

# SQL Sentry Portal & SentryOne Monitor Top SQL

Last Modified on 02 November 2021

✔ **Applies to the following products and features:** The [SentryOne Monitor](#) product and the on-premises SQL Sentry [Portal](#) feature for SQL Sentry.

## Introduction

The Top SQL view displays a unified picture of collected SQL statements. It's designed to help you quickly identify queries, applications, logins, and more that are causing the most waits, using the most resources, taking the most time, and putting the most load on your SQL Server.

**Note:** Top SQL data is retained for 15 days in **SentryOne Monitor**. If you're using the **SQL Sentry Portal** feature for SQL Sentry, this default value may be changed and is controlled by the [Monitoring Service Settings](#).

## Available Charts

The full viewing options for this card's charts are:

- [Waits](#)
- [Resources](#)
- [Queries](#) ›
- [By App](#) ›
- [By DB](#) ›
- [By Host](#) ›
- [By Login](#) ›

Select the  button in the upper right for additional **options** such as reset, show/hide axis labels, and show/hide axes.

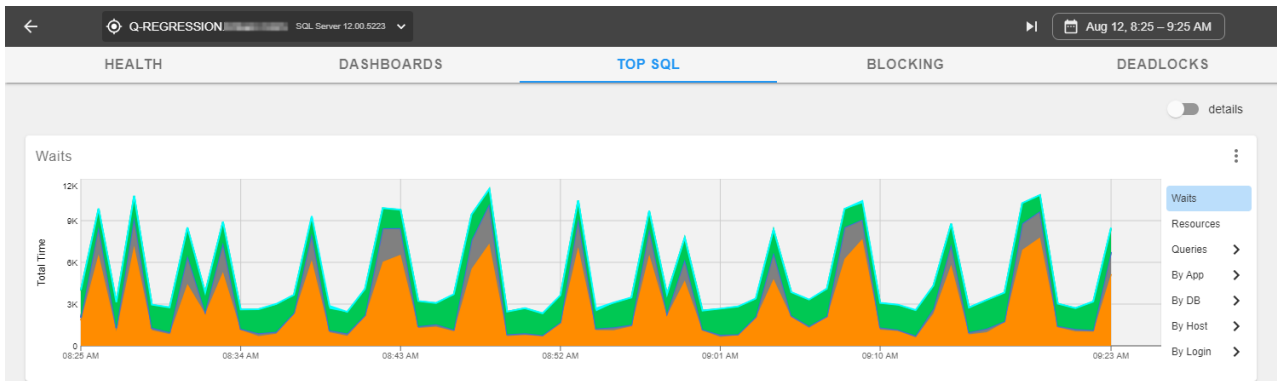
Show/hide axes has the following options:

- Avg Duration (ms)
- CPU Time (ms)
- Exec Count
- Reads Logical
- Writes Logical
- Reads Physical

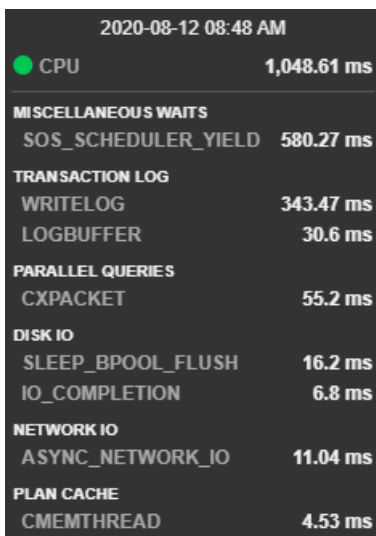
On the options with the ➤ (chevron-right), additional choices similar to the above are available by selecting the ➤ symbol. For example, *By App - Duration (ms)* and *Queries - Reads (P)* are available chart options.

## Waits

The first card in **Top SQL** defaults to a **Waits** view. Waits displayed here are from the SQL Server instance level. For a better understanding of waits, see the SQL Server [Waits Stats](#) section of the [Dashboards](#) article and this [blog post](#) [What to do \(or not do\) about top wait stats](#).

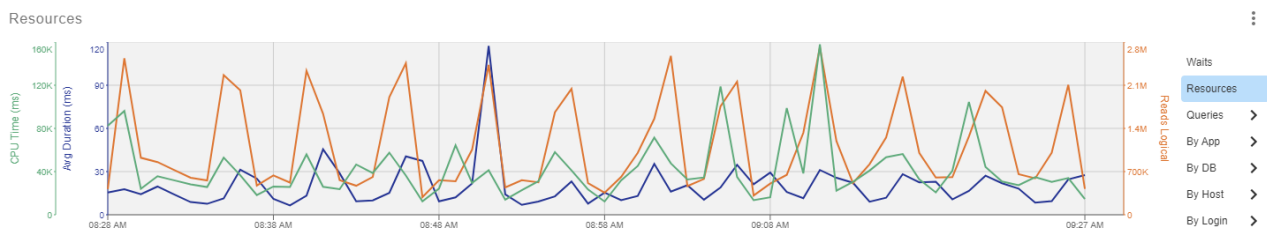


Hover over an area on the chart to view additional details about the waits:

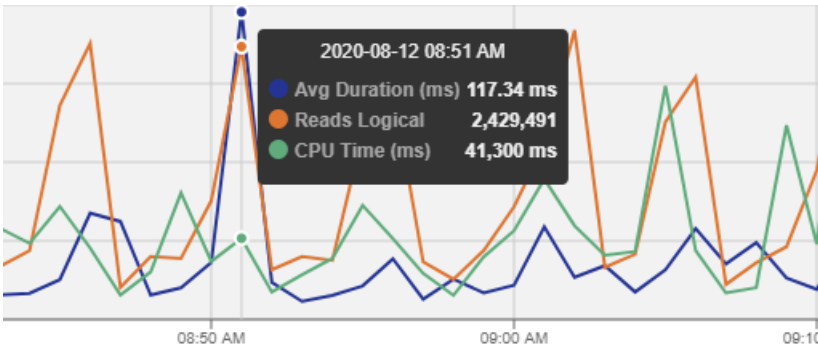


## Resources

View resource usage from Top SQL, based on query and procedure stats:



Hover over a point on the chart to view additional details about the resources being used:

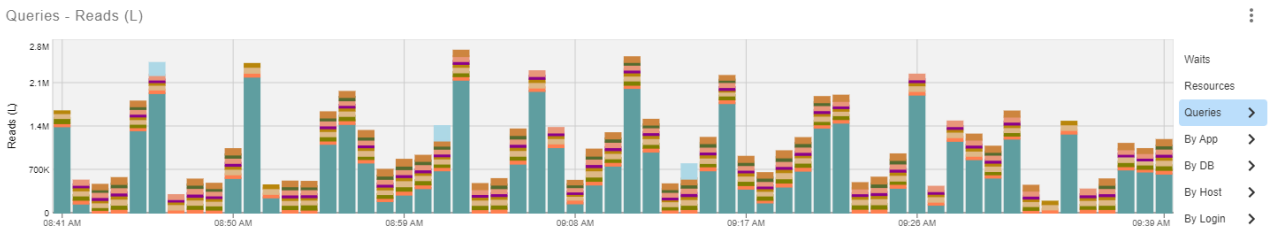


## Queries

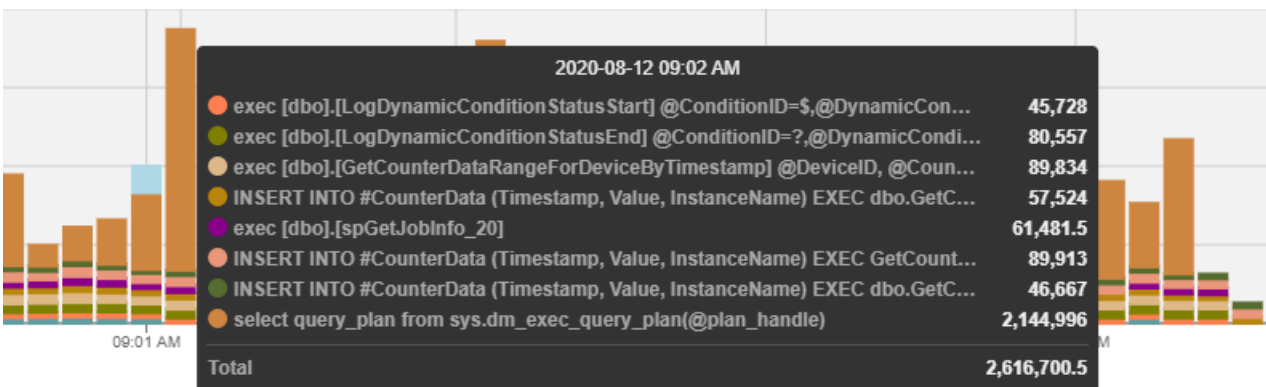
Select the **>** (chevron-right) to view charts for:

- CPU
- Duration
- Exec Count
- Reads (L) - The default selection
- Reads (P)
- Writes (L)

The information displayed here is from query stats, procedure stats, and trace data.



Hover over an area in the chart to view more details about the queries:



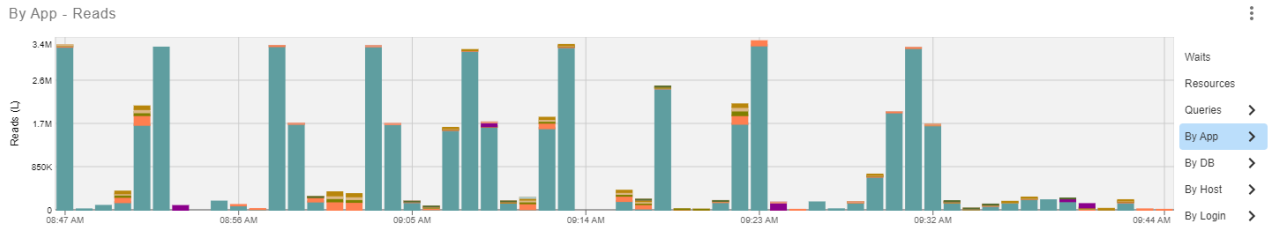
## By App

Select the **>** (chevron-right) to view charts for:

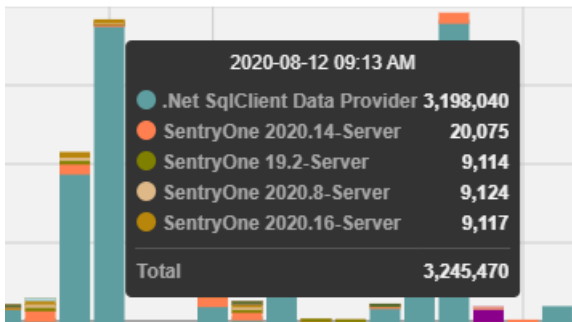
- CPU

- Duration
- Exec Count
- Reads (L) - The default selection
- Writes (L)

The information displayed here is from trace data.



