[**Course Overview**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live)

[**Course Overview**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live)

[Hello everyone. My name's Gail Shaw.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=4.5) [Welcome to my course, Solving Real World](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=7.802399999999999) [Problems with the SQL Server 2016 Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=11.228545454545454) [Store. I'm a technical lead at Entelect](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=14.085818181818182) [Software based in South Africa. Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=16.76745454545454) [performance is an important area of SQL](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=18.92758333333333) [Server, and there are always badly](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=20.786666666666655) [performing queries around. Query Store is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=22.657799999999998) [the newest tool for tracking and resolving](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=25.084199999999992) [performance problems in SQL Server. In](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=28.0505) [this course, we're going to have a look at](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=30.403142857142857) [some practical uses of the SQL Server](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=32.159428571428585) [Query Store, including identifying the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=34.1004) [causes of performance regressions,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=36.034400000000005) [determining just how much CPU that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=37.797333333333334) [database is really consuming, and how to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=40.76533333333334) [ensure the performance problems caused by](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=43.35072727272726) [updates are caught be testing and not by](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=45.593500000000006) [the end users. By the end of this course,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=49.597500000000025) [you'll be able to use Query Store to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=52.23428571428571) [identify and resolve what were previously](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=53.748) [very difficult to attract performance](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=56.46450000000001) [problems. Before beginning this course,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=58.72825000000002) [you should be familiar with T-SQL and have](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=60.584999999999994) [some experience with SQL Server Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=63.476333333333336) [performance tuning. I hope you'll join me](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=66.08233333333331) [on this journey to learn the ins and outs](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=67.88006249999998) [of the best new feature in SQL Server](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=69.55237499999996) [2016, the Query Store, with this Solving](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=72.45660000000001) [Real World Problems with SQL Server Query Store course at Pluralsight.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=7d24188e-b3b2-4eeb-a645-4c6974c81ae0&clip=0&mode=live&start=74.98418181818181)

[**Introduction**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live)

[**What Is Query Store?**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live)

[Hello, and welcome to this Pluralsight](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=2) [course on Solving Real World Problems with](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=4.046000000000001) [the SQL Server 2016 Query Store. Before we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=6.8165000000000004) [dive into the details, I want to quickly](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=10.439714285714286) [go over what the Query Store is for anyone](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=12.146571428571432) [completely new to it. The Query Store has](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=15.620555555555555) [been described by Microsoft as a flight](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=18.915999999999997) [data recorder for SQL Server queries. It](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=21.014249999999993) [tracks the queries that run against the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=23.755454545454555) [database recording the details of the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=26.390181818181816) [queries and their plans and their runtime](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=28.190727272727266) [characteristics. Query Store is per](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=31.461400000000005) [database and runs automatically. Once](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=34.42439999999999) [turned on, nothing further needs to be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=36.46645454545456) [done to get it to track data. It runs in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=39.003) [the background collecting data and storing](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=42.08915384615386) [it for later analysis. Query Store is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=44.54100000000001) [available in SQL Server 2016 and later and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=48.1016666666667) [Azure SQLDB version 12 and later. It is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=52.2295) [available in all editions of SQL Server.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=56.287111111111116) [This is not an enterprise only feature.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=59.602) [This is available in Enterprise edition,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=62.00109090909091) [Standard edition, and even Express](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=65.01725) [edition. Now we've had query performance](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=69.13037500000002) [tracking for some time though in the form](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=71.31591666666665) [of the dynamic management views, mostly](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=73.74344444444445) [sys. dm\_exec\_query\_stats and sys.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=76.86011111111112) [dm\_exec\_query\_plan, and tracing tools like](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=79.02027272727273) [Profiler and Extended Events. What makes](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=81.82345454545454) [Query Store different? Let me start](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=84.72381818181819) [answering that by describing a scenario](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=86.69727272727275) [that I encountered a couple of years ago.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=88.70318181818182) [In particular, critical system was](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=91.421) [suddenly performing badly. It had been](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=94.231) [fine the previous week, and there had been](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=96.73484615384614) [no Extended Events sessions or Profiler](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=98.91576923076916) [traces running historically, and the admin](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=101.3018) [had restarted the server when the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=104.063) [performance problem started just to make](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=106.16572727272724) [sure it wasn't something related to a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=108.307) [pending reboot. As such, there was no](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=111.02999999999997) [historical performance data at all, and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=114.24099999999999) [solving the problem of what happened, why](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=117.05300000000001) [is the query performance different this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=119.70600000000005) [week to last week, was extremely](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=122.99555555555555) [difficult. Query Store would've solved the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=128.31622222222222) [problem from a lack of historical data.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=130.8409166666667) [Once turned on, Query Store tracks query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=133.134) [performance automatically. The data](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=136.76700000000002) [collected is persisted into the user](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=138.63845454545458) [database, and hence, unlike with the DMVs,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=141.1388181818183) [it's not lost on a server restart. Since](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=144.8155454545455) [the Query Store data is persisted into the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=149.37) [user database, it's included in the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=151.83399999999995) [backups of that database as well. This](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=153.73600000000005) [makes it much easier to do performance](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=155.92336363636363) [analysis somewhere other than the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=157.7319090909091) [production server now as a backup can be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=159.06376923076925) [restored and the Query Store data](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=161.29084615384625) [analyzed. If there's concern about](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=163.47240000000002) [sensitive data, as there probably will be,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=165.71640000000005) [the user tables can be dropped or](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=168.08861538461542) [truncated or scrambled after the restore,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=170.153076923077) [and Query Store will still have all the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=172.25716666666662) [historical query performance data](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=175.49949999999998) [printouts. This has been a high-level look](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=178.33749999999995) [at Query Store. We'll get into a lot more](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=180.63633333333334) [detail regarding its capabilities later](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=185.10250000000005) [on. In the rest of this course, we'll](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=188.1620833333334) [mostly be looking at the uses for Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=190.8901875) [Store. We'll start in module 2 with what's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=193.3086875) [probably one of the most important and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=195.67438461538453) [significant uses for Query Store, that of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=197.96091666666666) [tracking query performance regressions. In](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=201.5863333333334) [module 3, we'll look at tracking resource](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=204.0282222222222) [consumption, both per query and overall.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=206.61977777777778) [Then in module 4, we'll discuss Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=209.11500000000007) [Store architecture and some of its more](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=212.09) [important configuration options. And](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=215.25749999999994) [finally, we'll have a look at some](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=216.87900000000002) [advanced uses for Query Store, such as an](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=218.7270000000001) [upgrade and low tests. I hope you enjoy](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=221.10557142857144) [this course on real world uses of Query Store. See you in the next module.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m1&clip=0&mode=live&start=223.9284285714286)

