



Date and Time Conversions Using SQL Server

By: [Edgewood Solutions \(/sqlserverauthor/11/edgewood-solutions/\)](#) | Updated: 2021-04-22 | [Comments \(54\)](#) | Related: 1 [\(/sqlservertip/1145/date-and-time-conversions-using-sql-server/\)](#) | 2 [\(/sqlservertip/2655/format-sql-server-dates-with-format-function/\)](#) | 3 [\(/sqlservertip/2507/determine-sql-server-date-and-time-parts-with-datepart-and-datetime-functions/\)](#) | 4 [\(/sqlservertip/1616/sql-server-2008-date-and-time-data-types/\)](#) | 5 [\(/sqlservertip/1712/sql-server-function-to-convert-integer-date-to-datetime-format/\)](#) | [More \(/sql-server-developer-resources/\)](#) > [Dates \(/sql-server-tip-category/121/dates/\)](#)

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(<https://www.mssqltips.com/sql-server-whitepaper/158/understanding-windows-server-cluster-quorum-options/>).

Problem

There are many instances when dates and times don't show up at your doorstep in the format you'd like it to be, nor does the output of a query fit the needs of the people viewing it. One option is to format the data in the application itself. Another option is to use the built-in functions SQL Server provides to format the date string for you.

Solution

SQL Server provides a number of options you can use for formatting a date/time string in SQL queries and stored procedures either from an input file (Excel, CSV, etc.) or a date column (datetime, datetime2, smalldatetime, etc.) from a table. One of the first considerations is the actual date/time value needed. The most common is the current date/time using **getdate()** ([/sqlservertip/6817/sql-current-date/](#)). This provides the current date and time according to the server providing the date and time. If a universal date/time (UTC) is needed, then **getutcdate()** ([/sqlservertip/6817/sql-current-date/](#)) should be used. To change the format of the date, you convert the requested date to a string and specify the format number corresponding to the format needed.

How to get different date formats in SQL Server

1. Use the SELECT statement with CONVERT function and date format option for the date values needed
2. To get YYYY-MM-DD use this T-SQL syntax `SELECT CONVERT(varchar, getdate(), 23)`
3. To get MM/DD/YY use this T-SQL syntax `SELECT CONVERT(varchar, getdate(), 1)`
4. Check out the chart to get a list of all format options

Below is a list of SQL date formats and an example of the output. The date used for all of these examples is "2006-12-30 00:38:54.840".

| DATE ONLY FORMATS | | | |
|-------------------|--|------------|------------|
| Format # | Query | Format | Sample |
| 1 | <code>select convert(varchar, getdate(), 1)</code> | mm/dd/yy | 12/30/06 |
| 2 | <code>select convert(varchar, getdate(), 2)</code> | yy.mm.dd | 06.12.30 |
| 3 | <code>select convert(varchar, getdate(), 3)</code> | dd/mm/yy | 30/12/06 |
| 4 | <code>select convert(varchar, getdate(), 4)</code> | dd.mm.yy | 30.12.06 |
| 5 | <code>select convert(varchar, getdate(), 5)</code> | dd-mm-yy | 30-12-06 |
| 6 | <code>select convert(varchar, getdate(), 6)</code> | dd-Mon-yy | 30 Dec 06 |
| 7 | <code>select convert(varchar, getdate(), 7)</code> | Mon dd, yy | Dec 30, 06 |
| 10 | <code>select convert(varchar, getdate(), 10)</code> | mm-dd-yy | 12-30-06 |
| 11 | <code>select convert(varchar, getdate(), 11)</code> | yy/mm/dd | 06/12/30 |
| 12 | <code>select convert(varchar, getdate(), 12)</code> | yyymmdd | 061230 |
| 23 | <code>select convert(varchar, getdate(), 23)</code> | yyyy-mm-dd | 2006-12-30 |
| 101 | <code>select convert(varchar, getdate(), 101)</code> | mm/dd/yyyy | 12/30/2006 |