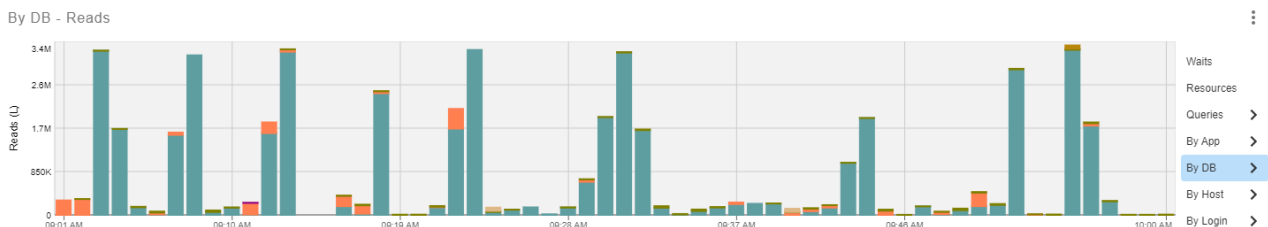
Hover over an area on the chart to view more details about the applications:



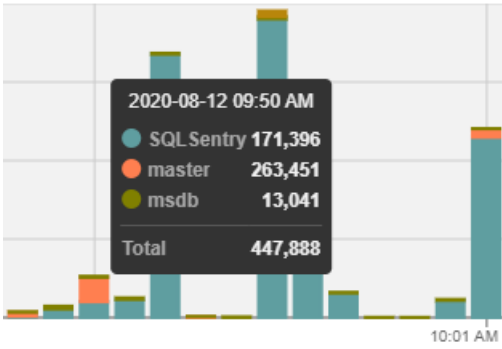
## By DB

Select the > (chevron-right) to view charts for:

- CPU
- Duration
- Exec Count
- Reads (L) - The default selection
- Reads (P)



Hover over an area on the chart to view more details about the databases:

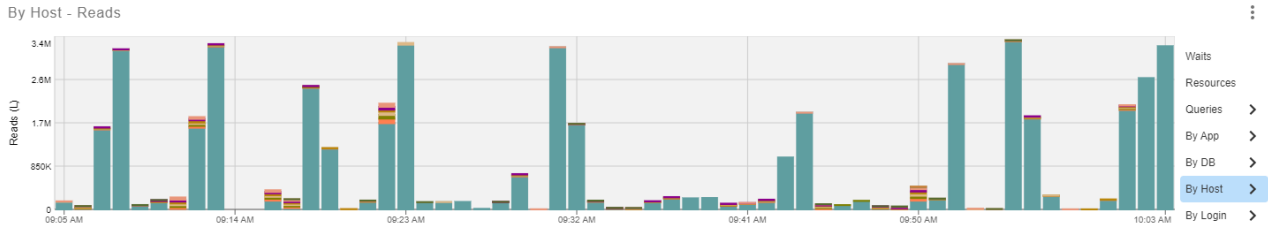


## By Host

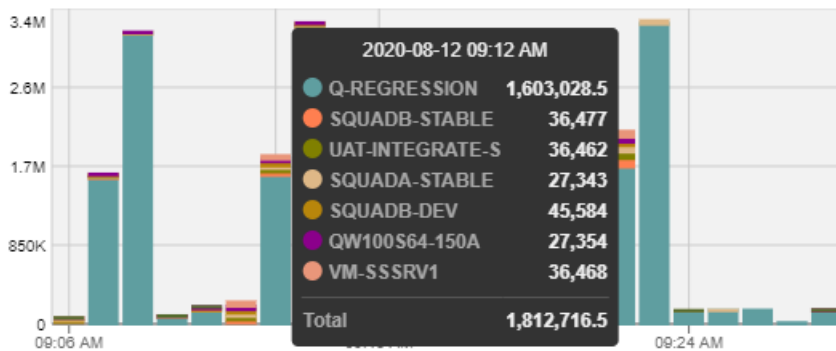
Select the **>** (chevron-right) to view charts for:

- CPU
- Duration
- Exec Count
- Reads (L) - The default selection
- Writes (P)

The information displayed here is from trace data.