[**Solving Query Performance Regressions**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live)

[**Introduction**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live)

[Hello, and welcome to the second module of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=1) [this Pluralsight course on Solving Real](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=3.910666666666667) [World Problems with the SQL Server Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=6.2728) [Store. In the last module, I mentioned](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=9.446600000000002) [that the Query Store has made a number of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=11.424428571428573) [previously difficult problems easier to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=13.98688888888889) [identify and resolve. In this module,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=16.636333333333333) [we'll look at one of those problems, that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=19.500249999999998) [of the query performance regression. We'll](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=22.898249999999994) [start this module by looking at what](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=25.291461538461537) [regressions are and some of the things](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=27.177692307692304) [that can cause them. We'll look at how we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=29.194666666666663) [would've identified regressions in earlier](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=32.208166666666656) [versions of SQL Server, and then we'll see](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=34.3315) [how much easier it is to identify them](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=37.021428571428565) [we're using the Query Store. And finally,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=38.8242857142857) [we'll look at some details of how the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=40.874615384615375) [Query Store defines a performance](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=43.434) [regression. So what precisely is a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=47.619000000000014) [performance regression? A dictionary](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=52.01671428571429) [doesn't help much here. The Oxford](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=54.09100000000001) [Dictionary defines regression as returning](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=56.041000000000025) [to an earlier state, which is definitely](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=58.18246153846153) [not relevant here. A performance](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=61.66253846153843) [regression occurs when a query has](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=63.680200000000006) [degraded in performance over time. This](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=65.25879999999998) [degradation may be sudden, or it may be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=67.93484615384617) [gradual. It's probably more common for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=72.2345384615385) [regressions to be sudden, a behavior as](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=74.68311111111113) [sometimes refer to as falling off a cliff.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=77.30754545454548) [The degradation may be permanent, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=80.229) [query remains at that poor performance](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=82.03281818181814) [level no matter what happens, or it may at](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=83.86861538461538) [a later point return to its previously acceptable behavior.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=0&mode=live&start=86.8621538461538)

[**Demo - Performance Regression in Action**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=1&mode=live)

[Let's take a quick look at a demo and see](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=1&mode=live&start=1.4) [how a performance regression manifests.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=1&mode=live&start=5.673999999999999) [I've got here a little application which](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=1&mode=live&start=7.811) [simulates a workload against a database.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=1&mode=live&start=10.292769230769236) [It runs a set of queries against the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=1&mode=live&start=12.42) [database printing their name and duration](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=1&mode=live&start=14.673538461538469) [into the screen as it does so. Most of the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=1&mode=live&start=16.374615384615385) [queries are fairly fast, 20, 30 ms in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=1&mode=live&start=19.30076923076923) [general. And now we see a performance](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=1&mode=live&start=22.331230769230768) [regression has occurred. The query, Get](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=1&mode=live&start=25.184) [Client Transactions, previously ran in 10](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=1&mode=live&start=28.82225) [to 20 ms, and now runs in close to 200](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=1&mode=live&start=31.425500000000003) [with no warning, no major data changes, and no query changes having occurred.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=1&mode=live&start=34.90175000000001)

[**What Causes Regressions?**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live)

[The obvious question after seeing that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=1) [example is what could possibly have causes](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=3.678727272727273) [that behavior? One moment the query was](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=6.766818181818181) [running fine, the next it was running](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=9.76218181818182) [slowly, and no code changes were made in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=12.262666666666668) [the interim. A common cause of query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=14.894133333333336) [performance regressions is a plan change.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=17.551999999999996) [Let's briefly look at query optimization](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=19.952) [and the plan caching process to see why.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=21.886727272727267) [T-SQL is a declarative language. The query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=25.427) [written expresses the desired results, not](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=28.338300000000004) [the process of getting to those results.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=31.106400000000004) [It's up to the SQL Server engine to figure](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=34.654) [out how to get those results, and the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=36.547857142857154) [portion of the engine that figures that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=38.35738461538462) [out is called the query optimizer. The](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=40.12461538461539) [optimizer takes a query and outputs a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=42.56966666666667) [query plan, a series of operations that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=45.523083333333346) [the query processor can then execute to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=48.286999999999985) [obtain the desired results. For anything](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=51.00281818181818) [other than a trivial query, there are](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=53.24572727272726) [multiple different plan shapes that can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=55.59245454545455) [produce the same results, but differ in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=57.29536363636365) [the internal details and differ in how](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=59.697999999999986) [long it will take to execute that plan. In](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=62.267) [theory, the optimizer will always take a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=65.60323076923078) [query and produce a good plan, one that if](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=67.99264285714285) [not the fastest possible plan is fast](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=70.71257142857142) [enough. However, that's not always the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=73.87741666666668) [case. And it's also perfectly possible for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=76.9499166666667) [a query to have a plan that's fast for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=78.99015384615386) [some parameter values and really slow for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=81.87216666666666) [other parameter values. And then there's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=85.71924999999997) [plan caching, which adds a whole other](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=88.38038461538461) [layer of complexity. Optimization is an](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=90.74261538461539) [expensive process, and so SQL Server](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=93.21749999999999) [caches execution plans. When the query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=96.14249999999997) [executes again, it can fetch the plan from](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=98.53384615384616) [cache and execute it without needing the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=101.01076923076923) [costly optimization process. Now plans can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=104.355) [be thrown out of cache for a variety of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=106.70192307692308) [reasons, most commonly aged out due to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=108.83769230769234) [memory pressure or removed to data changes](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=110.93099999999997) [in the underlying table. Let's imagine a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=113.286) [query that's got two possible plans. One](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=116.44233333333334) [results in acceptable performance for all](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=119.10633333333334) [possible parameter values that the query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=121.16633333333334) [is called with. The other has good](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=123.27266666666667) [performance for a small subset of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=125.75708333333334) [parameter values, but really bad](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=127.81033333333329) [performance for all of the other parameter](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=129.50866666666658) [values. The first plan is currently in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=132.06258333333338) [cache, and the query is performing well.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=134.687) [The plan then gets thrown out of cache for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=137.17550000000006) [whatever reason, and the new plan for that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=140.0664285714286) [query is the second one. Now suddenly and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=142.29328571428576) [without warning the query's performing](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=145.31660000000002) [terribly for most executions. This is a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=147.6892) [classic performance regression caused by](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=151.52720000000002) [bad parameter sniffing and is what](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=153.06920000000005) [actually happened in the previous demo.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=155.4012) [There are other things that can cause plan](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=157.974) [changes and suboptimal plans. Out of date](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=161.1119999999999) [statistics is one of them. Statistics are](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=163.50300000000001) [used by the query optimizer to work out](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=165.42100000000002) [which plans are efficient and which plans](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=167.90085714285718) [are inefficient. And if those statics are](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=170.22185714285723) [out of date, it's very easy for the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=172.17642857142852) [optimizer to generate a plan that it](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=174.24271428571416) [expects to be efficient, but which is not.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=176.9421428571429) [There are a number of query patterns that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=180.197) [are prone to unstable plans, plans which](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=182.35576923076917) [perform well or poorly depending on](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=184.47299999999998) [parameter values. I'll have a link in the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=186.7769999999999) [resources slide at the end of this course](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=188.74019999999993) [to more details on those.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=190.33379999999985) [Overly-complicated queries are also prone](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=192.90499999999994) [to plan problems as the optimizer has](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=195.8699999999999) [limited time and limited resources to come](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=198.78881818181824) [up with plans. And if the query is very](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=201.441) [complicated, the optimizer may run out of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=204.654) [time when trying to generate plans. If](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=207.20299999999995) [that happens, the best plan that it had](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=209.75264285714286) [found so far is returned, but that's no](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=212.61378571428565) [guarantee it's even a good plan. These all](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=215.52133333333333) [tend to cause performance regressions that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=218.452) [are temporary. At a later time, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=220.52800000000002) [query's quite likely to perform well](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=223.53166666666667) [again. Data growth can also sometimes](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=226.30566666666667) [cause query performance regressions. These](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=229.24966666666663) [are usually steady degradations over time](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=231.59063636363638) [rather than the sudden ones that bad plans](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=233.72445454545456) [cause as the existing plans are still](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=236.57300000000004) [optimal, but they're processing more and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=239.0685000000001) [more data and so take longer and longer.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=241.22153846153842) [There's also something called the tipping](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=244.096) [point behavior where due to data growth](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=245.7950909090909) [the optimizer's choice for optimal plan](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=248.19833333333332) [changes, and the new plan, while](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=251.16033333333326) [calculated to be cheaper than the old, is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=253.49466666666666) [less efficient. In this case, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=256.4397333333333) [degradation tends to be persistent, and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=258.27015384615385) [it's not due to incorrect row estimations](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=259.91138461538463) [by the optimizer, just incorrect costing](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=262.35279999999995) [of various operators. And then, of course,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=264.784) [code and schema changes can cause](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=268.89618181818173) [performance regressions. If in index that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=271.8845) [a query needs is removed, the query will](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=273.80000000000007) [run slower. Changes to a column's data](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=276.6826666666666) [type or the addition of extra columns to a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=279.49258333333313) [table can also cause performance](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=281.90384615384596) [regressions where a previous optimal plan](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=283.16) [is no longer valid and the new plan generated is less efficient.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=2&mode=live&start=285.338)

