compression.
F	FDT for a Pattern	Displays the FDT Name panel to enter the FDT to use with a pattern name.
U	Unselect	Removes a Select line command and changes the status field to blank or Analyzed.

The following panel shows the Work List with Implementation line commands typed next to data sets selected for implementation.



The screenshot shows a window titled "CA Compress" with a menu bar (File, Edit, Transfer, Options, Connection, Macro, Window, Help) and a toolbar. Below the toolbar is a status bar showing "Row 26 to 40 of 40". The main area displays a table of data sets and their implementation status.

AC Data Set Name	Type	Status	Routine	Perct
ISPPAA1.P136825	PS			
ISPPAA1.P162271.USCOMP	KSDS	IMLEMNT		
ISPPAA1.P163641.AF	KSDS			
ISPPAA1.P163641.CF	KSDS			
ISPPAA1.SCHED.RESP.B52	KSDS	IMLEMNT		
ISPPAA1.SMPE.GLOBAL.SMPLOGA	PS			
ISPPAA1.SMSJUNK	KSDS			
ISPPAA1.SUL	PS	COMPRESO	STD TBL06	
ISPPAA1.SULT	PS	COMPRESO	STD TBL06	
ISPPAA1.SULTN	PS	ANALYZED	HUFFMAN	61.2
ISPPAA1.SUL2	PS	ANALYZED	HUFFMAN	75.6
ISPPAA1.SUPERC.LIST	PS			
ISPPAA1.TSOMAIL	PS			
ISPPAA1.VAM.QTBL	PS			
ISPPAA1.UPE.TEST.XFXIKPSS.CLUSTER	KSDS			

At the bottom of the panel, there is a "Command ==>" prompt followed by a blank line for input.

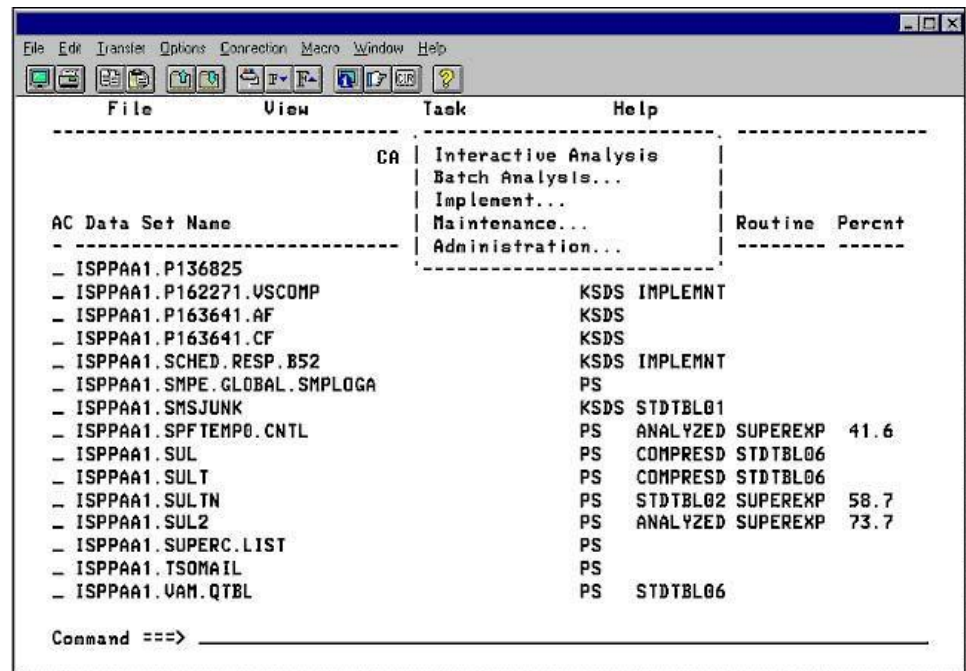


Press Enter to lock your selection (indicated by the change to the Status field of the selected data sets). The Status field changes to the name of the selected routine. The following panel shows the Work List panel after the routines have been selected and locked.

CA Compress				
AC Data Set Name	Type	Status	Routine	Percent
ISPPAA1.P136825	PS			
ISPPAA1.P162271.USCOMP	KSDS	IMPLEMNT		
ISPPAA1.P163641.AF	KSDS			
ISPPAA1.P163641.CF	KSDS			
ISPPAA1.SCHED.RESP.B52	KSDS	IMPLEMNT		
ISPPAA1.SMPE.GLOBAL.SMPLOGA	PS			
ISPPAA1.SMSJUNK	KSDS	STD_TBL01		
ISPPAA1.SPFTEMP0.CNTL	PS	ANALYZED	SUPEREXP	41.6
ISPPAA1.SUL	PS	COMPRES	STD_TBL06	
ISPPAA1.SULT	PS	COMPRES	STD_TBL06	
ISPPAA1.SULTN	PS	STD_TBL02	SUPEREXP	58.7
ISPPAA1.SUL2	PS	ANALYZED	SUPEREXP	73.7
ISPPAA1.SUPERC.LIST	PS			
ISPPAA1.TSOMAIL	PS			
ISPPAA1.UAM.QTBL	PS	STD_TBL06		
Command ==> _____				

## Activating Implementation

1. Select Task to display the menu.
2. Select Implement to begin the implementation process.
  - If the System Defaults Scheduling Option is specified as Scheduled, CA Compress implements compression for the data sets selected.
  - If the System Defaults Scheduling Option is specified as Choice, CA Compress displays the Implement Mode Selection panel as shown and described in the topic Selecting the Implementation Mode—VSAM in this chapter.



If any of the custom algorithms (HUFFMAN, SHRVL, or TAILORED) was selected for any of the data set names, the FDT Name panel displays as shown in the following panel:

File Edit Transfer Options Connection Macro Window Help

File View Task Help

Valid FDT Name

AC Data Set Name

Data Set Name ISPPAA1.SULTN

Enter the FDT name that will be used with the above data set name for compression

FDT

F1=Help F3=Exit

ISPPAA1.BIGUNC.PMR2189.

ISPPAA1.CF

ISPPAA1.C03

ISPPAA1.DDIR

ISPPAA1.DOC.P161469.CMP

ISPPAA1.D980202.T130815

ISPPAA1.D980202.T131736

ISPPAA1.D980202.T131910.CTLF.INPUT PS

ISPPAA1.D980202.T132247.CTLF.INPUT PS

ISPPAA1.D980202.T133757.CTLF.INPUT PS

ISPPAA1.D980202.T133949.CTLF.INPUT PS

ISPPAA1.D980202.T134226.CTLF.INPUT PS

ISPPAA1.EMPTY PS

ISPPAA1.LOG.MISC PS ANALYZED SUPEREXP 42.7

ISPPAA1.PMR2269 PS IMLEMNT

Command ==>

Enter the FDT Name and press Enter to continue.

The following panel shows the work list after compression has been implemented for the data set names selected. Notice that the Status field has changed to Implemented.

File Edit Transfer Options Connection Macro Window Help

File View Task Help Row 1 to 15 of 41

CA Compress

AC Data Set Name	Type	Status	Routine	Percent
ISPPAA1.BIGUNC.PMR2189.BIGU	KSDS	IMLEMNT		
ISPPAA1.CF	KSDS	ANALYZED SUPEREXP		6.8
ISPPAA1.C03	KSDS			
ISPPAA1.DDIR	KSDS	ANALYZED SUPEREXP		41.4
ISPPAA1.DOC.P161469.CMPMUS.USAM	KSDS	IMLEMNT		
ISPPAA1.D980202.T130815.CTLF.INPUT	PS			
ISPPAA1.D980202.T131736.CTLF.INPUT	PS	ANALYZED SUPEREXP		42.5
ISPPAA1.D980202.T131910.CTLF.INPUT	PS			
ISPPAA1.D980202.T132247.CTLF.INPUT	PS	DCA0074		
ISPPAA1.D980202.T133757.CTLF.INPUT	PS	DCA0074		
ISPPAA1.D980202.T133949.CTLF.INPUT	PS			
ISPPAA1.D980202.T134226.CTLF.INPUT	PS			
ISPPAA1.EMPTY	PS			
ISPPAA1.LOG.MISC	PS	ANALYZED SUPEREXP		42.7
ISPPAA1.PMR2269	KSDS	IMLEMNT		

Command ==>

## Selecting the Implementation Mode—VSAM

The steps that follow assume that the system defaults are set to give you a choice of implementation modes. After selecting Implement (and after specifying the FDT name if Huffman, SHRVL, or Tailored was selected), the Implement Super Express Compression panel is displayed.

File Edit Transfer Options Connection Macro Window Help

File View Task Help

CA | Interactive Analysis  
| Batch Analysis...  
| Implement...

Implement Super Express Compression

DSNAME or PATTERN .... ISPPAA1.CF  
SPACE RELEASE ..... (0-99)  
SCHEDULED OPTION .... (OPEN, LOAD, SCHD or blank)  
BACKUP DSNNAME .....  
BACKUP GDG MODEL .....

JOB STATEMENT INFORMATION:  
...  
...  
...

F1=Help F3=End

Command ==> \_\_\_\_\_

In the SCHEDULED OPTION field type **OPEN** or **LOAD** and press Enter or select no option.

- OPEN—the data set is implemented for compression the next time it is opened for output.
- LOAD—the data set is implemented for compression the next time it is loaded.

If no option is selected, specify the backup data set name for the unload step in the DSNNAME field.

Type the JOB STATEMENT INFORMATION.

Move the cursor to the command line, and select one of the following:

- SUBMIT—to submit the JCL without saving it, type SUBMIT and press Enter.
- SAVE—to save the JCL to a PDS member, type SAVE and press Enter. Type the name of the data set and member and press Enter.
- EDIT—to invoke the ISPF editor, type EDIT and press Enter. Type the data set name and member and press Enter. The contents of the member are displayed in an ISPF edit session.
- END—to exit without building the JCL and control cards, type END and press Enter, or press PF3.

## Choosing the Implementation Mode—Physical Sequential

The steps that follow assume that the system defaults are set to give you a choice of implementation modes. After selecting Implement (and after specifying the FDT name if Huffman, SHRVL, or Tailored was selected), the Implement Physical Sequential Compression panel appears.

The screenshot shows a software window titled "Implement Physical Sequential Compression". The window has a menu bar with "File", "Edit", "Transfer", "Options", "Connection", "Macro", "Window", and "Help". Below the menu bar is a toolbar with icons for file operations, transfer, options, connection, macro, window, and help. The main area of the window is divided into four panes: "File", "View", "Task", and "Help". The "Task" pane is active and shows a list of tasks: "CA", "Interactive Analysis", "Batch Analysis...", and "Implement...". The "Implement..." task is selected. Below the task list is a dashed box containing the "Implement Physical Sequential Compression" panel. This panel contains the following fields:

DSNAME ...	ISPPAA1.D980202.T131736.CTLF.INPUT	FDT ...	SUPEREXP
EFFECTIVE DATE ..	98064__ (YYDD, ANYDATE)	NON-COMP ....	
GDG .....	NO__ (YES, NO, ONLY)	ERASEUNCAT ..	NO_ (YES, NO)
DCBMODEL .....	ISPPAA1.D980202.T131736.CTLF.INPUT		
LRECL .....		BLKSIZE ...	
DEUTYPE .....		RECFM ...	
BACKUP DSNAME ...			

Below the fields is a section titled "JOB STATEMENT INFORMATION:" with three lines for input. At the bottom of the panel are the labels "F1=Help" and "F3=End". Below the panel is a "Command ==>" prompt with a line for input.

In the EFFECTIVE DATE field, enter the Julian date or ANYDATE that compression is to be implemented and press Enter.

- ANYDATE—Specifies that the data set should be considered compressed already.

In the NONCOMP field, you can specify a noncompressible area at the beginning of each record and press Enter.

In the GDG field, specify whether pattern matches should be recognized for all data sets including GDGs (YES), excluding GDGs (NO), or only for GDGs (ONLY) and press Enter.

In the ERASEUNCAT field, specify whether the entry should be purged (YES) from the Control File when the data set becomes uncataloged and press Enter.

