Datatypes

Data Type Table

Type Name	Description	Value Range	NULL Value
short	16-bit signed integer data type	-32767 ~ 32767	-32768
ushort	16-bit unsigned integer type data type	0 ~ 65534	65535
integer	32-bit signed integer data type	-2147483647 ~ 2147483647	-2147483648
uinteger	32-bit unsigned integer data type	0 ~ 4294967294	4294967295
long	64-bit signed integer data type	-9223372036854775807 ~ 9223372036854775807	-9223372036854775808
ulong	64-bit unsigned integer data type	0~18446744073709551614	18446744073709551615
float	32-bit floating point data type	-	-
double	64-bit floating point data type	-	-
datetime	Time and date	1970-01-01 00:00:00 000:000:000 ~	-
varchar	Variable-length character strings (UTF-8)	Length : 1 ~ 32768 (32K)	-
ipv4	Version 4 Internet address type (4 bytes)	"0.0.0.0" ~ "255.255.255.255"	-
ipv6	Version 6 Internet address type (16 bytes)	"0000:0000:0000:0000:0000:0000:0000:0000" ~ "FFFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFF:FFFF"	-
text	Text data type (keyword index can be generated)	Length : 0 ~ 64M	-
binary	Binary data type (index creation not possible)	Length: 0 ~ 64M	-

- Data Type

  Table

- SQL Datatype

  Table

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  Table

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short

This is the same as the 16-bit signed integer data of the C language. For the minimum negative value, it is recognized as NULL. May be displayed as "int16".

integer

This is the same as 32-bit signed integer data in C language. For the minimum negative value, it is recognized as NULL. May be displayed as "int32" or "int".

long

This is the same as 64-bit signed integer data in C language. For the minimum negative value, it is recognized as NULL. May be displayed as "int64".

float

This is equivalent to the C 32-bit floating-point data type float. For a positive maximum value, it is recognized as NULL.

double

This is equivalent to the 64-bit floating-point data type double of C language. For a positive maximum value, it is recognized as NULL.

datetime

In Machbase, this type maintains the nano value of the time elapsed since midnight January 1, 1970.

Thus, Machbase provides the ability to process values up to nano units for all datetime type related functions.

varchar

This is a variable string data type and can be generated up to 32K bytes in length.

This length criterion is based on one character in English, so it is different from the actual number of characters to be output in UTF-8 and should be set to an appropriate length.

IPv4

This type is a type that can store addresses used in Internet Protocol version 4.

It is internally represented using 4 bytes, and can be expressed from "0.0.0.0" to "255.255.255.255".

IPv6

This type is a type that can store addresses used in Internet Protocol version 6.

16 bytes are internally represented and can be expressed from "0000: 0000: 0000: 0000: 0000: 0000: 0000: 0000" to "FFFF: FFFF: FFFF: FFFF: FFFF: FFFF: FFFF: FFFF" .
Since the abbreviation type is also supported when inputting data, it can be expressed as follows using the symbol ∶.

- ":: FFFF: 1232": all leading with zeros
- ":: FFFF: 192.168.0.3": Support for IPv4 type compatibility
- ":: 192.168.3.1": Support for deprecated IPv4 type compatibility

text

This type is a data type for storing text or documents beyond the size of a VARCHAR.

This data type can be searched through keyword indexes and can store up to 64 megabytes of text.
This type is mainly used to store and retrieve large text files as separate columns.

binary

This type is a supported type for storing unstructured data in columns.

It is used to store binary data such as image, video, or audio. Indexes can not be created for this type.
The maximum data size for storing is up to 64 megabytes, the same as the TEXT type.

SQL Datatype Table

The following table shows the SQL data types and C data types corresponding to the mark base data types.

Machbase Datatype	Machbase CLI Datatype	SQL Datatype	C Datatype	Basic types for C	Description
short	SQL_SMALLINT	SQL_SMALLINT	SQL_C_SSHORT	int16_t (short)	16-bit signed integer data type
ushort	SQL_USMALLINT	SQL_SMALLINT	SQL_C_USHORT	uint16_t (unsigned short)	16-bit unsigned integer type data type
integer	SQL_INTEGER	SQL_INTEGER	SQL_C_SLONG	int32_t (int)	32-bit signed integer data type
uinteger	SQL_UINTEGER	SQL_INTEGER	SQL_C_ULONG	uint32_t (unsigned int)	32-bit unsigned integer data type
long	SQL_BIGINT	SQL_BIGINT	SQL_C_SBIGINT	int64_t (long long)	64-bit signed integer data type
ulong	SQL_UBIGINT	SQL_BIGINT	SQL_C_UBIGINT	uint64_t (unsigned long long)	64-bit unsigned integer data type
float	SQL_FLOAT	SQL_REAL	SQL_C_FLOAT	float	32-bit floating point data type
double	SQL_DOUBLE	SQL_FLOAT, SQL_DOUBLE	SQL_C_DOUBLE	double	64-bit floating point data type
datetime	SQL_TIMESTAMP SQL_TIME	SQL_TYPE_TIMESTAMP SQL_BIGINT SQL_TYPE_TIME	SQL_C_TYPE_TIMESTAMP SQL_C_UBIGINT SQL_C_TIME	char * (YYYY-MM-DD HH24:MI:SS) int64_t (timestamp: nano seconds) struct tm	Time and date
varchar	SQL_VARCHAR	SQL_VARCHAR	SQL_C_CHAR	char *	String
ipv4	SQL_IPV4	SQL_VARCHAR	SQL_C_CHAR	char * (enter ip string) unsigned char[4]	Version 4 Internet address type
ipv6	SQL_IPV6	SQL_VARCHAR	SQL_C_CHAR	char * (enter ip string) unsigned char[16]	Version 6 Internet address type
text	SQL_TEXT	SQL_LONGVARCHAR	SQL_C_CHAR	char *	Text
binary	SQL_BINARY	SQL_BINARY	SQL_C_BINARY	char *	Binary data