# MDBS COMPACT BACKUP RESTORE UTILITY MANUAL

- The MDBS CBRU Manual -

Version 3.08

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## NEW RELEASES, VERSIONS, AND A WARNING

Any programming endeavor of the magnitude of the MDBS software will necessarily continue to evolve over time. Realizing this, Micro Data Base Systems, Inc., vows to provide its users with updates to this version for a nominal handling fee.

New versions of MDBS software will be considered as separate products. However, bona fide owners of previous versions are generally entitled to a preferential rate structure.

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# I. INTRODUCTION

The Compact-Backup-Restore Utility (CBRU) is an interactive, menu-driven backup system. It performs three important activities:

. produces compact backups of MDBS data bases
. produces compact backups of individual files
. restores compact data bases/files

CBRU is media-independent. A CBRU user can make single- or multi- volume backups using a floppy diskette, a tape, a cartridge, or a hard disk file as the backup medium, for example.

**Data Base Compaction:** CBRU understands the structure of an MDBS data base. (An MDBS data base consists of one or more areas. Each area is divided into pages. The pages can be blank or can contain information.) During the backup process, CBRU recognizes the existence of areas. It also distinguishes between blank and non-blank pages. Blank pages are compacted to the point at which they occupy no space in the backup, for all practical purposes. Non-blank pages are regarded as byte streams, which CBRU compresses. During the data base compaction option, CBRU performs "housecleaning" tasks. As a result, any holes which existed in the data base prior to data base compaction are reinitialized to their original empty state. The resulting backup is a compacted file.

**File Byte Compaction:** CBRU can back up individual files. A user can opt to back up an MDBS data base area-by-area, or any other files which contain data or programs. CBRU regards the contents of each file as a byte stream, which it compresses during the backup process. The resulting backup is a compacted file.

**Restoration:** CBRU restores a compacted MDBS data base or an individual file to its previous expanded state. A data base which has been compacted by use of the data base compaction option and then restored is identical to the original with one exception: Any holes which existed in the data base prior to compaction have now been reinitialized to their original empty state. This change is reflected in the restored data base. CBRU does not perform these housekeeping tasks if you select the file byte compaction option. In this case, contents of a restored data base area or any other file are identical to those of the file before it was compacted.

CBRU's usefulness is twofold: On one hand, it enables users to transmit large MDBS data bases efficiently. On the other, it provides a versatile, convenient backup utility to MDBS users and non-users alike.

# II. CBRU FEATURES

## A. Getting Started

Install CBRU by placing its file on the appropriate drive. Invoke it by entering:

    CBRU

CBRU then displays a menu which consists of available options. (See Figure II-1.) Make your selection by entering the letter which follows the desired option. If you select the Exit option, you return to the operating system. Otherwise, a series of prompts appears. The prompts guide you through the selected compaction or restoration activity. When compaction or restoration is completed, you return to this menu.

**Error Messages:** Refer to the MDBS-DMS Manual for an explanation of any DMS error messages you may encounter during processing. Section D of this manual contains an explanation of CBRU diagnostics.

```
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          OPTIONS:

Data base compaction:  D
File byte compaction:  F
Restore:               R
Exit:                  E



        Enter option:
```

Figure II-1: The CBRU Menu

On some operating systems the option "free Space on drive: S" will also appear. This option shows the free space available on a target disk drive.

## B. Menu Options

### Data Base Compaction - Option D

The Data Base Compaction Option produces a backup of an MDBS data base. When you select this option, CBRU displays the prompts shown in Figure II-2. Respond to them by entering the name of the file which holds the main data base area, your user name and password, and the names of files which hold secondary data base areas, if any.

Notice the example in Figure II-2. The data base consists of the main data base area ( **sample.db** ) and two secondary areas ( **area1.dba** and **area2.dba** ). CBRU recognizes the structure of your data base. The names of the secondary areas, as defined in the DDL description, are used as default values. Press ENTER to enter the default values, as in this example. Otherwise, enter a name as desired.

```
Data base:   sample.db
User name:   user
Password:

Enter filename for area AREA1 [area1.dba] ?
Enter filename for area AREA2 [area2.dba] ?
```

Figure II-2: Prompts for Data Base Compaction

If you enter a dash ("-") in response to an area prompt, CBRU will ignore that area. This allows some areas to be off-line. This can be dangerous.

**Restoration Note:** When a data base which has been compacted using the data base compaction option is restored, it may not compare byte-for-byte with the original. This is due to housecleaning performed by CBRU during the data base compaction option.

CBRU uses your responses to produce single- or multi-volume backups. You specify a file name root and the maximum volume size in response to CBRU prompts. Each volume of the backup consists of one compacted file.