In the DCBMODEL field, enter a cataloged data set from which to extract RECFM, LRECL, and BLKSIZE attributes, or explicitly supply these values yourself. If you specify both DCBMODEL and individual attributes, any individual attributes supplied *override* the values obtained from the DCBMODEL data set.

In the DEVTYPE field type **DA** to limit compression to Direct Access or TAPE to limit compression to Tape. Leave blank or say ALL to compress on any device.

Move the cursor to the command line, and type one of the following line commands:

- SUBMIT—to submit the JCL without saving it, type **SUBMIT** and press Enter.
- SAVE—to save the JCL to a PDS member, type SAVE and press Enter. Type the name of the data set and member and press Enter.
- EDIT—to invoke the ISPF editor, type EDIT and press Enter. Type the data set name and member and press Enter. The contents of the member are displayed in an ISPF edit session.
- END—to exit without building the JCL and control cards, type END and press Enter, or press PF3.

## Implementing Compressed Physical Sequential Data Sets

The IUI can recognize sequential data sets which have been compressed using a noncustom technique or an FDT generated by the IUI, but which have not yet been implemented (that is, registered to the Control File). These have commonly been implemented using the SUBSYS JCL parameter under earlier versions. The IUI marks them COMPRESD in the work list and fills in the FDT or algorithm name if available. Because they are already compressed, they must be implemented differently from uncompressed data sets.

Because the sequential data sets are already compressed, instead of being analyzed they must be implemented exactly as they are compressed. Without recompression, they must be recognized as already compressed the next time they are accessed, whether for input or output.

The IUI internally enters the correct implementation line command for a compressed data set. With no further action on your part, implementation is attempted on the compressed data set when you select Implement from the Task menu.

If the IUI knows the correct FDT or algorithm, you cannot change it. If the IUI could not determine the correct FDT or algorithm, you must enter it on the Implementation panel. If the FDT is not found on the Control File or if the ICB does not match, it is rejected and the implementation is not performed. If you have the correct FDT in a load library, you can add it to the Control File and try the implementation again.

Because the data set is compressed, the uncompressed DCB attributes are unavailable, so you must supply them, by supplying either a DCBMODEL data set or the individual attributes on the Implementation panel, shown previously. You can override selected attributes in the DCBMODEL data set by supplying them on the panel.

## Pattern Implementation

Since there are many differences between VSAM and PS data sets, VSAM Patterns and PS Patterns are completely distinct. In other words, VSAM data sets do not match on a PS Pattern, and PS data sets do not match on a VSAM Pattern.

The implementation flow for patterns is essentially the same as for data sets. As with data set implementation, an implementation line command tells the IUI that you want to implement the pattern using the selected compression algorithm. Pressing the Enter key confirms your choices. Implementation is performed for each work list entry you selected when you select Implement from the Task menu.

Since patterns are not data sets, there is no data to analyze, so any pattern being implemented with a custom routine must use an existing FDT. Instead of H, V, or T, the custom implementation line commands, you code F to indicate that you want to use an FDT. When you select and confirm the F line command, the status field displays \*CUSTFDT. Selecting Implement from the Task menu displays the Valid FDT Name panel. Enter the name of an FDT generated from data which best represents the data sets which are implemented from the pattern. This selection is important, since compression efficiency and performance both suffer if the data does not closely resemble what was used to create the FDT.

The RDL must be general enough to accurately describe any data set that matches the pattern. For example, if the RDL is C1F80, which describes a fixed length record of 80 bytes, CA Compress fails any record having more or less than 80 characters.

For patterns, the IUI permits only Scheduled implementation for VSAM (LOAD or OPEN) and EFFDATE=today for PS.

The steps that follow assume that the system defaults are set to give you a choice of implementation modes. After selecting Implement (and after specifying the FDT name if Huffman, SHRVL, or Tailored was selected) the Implement Pattern Compression panel appears.

The screenshot shows a window titled "CA Interactive Analysis" with a menu bar (File, Edit, Transfer, Options, Connection, Macro, Window, Help) and a toolbar. The main area is divided into sections. The top section, "CA Interactive Analysis", contains a list of options: "Batch Analysis...", "Implement...", and "Implement...". Below this is a dashed box titled "Implement Pattern Compression". Inside this box, instructions state: "Enter the scheduled option (Open or Load) and optionally the space release information for the Pattern. Press the ENTER key to Implement the Pattern or press the END key to cancel the process." Below the instructions are four input fields: "PATTERN NAME" with value "ISPPAA1.", "SPACE RELEASE" with value "=", "FDTNAME" with value "FRACK", and "SCHEDULED OPTION" with value "\_\_\_\_ (OPEN, LOAD)". At the bottom of the dashed box are the keys "F1=Help" and "F3=End". Below the dashed box is a "Command ==>" prompt followed by a blank line.

File	Edit	Transfer	Options	Connection	Macro	Window	Help
CA Interactive Analysis							
Batch Analysis...							
Implement...							
Implement...							

**Implement Pattern Compression**

Enter the scheduled option (Open or Load) and optionally the space release information for the Pattern. Press the ENTER key to Implement the Pattern or press the END key to cancel the process.

PATTERN NAME ..... ISPPAA1./\_\_\_\_\_

SPACE RELEASE ..... = (0-99)

FDTNAME ..... FRACK\_\_\_\_

SCHEDULED OPTION ..... \_\_\_\_ (OPEN, LOAD)

F1=Help F3=End

Command ==> \_\_\_\_\_



For VSAM:

In the SCHEDULED OPTION field, type **OPEN** or **LOAD** and press Enter.

### OPEN

Any data set that matches the pattern is implemented for compression the next time it is opened for output.

### LOAD

Any data set that matches the pattern is implemented for compression the next time it is loaded.

**Note:** OPEN or LOAD refers to when compression is to be implemented. After the specified event occurs on a data set and compression is implemented, the data set changes from OPEN or LOAD, to SCHED, which means the scheduled data set is now compressed.

The steps that follow are for Physical Sequential Patterns. After selecting Implement (and after specifying the FDT name if Huffman, SHRVL, or Tailored is selected) the Implement Physical Sequential Pattern Compression panel is displayed.

The screenshot shows a mainframe terminal window with a menu and a detailed panel. The menu has options: CA, Interactive Analysis, Batch Analysis..., and Implement... The Implement... option is selected, leading to the 'Implement Physical Sequential Pattern Compression' panel. This panel contains fields for PATTERN (ISPPAA1.), EFFECTIVE DATE (98064), GDG (NO), DCBMODEL, LRECL, BLKSIZE, RECFM, and FDT (FRACK). It also includes instructions like F1=Help and F3=End. At the bottom, there is a 'Command ==>' prompt.

```

File Edit Transfer Options Connection Macro Window Help
File View Task Help
CA | Interactive Analysis
   | Batch Analysis...
   | Implement...
-----
Implement Physical Sequential Pattern Compression
PATTERN ... ISPPAA1./                                FDT ... FRACK
EFFECTIVE DATE ..... 98064 (YYDDD,ANYDATE) DEUTYPE ____ (TAPE,DA,ALL)
GDG ..... NO_ (YES,NO,ONLY) ERASEUNCAT ..... NO_ (YES,NO)
DCBMODEL .....
LRECL ..... BLKSIZE ... RECFM ...
F1=Help F3=End
Command ==>

```

For PS:

1. In the GDG field, specify whether pattern matches should be recognized for all data sets including GDGs (YES), excluding GDGs (NO), or only for GDGs (ONLY) and press Enter.
2. In the ERASEUNCAT field, specify whether the entry should be purged (YES) from the Control File when the data set becomes uncataloged and press Enter.
3. In the DCBMODEL field, specify a cataloged data set from which to extract RECFM, LRECL, and BLKSIZE attributes and press Enter.
4. In the DEVTYPE field, enter DA to limit compression to Direct Access or TAPE to limit compression to Tape. Leave blank or say ALL to compress on any device.

# Chapter 7: Maintenance and Administration

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This section provides information to help you to understand the maintenance and administrative functions provided through the IUI. In this chapter you find step-by-step procedures and guidelines for using these functions.

This section contains the following topics:

[File Maintenance Functions](#) (see page 83)

[Administrative Functions](#) (see page 89)

[Analysis File Maintenance](#) (see page 91)

[Control File Maintenance](#) (see page 91)

[FDT Maintenance](#) (see page 104)

[System Defaults](#) (see page 110)

[User Access](#) (see page 112)

## File Maintenance Functions

Analysis File, Control File and FDT maintenance functions are available through the IUI.

### Analysis File Maintenance

Analysis File entries can be listed, either individually, by a pattern for the entry name or for the entire file. You can generate a list for viewing or you can generate a list that allows the entries listed to be deleted from the file. This Analysis File maintenance list also allows you to modify the RDL associated with a data set entry. This function is used in developing a tailored Huffman algorithm. You can also produce a hardcopy of the Analysis File list with this function.

## List Data set Names

### To list the data sets names in the Analysis File

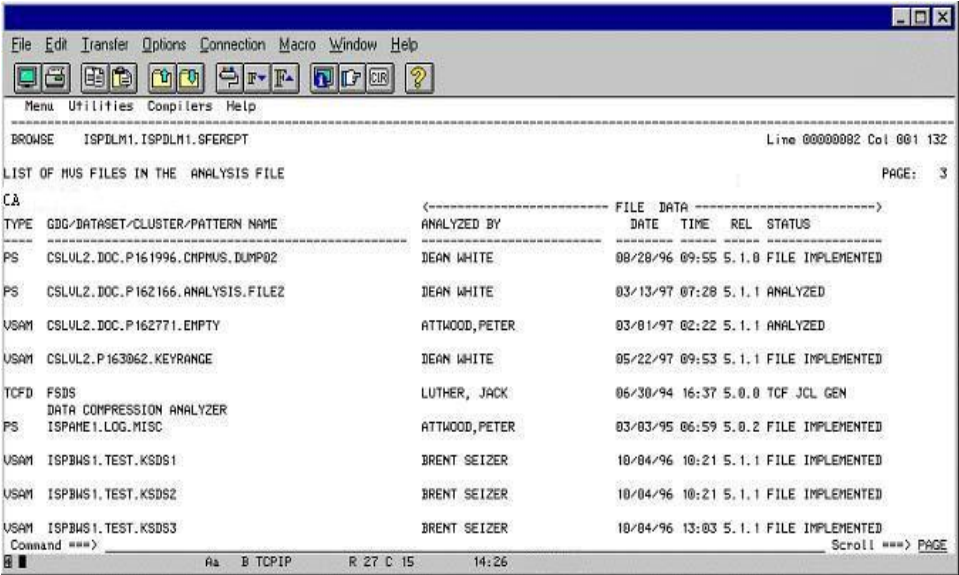
1. On the Maintenance menu, select Analysis File.
2. Select List to display a list of the data set names that are in the Analysis File. The list is shown with explanations of the fields and their contents. The online and hardcopy reports are the same.
3. Press PF3 to end and display the Report Printing Option panel.
  - To exit without printing, press PF3.
  - To print the list, change HARDCOPY OPTION to Y, change the rest of the entry fields as needed, and press Enter.

File	View	Task	Help
CA	Interactive Analysis		
	Batch Analysis		
	Implement		
	Maintenance...		
AC Data Set Name	A		
ISPPAA1.PROFILE.CLIST	--	Analysis File...	SUPEREXP 1.8-
ISPPAA1.PSTGDG1.G0060V00			
ISPPAA1.PSTGDG1.G0061V00		Limit Search...	
ISPPAA1.P			
ISPPAA1.P	HARDCOPY OPTION .... N	PRINTER .... LOCAL	
ISPPAA1.P	SVSOUT CLASS .... Z	DESTINATION ....	
ISPPAA1.P	NUMBER OF COPIES .... 1 1-9	USER ID .... ISPDLM1	5
ISPPAA1.P			4
ISPPAA1.P	F1=Help F3=Exit		
ISPPAA1.P			
ISPPAA1.P136825		PS	
ISPPAA1.P162271.VSCOMP		KSDS IMLEMNT	
ISPPAA1.P163641.AF		KSDS ANALYZED SUPEREXP	39.1
ISPPAA1.P163641.CF		KSDS	
ISPPAA1.SCHED.RESP.B52		KSDS IMLEMNT	

Command ==> \_\_\_\_\_

Analysis File Data Set List Report

This report lists all of the data sets, DSNAMES and TCF JCL Generations currently defined to the Analysis File.