[**Tracking Regressions Before Query Store**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live)

[So how did we tend to track regressions?](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=1.4) [The answer is, in general, not very well.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=4.941538461538463) [Before Query Store, there were two main](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=9.117272727272727) [options. We had the dynamic management](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=13.695909090909092) [views, and here mostly I'm talking about](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=15.933750000000003) [sys. dm\_exec\_query\_stats as that's the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=18.151) [dynamic management view that contains](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=20.29433333333334) [query performance statistics. But there](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=22.3857) [are a couple of problems with using this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=24.269199999999998) [to track query performance regressions.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=27.691555555555556) [The first is that it's memory only. It's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=30.086) [not persisted to disk, and if SQL Server](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=33.07600000000001) [restarts, the data in there is lost. The](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=36.230999999999995) [second problem is that the data in there](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=39.401357142857144) [is only valid for the query's current](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=41.52421428571427) [plan. If the plan is removed from cache,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=43.6708) [the aggregated performance statistics are](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=46.95) [removed as well. We lose the record of the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=49.34249999999999) [query's performance characteristics when](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=53.66538461538462) [its plan changes. Now if a regression is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=55.5903076923077) [most often causes by a plan change, you](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=58.45433333333334) [can see where this is going to be a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=60.72686666666668) [problem. If the plan changes, we've lost](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=63.685499999999976) [all record of how the query ran before the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=66.132) [regression, and we've lost the plan as](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=69.45750000000002) [well. The other option we had was Extended](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=73.15940000000003) [Events. The problem here is that the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=77.60260000000008) [Extended Events session would have to have](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=79.758) [been running before the performance](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=81.861875) [regression occurred. And most people don't](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=84.38124999999997) [leave Extended Events sessions running all](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=86.53045454545456) [the time for a variety of reasons, one of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=88.24263636363641) [them being that they consume a lot of disk](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=91.32114285714282) [space. You don't really want a heavy](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=94.62527272727272) [performance-related event session running](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=97.44690909090906) [all day every day. Of course, you can't](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=99.16574999999997) [predict when a regression is going to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=102.67441666666659) [happen either, and so tracking regressions](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=104.86063636363636) [with Extended Events sessions isn't particularly easy.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=3&mode=live&start=107.317)

[**Demo - Tracking Regressions with DMVs**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live)

