

Using PowerShell to extract data from SQL Server DB (Historian) into a CSV file

There are many ways to extract data from SQL Databases to CSV, generally by coding in App Server, SSIS, VS and many others. PowerShell is now part of the Windows OS and makes it simple ... Cut & Paste the code below into Windows PowerShell ISE or Notepad and modify the Server name and query as required and run on your SQL Server.

NOTE: Your OS user account will need to have access to the SQL Server (test by opening the SSMS and login with OS Security)

The PowerShell Script

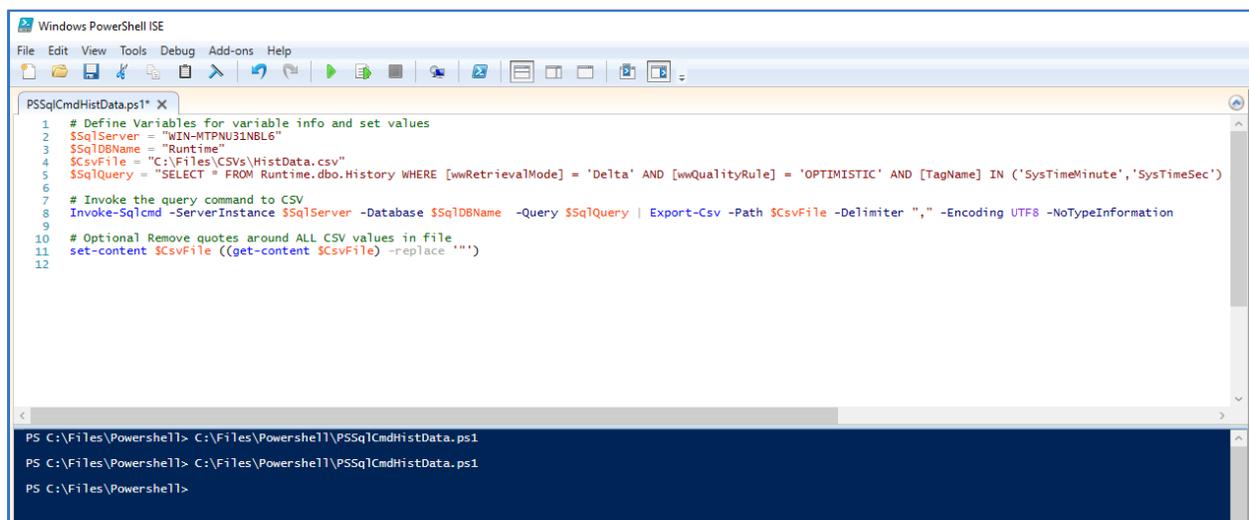
The file name for a PowerShell script has the *.ps1 extension. Here is the text-based query for Cut & Paste purposes.

```
# Define Variables for variable info and set values
$SqlServer = "WIN-MTPNU31NBL6"
$SqlDBName = "Runtime"
$CsvFile = "C:\Files\CSVs\HistData.csv"
$SqlQuery = "SELECT * FROM Runtime.dbo.History WHERE [wwRetrievalMode] = 'Delta' AND [wwQualityRule] = 'OPTIMISTIC' AND [TagName] IN ('SysTimeMinute','SysTimeSec') AND [DateTime] >= DATEADD(Minute,-5,GETDATE());"

# Invoke the query command into CSV file
Invoke-Sqlcmd -ServerInstance $SqlServer -Database $SqlDBName -Query $SqlQuery | Export-Csv -Path $CsvFile -Delimiter "," -Encoding UTF8 -NoTypeInformation

# Optional, Remove quotes around ALL CSV values in file
set-content $CsvFile ((get-content $CsvFile) -replace '"')
```