The following table describes the field names in the Analysis File Data Set List Report and the contents.

Field Names	Contents
TYPE	Indicates the purpose of the entry: <ul style="list-style-type: none"><li>■ VSAM—indicates entry is for a VSAM data set.</li><li>■ PS—indicates entry is for a Physical Sequential data set.</li><li>■ PTRN—indicates entry is for a pattern dsname.</li><li>■ GDG—indicates entry is for a Generation Data Group.</li><li>■ TCFD—indicates entry is for a TCF JCL generation.</li></ul>
GDG/DATA SET/CLUSTER/PATTERN NAME	This field contains the GDG, data set, cluster, pattern names, and user assigned titles. <ul style="list-style-type: none"><li>■ NAME—This field is the GDG index name for a Generated Data Group, or the data set name of a Physical Sequential file, or the cluster name of a VSAM file, or the dsname pattern. It is on the first line of the entry.</li><li>■ TITLE—This field is the title assigned by the user to describe the data content of the entry. It appears on the second line of the entry.</li></ul>

Field Names	Contents
FILE DATA	<p>This information is for the first line of the entry.</p> <ul style="list-style-type: none"><li>■ ANALYZED BY—The name of the person that performed the file structure analysis.</li><li>■ DATE—The date the entry was analyzed/created.</li><li>■ TIME—The time the entry was analyzed/created.</li><li>■ REL—IUI version used to create the entry.</li><li>■ STATUS—The current status of the entry as far as the IUI is aware.</li><li>■ ANALYZED—The entry has only been added to the Analysis File.</li><li>■ COMPRSN TESTING—The compression testing JCL has been generated.</li><li>■ FILE IMPLEMENTED—The compression implementation JCL has been generated.</li><li>■ TCF JCL GEN—This entry is the result of generating TCF execution JCL. The data set name on the second line of the entry in this section is not always present. When it is present, it is the data set name for the extracted data sample file created for compression testing.</li><li>■ PATTERN EXCLUDED—This data set is excluded from all pattern dsname compressions.</li></ul>

## Change RDL Information

### To change RDL information in the Analysis File

1. On the Maintenance menu, select Analysis File.
2. Select All Records or Limit Search.
  - All Records displays a list of all the data set names that are in the Analysis File.
  - Limit Search displays the Data set name selection box. Type the data set name for the search, and press Enter to display a list of the data set names you select.
3. Move the cursor to the Action field next to the following data set.
4. Type R, and press Enter to display the RDL User Parameter Maintenance panel.

The screenshot shows a window titled "Analysis File Maintenance" with a menu bar (File, Edit, Transfer, Options, Connection, Macro, Window, Help) and a toolbar. Below the menu bar, there are four tabs: File, View, Task, and Help. The main area displays a table with columns "AC Data Set Name", "Type", and "Status". A dashed box within the table contains the "RDL User Parameter Maintenance" panel. This panel shows the following information:

RDL User Parameter Maintenance			
File Name	..... ISPJMM1.USAM.PMR2050		
Record Format...	F	Avg LRECL...	0000080
		Max LRECL...	0000088
N8,C1VER.....			
=			
F1=Help F3=End			

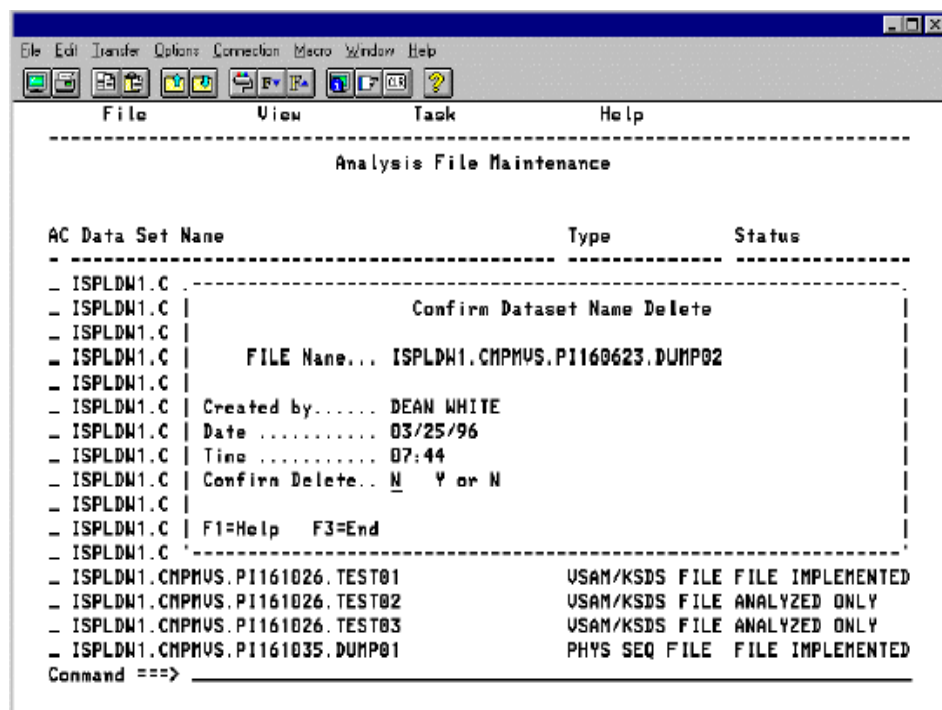
At the bottom of the window, there is a "Command ==>" prompt followed by a blank line.

5. Change the RDL.
6. To save the changes, press Enter.

## Delete a Data Set Name

### To delete a data set name from the Analysis File

1. On the Maintenance menu, select Analysis File.
2. Select All Records or Limit Search.
  - All Records displays a list of all the data set names that are in the Analysis File.
  - Limit Search displays the Data Set Name selection box. Type the data set name for the search, and press Enter to display a list of the data set names you selected.
3. Move the cursor to the Action field next to the data set.
4. Type **D** and press Enter to display the Confirmation Deletion panel.



5. Check the Data Set Name and information. Select one of the following:
  - To delete the Data Set Name from the Analysis File, type **Y** and press Enter.
  - To exit without deleting the Data Set Name from the Analysis file, type **N** and press Enter.



## Control File Maintenance

Control File entries can also be listed, either individually, by a pattern for the entry name or for the entire file. The Control File maintenance function operates differently from the Analysis File maintenance function in that maintenance and hardcopy output functions can be performed from the same generated list. For more information see the online Help available for both Analysis File and Control File maintenance functions.

## FDT Maintenance

FDT Maintenance operates in much the same way as Analysis File Maintenance. You can generate a list for viewing (Index List) or a list for maintenance (Service List). FDTs listed in the Service list can be implemented to the Control File in stand-alone mode, deleted from the Analysis File, or regenerated.

FDT regeneration is a disaster recovery function and is therefore not an activity performed under normal circumstances.

FDT implementation allows you to add an FDT to the Control File without implementing a data set allowing you to implement patterns before implementing any particular data set that can use that FDT.

## Administrative Functions

Administrative Functions, which include System Default and Authorized User list maintenance, are usually limited to the system administrator.

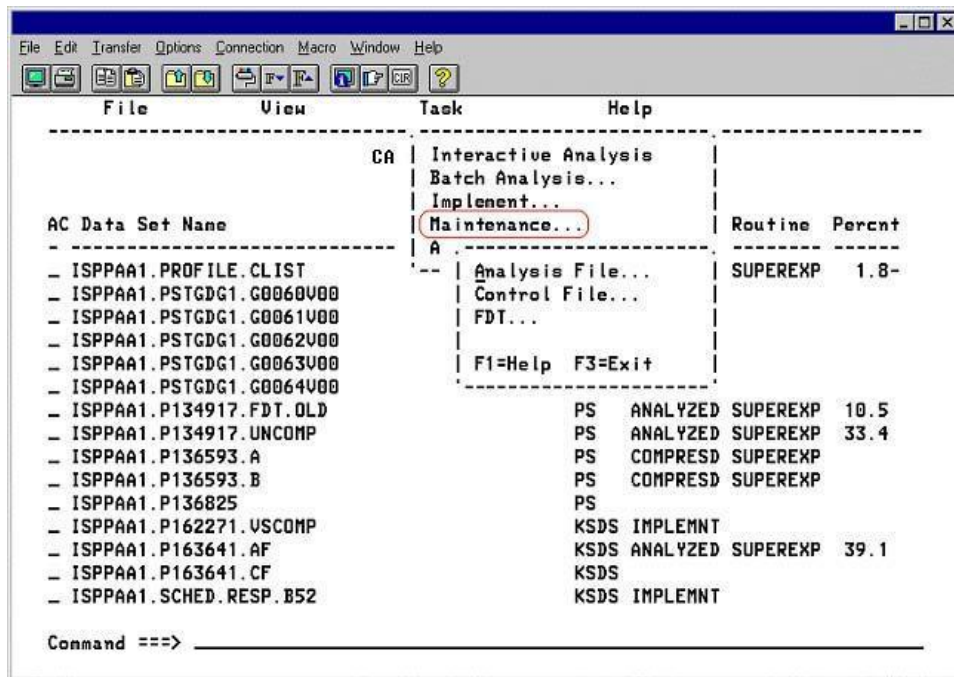
## Maintaining System Defaults

Maintaining System Defaults can alter the CA Compress operating characteristics. Be careful when maintaining any of these values and before deciding to activate the AUTO-IMPLEMENT function. This function is important and should be activated *only* after you clearly understand the implications of the function and properly set the associated system defaults.

## User Access

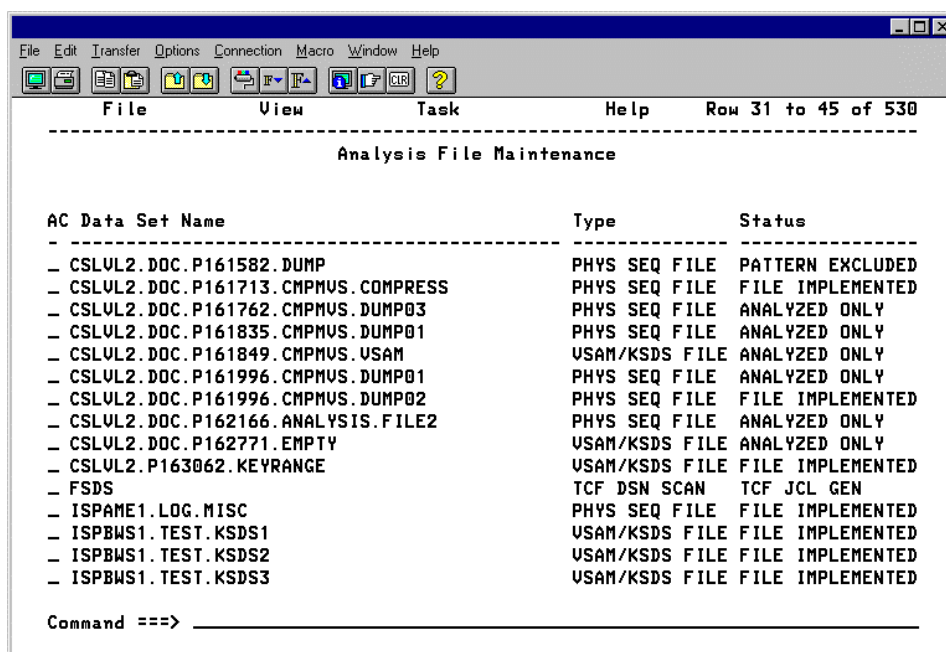
This system administrator function manages the list of users authorized to use CA Compress.