| | | | |
|--------------------------------|--|--------------------------------|---------------------------------|
| 102 | select convert(varchar, getdate(), 102) | yyyy.mm.dd | 2006.12.30 |
| 103 | select convert(varchar, getdate(), 103) | dd/mm/yyyy | 30/12/2006 |
| 104 | select convert(varchar, getdate(), 104) | dd.mm.yyyy | 30.12.2006 |
| 105 | select convert(varchar, getdate(), 105) | dd-mm-yyyy | 30-12-2006 |
| 106 | select convert(varchar, getdate(), 106) | dd Mon yyyy | 30 Dec 2006 |
| 107 | select convert(varchar, getdate(), 107) | Mon dd, yyyy | Dec 30, 2006 |
| 110 | select convert(varchar, getdate(), 110) | mm-dd-yyyy | 12-30-2006 |
| 111 | select convert(varchar, getdate(), 111) | yyyy/mm/dd | 2006/12/30 |
| 112 | select convert(varchar, getdate(), 112) | yyyymmdd | 20061230 |
| | | | |
| TIME ONLY FORMATS | | | |
| 8 | select convert(varchar, getdate(), 8) | hh:mm:ss | 00:38:54 |
| 14 | select convert(varchar, getdate(), 14) | hh:mm:ss:nnn | 00:38:54:840 |
| 24 | select convert(varchar, getdate(), 24) | hh:mm:ss | 00:38:54 |
| 108 | select convert(varchar, getdate(), 108) | hh:mm:ss | 00:38:54 |
| 114 | select convert(varchar, getdate(), 114) | hh:mm:ss:nnn | 00:38:54:840 |
| | | | |
| DATE & TIME FORMATS | | | |
| 0 | select convert(varchar, getdate(), 0) | Mon dd yyyy hh:mm AM/PM | Dec 30 2006 12:38AM |
| 9 | select convert(varchar, getdate(), 9) | Mon dd yyyy hh:mm:ss:nnn AM/PM | Dec 30 2006 12:38:54:840AM |
| 13 | select convert(varchar, getdate(), 13) | dd Mon yyyy hh:mm:ss:nnn AM/PM | 30 Dec 2006 00:38:54:840AM |
| 20 | select convert(varchar, getdate(), 20) | yyyy-mm-dd hh:mm:ss | 2006-12-30 00:38:54 |
| 21 | select convert(varchar, getdate(), 21) | yyyy-mm-dd hh:mm:ss:nnn | 2006-12-30 00:38:54.840 |
| 22 | select convert(varchar, getdate(), 22) | mm/dd/yy hh:mm:ss AM/PM | 12/30/06 12:38:54 AM |
| 25 | select convert(varchar, getdate(), 25) | yyyy-mm-dd hh:mm:ss:nnn | 2006-12-30 00:38:54.840 |
| 100 | select convert(varchar, getdate(), 100) | Mon dd yyyy hh:mm AM/PM | Dec 30 2006 12:38AM |
| 109 | select convert(varchar, getdate(), 109) | Mon dd yyyy hh:mm:ss:nnn AM/PM | Dec 30 2006 12:38:54:840AM |
| 113 | select convert(varchar, getdate(), 113) | dd Mon yyyy hh:mm:ss:nnn | 30 Dec 2006 00:38:54:840 |
| 120 | select convert(varchar, getdate(), 120) | yyyy-mm-dd hh:mm:ss | 2006-12-30 00:38:54 |
| 121 | select convert(varchar, getdate(), 121) | yyyy-mm-dd hh:mm:ss:nnn | 2006-12-30 00:38:54.840 |
| 126 | select convert(varchar, getdate(), 126) | yyyy-mm-dd T hh:mm:ss:nnn | 2006-12-30T00:38:54.840 |
| 127 | select convert(varchar, getdate(), 127) | yyyy-mm-dd T hh:mm:ss:nnn | 2006-12-30T00:38:54.840 |
| | | | |
| ISLAMIC CALENDAR DATES | | | |
| 130 | select convert(nvarchar, getdate(), 130) | dd mmm yyyy hh:mi:ss:nnn AM/PM | 10 12:38:54:840 1427 ذو الحجة A |
| 131 | select convert(nvarchar, getdate(), 131) | dd mmm yyyy hh:mi:ss:nnn AM/PM | 10/12/1427 12:38:54:840AM |