Running from Windows PowerShell ISE is best until you get any bugs out of the system



```
Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
PSSqlCmdHistData.ps1 X
1 # Define Variables for variable info and set values
2 $SqlServer = "WIN-MTPNU31NBL6"
3 $SqlDBName = "Runtime"
4 $CsvFile = "C:\Files\CSVs\HistData.csv"
5 $SqlQuery = "SELECT * FROM Runtime.dbo.History WHERE [wwRetrievalMode] = 'Delta' AND [wwQualityRule] = 'OPTIMISTIC' AND [TagName] IN ('SysTimeMinute','SysTimeSec')
6
7 # Invoke the query command to CSV
8 Invoke-Sqlcmd -ServerInstance $SqlServer -Database $SqlDBName -Query $SqlQuery | Export-Csv -Path $CsvFile -Delimiter "," -Encoding UTF8 -NoTypeInformation
9
10 # Optional Remove quotes around ALL CSV values in file
11 set-content $CsvFile ((get-content $CsvFile) -replace '"')
12

PS C:\Files\Powershell> C:\Files\Powershell\PSSqlCmdHistData.ps1
PS C:\Files\Powershell> C:\Files\Powershell\PSSqlCmdHistData.ps1
PS C:\Files\Powershell>
```

An alternate programmed approach with PowerShell ...

```
# Define Variables for variable info and set values
$SqlServer = "WIN-MTPNU31NBL6"
$SqlDBName = "Runtime"
$CsvFile = "C:\Files\CSVs\HistData.csv"

# The SQL Query
$SqlQuery = "SELECT * FROM Runtime.dbo.History WHERE [wwRetrievalMode] = 'Delta' AND
[wwQualityRule] = 'OPTIMISTIC' AND [TagName] IN ('SysTimeMinute','SysTimeSec') AND
[DateTime] >= DATEADD(Minute,-5,GETDATE());"

# Build the connection
$SqlConn = New-Object System.Data.SqlClient.SqlConnection
$SqlConn.ConnectionString = "Server = $SqlServer; Database = $SqlDBName; Integrated
Security = True;"

# Set the Command
$SqlCmd = New-Object System.Data.SqlClient.SqlCommand
$SqlCmd.CommandText = $SqlQuery
$SqlCmd.Connection = $SqlConn

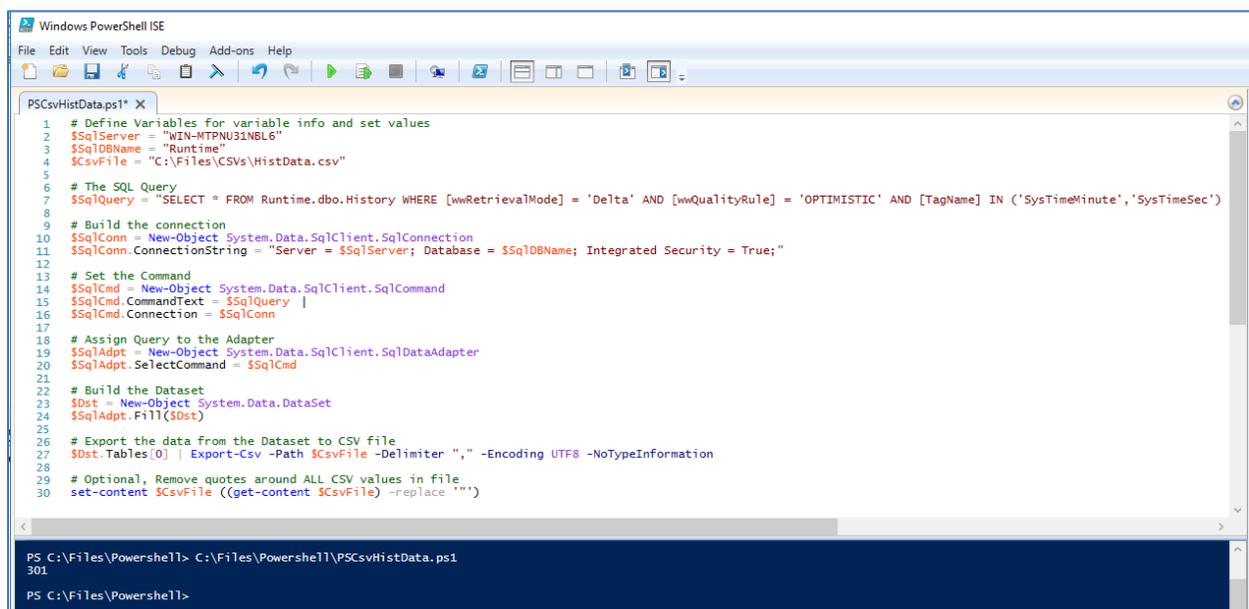
# Assign Query to the Adapter
$SqlAdpt = New-Object System.Data.SqlClient.SqlDataAdapter