**File Name Root:** CBRU generates the name for each volume's compacted file by appending a volume number (1, 2, 3, ...) to the specified file name root. In the following example of a CBRU prompt, the file name root is **dbback.v** :

```
File name root for compacted volumes? dbback.v
```

**Minimum Volume Size:** CBRU next prompts for the maximum size of a compacted volume. CBRU uses maximum size to determine when a change of volume is necessary. A typical response is the maximum size of the selected medium (a floppy diskette, for instance). Your response must be an integer which indicates number of bytes. A suffix of k or r can follow the integer, in which case the integer is multiplied by 1024 or 128, respectively. (Entries of 2048, 2k, and 16r are equivalent.)

```
Maximum size of compacted volumes?    200k
```

After you enter volume size, a summary of your responses is displayed, as shown in Figure II-3:

```
Summary:

Data base file name            : sample.db
Root name for compacted volumes : dbback.v
Maximum volume size            : 204800 bytes (200 k)
```

Figure II-3: Summary of Responses


**Volume Size Default:** The default for maximum size is no limit. If you select the no limit default, only one volume is written. The physical limits of the chosen medium then determine the maximum volume size. The no limit default is particularly useful when using a hard disk as the backup medium.

A request to continue the backup procedure follows. Press ENTER to select the default value of yes, as shown below. Enter no to return to the CBRU menu. For example:

```
Continue [yes] ?
```

If you continue with the backup, insert volumes as requested by CBRU. An example of CBRU prompts is shown in Figure II-4:

```
Insert volume 1 and press return:
Writing to  : dbback.v1
Processing sample.db
Remove volume 1 and insert volume 2, press return:
Writing to  : dbback.v2
Processing area1.dba
Processing area2.dba

Number of files written: 2
```

Figure II-4:  Changing Volumes During Compaction

In this example, the data base backup consists of two volumes, dbback.v1 and dbback.v2. The data base itself consists of a main area named sample.db, and two secondary areas, area1.dba and area2.dba.

CBRU will cause your terminal to beep (if possible) when prompting for a new volume.

Upon completion of the data base compaction option, you return to the CBRU menu.

## File Byte Compaction - Option F

The File Byte Compaction Option backs up an MDBS data base area- by-area, or any other file which contains data or programs. This option is particularly useful if you want to back up only a portion of the data base, or if there is difficulty opening the data base. CBRU does not perform housecleaning tasks during file byte compaction. Therefore, restored files are identical to the original.

The file byte compaction prompts and process are similar to those of data base compaction described in the preceding section.

## Restoration - Option R

The Restore Option restores data bases compacted with the data base compaction option or data bases and individual files compacted with the file byte compaction option.

To restore a data base or single file that has previously been compacted, select the R option from the CBRU menu. A series of prompts follows, as shown in Figure II-5:

```
File name root of compacted volumes?    dbback.v

Insert volume 1 and press return:
reading from: dbback.v1
Output file name? [sample.db   ]   test.db
Remove volume 1 and insert volume 2, press return:
Reading from: dbback.v2
Output file name? [area1.dba   ]   tarea1.dba
Output file name? [area2.dba   ]   tarea2.dba

Number of files read: 2
```

Figure II-5:  Restore Prompts

As the sample restoration in Figure II-5 illustrates, CBRU first prompts you for the file name root of the backup volumes to be restored. You are then prompted to insert the first backup volume and to specify the name of the file which will hold the restored data base or file. CBRU will cause your terminal to beep (if possible) when prompting for a new volume.

Notice that the default values of the output file names, (sample.db, area1.dba and area2.dba, in this case) are the names of the original files. Press ENTER to select the default value. One way to avoid overwriting contents of the original file is to specify an output file name which differs from the original. In the restoration example in Figure II-5, the restored output is placed on test.db, tarea1.dba, and tarea2.dba.

## C. Batch Mode

You can use CBRU on a batch basis. Simply include one or more of the following command line options when you invoke CBRU: -d, -i, -p, -u. Three of the options (-d, -u, and -p) are for use with the data base compaction option. The fourth option (-i) is for use with any CBRU compact or restore procedure.

**Data base option: -dfilename**

Specify **filename**, the name of the file which holds the main data base area. If -d is in effect, CBRU will not prompt for the name during the data base compaction option.

**Input option: -icmdfilename**

Specify **cmdfilename**, the name of a command file holding the information which you would enter in response to prompts in interactive mode. If -i is in effect, CBRU will not prompt you for commands during data base or file byte compaction. The -i option can also be used for data base or file byte restoration. When you use the -i option, one volume must be large enough to contain the entire backup.