Hover over an area on the chart to view more details about hosts:



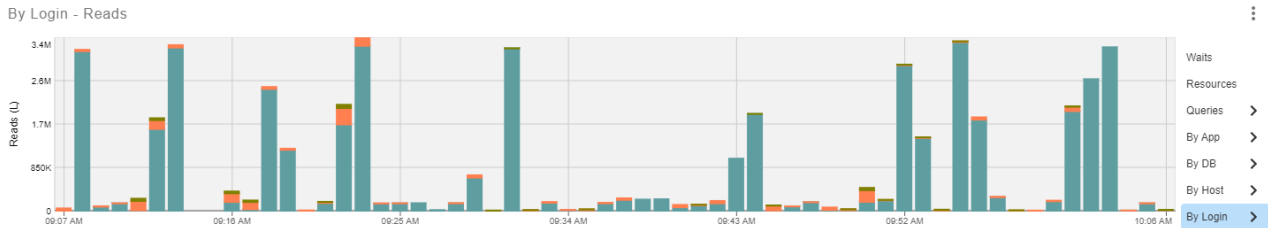
## By Login

Select the **>** (chevron-right) to view charts for:

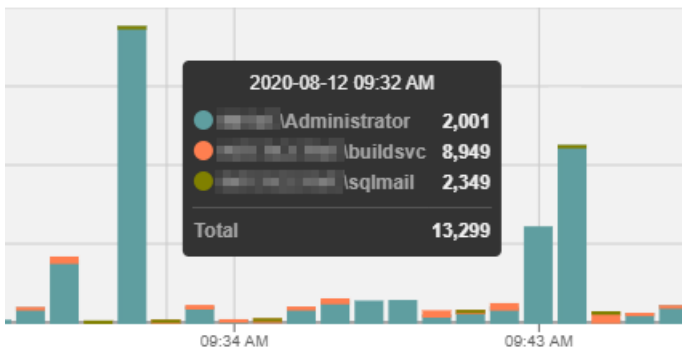
- CPU
- Duration

- Exec Count
- Reads (L) - The default selection
- Writes (P)

The information displayed here is from trace data.



Hover over an area on the chart to view more details about logins:



## Totals

The **Totals** table displays the text data and associated information such as database, duration, count, and CPU for the collected SQL statements (including procedure stats, query stats, and completed queries).

Totals

Text Data	Database	Duration	Count	CPU (ms)	Reads (L)	Writes (L)	Events
select query_plan from sys.dm_exec_query_plan(@plan_handle)	master	00:29:35.699	4,790	372,513	34,604,243	1,030,942	0
exec [dbo].[PurgeDataBeforeDateTime] @PurgePerformanceDataBeforeDateTimeUtc=,@PurgeEventData...	SQLSentry	00:15:37.165	22	149,854	23,221,469	527,687	22 >
INSERT INTO #CounterData (Timestamp, Value, InstanceName) EXEC GetCounterDataRangeForDeviceBy...	SQLSentry	00:13:24.761	70,546	341,253	5,020,858	699	0
exec [dbo].[LogDynamicConditionStatusEnd] @ConditionID=?,@DynamicConditionID=?,@ObjectID=?,@Las...	SQLSentry	00:52:08.352	262,522	80,282	3,699,878	3,302	0
exec [dbo].[GetCounterDataRangeForDeviceByTimestamp] @DeviceID, @CounterID, @StartTimestamp, @...	SQLSentry	00:09:31.684	51,238	236,413	3,645,429	439	0
exec [dbo].[PurgePerformanceAnalysisDataAllTables],1	SQLSentry	00:05:34.331	22	56,141	3,291,835	2,793	22 >
INSERT INTO #CounterData (Timestamp, Value, InstanceName) EXEC dbo.GetCounterNetworkAdapterIO...	SQLSentry	00:06:17.417	21,652	146,822	3,231,806	1,241	0
INSERT INTO #CounterData (Timestamp, Value, InstanceName) EXEC dbo.GetCounterBytesToMBDataRan...	SQLSentry	00:06:49.816	34,181	163,119	2,545,105	1,873	0

**Note:** By default, the **Totals** grid displays the top 8 queries by logical reads (descending). For all grids, the arrow with the circle around it highlights by which column the data is sorted; ascending or descending.


## Trace Events

Select the > (chevron-right) under the **Events** column to display details for any collected **Trace Events** such as

## RPC:Completed.

< Trace Events

Event Class	Text Data	Host	Application Name	Database Name	Login	Duration	CPU (ms)	Reads (L)	Writes (P)	Start Time	End Time	Information	Error	SPID	Host Process ID
RPC Completed	exec RollupPerformanceAnalysisData	O-REGRESSION	Net SqClient Data Provider	SQLSentry	Administrator	00:00:04.741	2,888	1,927,939	70	2020-08-12 10:01:05.000 AM	2020-08-12 10:01:09.740 AM	6,556	0	133	1,884
RPC Completed	exec RollupPerformanceAnalysisData	O-REGRESSION	Net SqClient Data Provider	SQLSentry	Administrator	00:00:02.137	375	195,772	33	2020-08-12 09:51:04.997 AM	2020-08-12 09:51:07.133 AM	2,485	0	144	1,884
RPC Completed	exec RollupPerformanceAnalysisData	O-REGRESSION	Net SqClient Data Provider	SQLSentry	Administrator	00:00:02.011	888	36,720	18	2020-08-12 09:57:05.007 AM	2020-08-12 09:57:07.017 AM	1,223	0	153	1,884

**Note:** In the upper right of the **Top SQL** page, there is a **details** switch. The switch is off by default. Select the switch to turn on details (  details ), which flips all totals and statements tables to the detailed **Trace Events** and **Trace Events Statements** view on the page.