[In this demo, we're going to try and see](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=4) [if we can identify the cause of the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=6.5361999999999965) [performance regression we saw previously](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=8.900200000000002) [using the dynamic management views, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=10.583200000000005) [DMVs. To start with, let's have a look at](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=14.346999999999998) [sys. dm\_exec requests and see if the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=17.61985714285715) [slowdown in the query is a result of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=19.738799999999998) [blocking. If there's been a sudden](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=22.561200000000014) [increase in locking in the system, then](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=24.069909090909086) [the query might be taking longer because](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=25.749833333333335) [it's waiting for logs, so we want to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=27.799666666666674) [investigate that before we dive into more](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=30.43961538461539) [complicated analysis. The simulation](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=33.00969230769232) [application is still running in the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=34.33840000000001) [background here, and the query is still](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=36.12160000000003) [slow. We've got the query running a couple](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=39.04600000000001) [of times, and there are a few things to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=42.774000000000015) [note. Cpu\_time is high; it's comparable](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=46.049777777777756) [with the duration. Logical\_reads are](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=49.01724999999999) [extremely high, and more interestingly](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=51.47425) [here, our wait\_type is NULL, our wait\_time](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=53.692374999999984) [is 0, and our blocking\_session\_id is 0.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=57.058000000000014) [This is not a locking problem. The query's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=60.467) [not waiting for anything. It's just](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=62.78833333333331) [running for a very long time. We can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=64.70299999999999) [conclude from that that we really do have](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=67.71899999999995) [a performance regression. We don't have a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=70.55687499999999) [locking problem. Let's move on to sys.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=72.71180000000003) [dm\_exec\_query\_stats and see if we can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=74.73541666666667) [identify why the query has regressed in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=76.69991666666665) [performance. The top row of the return](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=79.24315384615385) [result set is the query of interest. There](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=82.41469230769229) [are a few things interesting here. The](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=85.84540000000001) [first one is that the creation\_time for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=88.51246153846154) [the row, which is the creation time for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=90.18869230769232) [the plan, matches the time that the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=92.54649999999998) [regression occurred. This means that we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=95.25433333333328) [very likely have a plan-based regression](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=97.45672727272726) [here. If we look at the worker\_time,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=99.59981818181815) [that's the CPU time, we've got an average,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=101.64392307692304) [which is quite comparable to the max, and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=103.93141666666666) [a minimum value that's far, far below](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=106.48675000000001) [that. We've got the same pattern with the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=108.96199999999999) [logical\_reads as well, max comparable to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=111.996) [average, and an extremely low value for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=114.73254545454542) [the min. It's starting to look like we had](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=117.52728571428571) [the plan thrown out of cache for some](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=119.84157142857138) [reason, and the first execution after that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=122.2947857142857) [was a query with atypical parameter](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=124.64928571428567) [values. This resulted in a plan that was](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=126.92236363636363) [optimal for those atypical parameter](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=130.0875) [values, but not for anything else. That's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=131.90999999999997) [a very common cause of a query performance](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=134.4396) [regression. The data here doesn't prove](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=137.18040000000005) [that, however. All we've got are](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=139.18481818181812) [aggregated performance statistics, and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=141.179) [only since the regression occurred, not](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=142.74899999999997) [before. Let's have a look at the query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=145.10376923076925) [plan now from sys. dm\_exec\_query\_plan and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=148.24284615384627) [see if we can confirm any of our](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=150.972) [suspicions. When you query sys.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=155.11066666666673) [dm\_exec\_query\_plan, the plan is returned](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=157.58327272727269) [as XML. It can be clicked on, and that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=160.02736363636356) [opens it in the graphical plan view. If we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=164.7179999999999) [look at the properties of the Index Seek,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=168.92300000000003) [we've got a plan that was optimized for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=170.8910000000001) [one row. This is not the normal for this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=173.19546153846153) [query; at least I assume it's not the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=176.4188461538461) [normal for this query. Keep in mind I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=179.04181818181826) [don't have another plan for this query, I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=181.3017142857143) [don't know what this ran like beforehand,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=183.23314285714287) [but I'm going to assume that it doesn't](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=185.23600000000002) [normally read one row since this query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=187.668) [aggregates, and it normally returns more](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=190.52399999999992) [than one row. If we look at the properties](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=192.921) [of the SELECT operator, there's something](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=196.36349999999993) [very strange there. Priority in the system](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=199.1315) [is a number, 1, 2, or 3 for high, medium,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=202.17800000000005) [or low. NULL, which is the priority that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=205.74300000000017) [this query was compiled with, is not a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=208.37709090909092) [valid value, and it's not one that should](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=210.97359999999998) [be passed in queries. It is definitely](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=213.62853333333322) [looking like we had an atypical execution](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=216.00163636363632) [resulting in a bad plan. But again, we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=218.44145454545443) [can't confirm it from here because all](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=221.06850000000003) [we've got is the data after the regression, not before.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=4&mode=live&start=223.347)

[**Demo - Tracking Regressions with Extended Events**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live)