$SqlAdpt.SelectCommand = $SqlCmd

# Build the Dataset
$Dst = New-Object System.Data.DataSet
$SqlAdpt.Fill($Dst)

# Export the data from the Dataset to CSV file
$Dst.Tables[0] | Export-Csv -Path $CsvFile -Delimiter "," -Encoding UTF8 -
NoTypeInformation

# Optional, Remove quotes around ALL CSV values in file
set-content $CsvFile ((get-content $CsvFile) -replace '"')

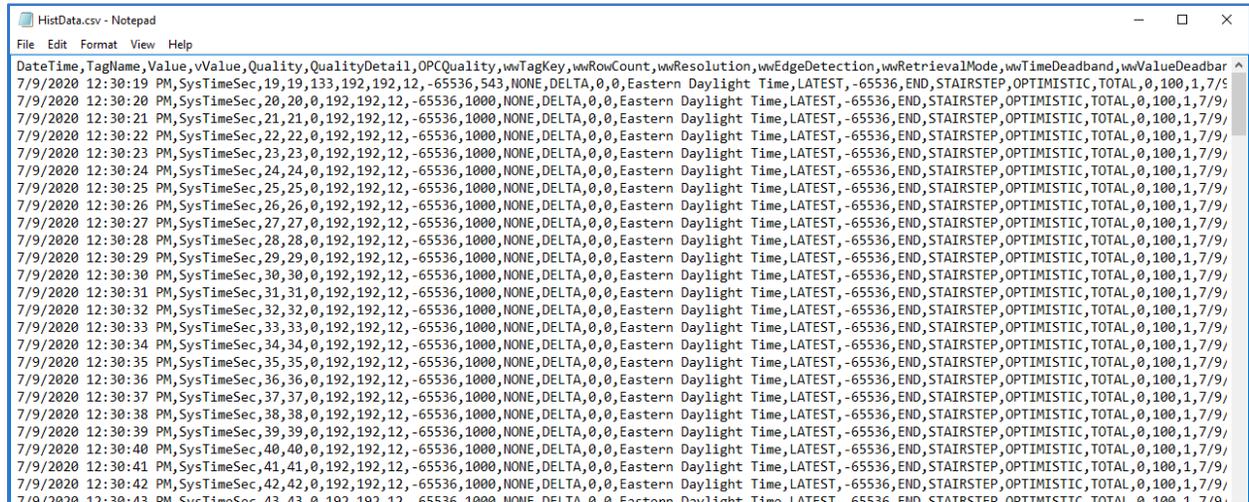
# Cleanup (may not be necessary)
$Dst.Dispose()
$SqlAdpt.Dispose()
$SqlCmd.Dispose()
$SqlConn.Dispose()
```



```
Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
PSCsvHistData.ps1* X
1 # Define Variables for variable info and set values
2 $SqlServer = "WIN-MTPNU31NBL6"
3 $SqlDBName = "Runtime"
4 $CsvFile = "C:\Files\CSVs\HistData.csv"
5
6 # The SQL Query
7 $SqlQuery = "SELECT * FROM Runtime.dbo.History WHERE [wwRetrievalMode] = 'Delta' AND [wwQualityRule] = 'OPTIMISTIC' AND [TagName] IN ('SysTimeMinute','SysTimeSec')
8
9 # Build the connection
10 $SqlConn = New-Object System.Data.SqlClient.SqlConnection
11 $SqlConn.ConnectionString = "Server = $SqlServer; Database = $SqlDBName; Integrated Security = True;"
12
13 # Set the Command
14 $SqlCmd = New-Object System.Data.SqlClient.SqlCommand
15 $SqlCmd.CommandText = $SqlQuery
16 $SqlCmd.Connection = $SqlConn
17
18 # Assign Query to the Adapter
19 $SqlAdpt = New-Object System.Data.SqlClient.SqlDataAdapter
20 $SqlAdpt.SelectCommand = $SqlCmd
21
22 # Build the Dataset
23 $Dst = New-Object System.Data.DataSet
24 $SqlAdpt.Fill($Dst)
25
26 # Export the data from the Dataset to CSV file
27 $Dst.Tables[0] | Export-Csv -Path $CsvFile -Delimiter "," -Encoding UTF8 -NoTypeInformation
28
29 # Optional, Remove quotes around ALL CSV values in file
30 set-content $CsvFile ((get-content $CsvFile) -replace '"')
PS C:\Files\Powershell> C:\Files\Powershell\PSCsvHistData.ps1
301
PS C:\Files\Powershell>
```

