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SQL Server Data Type

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In this article

SQL Server and the .NET Framework are based on different type systems. For example,

the .NET Framework Decimal structure has a maximum scale of 28, whereas the SQL Server decimal and numeric data types have a maximum scale of 38. To maintain data integrity when reading and writing data, the SqlDataReader exposes SQL Server–specific typed accessor methods that return objects of System.Data.SqlTypes as well as accessor methods that return .NET Framework types. Both SQL Server types and .NET Framework types are also represented by enumerations in the DbType and SqlDbType classes, which you can use when specifying SqlParameter data types.

The following table shows the inferred .NET Framework type, the DbType and SqlDbType enumerations, and the accessor methods for the SqlDataReader.

SQL Server Database Engine type	.NET Framework type	SqlDbType enumeration	SqlDataReader SqlTypes typed accessor	DbType enun
bigint	Int64	BigInt	GetSqlInt64	Int64
binary	Byte[]	VarBinary	GetSqlBinary	Binary
bit	Boolean	Bit	GetSqlBoolean	Boolean
char	String	Char	GetSqlString	AnsiStringFixe
	Char[]			String
date ¹	DateTime	Date ¹	GetSqlDateTime	Date ¹
(SQL Server 2008 and later)				
datetime	DateTime	DateTime	GetSqlDateTime	DateTime
datetime2 (SQL Server 2008 and later)	DateTime	DateTime2	None	DateTime2
datetimeoffset	DateTimeOffset	DateTimeOffset	none	DateTimeOffs
(SQL Server 2008 and later)				
decimal	Decimal	Decimal	GetSqlDecimal	Decimal
FILESTREAM attribute (varbinary(max))	Byte[]	VarBinary	GetSqlBytes	Binary
float	Double	Float	GetSqlDouble	Double
image	Byte[]	Binary	GetSqlBinary	Binary
int	Int32	Int	GetSqlInt32	Int32
money	Decimal	Money	GetSqlMoney	Decimal
nchar	String	NChar	GetSqlString	StringFixedLe
	Char[]			
ntext	String	NText	GetSqlString	String
	Char[]			
numeric	Decimal	Decimal	GetSqlDecimal	Decimal
nvarchar	String	NVarChar	GetSqlString	String
real	Char[]	Real	CotSalSingle	Single
rowversion	Single Byte[]	Timestamp	GetSqlSingle GetSqlBinary	Single Binary
smalldatetime	DateTime	DateTime	GetSqlDinary GetSqlDateTime	DateTime
smallint	Int16	SmallInt	GetSqlInt16	Int16
smallmoney	Decimal	SmallMoney	GetSqlMoney	Decimal
sql_variant	Object ²	Variant	GetSqlValue ²	Object
text	String	Text	GetSqlString	String
	Char[]			
time (SQL Server 2008 and later)	TimeSpan	Time	none	Time
timestamp	Byte[]	Timestamp	GetSqlBinary	Binary
tinyint	Byte	TinyInt	GetSqlByte	Byte
uniqueidentifier	Guid	Uniqueldentifier	GetSqlGuid	Guid
varbinary	Byte[]	VarBinary	GetSqlBinary	Binary
varchar	String	VarChar	GetSqlString	AnsiString, Str
	Char[]			
xml	Xml	Xml	GetSqlXml	Xml
ς				>

¹ You cannot set the DbType property of a SqlParameter to SqlDbType.Date.

SQL Server documentation

For more information about SQL Server data types, see Data types (Transact-SQL).

See also

- SQL Server Data Types and ADO.NET
- SQL Server Binary and Large-Value Data
- Data Type Mappings in ADO.NET
- Configuring Parameters and Parameter Data Types
- ADO.NET Overview

² Use a specific typed accessor if you know the underlying type of the sql_variant.