[The other option that we have for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=0.4) [detecting a query performance regression](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=2.333909090909091) [in versions of SQL Server before 2016 was](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=3.8980833333333336) [the Extended Events. Now I should point](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=7.5707499999999985) [out that it's extremely unusual to have](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=10.280666666666669) [Extended Events sessions running when a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=12.612833333333338) [performance regression occurs. Performance](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=15.507249999999999) [regressions aren't exactly predictable, if](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=17.471125) [they were, we'd fix them before they](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=19.60675) [occurred, and most database servers don't](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=22.32554545454545) [have Extended Events sessions running on](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=24.563) [them all the time as a matter of course](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=26.09992307692308) [because of the overhead. Yes, they'll have](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=28.565727272727273) [the system health event and couple of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=30.920272727272724) [other health events, but those don't](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=32.97300000000001) [record query performance statistics. In](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=34.62900000000003) [this case, however, I just happen to have](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=37.21263636363636) [two Extended Events sessions running.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=41.77616666666667) [Before we go and look at what the Extended](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=44.402) [Events session's called, let's have a look](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=46.84774999999998) [at the event sessions themselves and the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=48.422076923076915) [events that they were recording. There](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=49.75046153846152) [were two event sessions running, one](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=51.90955555555556) [capturing performance stats and one](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=54.8733) [capturing compile time plans. The one](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=58.5698) [capturing performance stats was capturing](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=62.32011111111112) [two events, sp\_statement\_completed and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=64.3028888888889) [sql\_statement\_completed. These two capture](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=68.21333333333334) [all the statements executing against the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=70.897) [server. Sp\_statement\_completed captures](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=73.147) [statements running within stored](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=74.656) [procedures, and sql\_statement\_completed](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=76.924) [captures statements running outside stored](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=78.83400000000002) [procedures. Both events have got an action](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=81.43854545454545) [added to them, the query\_hash. This](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=83.86945454545452) [enables us to easily aggregate queries of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=86.1090909090909) [the same form. Both of the events also](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=88.813) [have a filter on them, duration](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=91.75023076923073) [greater\_than 100. Duration is measured in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=94.06887499999999) [microseconds, so anything under 100](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=96.96612500000003) [microseconds is not really of interest;](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=98.60579999999997) [it's not going to be doing table access at](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=100.341) [that kind of speed. And the event session](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=104.57792307692311) [has been written out to a file. The second](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=108.16099999999999) [Extended Events session captures only a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=111.8552) [single event, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=114.0128) [query\_post\_compilation\_showplan event.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=115.79233333333333) [This event fires after a plan has been](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=117.913) [compiled by the optimizer, and the event](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=120.74166666666666) [records the plan generated. This is one of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=123.28192307692306) [three events that captures query execution](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=126.28438461538455) [plans, the other two being the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=128.5178) [query\_pre\_execution\_showplan and the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=130.742) [query\_post\_execution\_showplan events. All](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=133.7654) [three of these events have relatively high](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=136.12966666666668) [overhead, especially the two execution](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=138.5703333333334) [ones, and so in general they probably](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=140.56881818181822) [shouldn't be run for long periods of time](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=143.456) [on a production server. Hence, finding](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=145.72333333333324) [this event running when a query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=147.494) [performance regression has occurred is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=149.405) [extremely unlikely. But I have it here to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=151.0760769230769) [show you what's in it. In this event, I've](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=153.83361538461529) [also added the query\_hash action. That](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=158.8460833333333) [allows me to easily match a query in the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=162.15238461538462) [first Extended Events session with a plan](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=164.11784615384622) [in the second because I can join on the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=166.28100000000003) [query hashes. So that was the setup for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=169.67400000000012) [the two Extended Events sessions, and both](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=171.97927272727264) [of them were running when the query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=173.8483333333333) [performance regression occurred. So let's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=175.86549999999988) [see what data they captured. One of the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=177.29542857142857) [easiest ways to work with an Extended](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=179.5571428571429) [Events session's results is to open the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=181.46525) [file in Management Studio and save it to a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=183.27883333333335) [table. Once the file is loaded, click the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=186.66861538461535) [Extended Events menu, Export to, select](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=190.17688888888887) [Table, and then connect to a SQL Server,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=193.3175555555555) [select a database and a table name. I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=196.088) [should mention, of course, that this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=198.56706666666668) [should not be done on the production](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=199.95946666666669) [server. This kind of analysis should be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=201.58393333333336) [done somewhere else. Copy the extended](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=203.49333333333337) [event file to a development server or a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=205.14707692307695) [test server. Note, it'll analyze it there.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=207.3206153846155) [The first Extended Events session, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=210.15299999999996) [query performance one, records the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=212.84300000000002) [detailed execution characteristics of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=214.84800000000007) [every query that ran against the server.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=216.4573333333333) [If we filter that by the query we're](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=219.283) [interested in and scan down the results,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=221.23614285714288) [we can see one rather abnormal execution](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=223.10681818181817) [right before things went really bad. And](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=225.9475454545454) [the timestamp for that execution matches](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=228.79445454545456) [the compilation time that we stored in the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=231.2386363636364) [DMVs earlier. This, again, is suggesting](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=234.5175555555555) [that we had a plan for an out of cache,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=236.24628571428573) [and the first execution after it was with](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=238.517) [an atypical parameter set. The atypical](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=240.94499999999988) [parameter values result in the optimizer](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=242.9844) [generated plan that was suitable for that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=245.4606) [execution, but not all the other ones](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=247.38984615384618) [after it, and so our execution times went](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=248.93523076923083) [really bad after that point. This time, at](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=251.87549999999996) [least I can see the execution](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=254.8690909090909) [characteristics before things went bad and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=256.97127272727266) [not just after it, so I can compare before](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=259.39571428571435) [with after and see the difference. That's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=263.2740714285716) [a vast improvement over the DMVs. We can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=266.936) [load the results of the second Extended](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=270.55684615384615) [Events session into a table in much the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=271.9213076923078) [same way. And if we query that, there's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=274.98014285714294) [only one row in the table. Only one plan](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=279.53842857142877) [was compiled while that Extended Events](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=283.01425000000006) [session was running, and it's the query of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=285.0828) [interest. And the plan that we see in the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=288.28120000000024) [Extended Events session matches the one](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=290.65453846153827) [that we saw from the DMVs earlier. By this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=292.29581818181816) [point, we can definitely conclude that we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=295.96618181818184) [had a query performance regression due to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=298.14618181818173) [a bad plan coming into cache. What we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=300.2194) [don't know at this point is what the plan](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=302.6050000000001) [looked like beforehand. In other words,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=305.39493333333326) [what was our good plan? If this was a real](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=307.34333333333313) [system, at this point we'd be looking at](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=309.9231538461537) [recompiling that query and hoping that the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=311.453) [first execution afterwards is a typical](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=313.791) [parameter value and generates a good plan,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=315.6409285714285) [a plan that we could then look at and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=317.61942857142833) [analyze to try and identify why we have](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=319.9996153846155) [multiple plans and what we can do solve](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=321.999) [this permanently. That was a fair amount](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=326.2686000000001) [of work to get that analysis, and the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=328.6435000000001) [problem is if the Extended Events sessions](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=330.7355000000002) [hadn't been running, which is the norm,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=332.6404999999999) [we'd have much less data to work with. In](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=334.6701111111111) [addition, if the server had been restarted](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=338.0509090909091) [after the regression occurred, we would've](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=340.0942727272727) [lost a lot of that data. We wouldn't have](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=341.95833333333337) [been able to correlate the regression with](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=344.49230769230763) [a point in time, we possibly wouldn't have](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=345.7926923076921) [been able to see the bad plan, so this is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=347.98666666666674) [not ideal, but this is what we've had to work with up until 2016.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=5&mode=live&start=353.278)

[**Demo - Tracking Regressions with Query Store**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live)