The Maintenance menu is shown in the following figure:



## Analysis File Maintenance

This section covers how to list, delete, and do RDL maintenance for the Analysis File. The following panel shows the Analysis File Maintenance:



AC Data Set Name	Type	Status
CSLUL2.DOC.P161582.DUMP	PHYS SEQ FILE	PATTERN EXCLUDED
CSLUL2.DOC.P161713.CMPMVS.COMPRESS	PHYS SEQ FILE	FILE IMPLEMENTED
CSLUL2.DOC.P161762.CMPMVS.DUMP03	PHYS SEQ FILE	ANALYZED ONLY
CSLUL2.DOC.P161835.CMPMVS.DUMP01	PHYS SEQ FILE	ANALYZED ONLY
CSLUL2.DOC.P161849.CMPMVS.USAM	USAM/KSDS FILE	ANALYZED ONLY
CSLUL2.DOC.P161996.CMPMVS.DUMP01	PHYS SEQ FILE	ANALYZED ONLY
CSLUL2.DOC.P161996.CMPMVS.DUMP02	PHYS SEQ FILE	FILE IMPLEMENTED
CSLUL2.DOC.P162166.ANALYSIS.FILE2	PHYS SEQ FILE	ANALYZED ONLY
CSLUL2.DOC.P162771.EMPTY	USAM/KSDS FILE	ANALYZED ONLY
CSLUL2.P163062.KEYRANGE	USAM/KSDS FILE	FILE IMPLEMENTED
FSDS	TCF DSN SCAN	TCF JCL GEN
ISPAME1.LOG.MISC	PHYS SEQ FILE	FILE IMPLEMENTED
ISPBWS1.TEST.KSDS1	USAM/KSDS FILE	FILE IMPLEMENTED
ISPBWS1.TEST.KSDS2	USAM/KSDS FILE	FILE IMPLEMENTED
ISPBWS1.TEST.KSDS3	USAM/KSDS FILE	FILE IMPLEMENTED

Command ==> \_\_\_\_\_

## Control File Maintenance

This section provides a brief description of each of the parameters you can use to control the compression process. For more information about the parameters and their values, see Control File Maintenance Utility in the *CA Compress Reference Guide*.

There are two levels of line commands in control file maintenance. One level applies to data sets and the next lower level applies to data set associations.

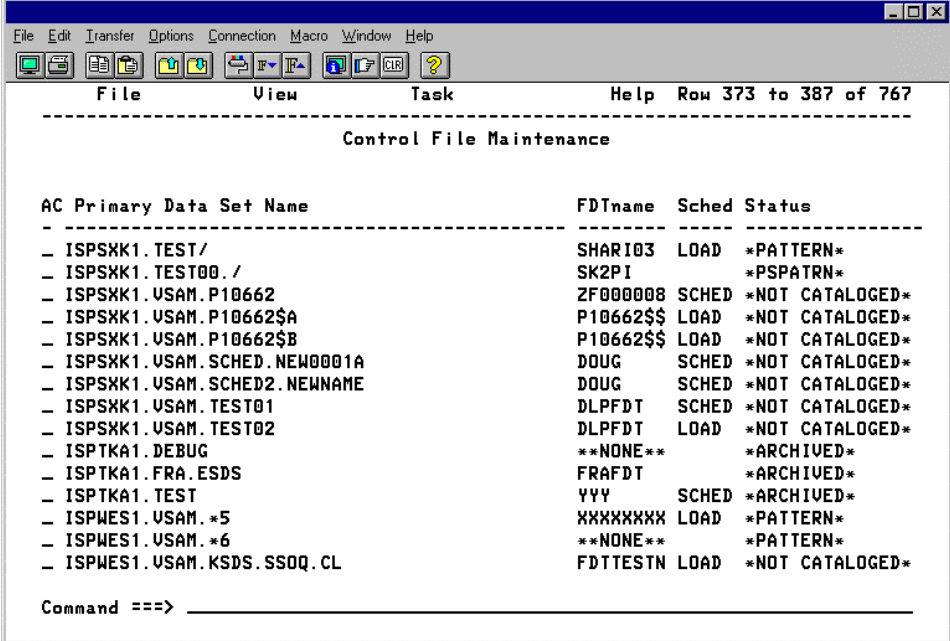
- Data set—B (Browse), D (Delete), and S (Select)
- Data set association (VSAM only)—A (Add), R (Rename), and D (Delete)

This function requires that the CA Compress subsystem be active. The Control File Maintenance function lets you view or change the CA Compress Control File. Data sets can be added, FDTs can be registered, or patterns excluded.

## List Data Set Names and Patterns

To list the data set names found in the Control File

1. On the Maintenance menu, select Control File to display the data set name panel.
2. Type the data set name for the search and press Enter to search the Control File and display a list of data set names. While viewing the list, you can report, browse, delete or select data sets.



The screenshot shows a window titled "Control File Maintenance" with a menu bar (File, Edit, Transfer, Options, Connection, Macro, Window, Help) and a toolbar. Below the menu bar, there are tabs for "File", "View", "Task", and "Help". The main area displays a list of data sets with the following columns: "AC Primary Data Set Name", "FDTname", "Sched", and "Status". The list is sorted by "AC Primary Data Set Name" and shows rows 373 to 387 of 767. The data sets listed are:

AC Primary Data Set Name	FDTname	Sched	Status
ISPSXK1.TEST/	SHARI03	LOAD	*PATTERN*
ISPSXK1.TEST00./	SK2PI		*PSPATRN*
ISPSXK1.USAM.P10662	ZF000008	SCHED	*NOT CATALOGED*
ISPSXK1.USAM.P10662\$A	P10662\$\$	LOAD	*NOT CATALOGED*
ISPSXK1.USAM.P10662\$B	P10662\$\$	LOAD	*NOT CATALOGED*
ISPSXK1.USAM.SCHED.NEW0001A	DOUG	SCHED	*NOT CATALOGED*
ISPSXK1.USAM.SCHED2.NEWNAME	DOUG	SCHED	*NOT CATALOGED*
ISPSXK1.USAM.TEST01	DLPFD1	SCHED	*NOT CATALOGED*
ISPSXK1.USAM.TEST02	DLPFD1	LOAD	*NOT CATALOGED*
ISPTKA1.DEBUG	**NONE**		*ARCHIVED*
ISPTKA1.FRA.ESDS	FRAFD1		*ARCHIVED*
ISPTKA1.TEST	YYY	SCHED	*ARCHIVED*
ISPWES1.USAM.*5	XXXXXXXX	LOAD	*PATTERN*
ISPWES1.USAM.*6	**NONE**		*PATTERN*
ISPWES1.USAM.KSDS.SSOQ.CL	FDTTESTN	LOAD	*NOT CATALOGED*

At the bottom of the window, there is a "Command ==>" prompt followed by a blank line for input.

From this panel, the following line commands can be used. These line commands are described individually in the following procedures.

**B**

Browse

**D**

Delete

**S**

Select

The following table describes the field names and contents of the Control File Maintenance panel:

Field Names	Contents
AC	Is a line command entry field. The line commands listed immediately above on the panel can be entered in this field.
Primary Data Set Name	Shows the name of the primary data set.
FDTname	Shows the type of compression selected for this data set or the name of the customized module created for the data set.
Sched	Shows when the data set should be compressed or that it has already been compressed.

Field Names	Contents
Status	<p>Shows one of eight values:</p> <ul style="list-style-type: none"><li>■ <b>*NOT CATALOGED*</b>—The cluster or physical sequential data set is not currently cataloged in the MVS system catalog.</li><li>■ <b>*ARCHIVED*</b>—The data set is currently archived.</li><li>■ <b>*NOT PHYS SEQ*</b>—The data set is implemented as Physical Sequential, but the catalog indicates that it is VSAM.</li><li>■ <b>*NOT VSAM*</b>—The data set is implemented as a VSAM cluster, but the catalog indicates that it is not a VSAM cluster.</li><li>■ <b>**DELETED**</b>—The data set has been deleted from the Control File.</li><li>■ <b>blank</b>—The cluster or physical sequential data set is cataloged as it is implemented in the Control File</li><li>■ <b>*PATTERN*</b>—This is a VSAM pattern.</li><li>■ <b>PSPATRN*</b>—This is a Physical Sequential pattern.</li></ul>

**Note:** Because patterns interact with one another and can be affected by patterns that do not match the search pattern you specified, the IUI shows you a superset of the patterns matching your search pattern.

## Browse a VSAM Data Set Name

### To browse a VSAM data set name in the Control File List

1. On the Maintenance menu, select Control File to display the data set name panel.
2. Type the data set name for the search and press Enter to search the Control File and display a list of data set names. While viewing the list, you can report, browse, delete or select data sets.
3. Type B in the Action field and press Enter to display a list of data set names and associations.

The screenshot shows a window titled "Control File Maintenance" with a menu bar (File, Edit, Transfer, Options, Connection, Macro, Window, Help) and a toolbar. The window displays search results for the data set name "ISPSXK1.USAM.SCHED2.NEWNAME".

AC Primary Data Set Name	FDTname	Sched	Status
Data Set Name . . . . .	ISPSXK1.USAM.SCHED2.NEWNAME		
Data Set Status . . . .	*NOT CATALOGED*		
FDT/Dict or Method . .	DOUG	Exclude . . . .	NO
Scheduled . . . . .	SCHED	Release . . . .	NO

VSAM Component Name	Type	Status
ISPSXK1.USAM.SCHED2.NEWNAME	CLUSTER	
ISPSXK1.USAM.SCHED2.NEWNAME.DATA	DATA	

\*\*\*\*\* Bottom of data \*\*\*\*\*

Command ==> \_\_\_\_\_

The following table describes the field names and contents of the data set name panel:

Field Names	Contents
Data Set Name	(display only)
Data Set Status	(display only)
FDT/Dict or Method	This parameter specifies the type of compression wanted for the data set. <b>Note:</b> Do NOT change this value if the data set is already compressed.

Field Names	Contents
Exclude	This parameter provides a means to temporarily remove compression for a data set without deleting the data set from the Control File. When EXCLUDE is set to <i>YES</i> , CA Compress ignores the data set when it is opened and continues to do so until this parameter is set to <i>NO</i> . Only use this parameter when you want the data set to be processed in its compressed form and it is not possible to use the <i>LABEL=EXPDT=86060</i> JCL parameter for the job that needs to access the compressed data. The danger is that uncompressed data can be written to the data set while compression is turned off, and this condition can make it access the data set later.
Release	This parameter specifies the percentage that the VSAM SPACE RELEASE feature uses to compute the amount of free space to retain when invoked. This percentage is used only when the data set is loaded with data (that is, when the data set is empty and data is written to it). If you enter the word <i>NO</i> for this parameter, any previously specified value is removed, and no attempt is made to release space on the data set. If you enter a value of 0 for this parameter, the utility interprets it as the default value (10%). You must use the word <i>NO</i> to turn off the release function.
Scheduled	<p>Defines timing of the data set's compression. The Scheduled parameter can have <b>one</b> of four values:</p> <p>LOAD—CA Compress does not compress the data set until it is RELOADED (that is, when the data set is deleted and reallocated and records are written into it from the beginning). When the data set is reloaded, the entire file is then compressed.</p> <p>OPEN—CA Compress starts compressing and expanding records the next time the data set is opened for output. OPEN slows the growth rate of the data set without requiring an unload/reload.</p> <p>SCHED—The data set is already compressed using a scheduled parameter. CA Compress starts compressing and expanding the records the next time the data set is opened.</p> <p>blank—The data set is not compressed using the scheduled option.</p>
AC	The data set association line commands can be entered in this field
VSAM Component Name	The name of the component

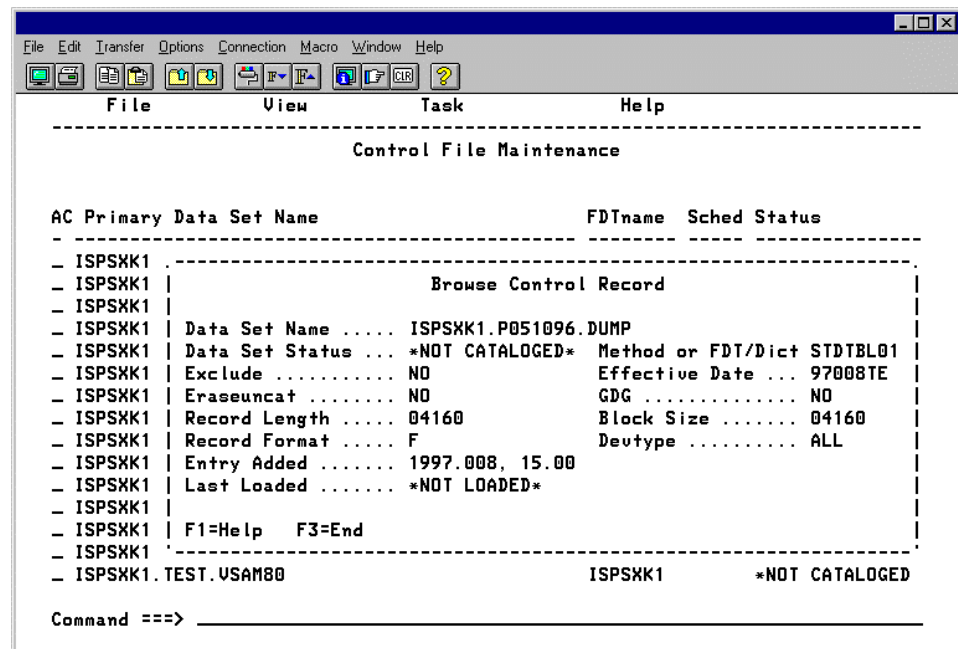


Field Names	Contents
Type	The component type
Status	Status of the last action performed

## Browse a Physical Sequential Data Set Name

### To browse a PS data set name in the Control File List

1. On the Maintenance menu, select Control File to display the data set name panel.
2. Type the data set name for the search and press Enter to search the Control File and display a list of data set names. While viewing the list, you can report, browse, delete or select data sets.
3. Type **B** in the Action field and press Enter to display a list of data set names and associations.



