

GDV-MapBuilder Shape Format (MBS)

The MBS format differs from the SHP format mainly by the fact that the data is not stored in two different ways concerning the bit encoding (BIG ENDIAN, LITTLE ENDIAN). Also some unnecessary information, which is to be found in the ESRI Shape file, is not contained anymore. So data access is much faster.

In the strict sense the MBS format is not encrypted, but without detailed documentation and programming the use of the data is impossible. The dbase table with the attribute data is, however, readable as is in the ESRI Shape format.

Attention: The next major release of GDV MapBuilder (new technology) will bring changes of the internal data model, which will make working with GDV MapBuilder applications still faster and more efficient. These changes will have effects on the MBS format. Also this new file format will be documented openly again, no downward-compatibility to the now available version is given. There will be a free converter for the transfer of "old" MBS files to the new data format however.

Structure of the MapBuilder Shape file (*.mbs):

HEADER:

The header consists of 36 bytes containing general information on data sources:

Position in Bytes	Data type	Content
0...24	Double	Four Values representing the bounding box of the data source in form of x, y, width and height.
32	Integer	Number of objects in this data source.

RECORDS:

The description of each individual object starts at byte 36. Each object is represented by one record, starting with the geometry type:

Position in Bytes	Data type	Content
0	Integer	geometry type

The following geometry types are possible:

Integer Value	geometry type
0	Null Element
1	Point
3	Polyline
5	Polygon

Null Elements:

Null Elements are replacements for objects without geometry but containing non-spatial data. The record of a null element contains only the geometry type.

Point Elements:

Position in Bytes	Data type	Content
4	Double	x – Coordinate
12	Double	y – Coordinate

Polyline Elements:

Position in Bytes	Data type	Content
4...28	Double	Four Values representing the bounding box of the data source in form of x, y, width and height.
36	Integer	Length of the element in bytes following this position. (The complete length of the record is this value plus 40.)
40	Integer	Number of sub-elements in this element. (In case of multi-polylines this value is greater than 1)
44	Integer	Number of points (coordinate-pairs) of the complete element.
48	Integer	A list of the starting positions of each of the individual sub-elements in the point-list. These are not byte values but the positions of the first point of the respective sub-element. "0" is the first position in this list.
48 + 4 * Number of sub-elements	Double	Point-list where two following values represent a x,y-coordinate.

Polygon Elements:

The data structure for polygon elements is equal to the structure of polyline elements. However, the individual rings that make up the polygon have to be closed, which means that the first and the last point of a ring have to be equal!

Structure of the MapBuilder Index file (*.mbx)

The index file permits the direct access to each individual element in a *.mbs file, as long as the consequent number of the element is known. The index file contains integers with the starting positions (in bytes) of each of the elements.

E.g. if the byte position of the ninth element in the *.mbs-file is needed, it is to be found at position $(9 - 1) * 4$ in the *.mbx file.