[In this demo, we're going to see how to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=4) [identify case of a query performance](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=6.322642857142855) [regression using SQL Server 2016's Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=8.377125000000001) [Store. The Query Store was enabled before](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=12.961875000000001) [the simulation application ran earlier,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=15.653199999999996) [and so it captured everything that ran](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=17.561272727272726) [during that test. We want to expand out](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=21.924181818181818) [the database, then expand out the Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=25.046692307692307) [Store folder, and then open the Regressed](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=26.800461538461537) [Queries report. The default configuration](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=30.945000000000004) [for the report has already identified the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=33.298399999999994) [query performance regression we saw](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=35.761) [earlier, but the default configuration is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=37.538777777777774) [not ideal. Start with the user's total for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=39.74733333333333) [the duration. We're not interested in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=42.892666666666656) [total. If the query runs a different](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=44.72999999999999) [number of times per interval, then we're](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=46.56924999999997) [not going to see the same behavior. What I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=48.90615384615386) [want is to check for regression by CPU](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=51.92107692307692) [time because that eliminates cases of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=54.301384615384585) [blocking, and I want the Max, not the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=56.279250000000005) [Total. Using the Max means that I need to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=59.17325000000001) [make sure that the Recent and History](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=60.91157142857142) [intervals don't overlap, and so the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=62.262454545454545) [History interval needs to be set to Custom](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=64.1731818181818) [with the appropriate To and From dates.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=68.4797272727273) [And here we can see our query performance](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=73.787) [regression. This is the query that I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=76.44299999999996) [identified previously using the DMVs and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=78.8758) [the Extended Events. Now we can see how](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=80.97659999999999) [it's behaved over time, and we can see](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=83.123) [that this query does indeed have two plans](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=84.87660000000001) [associated with it, which we suspected](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=87.24500000000003) [from the earlier investigations. If we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=89.96757142857145) [hover over the bars of the bar graph in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=92.7946) [the top left corner, we can see the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=94.97079999999998) [query's behavior in the recent and the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=96.86033333333332) [historic intervals, and we can see how](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=98.47441666666661) [they differ. We can also see how many](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=100.67300000000002) [plans the query has. If we select the plan](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=103.89459999999998) [on top right, we can see this graphical](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=107.1514285714286) [display in the bottom panel, and now we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=109.62571428571437) [can look at the two different plans that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=111.19199999999995) [this query has. The faster plan has an](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=113.12630769230769) [Index Scan on the Shipments table, with a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=118.54476923076923) [filter on the priority. The slow plan, in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=123.00850000000001) [comparison, has an Index Seek on the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=125.85366666666667) [Shipments table, along with a Key Lookup](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=127.76233333333333) [to look up the missing columns. Comparing](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=132.90450000000007) [plans like this, however, is difficult and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=138.08218181818182) [prone to error. Clicking backwards and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=140.23945454545458) [forwards and trying to eyeball the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=141.87769999999998) [differences is not trivial. Fortunately,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=143.30509999999995) [there's a far better way. If we select](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=145.6443333333333) [both plans in the scatter plot and then](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=149.1144285714286) [click the Compare plans button on the top](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=151.36357142857153) [right, we get a screen with the two plans,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=153.54878571428577) [one below the other, for easy comparison.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=155.964) [The different colored blocks are](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=161.06490000000002) [highlighting the operators in common. So](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=164.13185714285717) [the cyan block in the two query plans](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=166.59653846153847) [shows that the operator highlighted was](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=168.69684615384622) [the same in both plans. In more](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=170.56627272727275) [complicated plans, you may see the color](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=173.4337272727273) [blocks around entire subtrees showing that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=175.69466666666662) [those subtrees are in common between the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=177.42466666666658) [plans. By looking at this report, we can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=181.69850000000005) [conclude that we definitely do have a case](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=186.22346666666667) [of bad parameter sniffing here. We've got](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=188.38133333333334) [two plans, one appropriate for all](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=190.311) [executions, and one that was generated by](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=192.05400000000006) [an atypical parameter value and is not](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=194.2665) [suitable for the majority of executions](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=196.71766666666667) [for this query. That's all well, and good](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=198.9117142857143) [and it'll certainly help us fix it later,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=201.20046153846155) [but what if we need to fix it now? What if](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=203.07) [the users are screaming the application is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=206.26293333333334) [down, and the server's on fire, and we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=208.22725000000003) [absolutely have to fix this immediately](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=210.36925000000008) [right this second and worry about the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=212.22241666666665) [analysis and the long-term fixes later?](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=214.442) [Again, Query Store comes to our aide here.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=216.6581818181818) [We can select the fast plan and then click](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=219.70818749999998) [the Force Plan button. We get a request](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=223.31774999999993) [for confirmation. Do we really want to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=225.74723076923075) [force that plan for that query? In this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=227.19138461538458) [case, yes we absolutely do. That plan is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=230.09454545454545) [now forced. From that point onwards, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=233.12124999999997) [query in question will execute with the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=235.34083333333328) [forced plan no matter what parameter](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=237.72545454545454) [values the query is compiled with. And if](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=239.826) [we go back to our simulation application,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=241.6050769230769) [we can see that the performance of the Get](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=243.35827272727275) [Client Transactions store procedure is now](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=246.244) [back down to its 20-odd milliseconds. The](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=248.88500000000002) [application is performing, the users are](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=251.7552307692308) [happy, and now we want to do further](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=253.13061538461548) [analysis to try to identify why this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=255.09384615384616) [happened and how to prevent it in the long](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=257.1513076923077) [term without resulting to plan forcing.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=259.93200000000013) [This is the kind of investigation we don't](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=261.858) [really want to do on the production](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=264.09599999999983) [server. We could export the Query Store's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=266.0542499999997) [information to CSVs, copy those over, and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=268.1086666666668) [work with them, but there's a far easier](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=270.13076923076926) [way. The Query Store is persisted into the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=272.4003076923078) [user database, and that means it's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=274.27299999999985) [included in backups. So I'm going to take](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=275.67838461538463) [a backup of my production database and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=277.84146153846154) [restore it into a Azure VM, and then have](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=279.7281538461538) [a look at the Query Store Regressed](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=282.14361538461526) [Queries report again. If I open the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=287.1133333333333) [report, change the configuration options](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=290.52909090909094) [to the appropriate date and time, and keep](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=291.8604545454546) [in mind that the time zones might be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=293.82976923076905) [different between the servers, I can get](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=295.7917692307692) [exactly the same report as I got on](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=297.79215384615384) [production at the time that I took the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=301.29675) [backup. I can see the query. I can see the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=306.83208333333323) [plans. I've got all of the runtime](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=309.19169999999986) [information that I had in Query Store on](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=311.1007142857142) [the production server now available to be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=313.399) [on a test server where I can do analysis,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=315.3865000000001) [where I can fiddle with it, where I can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=317.83771428571436) [change things and see how they behave.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=319.92442857142885) [That is another huge advantage of Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=322.043) [Store. Copying this kind of information](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=324.53325) [from production to a development](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=326.2299999999999) [environment in the past was extremely difficult.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=6&mode=live&start=327.571)

[**Configuring the Regressed Query Report**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live)

