NAME

myisampack − generate compressed, read−only MyISAM tables

SYNOPSIS

myisampack [*options***]** *file_name* **...**

DESCRIPTION

The **myisampack** utility compresses MyISAM tables. **myisampack** works by compressing each column in the table separately. Usually, **myisampack** packs the data file 40% to 70%.

When the table is used later, the server reads into memory the information needed to decompress columns. This results in much better performance when accessing individual rows, because you only have to uncompress exactly one row.

MySQL uses mmap() when possible to perform memory mapping on compressed tables. If mmap() does not work, MySQL falls back to normal read/write file operations.

Please note the following:

- If the **mysqld** server was invoked with external locking disabled, it is not a good idea to invoke **myisampack** if the table might be updated by the server during the packing process. It is safest to compress tables with the server stopped.
- After packing a table, it becomes read only. This is generally intended (such as when accessing packed tables on a CD).
- **myisampack** does not support partitioned tables.

Invoke **myisampack** like this:

shell> **myisampack [***options***]** *file_name* **...**

Each file name argument should be the name of an index (.MYI) file. If you are not in the database directory, you should specify the path name to the file. It is permissible to omit the .MYI extension.

After you compress a table with **myisampack**, use **myisamchk −rq** to rebuild its indexes. **myisamchk**(1).

myisampack supports the following options. It also reads option files and supports the options for processing them described at Section 4.2.2.3, “Command-Line Options that Affect Option-File Handling”.

- **−−help**, **−?**

  Display a help message and exit.

- **−−backup**, **−b**

  Make a backup of each table's data file using the name *tbl_name*.OLD.

- **−−character−sets−dir=***dir_name*

  The directory where character sets are installed. See Section 10.15, “Character Set Configuration”.

- **−−debug[=***debug_options***]**, **−# [***debug_options***]**

  Write a debugging log. A typical *debug_options* string is d:t:o,*file_name*. The default is d:t:o.

- **−−force**, **−f**

  Produce a packed table even if it becomes larger than the original or if the intermediate file from an earlier invocation of **myisampack** exists. (**myisampack** creates an intermediate file named *tbl_name*.TMD in the database directory while it compresses the table. If you kill **myisampack**, the .TMD file might not be deleted.) Normally, **myisampack** exits with an error if it finds that *tbl_name*.TMD exists. With **−−force**, **myisampack** packs the table anyway.

- **--join=***big_tbl_name*, **-j** *big_tbl_name*

  Join all tables named on the command line into a single packed table *big_tbl_name*. All tables that are to be combined *must* have identical structure (same column names and types, same indexes, and so forth).

  big_tbl_name must not exist prior to the join operation. All source tables named on the command line to be merged into *big_tbl_name* must exist. The source tables are read for the join operation but not modified.

- **--silent**, **-s**

  Silent mode. Write output only when errors occur.

- **--test**, **-t**

  Do not actually pack the table, just test packing it.

- **--tmpdir=***dir_name*, **-T** *dir_name*

  Use the named directory as the location where **myisampack** creates temporary files.

- **--verbose**, **-v**

  Verbose mode. Write information about the progress of the packing operation and its result.

- **--version**, **-V**

  Display version information and exit.

- **--wait**, **-w**

  Wait and retry if the table is in use. If the **mysqld** server was invoked with external locking disabled, it is not a good idea to invoke **myisampack** if the table might be updated by the server during the packing process.