## Statements

Statements

Text Data	Duration	Count	CPU (ms)	Reads (L)	Writes (L)	Events
UPDATE [dbo].[EventSourceObject] WITH (ROWLOCK) SET [dbo].[EventSourceObject].[RemoteObjectID]=...	00:05:02.338	36,063	20,152	6,262,305	0	<a href="#">2 &gt;</a>
UPDATE EventSourceObject SET LastModified = GETUTCDATE() FROM EventSourceObject INNER JOIN I...	00:00:04.968	0	0	333	28	<a href="#">2 &gt;</a>

The **Statements** card displays additional information about **Totals** where applicable, including plan diagrams, text data, parameters, and plan XML.

## Trace Events Statements

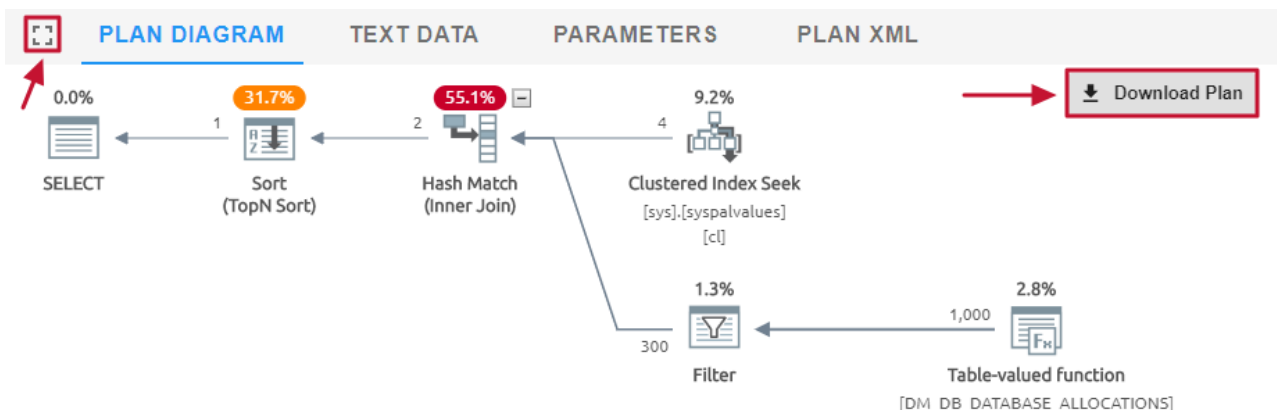
Select the  (chevron-right) under the **Events** column to display statement details to any collected Trace Events such as *SP:StmtCompleted*.

< Trace Events

Event Class	Text Data	Host	Application Name	Database Name	Login	Duration	CPU (ms)	Reads (L)	Writes (P)	Start Time	End Time	Information	Error
SP:StmtCompleted	UPDATE [dbo].[EventSourceObject] WITH (ROWLOCK) SET [dbo].[EventSourceObject].[RemoteObjectID]=...	VM-SSSRV2	Net SqClient Data Provider	sqlSentry20	sqlmail	00:00:02.489	0	174	23	2020-08-12 10:30:09.750 AM	2020-08-12 10:30:12.240 AM	1	0
SP:StmtCompleted	UPDATE [dbo].[EventSourceObject] WITH (ROWLOCK) SET [dbo].[EventSourceObject].[RemoteObjectID]=...	VM-SSSRV2	Net SqClient Data Provider	sqlSentry20	sqlmail	00:00:02.480	0	171	7	2020-08-12 10:30:09.753 AM	2020-08-12 10:30:12.233 AM	1	0

## Plan Diagram

Use the **full screen** button in the upper left to expand a larger plan, or use the **Download Plan** button to download the entire **.sqlplan** file.

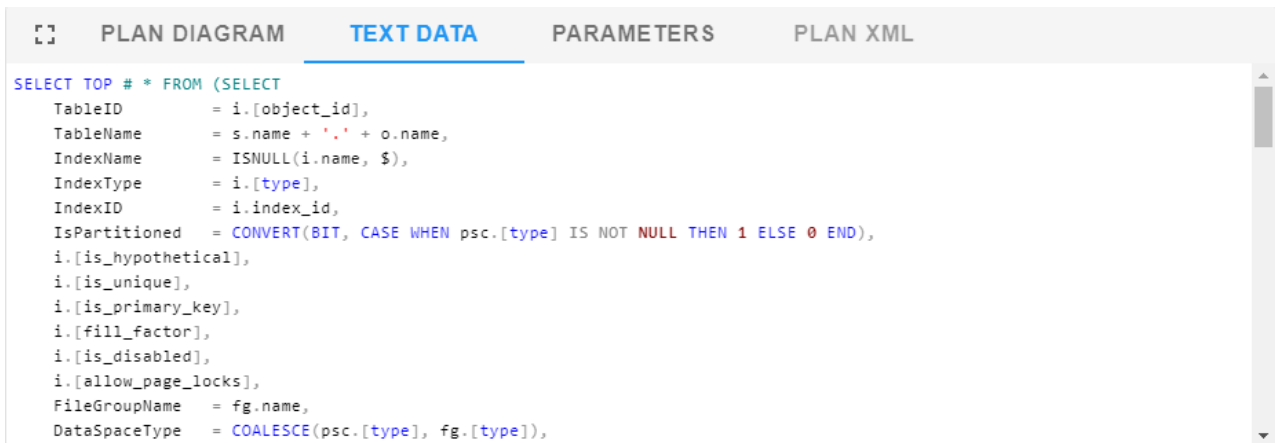


**Note:**

- Sometimes the **plan XML** may be populated, but there's not a statement that can be matched for the **plan diagram**. This can be caused by things like nested procedures or individual statements falling outside of the collection thresholds on their own. In this case, the **plan diagram** will display a message such as "*The selected statement was not found in the plan XML. Download the full plan to view in SentryOne Plan Explorer*" and provide a **Download Plan XML** button.
- If the **Query History** chart shows a disabled point (i.e. a gray triangle), then the plan diagram will display a message to indicate that there are no plans available (e.g. "*There is no data to display*").