[Now it's not always going to be quite as](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=2) [simple as that. Not all cases of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=5.676500000000001) [regressions are going to show up in the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=7.922923076923076) [Regressed Queries report so easily. The](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=9.964769230769228) [query that the report runs can be captured](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=12.391250000000003) [using Extended Events. It's quite a long](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=15.761583333333332) [query, so I'm not going to show you the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=18.075666666666667) [whole thing. I just want to call attention](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=20.483333333333338) [to a couple of aspects of it. The](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=22.21986666666668) [condition for a query to show up in the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=24.566799999999997) [Regressed Queries report is that the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=27.436) [regression percentage must be greater than](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=29.610400000000006) [0 for the column that we're looking at;](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=31.762714285714285) [that is CPU time, duration, logical reads,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=34.573571428571405) [or whatever else you want to look at. That](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=37.396090909090915) [is the only criteria for a query to appear](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=41.550599999999996) [in the Regressed Queries report. There's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=44.93099999999998) [no requirement for the query to have](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=47.10425) [multiple plans at all, much less any](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=49.17100000000002) [checks to see one plan performs worse than](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=51.32030769230769) [the other. This is a good thing. While](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=53.90246153846155) [most query performance regressions will be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=56.456545454545434) [the result of a different execution plan,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=58.332625) [not all of them are going to be. Blocking](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=60.33200000000002) [is something that comes to mind here. If](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=62.922625) [we've suddenly got a bad case of blocking](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=65.36976923076922) [on the production server, then we're going](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=67.83192307692302) [to be seeing queries with regressions in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=69.96750000000002) [terms of duration, not CPU, it'll be the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=72.07800000000005) [same, but duration. And that's got nothing](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=75.21766666666669) [to do with a different execution plan.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=77.70054545454543) [It's purely around the weights for locks.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=79.826) [The calculation for the regression](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=82.15636363636368) [percentage is shown in the lower left code](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=83.7768) [snippet. It's a fairly standard percentage](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=86.08719999999995) [change formula, so I'm not going to go](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=87.5539166666667) [into detail on it, but let's take a quick](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=89.6069090909091) [example. If we had a query that used to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=93.24209090909096) [run in 1 second in our historical](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=95.25026666666672) [interval, and it now runs in 1. 2 seconds,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=96.654) [then the recent minus the history is not.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=100.07721428571435) [2. Divide that by the history and multiply](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=103.08115384615382) [by 100, and we get 20. That's greater than](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=106.0202307692307) [0, and so the query does show up in the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=108.4074666666667) [Regressed Queries report. The requirement](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=111.06400000000001) [can be summarized essentially as the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=112.98400000000001) [chosen performance related statistic must](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=115.46320000000001) [be higher in the recent interval than in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=117.67520000000005) [the historic interval. It's in the choice](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=120.90266666666665) [of those statistics and intervals where](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=122.98766666666664) [things get a little more interesting. The](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=124.3581666666666) [standard query performance characteristics](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=128.79755555555553) [are all available in the regression](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=130.0917777777777) [report, CPU usage, duration, logical](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=132.57072727272728) [reads, and several others. Duration is the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=135.5325454545455) [actual time that the query took it to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=138.87074999999996) [execute. CPU time is the amount of time](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=141.45408333333322) [the query spent executing on the CPUs. CPU](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=144.2319999999999) [time can be higher than duration if the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=146.98084615384616) [query ran in parallel. For example, if a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=149.33161538461533) [query runs on four calls for 1 second, its](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=151.6043333333334) [duration is 1 second, but it accrued 4](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=154.217) [seconds of CPU time. Logical reads are](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=157.56100000000006) [reads from memory from the SQL buffer](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=160.16218181818178) [pool. They're measured in pages, and pages](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=162.3302727272726) [are 8 KB in size always. For most uses,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=165.11550000000005) [these three will be sufficient. The other](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=168.911) [performance characteristics available for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=171.74124999999998) [the regression report, logical writes,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=173.00174999999996) [those would be writes to the buffer pool,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=174.77390909090911) [also measured in 8 KB pages. Physical](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=177.819) [reads are reads from disk. They happen](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=180.89375000000007) [when the query needs data on a page, but](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=183.65576470588238) [that page is not in memory. The page gets](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=186.20170588235305) [fetched from disk and cached in the buffer](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=188.6725) [pool. The read from disk is a physical](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=190.73516666666671) [read. When the page is then read from](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=192.78100000000006) [memory for the query, that'll be counted](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=194.93124999999998) [as a logical read. Searching for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=197.4669999999999) [regressions in physical reads may be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=199.4814) [useful in identifying memory pressure or](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=201.17760000000004) [seeing if there's cache displacement](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=203.24477777777776) [happening at any point in the day. For](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=205.122) [example, if a lot of queries show a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=207.3214285714286) [regression in physical reads at a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=209.55638461538462) [particular point in the day, it's just](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=211.31253846153845) [that something happened just before that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=213.26483333333334) [point that forced a lot of pages out of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=214.73133333333334) [cache and hence required these queries to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=217.20614285714282) [do more physical reads than they normally](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=219.30214285714277) [would. This kind of thing is really hard](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=221.6530833333333) [to identify otherwise. Memory consumption](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=224.5214) [is for things like hash tables and sorts.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=226.59840000000003) [Not all queries will use memory. Some](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=229.76120000000003) [will; some won't. Regressions in the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=232.39436363636364) [memory consumption can in some](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=234.68254545454542) [circumstances be correlated to increases](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=236.57558333333333) [in row count for a query or bad row](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=238.41349999999997) [estimations for a query, but it's not](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=241.731) [significant enough that I'd probably used](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=244.32566666666665) [this very much. For the aggregating](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=247.0786363636364) [function, I recommend using Max, not the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=250.096090909091) [default of Average. The problem with](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=253.09300000000007) [Average is that if the query runs badly a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=255.02999999999997) [couple of times within the interval, but](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=257.1) [runs well many hundreds of times within](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=259.2595833333334) [the same interval, averaging the duration](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=261.639) [will hide those extreme values. For](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=264.30027272727284) [example, if a query runs normally for 10](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=266.8003076923077) [seconds and runs a thousand times an hour](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=269.05876923076937) [and twice within that hour period ran for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=271.5732307692307) [10 minutes, we'd probably want to know](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=274.3436923076921) [about that. But the average duration of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=277.15000000000015) [that query over the hour is only 11](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=279.2415384615385) [seconds, and if it ran consistently in 10](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=281.276) [seconds in the history interval, we would](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=283.9060000000001) [see that as a regression, but with a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=286.26250000000005) [regression percentage of only 10%, which](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=289.0398333333335) [may not look particularly bad. If we use](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=292.066) [Max instead, that query shows up with a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=295.5494615384615) [regression percent of almost 6000%,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=297.6946923076922) [meaning it's more likely to be noticed and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=299.3595) [more likely to be addressed. The downside](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=302.36883333333344) [of this is you need to make sure that the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=305.00099999999986) [History interval and the Recent interval](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=308.9376) [don't overlap because if the History](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=311.72339999999986) [interval contains the Recent interval,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=314.33688888888895) [which is the default for the report, then](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=316.443) [Max will never show you regressions](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=319.44915384615365) [because the max duration in History and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=321.65675) [Recent will be the same, the same values.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=323.9580000000001) [So I do recommend you use Max and then](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=326.9372857142856) [change the Time Interval for the History](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=330.6819285714282) [interval not to cover the Recent interval.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=333.54046153846167) [When choosing the History and the Recent](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=336.39) [interval, don't choose too large of values](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=338.7203636363636) [for the Recent interval. Let's consider](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=341.2286923076923) [the case of a query that's flipping](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=343.5820769230769) [between a good plan, very efficient, and a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=346.13475000000005) [poor plan, very inefficient, every 10 to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=348.7580833333335) [20 minutes. So this query is very fast for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=352.5172499999999) [10 minutes, slow for 10 minutes, fast for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=355.2699230769231) [20 minutes, slow for 10 minutes, and it's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=357.1238571428571) [been going on like that for quite some](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=359.0232857142855) [time. If we have the Recent time interval](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=361.1784285714285) [set to an hour, we won't see that query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=363.58928571428544) [because its CPU or whatever other column](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=366.756153846154) [we're measuring is not any higher in the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=369.20725) [current interval than it was in the past.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=371.2332499999998) [In that case, you probably want to reduce](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=373.25192857142844) [the Recent interval down to a smaller](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=375.26621428571394) [value. With that said, as we'll see in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=377.70984615384606) [module 4, the Query Store itself](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=380.6002) [aggregates those performance statistics](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=382.59939999999983) [over a period of time, and so the solution](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=383.896) [to find that query in the regression](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=386.56900000000024) [report may not be as simple as reducing](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=388.5584615384616) [the recent interval to 5 minutes.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=390.7553846153848) [Identifying regressions is all well and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=395.462) [good, but fixing them is often more](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=397.7094285714285) [important. The Query Store offers a way to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=400.3314285714284) [force a query to use a specific plan. This](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=402.86713333333347) [isn't necessarily the best long-term fix](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=405.7163) [for a regression, but as a temporary stop](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=407.9921) [gap maneuver to put out the fires and stop](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=410.388) [the users from screaming, it's probably](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=412.65239999999994) [just fine. In this demo, we'll have a look](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=415.63257142857134) [at how we can fix the performance](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=418.006) [regression we identified earlier by](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=419.288) [forcing a plan. We'll have a look at how](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=422.42799999999994) [to track whether plan forcing is working](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=425.55357142857156) [or not and how to identify why a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=427.0020714285717) [particular plan forcing is failing, and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=430.1221666666665) [we'll have a look at some cases where plan](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=432.4301538461538) [forcing hinders query performance and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=434.4745384615384) [discuss the differences between Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=435.9164444444445) [Store's plan forcing, plan guides, and the USE PLAN hint.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=7&mode=live&start=437.8175555555557)