The Resulting CSV

More is better.



```
HistData.csv - Notepad
File Edit Format View Help
DateTime,TagName,Value,vValue,Quality,QualityDetail,OPCQuality,wvTagKey,wvRowCount,wvResolution,wvEdgeDetection,wvRetrievalMode,wvTimeDeadband,wvValueDeadband
7/9/2020 12:30:19 PM, SysTimeSec, 19, 19, 133, 192, 192, 12, -65536, 543, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:20 PM, SysTimeSec, 20, 20, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:21 PM, SysTimeSec, 21, 21, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:22 PM, SysTimeSec, 22, 22, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:23 PM, SysTimeSec, 23, 23, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:24 PM, SysTimeSec, 24, 24, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:25 PM, SysTimeSec, 25, 25, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:26 PM, SysTimeSec, 26, 26, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:27 PM, SysTimeSec, 27, 27, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:28 PM, SysTimeSec, 28, 28, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:29 PM, SysTimeSec, 29, 29, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:30 PM, SysTimeSec, 30, 30, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:31 PM, SysTimeSec, 31, 31, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:32 PM, SysTimeSec, 32, 32, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:33 PM, SysTimeSec, 33, 33, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:34 PM, SysTimeSec, 34, 34, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:35 PM, SysTimeSec, 35, 35, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:36 PM, SysTimeSec, 36, 36, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:37 PM, SysTimeSec, 37, 37, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:38 PM, SysTimeSec, 38, 38, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:39 PM, SysTimeSec, 39, 39, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:40 PM, SysTimeSec, 40, 40, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:41 PM, SysTimeSec, 41, 41, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:42 PM, SysTimeSec, 42, 42, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
7/9/2020 12:30:43 PM, SysTimeSec, 43, 43, 0, 192, 192, 12, -65536, 1000, NONE, DELTA, 0, 0, Eastern Daylight Time, LATEST, -65536, END, STAIRSTEP, OPTIMISTIC, TOTAL, 0, 100, 1, 7/9/
```

... Quick and easy!

NOTE: To return the date and time with milliseconds, build out the `SELECT` portion of the query and convert the `Date` to a text datatype like ...

```
SELECT CAST([DateTime] as nvarchar) AS ValueDateTime, [TagName], [Value], [QualityDetail]
...
```

Or

```
SELECT CONVERT(nvarchar, [DateTime], 121) AS ValueDateTime, [TagName], [Value],
[QualityDetail] ...
```

Enjoy and have fun!

By J. Bruce Telford.