## Text Data

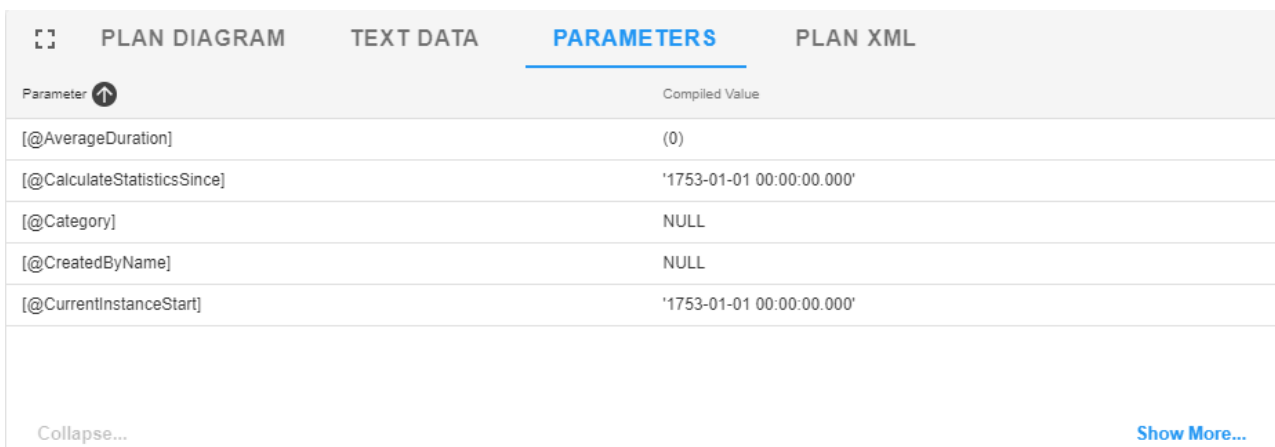
Use the **Text Data** tab to view a formatted and syntax color-coded copy of the statement.



```
SELECT TOP # * FROM (SELECT
  TableID      = i.[object_id],
  TableName    = s.name + '.' + o.name,
  IndexName    = ISNULL(i.name, $),
  IndexType    = i.[type],
  IndexID      = i.index_id,
  IsPartitioned = CONVERT(BIT, CASE WHEN psc.[type] IS NOT NULL THEN 1 ELSE 0 END),
  i.[is_hypothetical],
  i.[is_unique],
  i.[is_primary_key],
  i.[fill_factor],
  i.[is_disabled],
  i.[allow_page_locks],
  FileGroupName = fg.name,
  DataSpaceType = COALESCE(psc.[type], fg.[type]),
```

## Parameters

Use the **Parameters** tab to view compiled values for statement parameters.



Parameter	Compiled Value
[@AverageDuration]	(0)
[@CalculateStatisticsSince]	'1753-01-01 00:00:00.000'
[@Category]	NULL
[@CreatedByName]	NULL
[@CurrentInstanceStart]	'1753-01-01 00:00:00.000'

Collapse... [Show More...](#)

## Plan XML



Use the **Plan XML** tab to view or copy the ShowPlanXML output.

```
<ShowPlanXML
  xmlns="http://schemas.microsoft.com/sqlserver/2004/07/showplan" Version="1.518" Build="13.0.5366.0">
  <BatchSequence>
    <Batch>
      <Statements>
        <StmtSimple StatementText="CREATE PROCEDURE [dbo].UpdateEventSourceObject&#xD;&#xA;@ObjectID UniqueIdentifier,&#xD;&#xA;
        <StmtSimple StatementText="UPDATE [dbo].[EventSourceObject] WITH (ROWLOCK) SET [dbo].[EventSourceObject].[RemoteObject
        <StatementSetOptions QUOTED_IDENTIFIER="true" ARITHABORT="true" CONCAT_NULL_YIELDS_NULL="true" ANSI_NULLS="true" ANS
        <QueryPlan CachedPlanSize="96" CompileTime="3" CompileCPU="3" CompileMemory="1040">
          <MemoryGrantInfo SerialRequiredMemory="0" SerialDesiredMemory="0" />
          <OptimizerHardwareDependentProperties EstimatedAvailableMemoryGrant="471859" EstimatedPagesCached="235929" Estimat
          <TraceFlags IsCompileTime="1">
            <TraceFlag Value="2469" Scope="Global" />
          </TraceFlags>
          <RelOp NodeId="1" PhysicalOp="Clustered Index Update" LogicalOp="Update" EstimateRows="1" EstimateIO="0.08" Estima
```

