**Data Types (Transact-SQL)**

**SQL Server 2014**

[Other Versions](javascript:;)

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

* [SQL Server 2012](http://msdn.microsoft.com/en-IN/library/ms187752(d=printer,v=sql.110).aspx)
* [SQL Server 2008 R2](http://msdn.microsoft.com/en-IN/library/ms187752(d=printer,v=sql.105).aspx)
* [SQL Server 2008](http://msdn.microsoft.com/en-IN/library/ms187752(d=printer,v=sql.100).aspx)
* [SQL Server 2005](http://msdn.microsoft.com/en-IN/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://msdn.microsoft.com/en-IN/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://msdn.microsoft.com/en-IN/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://msdn.microsoft.com/en-IN/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://msdn.microsoft.com/en-IN/library/ms190476.aspx).

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

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

**Exact Numerics**

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

**Approximate Numerics**

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

**Date and Time**

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

**Character Strings**

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

**Unicode Character Strings**

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

**Binary Strings**

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

**Other Data Types**

|  |  |
| --- | --- |
| [cursor](http://msdn.microsoft.com/en-IN/library/ms190498.aspx) | [timestamp](http://msdn.microsoft.com/en-IN/library/ms182776.aspx) |
| [hierarchyid](http://msdn.microsoft.com/en-IN/library/bb677290.aspx) | [uniqueidentifier](http://msdn.microsoft.com/en-IN/library/ms187942.aspx) |
| [sql\_variant](http://msdn.microsoft.com/en-IN/library/ms173829.aspx) | [xml](http://msdn.microsoft.com/en-IN/library/ms187339.aspx) |
| [table](http://msdn.microsoft.com/en-IN/library/ms175010.aspx) | [Spatial Types](http://msdn.microsoft.com/en-IN/library/ff848797.aspx) |

**Data Type Synonyms (Transact-SQL)**

**SQL Server 2014**

[Other Versions](javascript:;)



* [SQL Server 2012](http://msdn.microsoft.com/en-IN/library/ms177566(d=printer,v=sql.110).aspx)
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Data type synonyms are included in SQL Server for ISO compatibility. The following table lists the synonyms and the SQL Server system data types that they map to.

|  |  |
| --- | --- |
| **Synonym** | **SQL Server system data type** |
| **Binary varying** | varbinary |
| **char varying** | varchar |
| **character** | char |
| **character** | char(1) |
| **character(** *n* **)** | char(n) |
| **character varying(** *n* **)** | varchar(n) |
| **Dec** | decimal |
| **Double precision** | float |
| **float**[**(***n***)**] for *n* = 1-7 | real |
| **float**[**(***n***)**] for *n* = 8-15 | float |
| **integer** | int |
| **national character(** *n* **)** | nchar(n) |
| **national char(** *n* **)** | nchar(n) |
| **national character varying(** *n* **)** | nvarchar(n) |
| **national char varying(** *n* **)** | nvarchar(n) |
| **national text** | ntext |
| **timestamp** | rowversion |

Data type synonyms can be used instead of the corresponding base data type name in data definition language (DDL) statements, such as CREATE TABLE, CREATE PROCEDURE, or DECLARE @variable. However, after the object is created, the synonyms have no visibility. When the object is created, the object is assigned the base data type that is associated with the synonym. There is no record that the synonym was specified in the statement that created the object.

All objects that are derived from the original object, such as result set columns or expressions, are assigned the base data type. All subsequent metadata functions performed on the original object and any derived objects will report the base data type, not the synonym. This behavior occurs with metadata operations, such as **sp\_help** and other system stored procedures, the information schema views, or the various data access API metadata operations that report the data types of table or result set columns.

For example, you can create a table by specifying national character varying:

CREATE TABLE ExampleTable (PriKey int PRIMARY KEY, VarCharCol national character varying(10))

VarCharCol is actually assigned an nvarchar(10) data type, and all subsequent metadata functions will report the column as an nvarchar(10) column. The metadata functions will never report them as a national character varying(10) column.