You can also format the date or time without dividing characters, as well as concatenate the date and time string:

| Sample statement | Format | Output |
|---|---------------|----------------|
| select replace(convert(varchar, getdate(),101),'/',',') | mmddyyyy | 12302006 |
| select replace(convert(varchar, getdate(),101),'/',',') + replace(convert(varchar, getdate(),108),':','') | mmddyyyyhmmss | 12302006004426 |

If you want to get a list of all valid date and time formats, you could use the code below and change the @date to GETDATE() or any other date you want to use. This will output just the valid formats.

```

DECLARE @counter INT = 0
DECLARE @date DATETIME = '2006-12-30 00:38:54.840'

CREATE TABLE #dateFormats (dateFormatOption int, dateOutput nvarchar(40))

WHILE (@counter <= 150 )
BEGIN
    BEGIN TRY
        INSERT INTO #dateFormats
        SELECT CONVERT(nvarchar, @counter), CONVERT(nvarchar,@date, @counter)
        SET @counter = @counter + 1
    END TRY
    BEGIN CATCH;
        SET @counter = @counter + 1
        IF @counter >= 150
            BEGIN
                BREAK
            END
    END CATCH
END

SELECT * FROM #dateFormats

```

Recommended Reading

Continue your learning on Microsoft SQL Server dates with these tips and tutorials:

- [Determine SQL Server Date and Time Parts with DATEPART and DATENAME Functions \(/sqlservertip/2507/determine-sql-server-date-and-time-parts-with-datepart-and-datetime-functions/\)](/sqlservertip/2507/determine-sql-server-date-and-time-parts-with-datepart-and-datetime-functions/)
- [SQL Server Date and Time Data Types \(/sqlservertip/1616/sql-server-2008-date-and-time-data-types/\)](/sqlservertip/1616/sql-server-2008-date-and-time-data-types/)
- [SQL Server function to convert integer date to datetime format \(/sqlservertip/1712/sql-server-function-to-convert-integer-date-to-datetime-format/\)](/sqlservertip/1712/sql-server-function-to-convert-integer-date-to-datetime-format/)
- [SQL Database DateTime Best Practices \(/sqlservertip/5206/sql-server-datetime-best-practices/\)](/sqlservertip/5206/sql-server-datetime-best-practices/)
- [Format SQL Server Dates with FORMAT Function \(/sqlservertip/2655/format-sql-server-dates-with-format-function/\)](/sqlservertip/2655/format-sql-server-dates-with-format-function/)
- [SQL Server Date Functions \(/sql-server-tip-category/121/dates/\)](/sql-server-tip-category/121/dates/)
- [Add and Subtract Dates using DATEADD in SQL Server \(/sqlservertip/2509/add-and-subtract-dates-using-dateadd-in-sql-server/\)](/sqlservertip/2509/add-and-subtract-dates-using-dateadd-in-sql-server/)

Next Steps

- The formats listed above are not inclusive of all formats provided. Experiment with the different format numbers to see what others are available.
- These formats can be used for all date/time functions, as well as data being served to clients, so experiment with these data format conversions to see if they can provide data more efficiently.
- Also, check out the [SQL Server FORMAT Function to Format Dates \(/sqlservertip/2655/format-sql-server-dates-with-format-function/\)](/sqlservertip/2655/format-sql-server-dates-with-format-function/).