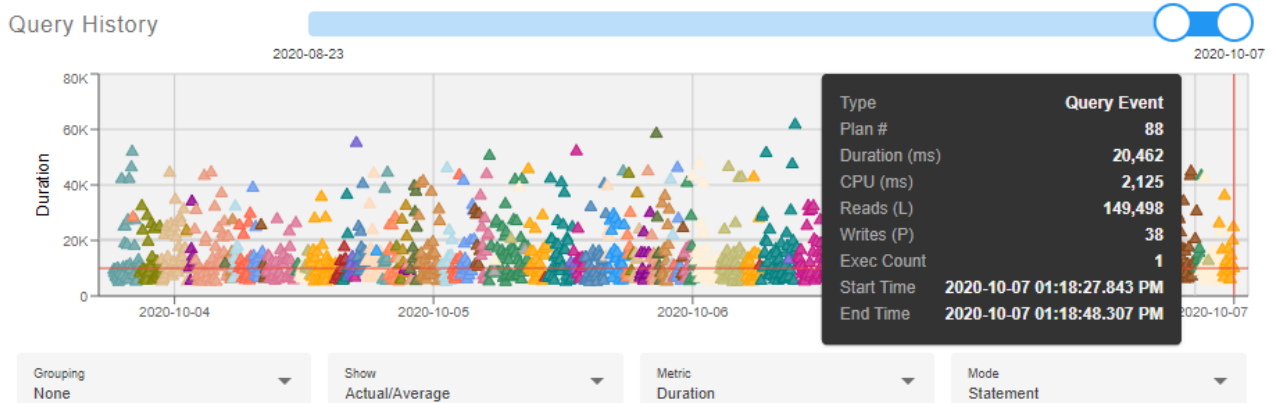
**Note:** The **Copy** button is only available when you are using **HTTPS** (requires an SSL certificate for your [SQL Sentry Portal installation](#)).

## Query History

Select a query or statement, then view the **Query History** for it. **Query History** displays a graphical representation of the selected query over a specified range of time. **Query History** provides information about the query execution plans, if and when they were changed, and how they impacted different resources.

## Query Event

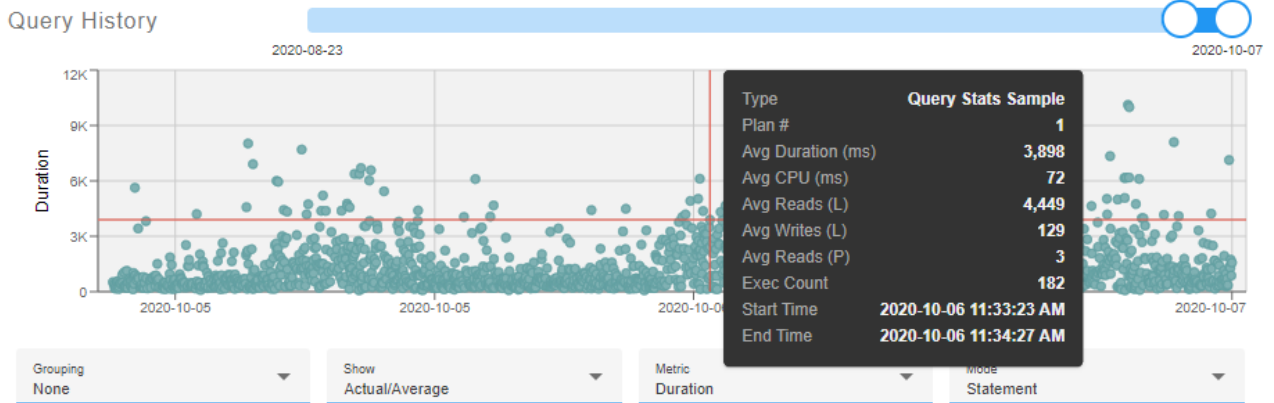
Each triangle represents a **Query Event**.



**Note:** The triangle colors represent execution plans. Triangles of the same color are using the same plan. If there is excessive plan drift (beyond 25 plans), then the 25 colors will start to be reused in the same order. Select a specific event to the **Plan #** represented.

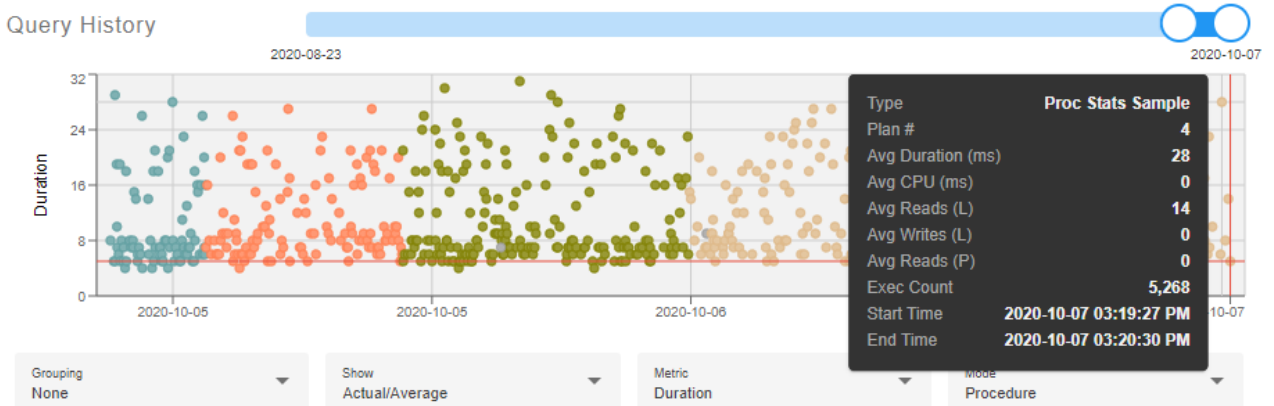
# Query Stats Sample

Each dot represents a **Query Stats Sample** or a Proc Stats Sample.