Field Names	Contents
Data Set Name	(display only)
Data Set Status	(display only)

Field Names	Contents
Method or FDT/Dict	<p>This parameter specifies the type of compression you want for the data set.</p> <p><b>Note:</b> Do NOT change this value if the data set already has been compressed.</p>
Exclude	<p>This parameter provides a means to temporarily remove compression for a data set without deleting the data set from the Control File. When EXCLUDE is set to YES CA Compress ignores the data set when it is opened and continues to do so until this parameter is set to NO.</p> <p><b>Important!</b> Only use this parameter when you want the data set to be processed in its compressed form and it is not possible to use the <i>LABEL=EXPDT=86060</i> JCL parameter for the job that needs to access the compressed data. The danger is that uncompressed data can be written to the data set while compression is turned off, and this condition can make it difficult for you to access the data set later.</p>
Effective Date	<p>This parameter specifies the Julian date that compression is to be implemented on the data set. When the date becomes current or past, the data set will be compressed the next time it is created or replaced. A value of ANYDATE specifies that the data set should be considered compressed already. If it is opened for output, compressed data is written, and if it is read, each record is expanded. Specify ANYDATE when you are implementing a data set already compressed in an earlier version of CA Compress using the SUBSYS JCL parameter; otherwise CA Compress assumes that the data is still uncompressed until the data set is recreated, and applications receive compressed data.</p>
Erase/uncat	<p>Specifies whether the entry should be purged from the Control File when the data set is uncataloged. This is an optional parameter and interacts with the GDG parameter.</p>
GDG	<p>Specifies whether pattern matches should be recognized for all data sets including GDGs (GDG=YES), excluding GDGs (GDG=NO), or only for GDGs (GDG=ONLY). The default is GDG=YES.</p>
Devtype	<p>Specifies whether compression is to be implemented for Direct Access only (DA), Tape only (TAPE), or any device type (ALL). The default is ALL.</p>

## Delete a Data Set Name

To delete a data set name from the Control File

1. On the Maintenance menu, select Control File to display the data set name panel.
2. Type the data set name for the search and press Enter to search the Control File and display a list of data set names. While viewing the list, you can report, browse, delete or select data sets.
3. Type **D** and press Enter to display the Confirm Dataset Name Delete panel.

The screenshot shows a window titled "Control File Maintenance" with a menu bar (File, Edit, Transfer, Options, Connection, Macro, Window, Help) and a toolbar. The main area displays a list of data sets with columns: AC Primary Data Set Name, FDTname, and Sched Status. A confirmation dialog box is overlaid on the list, titled "Confirm Dataset Name Delete". The dialog shows the dataset name "ISPSXK1.P051096.DUMP" and asks for confirmation to delete. It includes fields for "Confirm Delete..." with options "N" or "Y", and instructions "F1=Help" and "F3=End".

AC Primary Data Set Name	FDTname	Sched Status
ISPSXK1.BOG		
ISPSXK1.C34		
ISPSXK1.DMS		
ISPSXK1.KSD	ISPSXK1.P051096.DUMP	
ISPSXK1.KSD		
ISPSXK1.LUC		
ISPSXK1.P05		
ISPSXK1.SHR		
ISPSXK1.SHRINK98.KSDS	SHRINK98	*ARCHIVED*
ISPSXK1.SHRINK99.KSDS	SHRINK99	*ARCHIVED*
ISPSXK1.SXK.KSDS	TESTSXX	*NOT CATALOGED
ISPSXK1.TEST.KSDS	STDDBL01	SCHED *ARCHIVED*
ISPSXK1.TEST.KSDS.ALTER	SHARI03	SCHED *ARCHIVED*
ISPSXK1.TEST.SPCERLSE	SPCERLSE	*ARCHIVED*
ISPSXK1.TEST.USAM80	ISPSXK1	*NOT CATALOGED

Command ==> \_\_\_\_\_

4. Check the Control File Record name and information. Select one of the following:
  - To delete the data set name from the Control File, type **Y** and press Enter.
  - To exit without deleting the data set name, press PF3.

## Select a Data Set Association to Change—VSAM Only

### To select a data set association to change in the Control File

1. On the Maintenance menu, select Control File to display the data set name panel.
2. Type the data set name or mask pattern for the search and press Enter to search the Control File and display a list of data set names. While viewing the list, you can browse, delete or select data sets.
3. Type **S** in the Action field and press Enter to display a list of data set names and associations. The format of this panel is the same as the B (Browse) line command that was explained previously. The difference is while using this option, the following line commands are available:

The screenshot shows a window titled "Control File Maintenance" with a menu bar (File, Edit, Transfer, Options, Connection, Macro, Window, Help) and a toolbar. The window displays the following information:

-----  
**Control File Maintenance**  
 -----

**Primary Data Set Name** **FDTname** **Sched** **Status**  
 -----

Data Set Name ..... ISPSXK1.SXK.KSDS  
 Data Set Status .... \*NOT CATALOGED\*  
 FDT/Dict or Method.. TESTSXK Exclude .... NO Release .... NO  
 Scheduled .....

**AC VSAM Component Name** **Type** **Status**  
 -----

- ISPSXK1.SXK.KSDS CLUSTER  
 - ISPSXK1.SXK.KSDS.DATA DATA  
 \*\*\*\*\* Bottom of data \*\*\*\*\*

Command ==> \_\_\_\_\_

The following line commands are described individually in the following procedures.

#### A

Add association.

#### R

Rename association.

#### D

Delete association.

## Add a Data Set Association—VSAM Only

### To add a data set association

1. On the Maintenance menu, select Control File to display the data set name panel.
2. Type the data set name for the search and press Enter to search the Control File and display a list of data set names.
3. Type **S** in the Action field and press Enter to display a list of data sets and associations. While viewing the list of associations, you can add, rename, or delete associations for a cluster.
4. Use *one* of the following methods to add an association:
  - Type **A** in the Action field and press Enter to display the Add Path panel and type over the current name to add the new name.
  - Type **A** in the Action field and type over the current name to insert the new association below the one that was typed over.

The screenshot shows the 'Control File Maintenance' window with a menu bar (File, Edit, Transfer, Options, Connection, Macro, Window, Help) and a toolbar. The main area displays the 'AC Primary Data Set Name' section with fields for Data Set Name, Data Set Status, FDT/Dict or Method, Exclude, Release, and Scheduled. Below this is the 'ADD PATH Entry' panel, which contains fields for Old PATH Name and New PATH Name. The New PATH Name field is highlighted with a red circle, showing the text 'ISPSXK1.SXK.KSDS.aix3'. At the bottom of the window is a 'Command ==>' prompt.

AC Primary Data Set Name	FDTname	Sched Status
Data Set Name ..... ISPSXK1.SXK.KSDS		
Data Set Status .... *NOT CATALOGED*		
FDT/Dict or Method.. TESTSXX	Exclude .... NO	Release .... NO
Scheduled .....		

ADD PATH Entry	
Old PATH Name.....	ISPSXK1.SXK.KSDS
New PATH Name.....	ISPSXK1.SXK.KSDS.aix3
F1=Help F3=End	

Command ==> \_\_\_\_\_

## Rename a Data Set Association—VSAM Only

### To rename a data set association in the Control File

1. On the Maintenance menu, select Control File to display the data set name panel.
2. Type the data set name for the search and press Enter to search the Control File and display a list of data set names.
3. Type **S** in the Action field and press Enter to display a list of data sets and associations. While viewing the list of associations, you can add, rename, or delete associations for a cluster.
4. Use *one* of the following methods to rename an association:
  - Type **R** in the Action field next to the association and press Enter to display the Rename Path panel. Type over the current name to rename the association and press Enter.
  - Type **R** in the Action field next to the association, type over the current name and press Enter.

The screenshot shows a window titled "Control File Maintenance" with a menu bar (File, Edit, Transfer, Options, Connection, Macro, Window, Help) and a toolbar. The main area displays a table with columns: AC Primary Data Set Name, FDTname, and Sched Status. The table contains one entry for "ISPSXK1.DMS.USAM" with status "\*ARCHIVED\*". Below the table is a dashed box titled "RENAME CLUSTER Entry" containing fields for "Old CLUSTER Name" (ISPSXK1.DMS.USAM) and "New CLUSTER Name" (ISPSXK1.DMS.USAM), along with instructions "F1=Help F3=End". At the bottom is a "Command ==>" prompt.

AC Primary Data Set Name	FDTname	Sched Status
Data Set Name ..... ISPSXK1.DMS.USAM		
Data Set Status .... *ARCHIVED*		
FDT/Dict or Method.. DMSUSAM	Exclude .... NO	Release .... 20
Scheduled .....		

RENAME CLUSTER Entry

Old CLUSTER Name... ISPSXK1.DMS.USAM

New CLUSTER Name... ISPSXK1.DMS.USAM

F1=Help F3=End

Command ==> \_\_\_\_\_

## Delete a Data Set Association—VSAM Only

### To delete a data set association from the Control File

1. On the Maintenance menu, select Control File to display the data set name panel.
2. Type the data set name for the search and press Enter to search the Control File and display a list of data set names.
3. Type **S** in the Action field and press Enter to display a list of data sets and associations. While viewing the list of associations, you can add, rename, or delete associations for a cluster.
4. Type **D** in the Action field of the association that you want to delete and press Enter to delete the association and display the status of the association as **\*DELETED**. To reset the status of the association, type **B** in the selection field.

The screenshot shows the 'EXTRA! A - TCPIP' window with the 'Control File Maintenance' panel. The panel displays a list of data set associations. The 'Data Set Name' is 'ISPSMJ1.AUS.KSDS1'. The 'Data Set Status' is '\*ARCHIVED\*'. The 'FDT/Dict or Method' is 'STDIBL06'. The 'Exclude' status is 'NO' and the 'Release' is '10'. Below this, a table lists the 'AC VSAM Component Name', 'Type', and 'Status'.

AC VSAM Component Name	Type	Status
ISPSMJ1.AUS.KSDS1	CLUSTER	
ISPSMJ1.AUS.KSDS1.DATA	DATA	
d ISPSMJ1.AUS.KSDS1.DATA.AIX3	PATH	*DELETED
ISPSMJ1.AUS.KSDS1.DATA.AIX1	PATH	*ADDED

\*\*\*\*\* Bottom of data \*\*\*\*\*

Command ==> \_\_\_\_\_

## FDT Maintenance

This section describes how to list, stand-alone implement, regenerate and delete FDTs. The following panel shows the FDT Support Service List from which the line commands to regenerate and delete are issued.