The following sequence of commands illustrates a typical table compression session:

```
shell> ls -l station.*
-rw-rw-r--  1 jones    my        994128 Apr 17 19:00 station.MYD
-rw-rw-r--  1 jones    my         53248 Apr 17 19:00 station.MYI
shell> myisamchk -dvv station
MyISAM file:     station
Isam-version:  2
Creation time: 1996-03-13 10:08:58
Recover time:  1997-02-02  3:06:43
Data records:             1192  Deleted blocks:             0
Datafile parts:           1192  Deleted data:               0
Datafile pointer (bytes):    2  Keyfile pointer (bytes):    2
Max datafile length:   54657023  Max keyfile length:   33554431
Recordlength:              834
Record format: Fixed length
table description:
Key Start Len Index   Type              Root  Blocksize    Rec/key
1   2     4   unique  unsigned long       1024       1024          1
2   32    30  multip. text              10240       1024          1
Field Start Length Type
1     1     1
2     2     4
```

```
3    6    4
4    10   1
5    11   20
6    31   1
7    32   30
8    62   35
9    97   35
10   132  35
11   167  4
12   171  16
13   187  35
14   222  4
15   226  16
16   242  20
17   262  20
18   282  20
19   302  30
20   332  4
21   336  4
22   340  1
23   341  8
24   349  8
25   357  8
26   365  2
27   367  2
28   369  4
29   373  4
30   377  1
31   378  2
32   380  8
33   388  4
34   392  4
35   396  4
36   400  4
37   404  1
38   405  4
39   409  4
40   413  4
41   417  4
42   421  4
43   425  4
44   429  20
45   449  30
46   479  1
47   480  1
48   481  79
49   560  79
50   639  79
51   718  79
52   797  8
53   805  1
54   806  1
55   807  20
56   827  4
```

```
57   831   4
shell> myisampack station.MYI
Compressing station.MYI: (1192 records)
- Calculating statistics
normal:    20  empty-space:   16  empty-zero:    12  empty-fill:  11
pre-space:  0  end-space:     12  table-lookups:  5  zero:        7
Original trees:  57  After join: 17
- Compressing file
87.14%
Remember to run myisamchk -rq on compressed tables
shell> myisamchk -rq station
- check record delete-chain
- recovering (with sort) MyISAM-table 'station'
Data records: 1192
- Fixing index 1
- Fixing index 2
shell> mysqladmin -uroot flush-tables
shell> ls -l station.*
-rw-rw-r--  1 jones    my         127874 Apr 17 19:00 station.MYD
-rw-rw-r--  1 jones    my          55296 Apr 17 19:04 station.MYI
shell> myisamchk -dvv station
MyISAM file:     station
Isam-version:  2
Creation time: 1996-03-13 10:08:58
Recover time:  1997-04-17 19:04:26
Data records:              1192  Deleted blocks:              0
Datafile parts:            1192  Deleted data:                0
Datafile pointer (bytes):     3  Keyfile pointer (bytes):     1
Max datafile length:    16777215  Max keyfile length:     131071
Recordlength:               834
Record format: Compressed
table description:
Key Start Len Index   Type                 Root  Blocksize    Rec/key
1   2     4   unique  unsigned long       10240       1024          1
2   32    30  multip. text                54272       1024          1
Field Start Length Type                        Huff tree  Bits
1     1     1      constant                      1     0
2     2     4      zerofill(1)                   2     9
3     6     4      no zeros, zerofill(1)         2     9
4     10    1                                    3     9
5     11    20     table-lookup                  4     0
6     31    1                                    3     9
7     32    30     no endspace, not_always       5     9
8     62    35     no endspace, not_always, no empty    6     9
9     97    35     no empty                      7     9
10    132   35     no endspace, not_always, no empty    6     9
11    167   4      zerofill(1)                   2     9
12    171   16     no endspace, not_always, no empty    5     9
13    187   35     no endspace, not_always, no empty    6     9
14    222   4      zerofill(1)                   2     9
15    226   16     no endspace, not_always, no empty    5     9
16    242   20     no endspace, not_always       8     9
17    262   20     no endspace, no empty         8     9
18    282   20     no endspace, no empty         5     9
```

```
19   302  30   no endspace, no empty          6    9
20   332  4    always zero                    2    9
21   336  4    always zero                    2    9
22   340  1                                   3    9
23   341  8    table−lookup                   9    0
24   349  8    table−lookup                   10   0
25   357  8    always zero                    2    9
26   365  2                                   2    9
27   367  2    no zeros, zerofill(1)          2    9
28   369  4    no zeros, zerofill(1)          2    9
29   373  4    table−lookup                   11   0
30   377  1                                   3    9
31   378  2    no zeros, zerofill(1)          2    9
32   380  8    no zeros                       2    9
33   388  4    always zero                    2    9
34   392  4    table−lookup                   12   0
35   396  4    no zeros, zerofill(1)          13   9
36   400  4    no zeros, zerofill(1)          2    9
37   404  1                                   2    9
38   405  4    no zeros                       2    9
39   409  4    always zero                    2    9
40   413  4    no zeros                       2    9
41   417  4    always zero                    2    9
42   421  4    no zeros                       2    9
43   425  4    always zero                    2    9
44   429  20   no empty                       3    9
45   449  30   no empty                       3    9
46   479  1                                   14   4
47   480  1                                   14   4
48   481  79   no endspace, no empty          15   9
49   560  79   no empty                       2    9
50   639  79   no empty                       2    9
51   718  79   no endspace                    16   9
52   797  8    no empty                       2    9
53   805  1                                   17   1
54   806  1                                   3    9
55   807  20   no empty                       3    9
56   827  4    no zeros, zerofill(2)          2    9
57   831  4    no zeros, zerofill(1)          2    9
```

myisampack displays the following kinds of information:

- normal

  The number of columns for which no extra packing is used.

- empty−space

  The number of columns containing values that are only spaces. These occupy one bit.

- empty−zero

  The number of columns containing values that are only binary zeros. These occupy one bit.

- empty−fill

  The number of integer columns that do not occupy the full byte range of their type. These are

changed to a smaller type. For example, a BIGINT column (eight bytes) can be stored as a TINYINT column (one byte) if all its values are in the range from −128 to 127.

- pre−space

  The number of decimal columns that are stored with leading spaces. In this case, each value contains a count for the number of leading spaces.

- end−space

  The number of columns that have a lot of trailing spaces. In this case, each value contains a count for the number of trailing spaces.

- table−lookup

  The column had only a small number of different values, which were converted to an ENUM before Huffman compression.

- zero

  The number of columns for which all values are zero.

- Original trees

  The initial number of Huffman trees.

- After join

  The number of distinct Huffman trees left after joining trees to save some header space.

After a table has been compressed, the Field lines displayed by **myisamchk −dvv** include additional information about each column:

- Type

  The data type. The value may contain any of the following descriptors:

  - constant

    All rows have the same value.

  - no endspace

    Do not store endspace.

  - no endspace, not_always

    Do not store endspace and do not do endspace compression for all values.

  - no endspace, no empty

    Do not store endspace. Do not store empty values.

  - table−lookup

    The column was converted to an ENUM.

  - zerofill(*N*)

    The most significant *N* bytes in the value are always 0 and are not stored.

  - no zeros

Do not store zeros.

- always zero

  Zero values are stored using one bit.

- Huff tree

  The number of the Huffman tree associated with the column.

- Bits

  The number of bits used in the Huffman tree.

After you run **myisampack**, use **myisamchk** to re−create any indexes. At this time, you can also sort the index blocks and create statistics needed for the MySQL optimizer to work more efficiently:

shell> **myisamchk −rq −−sort−index −−analyze** *tbl_name***.MYI**

After you have installed the packed table into the MySQL database directory, you should execute **mysqladmin flush−tables** to force **mysqld** to start using the new table.

To unpack a packed table, use the **−−unpack** option to **myisamchk**.

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SEE ALSO

For more information, please refer to the MySQL Reference Manual, which may already be installed locally and which is also available online at http://dev.mysql.com/doc/.

AUTHOR

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