**Password option: -ppassword**

Specify **password**, a valid user password. If -p is in effect, CBRU will not prompt you for a password entry during the data base compaction option.

**User name option: -uusername**

Specify **username**, a user's name. If -u is in effect, CBRU will not prompt you for a user name during the data base compaction option.

**Verify option: -v**

This turns off verification during CBRU operation. It may not be available on all operating systems.

Examples:
```
cbru -dsample.db -uuser -ppass -icmdfile
cbru -dsample.db -uuser -ppass
cbru -icmdfile
```

## D.  CBRU Diagnostics

This section describes the diagnostics that can result during execution of CBRU. Possible causes and/or solutions are also cited.

### Can't open input file filename

Explanation:   CBRU could not access the input file.

Possible Cause/Solution:
1.  File name incorrect or misspelled.
2.  Drive not specified.
3.  Path not specified completely.

### Can't open output file filename

Explanation:   CBRU could not access the output file.

Possible Cause/Solution:
1.  File may already exist and be read-only.

### Data base corrupt! : Bad page number, expecting page number

Explanation:   Page number problem with the data base discovered.

Possible Cause/Solution:

1.  Use the F option (File Byte Compaction) rather than the D option (Data Base Compaction).

### Data base corrupt! : Bad record pointer on page page number

Explanation:   Pointer error on the specified page of the data base discovered.

Possible Cause/Solution:

1.  Use the F option (File Byte Compaction) rather than the D option (Data Base Compaction).

### Error error code number in reading filename hdr from compacted file

Explanation:   CBRU did not recognize the file as one that was compacted using CBRU.

Possible Cause/Solution:
1.  The file to be restored was not compacted by CBRU.
2.  The floppy disk damaged.

**ERROR: Invalid option selection**

    Explanation:   Self explanatory

    Possible Cause/Solution:
        1.   An entry other than the letter of a valid option was entered as a menu option.


**File open error in file file name**

    Explanation:   Error encountered while trying to open/create a file.

    Possible Cause/Solution:
        1.   File name specified incorrectly.
        2.   The file is user-protected, and user did not have access to it.


**File open error on file file name**

    Explanation:   CBRU could not read the specified file.

    Possible Cause/Solution:
        1.   File name misspelled or does not exist.
        2.   Floppy disk not in drive.
        3.   Wrong floppy disk in drive.


**Garbled data**

    Explanation:  CBRU encountered invalid data.

    Possible Cause/Solution:
        1.  You switched volumes when prompted for a file name.  Reinsert the original volume.
        2.  Bad floppy disk.
        3.  CBRU error - call customer support.


**No file**

    Explanation:   No file name was entered in response to a prompt for one.

    Possible Cause/Solution:
        1.   Enter a valid file name as required.

**Not a CBRU compacted file**

Explanation:   Self explanatory.

Possible Cause/Solution:
1.   An attempt was made to restore a file that was not generated by CBRU.


**Not enough free space on disk drive**

Explanation:   This will not occur on some operating systems.   There is not enough space on the target drive to hold for the current backup volume size.

Possible Cause/Solution:
1.   Restart the backup with a smaller volume size.


**Not enough memory for a page of size pagesize**

Explanation:   Data base page size too large for CBRU execution.

Possible Cause/Solution:
1.   Increase memory.


**Not smaller than volume size**

Explanation:   The maximum size specified for compacted volumes was not large enough.

Possible Cause/Solution:
1.   Maximum size must be at least 256 bytes.
2.   Specify a larger volume size.


**Output file write error (error code number)**

Explanation:   Error occurred when attempting to write to the file.

Possible Cause/Solution:
1.   Disk too full.

**Read error on input file**

Explanation: Error encountered when attempting to read file.

Possible Cause/Solution:
1. Bad sector on disk.
2. Disk not present in correct disk drive.
3. Hardware error.


**Unexpected EOF encountered on file name**

Explanation: End of file occurred prematurely.

Possible Cause/Solution:
1. CBRU cannot interpret the input file during restoration.
2. File data corrupted or destroyed.


**Warning: Bad check sum on page page number**

Explanation: Problem with the data base discovered.

Possible Cause/Solution:
1. An error encountered when check sum was being performed on the data base pages.


**Warning: Data base corrupt [error code ]; page page number**

Explanation: The data base damaged or destroyed.

Possible Cause/Solution:
1. Use the F option (File Byte Compaction) rather than the D option (Data Base Compaction).


**Wrong volume: wrong volume number**

Explanation: Wrong volume inserted in response to a prompt during restoration.

Possible Cause/Solution:
1. Disks must be restored in the same order in which they were compacted.

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