**Data Types (Transact-SQL)**

**SQL Server 2012**

[Other Versions](javascript:;)

Description: http://i.technet.microsoft.com/Areas/Epx/Content/Images/ImageSprite.png

* [SQL Server 2008 R2](http://technet.microsoft.com/en-us/library/ms187752(d=printer,v=sql.105).aspx)
* [SQL Server 2008](http://technet.microsoft.com/en-us/library/ms187752(d=printer,v=sql.100).aspx)
* [SQL Server 2005](http://technet.microsoft.com/en-us/library/ms187752(d=printer,v=sql.90).aspx)

In SQL Server, each column, local variable, expression, and parameter has a related data type. A data type is an attribute that specifies the type of data that the object can hold: integer data, character data, monetary data, date and time data, binary strings, and so on.

SQL Server supplies a set of system data types that define all the types of data that can be used with SQL Server. You can also define your own data types in Transact-SQL or the Microsoft .NET Framework. Alias data types are based on the system-supplied data types. For more information about alias data types, see [CREATE TYPE (Transact-SQL)](http://technet.microsoft.com/en-us/library/ms175007.aspx). User-defined types obtain their characteristics from the methods and operators of a class that you create by using one of the programming languages support by the .NET Framework.

When two expressions that have different data types, collations, precision, scale, or length are combined by an operator, the characteristics of result are determined by the following:

* The data type of the result is determined by applying the rules of data type precedence to the data types of the input expressions. For more information, see [Data Type Precedence (Transact-SQL)](http://technet.microsoft.com/en-us/library/ms190309.aspx).
* The collation of the result is determined by the rules of collation precedence when the result data type is char, varchar, text, nchar, nvarchar, or ntext. For more information, see [Collation Precedence (Transact-SQL)](http://technet.microsoft.com/en-us/library/ms179886.aspx).
* The precision, scale, and length of the result depend on the precision, scale, and length of the input expressions. For more information, see [Precision, Scale, and Length (Transact-SQL)](http://technet.microsoft.com/en-us/library/ms190476.aspx).

SQL Server provides data type synonyms for ISO compatibility. For more information, see [Data Type Synonyms (Transact-SQL)](http://technet.microsoft.com/en-us/library/ms177566.aspx).

[Data Type Categories](javascript:void(0))

Data types in SQL Server are organized into the following categories:

|  |  |
| --- | --- |
| Exact numerics | Unicode character strings |
| Approximate numerics | Binary strings |
| Date and time | Other data types |
| Character strings |  |

In SQL Server, based on their storage characteristics, some data types are designated as belonging to the following groups:

* Large value data types: varchar(max), nvarchar(max), and varbinary(max)
* Large object data types: text, ntext, image, varchar(max), nvarchar(max), varbinary(max), and xml

|  |
| --- |
| **Note** |
| sp\_help returns -1 as the length for the large-value and xml data types. |

**Exact Numerics**

|  |  |
| --- | --- |
| [bigint](http://technet.microsoft.com/en-us/library/ms187745.aspx) | [numeric](http://technet.microsoft.com/en-us/library/ms187746.aspx) |
| [bit](http://technet.microsoft.com/en-us/library/ms177603.aspx) | [smallint](http://technet.microsoft.com/en-us/library/ms187745.aspx) |
| [decimal](http://technet.microsoft.com/en-us/library/ms187746.aspx) | [smallmoney](http://technet.microsoft.com/en-us/library/ms179882.aspx) |
| [int](http://technet.microsoft.com/en-us/library/ms187745.aspx) | [tinyint](http://technet.microsoft.com/en-us/library/ms187745.aspx) |
| [money](http://technet.microsoft.com/en-us/library/ms179882.aspx) |  |

**Approximate Numerics**

|  |  |
| --- | --- |
| [float](http://technet.microsoft.com/en-us/library/ms173773.aspx) | [real](http://technet.microsoft.com/en-us/library/ms173773.aspx) |

**Date and Time**

|  |  |
| --- | --- |
| [date](http://technet.microsoft.com/en-us/library/bb630352.aspx) | [datetimeoffset](http://technet.microsoft.com/en-us/library/bb630289.aspx) |
| [datetime2](http://technet.microsoft.com/en-us/library/bb677335.aspx) | [smalldatetime](http://technet.microsoft.com/en-us/library/ms182418.aspx) |
| [datetime](http://technet.microsoft.com/en-us/library/ms187819.aspx) | [time](http://technet.microsoft.com/en-us/library/bb677243.aspx) |

**Character Strings**

|  |  |
| --- | --- |
| [char](http://technet.microsoft.com/en-us/library/ms176089.aspx) | [varchar](http://technet.microsoft.com/en-us/library/ms176089.aspx) |
| [text](http://technet.microsoft.com/en-us/library/ms187993.aspx) |  |

**Unicode Character Strings**

|  |  |
| --- | --- |
| [nchar](http://technet.microsoft.com/en-us/library/ms186939.aspx) | [nvarchar](http://technet.microsoft.com/en-us/library/ms186939.aspx) |
| [ntext](http://technet.microsoft.com/en-us/library/ms187993.aspx) |  |

**Binary Strings**

|  |  |
| --- | --- |
| [binary](http://technet.microsoft.com/en-us/library/ms188362.aspx) | [varbinary](http://technet.microsoft.com/en-us/library/ms188362.aspx) |
| [image](http://technet.microsoft.com/en-us/library/ms187993.aspx) |  |

**Other Data Types**

|  |  |
| --- | --- |
| [cursor](http://technet.microsoft.com/en-us/library/ms190498.aspx) | [timestamp](http://technet.microsoft.com/en-us/library/ms182776.aspx) |
| [hierarchyid](http://technet.microsoft.com/en-us/library/bb677290.aspx) | [uniqueidentifier](http://technet.microsoft.com/en-us/library/ms187942.aspx) |
| [sql\_variant](http://technet.microsoft.com/en-us/library/ms173829.aspx) | [xml](http://technet.microsoft.com/en-us/library/ms187339.aspx) |
| [table](http://technet.microsoft.com/en-us/library/ms175010.aspx) |  |