AC	FDT Name	FDT ID	Data Set Name	Create Date
-	PETES411	FDT00412	ISPJMM1.PS.TST4PST5	04/27/11
-	PI050782	FDT00476	ISPLDW1.CMPMUS.PI050782.GDGTST.G0001V00	03/26/11
-	PI161173	FDT00450	ISPLDW1.CMPMUS.PI161173.SMFDATA.TAILORED	02/29/11
-	PMR2259	FDT00159	ISPPAA1.PMR2259	03/29/11
-	PSTFDT1	FDT00306	ISPJMM1.PS.TST4PST1	03/30/11
-	PS80A	FDT00250	ISPSXK1.STUDENT.PS80A	02/28/11
-	P135067A	FDT00526	CSLVL2.DOC.P135067.TEST	01/13/11
-	P135067A	FDT00527	CSLVL2.DOC.P135067.TEST	01/13/11
-	P135414A	FDT00528	ISPPAA1.PI135414.C1	04/11/11
-	P135414B	FDT00531	ISPPAA1.PI135414.N	04/11/11
-	P135414C	FDT00533	ISPPAA1.PI135414.UC1	04/11/11
-	P135414D	FDT00532	ISPPAA1.PI135414.UN	04/11/11
-	P161173D	FDT00455	ISPLDW1.CMPMUS.PI161173.NT5004B.HUFMAN	03/18/11
-	P161173E	FDT00456	ISPLDW1.CMPMUS.PI161173.NT5004B.SHRUL	03/18/11
-	P161173F	FDT00457	ISPLDW1.CMPMUS.PI161173.NT5004B.TAILORED	03/18/11

Command ==> \_\_\_\_\_

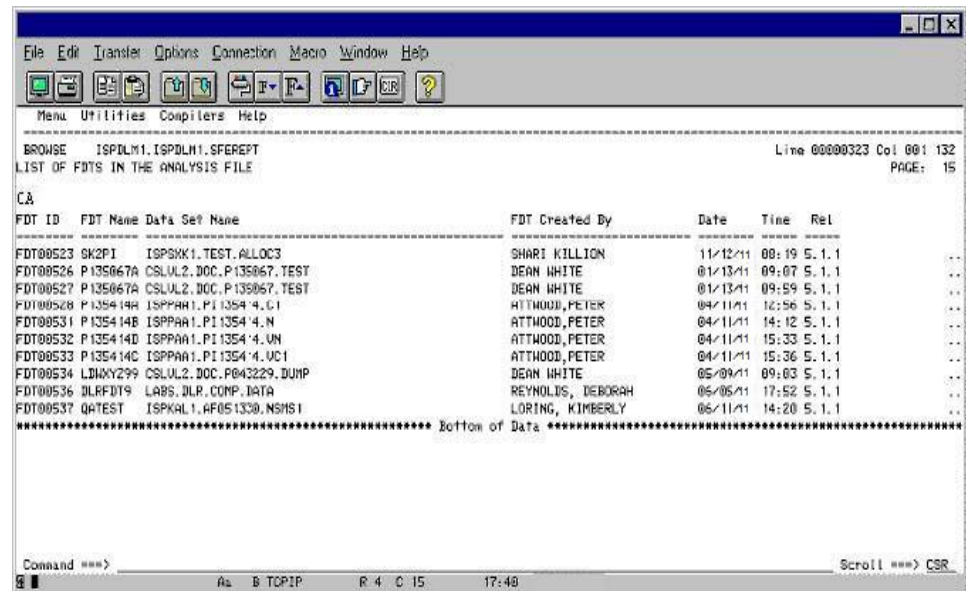
Field Names	Contents
AC	The entry area for the maintenance line commands.
FDT Name	The name of the FDT.
FDT ID	The FDT identification number.
Data Set Name	The name of the data set for which the FDT was created.
Create Date	The date the FDT was originally generated.



## List FDTs

### To list the FDTs in the Analysis File

1. On the Maintenance menu, select FDT.
2. Select Index List to display the FDT list. The fields and contents are shown in the following image:



Field Names	Contents
FDT ID	The control ID for the FDT. The numeric portion of the ID is the FDT number, which is used in any error message.
FDT Name	This is the load module name for the FDT.
Data Set Name	The data set name associated with the FDT ID and name.
FDT Created By	The name of the person who generated the FDT.
Date	The date the FDT was generated.
Time	The time the FDT was generated.
Rel	The version of the CA Compress Interactive User Interface used to generate the FDT.

- Press PF3 to end and display the Report Printing Option panel. To print the list, change Hardcopy Option to Y, change the rest of the entry fields as needed, and press Enter.

The screenshot displays the FDT Maintenance software interface. At the top is a menu bar with options: File, Edit, Transfer, Options, Connection, Macro, Window, and Help. Below the menu bar is a toolbar with various icons. The main window is divided into several sections. On the left, there is a section labeled 'AC Data Set Name' with a dashed line below it. In the center, there is a 'Task' section with a dashed line above it, containing a list of tasks: CA, Batch Analysis, Implement, Maintenance..., A, Analysis File..., Control File..., FDT..., and Index List. On the right, there is a 'Help' section with a dashed line above it, containing a table with columns 'Routine' and 'Percent'. Below the 'Task' section, there is a 'Report Printing Option' panel with a dashed border, containing the following fields: HARDCOPY OPTION (N), PRINTER (LOCAL), SYSOUT CLASS (2), DESTINATION, NUMBER OF COPIES (1), USER ID (ISPDLN1), and F1=Help F3=Exit. At the bottom of the window, there is a 'Command' prompt with a dashed line and an arrow pointing to the right.

Routine	Percent
CA	
Batch Analysis	
Implement	
Maintenance...	
A	
Analysis File...	
Control File...	
FDT...	
Index List	

HARDCOPY OPTION	PRINTER
..... N	.... LOCAL
SYSOUT CLASS	DESTINATION
..... 2	....
NUMBER OF COPIES	USER ID
..... 1	.... ISPDLN1

F1=Help F3=Exit

Command ==>

## Stand-alone Implement an FDT

### To stand-alone implement an FDT in the Analysis File

1. On the Maintenance menu, select FDT.
2. Select Service List to display the FDT Support Service List.
3. Move the cursor to the Action field next to the wanted FDT.
4. Type I, and press Enter to display the Confirm FDT Control File Implementation Confirmation panel.

The screenshot shows a window titled "FDT Support Service List" with a menu bar (File, Edit, Transfer, Options, Connection, Macro, Window, Help) and a toolbar. The window displays a table of FDTs with columns: AC, FDT Name, FDT ID, Data Set Name, and Create Date. A confirmation panel is open for FDT ID FDT00457, showing details like FDT name (PS80A), FDT for (ISPSXK1.STUDENT.PS80A), and a confirmation prompt "Confirm implementation .. N Y or N".

AC	FDT Name	FDT ID	Data Set Name	Create Date
-	PETES411	F		
-	PI050782	F		
-	PI161173	F		
-	PMR2259	F	FDT ID ..... FDT00250	
-	PSTFDT1	F	FDT name .... PS80A	
-	PS80A	F	FDT for ..... ISPSXK1.STUDENT.PS80A	
-	P135067A	F		
-	P135067A	F	Created by... HENRY CHAO	
-	P135414A	F	Date ..... 02/28/95	
-	P135414B	F	Time ..... 15:39	
-	P135414C	F	Confirm implementation .. N Y or N	
-	P135414D	F		
-	P161173D	F	F1=Help F3=End	
-	P161173E	F		
-	P161173F	FDT00457	ISPLDW1.CMPMUS.PI161173.NT5004B.TAILORED	03/18/11
-	P161173G	FDT00458	ISPLDW1.CMPMUS.PI161173.SASDATA.HUFMAN	03/18/11

Command ==>

5. To implement the FDT, type Y and press Enter.

## Regenerate an FDT

### To regenerate an FDT in the Analysis File

1. On the Maintenance menu, select FDT.
2. Select Service List to display the FDT Support Service List.
3. Move the cursor to the Action field next to the wanted FDT.
4. Type **G**, and press Enter to display the Confirm FDT Regeneration panel.

The screenshot shows a window titled "FDT Support Service List" with a menu bar (File, Edit, Transfer, Options, Connection, Macro, Window, Help) and a toolbar. The window displays a list of FDTs with columns: AC, FDT Name, FDT ID, Data Set Name, and Create Date. A confirmation dialog box is overlaid on the list, titled "Confirm FDT Regeneration". The dialog contains the following information:

FDT ID	FDT00306
FDT name	PSTFDT1
FDT for	ISPJMM1.PS.TST4PST1
Created by	LUTHER, JACK
Date	03/30/95
Time	14:01
Confirm regeneration	N Y or N
F1=Help F3=End	

Below the dialog, the list of FDTs continues:

AC	FDT Name	FDT ID	Data Set Name	Create Date
-	PETES411	F		
-	PI050782	F		
-	PI161173	F		
-	PMR2259	F		
-	PSTFDT1	F		
-	PS80A	F		
-	P135067A	F		
-	P135067A	F		
-	P135414A	F		
-	P135414B	F		
-	P135414C	F		
-	P135414D	F		
-	P161173D	F		
-	P161173E	F		
-	P161173F	FDT00457	ISPLDW1.CMPMUS.PI161173.NT5004B.TAILORED	03/18/11
-	P161173G	FDT00458	ISPLDW1.CMPMUS.PI161173.SASDATA.HUFMAN	03/18/11

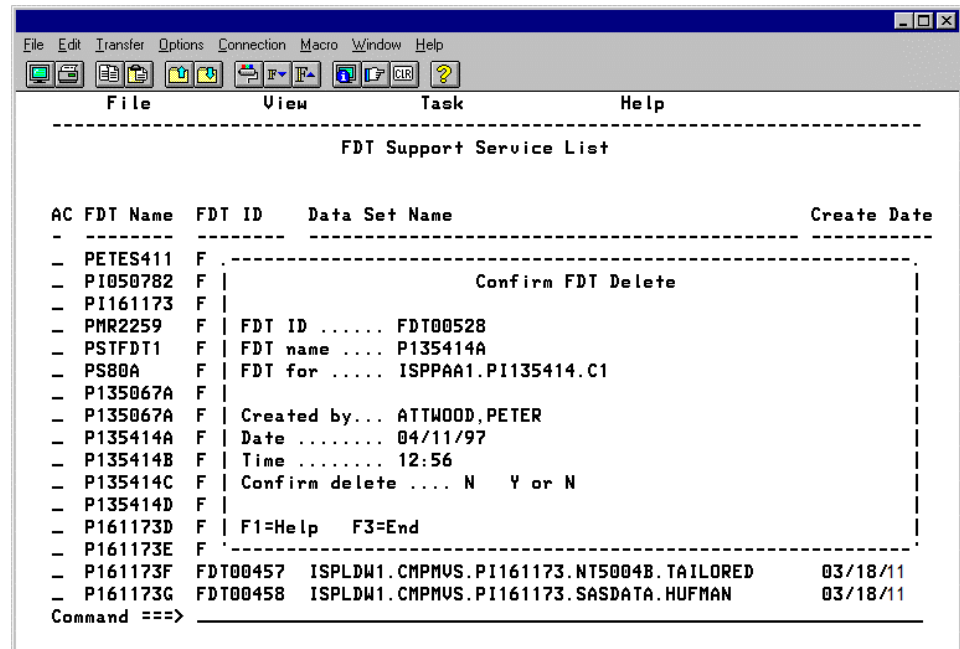
Command ==>

5. Check the FDT name and information. To regenerate the FDT, type **Y** and press Enter.

## Delete an FDT

### To delete an FDT from the Analysis File

1. On the Maintenance menu, select FDT.
2. Select Service List to display the FDT Support Service List.
3. Move the cursor to the Action field next to the wanted FDT.
4. Type **D** and press Enter to display the Confirm FDT Delete panel.



