

INT

Data type	Range	Storage
bigint	-2^{63} (-9,223,372,036,854,775,808) to $2^{63}-1$ (9,223,372,036,854,775,807)	8 Bytes
int	-2^{31} (-2,147,483,648) to $2^{31}-1$ (2,147,483,647)	4 Bytes
smallint	-2^{15} (-32,768) to $2^{15}-1$ (32,767)	2 Bytes
tinyint	0 to 255	1 Byte

BIT

An integer data type that can take a value of 1, 0, or NULL.

The SQL Server Database Engine optimizes storage of **bit** columns. If there are 8 or fewer **bit** columns in a table, the columns are stored as 1 byte. If there are from 9 up to 16 **bit** columns, the columns are stored as 2 bytes, and so on.

DECIMAL

decimal[(p[,s])] and **numeric[(p[,s])]**

Fixed precision and scale numbers. When maximum precision is used, valid values are from $-10^{38} + 1$ through $10^{38} - 1$.

p (precision)

The maximum total number of decimal digits to be stored. This number includes both the left and the right sides of the decimal point. The precision must be a value from 1 through the maximum precision of 38. The default precision is 18.

s (scale)

The number of decimal digits that are stored to the right of the decimal point. This number is subtracted from p to determine the maximum number of digits to the left of the decimal point. Scale must be a value from 0 through p , and can only be specified if precision is specified. The default scale is 0 and so $0 \leq s \leq p$.

Maximum storage sizes vary, based on the precision.

Precision	Storage bytes
1 - 9	5
10-19	9
20-28	13
29-38	17

FLOAT & REAL

float [(*n*)] Where *n* is the number of bits that are used to store the mantissa of the **float** number in scientific notation and, therefore, dictates the precision and storage size. If *n* is specified, it must be a value between 1 and 53. The default value of *n* is 53.

<i>n</i> value	Precision	Storage size
1-24	7 digits	4 bytes
25-53	15 digits	8 bytes

Data type	Range	Storage
float	- 1.79E+308 to -2.23E-308, 0 and 2.23E-308 to 1.79E+308	Depends on the value of <i>n</i>
real	- 3.40E + 38 to -1.18E - 38, 0 and 1.18E - 38 to 3.40E + 38	4 Bytes

CHAR & VARCHAR

char [(*n*)] Fixed-size string data. *n* defines the string size in bytes and must be a value from 1 through 8,000. For single-byte encoding character sets such as *Latin*, the storage size is *n* bytes and the number of characters that can be stored is also *n*. For multibyte encoding character sets, the storage size is still *n* bytes but the number of characters that can be stored may be smaller than *n*.

varchar [(*n* | **max**)] Variable-size string data. Use *n* to define the string size in bytes and can be a value from 1 through 8,000 or use **max** to indicate a column constraint size up to a maximum storage of $2^{31}-1$ bytes (2 GB). For single-byte encoding character sets such as *Latin*, the storage size is *n* bytes + 2 bytes and the number of characters that can be stored is also *n*. For multi-byte encoding character sets, the storage size is still *n* bytes + 2 bytes but the number of characters that can be stored may be smaller than *n*.

DATE & TIME

<i>Data type</i>	<i>Syntax</i>	<i>Range</i>	<i>Storage</i>
date	date	0001-01-01 through 9999-12-31	3 bytes
time	time [(<i>n</i>)]	00:00:00.0000000 through 23:59:59.9999999	5 bytes
datetime	datetime	1753-01-01 through 9999-12-31 00:00:00 through 23:59:59.997	8 bytes
datetime2	datetime2 [(<i>n</i>)]	0001-01-01 through 9999-12-31 00:00:00 through 23:59:59.9999999	6 – 8 bytes
smalldatetime	smalldatetime	1900-01-01 through 2079-06-06 00:00:00 through 23:59:59	4 bytes

<https://docs.microsoft.com/en-us/sql/t-sql/data-types/data-types-transact-sql?view=sql-server-ver15>