

Silvercore Database File Format Specification

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This document describes the file format of Silvercore database files.

Unless otherwise specified, all values in Silvercore database files are represented in big-endian byte order and all integers are unsigned.

File header

A Silvercore database file starts with a 38-byte header inspired by PNG.

Bytes	Description
89	<i>Same as PNG</i>
63 6F 6D 2E 70 65 74 72 6F 75 6C 65 73 2E 73 69 6C 76 65 72 63 6F 72 65 2E 64 61 74 61 62 61 73 65	In ASCII, the string <i>com.petroules.silvercore.database</i> , allowing easy identification of the format in a text editor
0D 0A	<i>Same as PNG</i>
1A	<i>Same as PNG</i>
0A	<i>Same as PNG</i>

Cryptographic configuration

The following data provides the details of the symmetric cipher used to encrypt the file, along with the key size, salt, key derivation algorithm, etc.

Offset#	Size (in bytes)	Description
38	4	Version number of the file. Currently 1.
42	4	Block cipher: 1: AES
46	4	Block cipher mode of operation: 1: CBC
50	4	Padding scheme: 1: PKCS7
54	4	Cipher key length in bytes (i.e. 16, 24 or 32 for AES).
58	4	Cipher block length in bytes (i.e. 16 for AES).
62	4	Key derivation function: 1: PBKDF2 w/ HMAC-SHA1
66	4	“Cost” of the KDF. This has a different meaning depending on the KDF. It specifies the the number of iterations/rounds in the case of PBKDF2.
70	4	KDF salt length in bytes. Must be a multiple of 3.
74	4	MAC length in bytes.
78	4	Encrypted data length.
82	<i>variable</i>	KDF salt bytes.
-	<i>variable</i>	MAC bytes.
-	<i>variable</i>	Encrypted data bytes.

Database contents

The decrypted payload contains the actual database data: a series of blocks, each containing the data of a node in the database.

Each node consists of an integer specifying its type, two UUIDs and three timestamps, followed by a variable number of “attributes”.

The first node in the file is always the root “database” node, whose node type and parent UUID are filled with all zeros.

Timestamp (13 bytes):

Size (in bytes)	Description
8	Year - contrary to the rule this is a signed integer.
1	Month (1 to 12).
1	Day (1 to 31).
1	Hour (0 to 23).
1	Minute (0 to 59).
1	Second (0 to 59).

Node (79 bytes):

Offset #	Size (in bytes)	Description
0	4	Type of the node: 0: Database (root node) 1: Attachment 2: Field 3: Folder 4: Vault 5: Item 6: Trash
4	16	Bytes of UUID of parent node.
20	16	Bytes of node's UUID.
36	13	Timestamp representing when the node was created.
49	13	Timestamp representing when the node was last accessed.
62	13	Timestamp representing when the node was last modified.
75	4	Number of attributes of the node. May be 0.

Attribute (8+ bytes):

Size (in bytes)	Description
4	Type of the attribute: 1: Title 2: Data 3: Kind 4: Tag 5: Masked 6: SectionTitle 7: SectionCount 8: Icon
4	Attribute data size in bytes.
<i>variable</i>	Attribute data bytes.