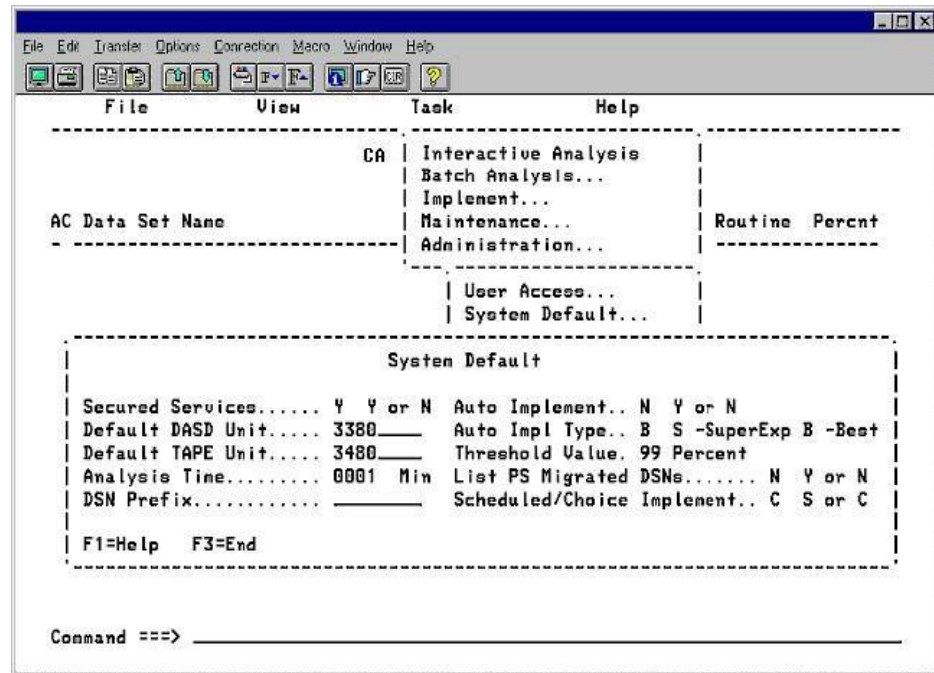
5. Check the FDT name and information. To delete the FDT, type **Y** and press Enter.

## System Defaults

System defaults are initially entered during the install process and, after installation is complete, can be changed by using the System Default panel. Changes to the fields in this panel affect the default operation of CA Compress.

### To enter/change the system defaults

1. On the Administration menu, select System Defaults to display the System Default panel.
2. Type the changes and press Enter to record the changes.

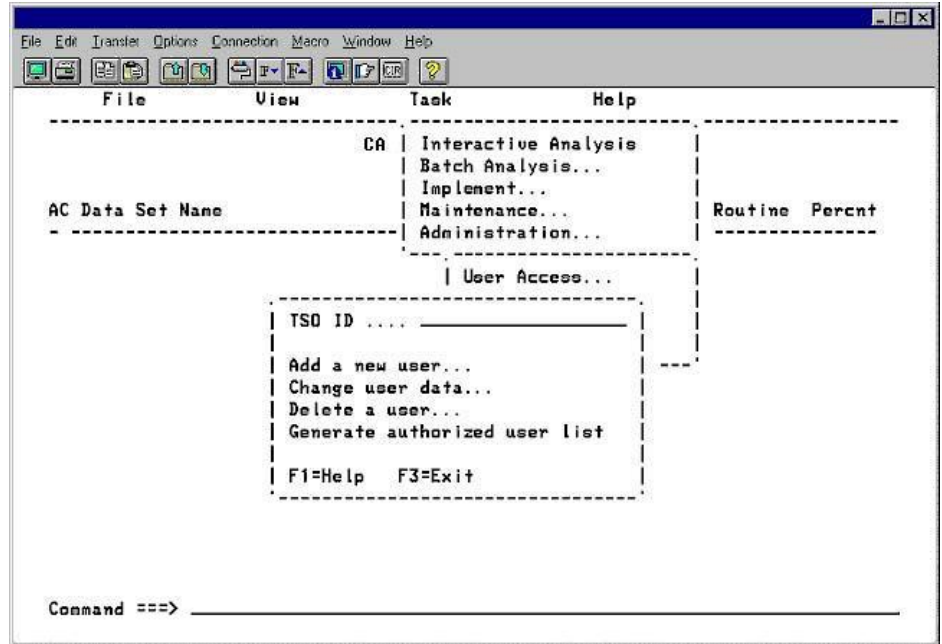


Field Names	Contents
Secured Services	Indicates whether the CA Compress services are to be protected from unauthorized use. Valid entries are Y/N. For more information about how this field affects user access, see User Access in this chapter.
Auto Implement	The value in this field turns on or off (Y/N) the Auto Implement feature. Auto Implement Y means that if a data set meets all the criteria during Interactive or Batch Analysis, it is automatically implemented for compression. When set to N, Analysis only analyzes.

Field Names	Contents
Default DASD Unit	The default DASD unit is SYSDA. The value in this field can be changed on the panel. It can also be changed when the Control File is initialized. The value is the unit specification used for any DASD device when work files are allocated or JCL is generated.
Auto Impl Type	The value in this field determines the compression routine to be used when Auto Implement is on (set to Y). The selections are Super Express or the Best of Standard Tables 1 through 6 (S/B). <b>Note:</b> If Auto Implement is off (set to N), this option has no effect.
Default TAPE Unit	The normal tape unit is TAPE. The default value can be changed on this panel.
Threshold Value	The value in this field sets the minimum compression percentage that must be achieved, when Auto Implement is on (set to Y), for the data set to be automatically implemented for compression.
Analysis Time	The value in this field, expressed in number of minutes, sets the maximum time limit for an interactive file analyze (1 to 9999). When this limit is exceeded, CA Compress stops and asks you whether to create a batch job using the JCL that was built for the online job.
List PS Migrated DSNs	This field applies to PS data sets only. Y means that PS data sets are listed after they are migrated. N means that they are not.
DSN Prefix	This optional field contains the high-level node of the data set name to be used as a work file.
Scheduled/Choice Implement	The value in this field determines the implementation type. The selections are Scheduled (S), or Choice (C). C gives a variety of selections, including scheduled.

## User Access

User Access describes how to generate a list of users, and add, change, and delete user information from the User detail panel. This information is kept in the Analysis File.



## Access Security

The CA Compress IUI supports access security at two points:

- The Secured Services field of the System Defaults panel.
- The User Access function.

Authorized Users have unrestricted access to every function of the IUI and are the only users allowed access to these controls.



## Secured Services

Access security is turned off or on by specifying N or Y in the Secured Services field of the System Defaults panel. The following table shows how the setting of this field affects undefined users.

When Secured Services is off, specified with an N, a user that is not defined to the system is given General access, as described below. This setting relieves the administrator of CA Compress from the need to add every user to the List of Authorized Users. Only users to be given Maintenance or Authorized access need be added.

When Secured Services is on, specified with a Y, a user that is not defined cannot access the functions of CA Compress. To define users to the system, the CA Compress administrator must add each one to the List of Authorized Users.

Customers wishing to completely disable IUI security and rely on RACF or an equivalent security package can specify this option at initialization or with a subsequent batch update. Access security cannot be enabled or disabled from the IUI.

Secured Services Setting	Access Granted to Undefined Users	
		Comments
N	General	An Authorized User must define the user to the system to give Maintenance authority.
Y	None	An Authorized User must define the user to the system to give any access.
D	Disabled	IUI security is completely disabled. The user controls access with RACF or other security product.

## User Access

CA Compress access security supports 3 levels of authority. These levels are shown in the table that follows. Access is determined by setting the *Use FDT/Control File Support* and *can User Control Security?* fields on the User Access panel. If you disable IUI access security, the IUI permits full access to all TSO users.

**Authorized Users**—The first TSO ID with this authority is specified at installation. A Primary Authorized User can:

- Make changes to System Defaults and User Access.
- Exercise Maintenance and General authority.

**Maintenance**—This authority is typically granted to only a few users. An Authorized User grants it by specifying a Y in the *Use FDT/Control File Support* field of the User Access panel. A user with Maintenance authority can:

- Maintain FDTs and the Control File.
- Exercise General authority.

**General**—Most users are granted this authority by specifying N in the *Use FDT/Control File Support* field of the User Access panel. A user with General authority can:

- Maintain the Analysis File, and Implement and Analyze compression for data sets.

User Type	Access to Functions	How Granted	Comments
Authorized User	System Defaults & User Access Maintain Control File & FDTs Maintain Analysis File, Implement & Analyze	TSO ID on the Authority Code line, can User Control Security?=Y	All functions
Maintenance	Maintain Control File & FDTs Maintain Analysis File, Implement & Analyze	Use FDT/Control File Support=Y	Maintenance and General functions
General	Maintain Analysis File, Implement & Analyze	Use FDT/Control File Support=N	Only General functions

## List Users

### To display or print the list of CA Compress users

1. On the Administration menu, select User Access.
2. Select Generate Authorized User List to display a list of users. The field names and contents are shown below.

TSO ID	USER'S FULL NAME	MESSAGE NAME	CATALOG NODE	DIALOG MVS	USAGE
ISPBAG1	EQUTS, BELLEROPHON A.	BELL		YES	YES
ISPBAG1	BRENT SEIZER	BRENT	ISPBAG1	YES	YES
ISPDLM1	DAVID MULLINGS	ILM		YES	YES
ISPDLM2	DAVID MULLINGS	ILM		YES	YES
ISPDLR1	REYNOLDS, DEBORAH	IED		YES	YES
ISPDLR2	REYNOLDS, DEBORAH	IED		YES	YES
ISPDHR1	DEBBIE RICHARDSON	DEBBIE		YES	YES
ISPECC1	GORDON, EVELYN CYRIL	OSCAR		YES	YES
ISPECC2	GORDON, EVELYN CYRIL	OSCAR		YES	YES
ISPJMM1	LUTHER, JACK	JACK		YES	YES
ISPJMM2	JACK LUTHER	JACKTWO		YES	YES
ISPJMM3	FFFFFFFF	FFFFF	FFF	YES	YES
ISPKAL1	LORING, KIMBERLY	KIMBERLY		YES	YES
ISPKCH1	HEASLEY, KEVIN	KEVIN		YES	YES
ISPKDZ1	KURT ZOBEI	KURT ZOBEI	ISPKDZ1	YES	YES
ISPLAU1	VANTON, LANCE A.	VAN		YES	YES
ISPLWA1	DEAN WHITE	DEAN		YES	YES
ISPLLA1	LUCY LEE ARNOLD	LUCY	ISPLLA1	YES	YES

Field Names	Contents
TSO ID	This is the TSO ID of the user. Since the CA Compress Interactive User Interface (IUI) is an ISPF dialog, it uses the TSO ID as the primary user identifier.
USER'S FULL NAME	This is your full name as recorded in the User Access list of the CA Compress IUI.
MESSAGE NAME	This is the name you want to appear in the various help and tutorial messages and panels in the field where your name is displayed.
CATALOG NODE	This field shows what to use for the high-level element in any data set the IUI creates. If it is blank, the default is the Company catalog node. If that field is also blank, your TSO prefix is used.

Field Names	Contents
DIALOG USAGE	These fields show the CA Compress Dialog services you are permitted to use: MVS—CA Compress services FDT—FDT regenerate and delete services

- Press PF3 to exit and display the Report Printing Option panel.
- To print the list, change HARDCOPY OPTION to Y, change the rest of the entry fields as needed, and press Enter. An example of the report follows:

The screenshot shows a window titled "CA Compress Dialog" with a menu bar (File, Edit, Transfer, Options, Connection, Macro, Window, Help) and a toolbar. The main area is divided into four panes: File, View, Task, and Help. The Task pane is active, displaying a list of services: Interactive Analysis, Batch Analysis..., Implement..., Maintenance..., Administration..., and User Access... The View pane shows "AC Data Set Name". The Help pane shows "Routine Percent". At the bottom, there is a "Command ==>" prompt.