# Proc Stats Sample

Each dot represents a **Proc Stats Sample** or a Query Stats Sample.



**Note:** The **Mode** for the **Proc Stats Sample** is set to *Procedure*.

# Additional Options

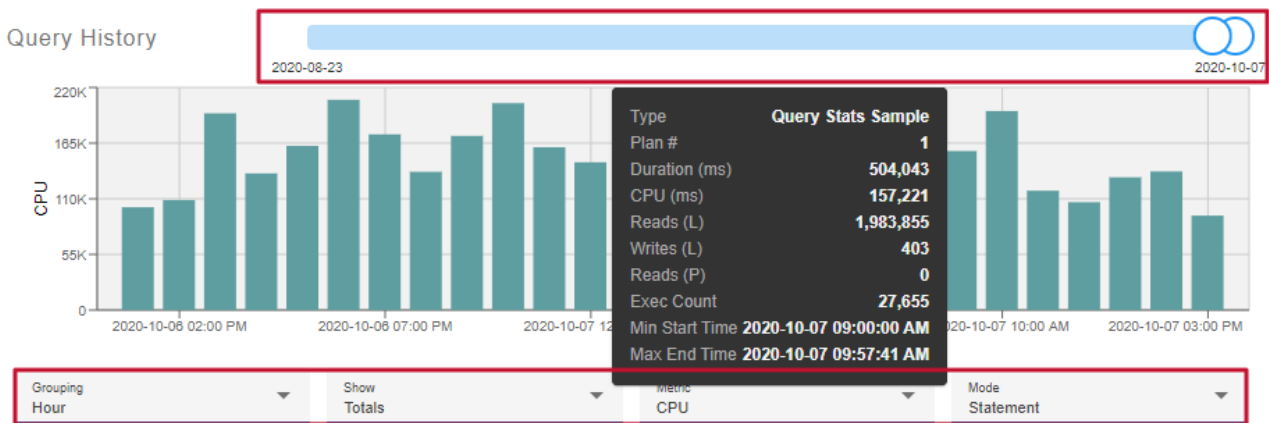
Use the options below the chart to adjust the **Grouping**, **Show**, **Metric**, **Mode**, or **Dates** slider window.

- **Grouping**
  - *None*
  - *Hour*
  - *Day*
  - *Week*
- **Show**
  - *Actual/Average*

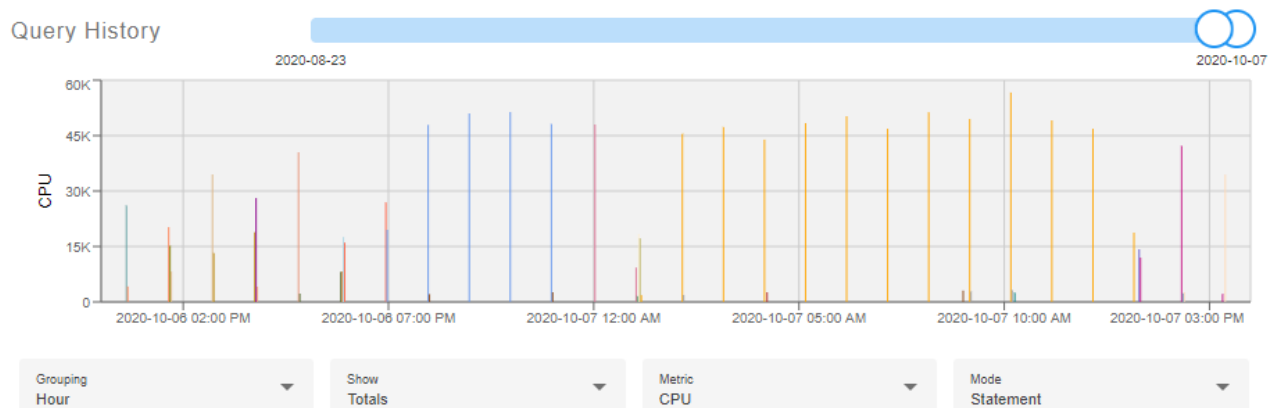
- Totals
- **Metric**
  - Duration
  - CPU
  - IO
- **Mode**
  - Procedure
  - Statement

**Note:** In *Procedure* mode, the chart reflects changes in the procedure stats (plan\_handle), whereas *Statement* mode displays the changes in query stats (query\_plan\_hash).

Example with **Grouping by Hour, Show Totals, Metric CPU, and Mode Statement**:



An additional example with multiple plans represented:



**Additional Information:**

- [Multiple Plans for an "Identical" Query blog post by Aaron Bertrand on SQLPerformance](#)

- [Different Plans for "Identical" Servers](#) blog post by Aaron Bertrand on SQL Performance
  - [Analyzing "death by a thousand cuts" workloads](#) blog post by Erin Stellato on SQLPerformance
  - [How useful are query\\_hash and query\\_plan\\_hash for troubleshooting?](#) blog post by Jonathan Kehayias on SQLskills
-