Field	Value
HARDCOPY OPTION	N
SYSOUT CLASS	X
NUMBER OF COPIES	1
PRINTER	LOCAL
DESTINATION	
USER ID	ISPDLMI

F1=Help F3=Exit

## Add a User

### To add a user to the list of CA Compress authorized users

1. On the Administration menu, select User Access.
2. Type the TSO ID to be added.
3. Select Add a New User and press Enter.
4. Type the following information.
  - Name of the new user (last, first, initial) in the Full Name field.
  - Name the user prefers to be called in the Message name field.
  - Optional—Name of the Catalog to be used in the Catalog Node field.
  - Y or N in the Use FDT/Control File Support field.
5. Press Enter to record the changes.

The screenshot shows a terminal window with a menu structure. The 'Task' menu is open, showing options: Interactive Analysis, Batch Analysis..., Implement..., Maintenance..., Administration..., and User Access... (highlighted). Below the menu, a form for adding a new user is displayed. The form contains the following fields and values:

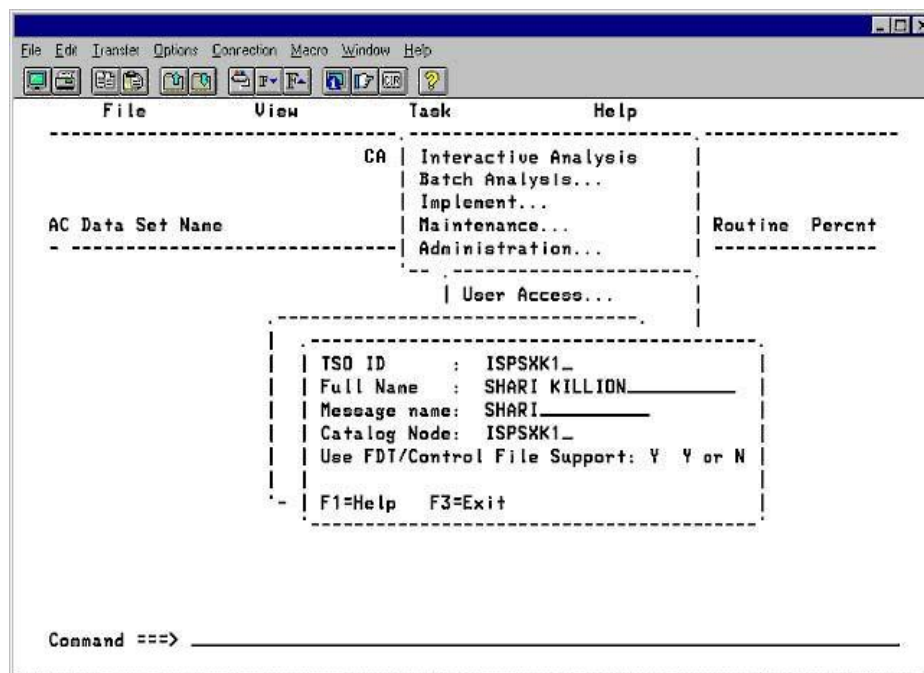
TSO ID	: ISPEC3_
Full Name	: _____
Message name	: _____
Catalog Node	: _____
Use FDT/Control File Support	: N Y or N
F1=Help F3=Exit	

At the bottom of the window, there is a 'Command ==>' prompt followed by a line for input.

## Change a User

To change the information about a user in the list of CA Compress authorized users

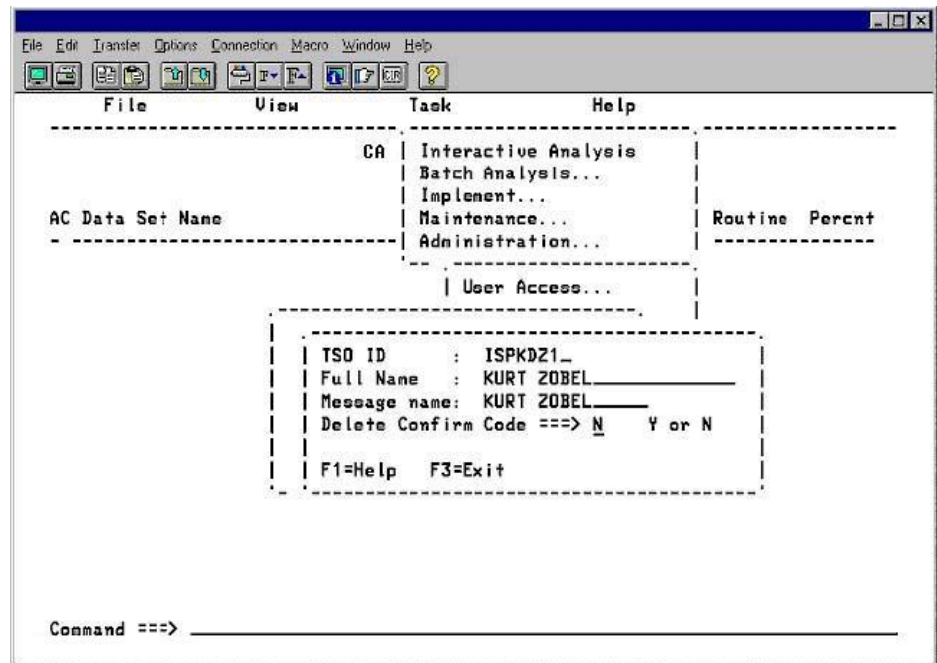
1. On the Administration menu, select User Access.
2. Type the TSO ID to be changed.
3. Select Change User Data and press Enter.
4. Type the changes and press Enter to record the changes.



## Delete a User

### To delete a user from the list of CA Compress authorized users

1. On the Administration menu, select User Access.
2. Type the TSO ID to be deleted (CA Compress does not allow a user to delete their own TSO ID).
3. Select Delete a User and press Enter.
4. Check the user identity. To delete the user, type Y in the Delete Confirm Code field and press Enter.







# Glossary

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## Algorithm

An *algorithm* is a finite set of well-defined rules for the solution of a problem in a finite number of steps, for example, a specific set of steps used to compress or expand a record.

## Analysis File

The *analysis file* is the data set used by the CA Compress Interactive User Interface to record the results of compression analysis and implementation performed by the Dialog.

## BDA

*Byte Distribution Analysis (BDA)* is the process of analyzing the distribution of characters in a data set to construct the Huffman tables used to compress and expand the data set.

## Buffer

A *buffer* is storage allocated to temporarily hold input or output data.

## CA Compress started task

The *CA Compress started task* is the task which, running in its own address space, supports the SVC intercepts, cross-memory services, and other facilities required to support compression transparently for application programs.

## CA Compress/2 subroutines

*CA Compress/2 subroutines* are compression and expansion subroutines, used by CA Compress, which can also be called by users. These subroutines are especially useful for supporting compression in products with data that CA Compress cannot support transparently.

## CA Compress/2 utilities

*CA Compress/2 utilities* are utilities that can be used to perform compression and expansion when the CA Compress subsystem is unavailable.

---

## CFMU

The *Control File Maintenance Utility (CFMU)* is a batch utility provided with CA Compress for maintaining the Control File.

## Checksum

A *checksum* is an extra byte calculated and added to the compressed data. If it does not exactly match the expected result at expansion, the compressed data has been damaged, perhaps through overlay or truncation when written.

## Compression algorithm

A *compression algorithm* is a finite set of rules used to collect and assign values to the characters found in a string of data so that the data takes less space.

## Compression overhead

*Compression overhead* is the processing required to compress data as it is transferred from the application to the data set.

## Control File

The *control file* is the data set used by CA Compress to record the data sets controlled by CA Compress and how CA Compress should handle them.

## Discrete data set

A *discrete data set* is a single data set, as opposed to a pattern defining a number of data sets.

## Dynamic allocation

*Dynamic allocation* is the allocation performed during program execution rather than at step initialization and termination. This facility is supported by SVC99.

## Exclusion Feature

The *exclusion feature* is a facility enabling the user to supply tables of jobs and programs for which compression and expansion should not take place to prevent unnecessary compression and expansion or double compression.

## Expansion overhead

*Expansion overhead* is the processing required to expand data as it is transferred from the data set to the application.

---

**Express**

*Express* is the CA Compress string compression algorithm that was replaced by the Super Express algorithm.

**FDT**

A *File Descriptor Table (FDT)* is a load module that also exists as records on the Analysis and Control Files. It contains information required to compress and expand the data set, including its Huffman compression and expansion tables.

**FDTLIB**

*FDTLIB* is the load library in which the Interactive User Interface stores FDTs, and from which it and the CFMU copy FDTs to the Control File.

**File analysis**

*File analysis* is the process by which CA Compress presents the various compression choices and the compression percentages possible.

**Huffman**

*Huffman* is a compression algorithm that uses tables to replace each character by a variable-length bit string. The characters expected to occur most often are assigned the shortest bit lengths.

**ICB**

An *Integrity Check Block (ICB)* is a 3-byte field preceding the compressed data by which CA Compress recognizes the algorithm used to compress the data.

**Implementation**

*Implementation* is placing a data set under CA Compress control.

**Interactive Dialog**

*Interactive Dialog* is the ISPF interface of CA Compress.

**Linklist**

The *linklist* is the list of load module libraries chosen by the installation to be searched by default after any STEPLIB or JOBLIB libraries.

---

## LSR

*Local Shared Resources (LSR)* is the IBM facility for permitting buffers to be shared by VSAM data sets in a job step. Because I/O to DASD is greatly reduced for random processing in most cases, performance is much improved even for a single data set.

## PASSTHRU

*Passthru* is a facility to enable CA Compress processing without actually performing compression or expansion.

## Pattern

A *pattern* is a name with variable characters used to implement a particular compression algorithm for all data sets matching the pattern.

## Pattern analysis

*Pattern analysis* is the process by which CA Compress will search for data sets to analyze based on name.

## Pattern matching

*Pattern matching* is the process of implementing a data set when it matches a pattern in the Control File, rather than explicitly by name.

## PR

*Problem Report (PR)* is a method of tracking and correlating a problem and its solution. PRs are commonly used to track actual problems in the product, rather than user errors or other difficulties that do not require changes in the product.

## RDL

*Record Definition Language (RDL)* is the language supplied with CA Compress to define compression on each record. RDL is usually generated by default, but can be modified by the user.

## RDW

*Record Descriptor Word (RDW)* is the first four bytes of a variable length non-VSAM record or segment, which defines its length.

## Safeguards

*Safeguards* is a CA Compress facility for preventing inadvertent access to compressed VSAM data sets when the CA Compress subsystem is not active.

---

## **SAM-SI**

*Sequential Access Method-Subsystem Interface (SAM-SI)* is the IBM access method used to support the SUBSYS JCL keyword. It is also invoked by Physical Sequential Transparency. Its limitations require certain special considerations when implementing compression using the SUBSYS JCL parameter.

## **Scheduled**

*Scheduled* is a method of implementing compression at a specified future event, either when the VSAM data set is next loaded or when it is opened for output.

## **SDB**

*SDB* is the System Determined Block size, in which the user codes BLKSIZE=0 to cause the system to choose an optimal block size for the device.

## **SHRVL**

*SHRVL* is a CA Compress algorithm that achieves high compression for relatively low CPU overhead on certain types of data.

## **Space Release**

*Space release* is the facility for freeing unused space from compressed VSAM data sets.

## **Standard Tables**

*Standard tables* are the six compression tables distributed with CA Compress.

## **SUBSYS**

*SUBSYS* is an IBM JCL DD parameter for non-VSAM data sets that invokes a subsystem to process the ddname on which it is coded.

## **Subsystem**

A *subsystem* is a facility running under MVS that performs a certain function. JES2 and JES3, for example, handle job entry and throughput, and SMS does storage management.

## **Super Express**

*Super Express* is the CA Compress string compression algorithm. It compresses repetitive characters without using tables.

## **TCF**

*TCF* stands for Test Compression Facility.

---

## **VPE**

*VPE* stands for VSAM Performance Enhancement.

### **VPE rule table**

The *VPE rule table* is the table of rules built by VPE in extended CSA and addressed through the entry for VPE in the subsystem control table (SSCT). VPE does not run as a true subsystem or started task, but in this way VPE can recognize rules built before it is activated.

### **VPE Rules**

*VPE rules* are the rules supplied to VPE to direct its optimization of data sets.

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