[**Demo - Forced Plans**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live)

[In this demo, we're going to look at a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=2.4) [couple of other aspects of the Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=4.3596) [Store's plan forcing. Before this demo](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=6.0520000000000005) [started, I went and dropped one of the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=8.368) [indexes that the forced plan depends on.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=11.229090909090909) [Now if we were forcing that index using a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=13.534) [query hint, the query would fail at this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=15.836071428571431) [point. Fortunately, Query Store's smart](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=18.620749999999997) [enough that it doesn't. If we refresh the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=21.13033333333333) [Regressed Queries report, we can see that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=24.102857142857143) [a new plan has been created. The plan in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=25.79135714285714) [green, plan 36, is still forced, but it's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=29.10300000000001) [no longer being used because it's no](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=32.219153846153844) [longer valid and index that it references](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=34.06769230769229) [is missing, and so the query optimizer has](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=35.867076923076915) [gone and created a new plan with a plan ID](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=37.84861538461535) [of 72 and is using that one for this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=41.55644444444443) [query. We can track that behavior, that of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=45.17044444444441) [a force plan not being used, using the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=47.69569230769231) [Query Store plan's catalog view. What](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=50.54914285714286) [we're looking for here is a query with a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=53.41121428571428) [plan that is forced, so the is\_forced\_plan](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=55.92414285714288) [column is 1, and with a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=58.53169999999999) [force\_failure\_count that's greater than 0.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=61.513099999999966) [And if we run that query, we'll see that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=62.99371428571428) [we've got one plan that's forced and is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=65.20707142857145) [failing, that would be the one that we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=67.22299999999997) [forced earlier and then dropped the index](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=69.23507692307692) [for, and we've got a force\_failure\_reason](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=70.92961538461537) [of NO\_INDEX, which fortunately is pretty](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=72.78771428571429) [descriptive because that's exactly what's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=76.674) [happened. One of the indexes of that query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=79.08566666666665) [plan references is missing, hence there's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=81.48154545454548) [no index where there should be. There are](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=83.3815) [several other possible values for the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=86.57972727272728) [last\_force\_failure description column. I'm](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=88.91590909090912) [not going to go into them here. They're](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=90.38466666666667) [all discussed in the SQL documentation.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=92.79000000000005) [That was a good behavior for a forced](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=94.594) [plan. It means the query doesn't fail](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=96.98155555555553) [unexpectedly when something changes and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=99.2936) [makes the forced plan invalid. But there's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=100.95454545454545) [another behavior of forced plans, isn't](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=103.18436363636366) [quite so ideal. To see that behavior, I'm](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=105.43269999999998) [going to unforce plan 36 and force plan](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=108.86292857142857) [72, the new plan that's been generated](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=112.17435714285713) [since we dropped the index. And once](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=115.13942857142857) [that's done, I'm going to go and go create](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=117.74671428571428) [an index suitable for this query. If this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=119.40592857142852) [was a normal query without a forced plan,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=121.7982307692308) [then the next time this query is compiled,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=124.741) [the optimizer would pick up that index and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=126.48684615384617) [use it. But it can't in this case, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=128.90479999999997) [plan is forced, and so the plan which is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=132.88519999999986) [still valid must be used even though](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=136.14571428571435) [there's a more suitable index. And if we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=138.40171428571443) [refresh the Regressed Queries report, we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=141.26118181818177) [can see that our query is still using plan](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=143.50333333333333) [72, the forced plan, the plan that does](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=147.06883333333326) [not use the new index. If I unforce plan](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=150.20024999999998) [72, then immediately a new plan is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=153.452) [generated for the query, a plan much more](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=155.7235) [optimal than plan 72. This is one of the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=158.8108888888889) [downsides of plan forcing. While the plan](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=162.14422222222223) [can't get any worse, it also can't get any](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=165.1347692307692) [better. Now the Query Store plan forcing](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=170.16507692307678) [is not the first time we've had the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=172.21928571428572) [ability to force a plan for a particular](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=174.213) [query. We've had the USE PLAN hint for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=177.28233333333336) [several versions of SQL Server now, and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=179.72130769230765) [we've also had plan guides, which can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=181.73770000000002) [apply hints, including the USE PLAN hint,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=183.52060000000012) [to queries who's definitions we can't](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=185.6983333333333) [change. For example, Entity Framework or](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=187.70033333333325) [queries embedded in an application to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=189.59990909090908) [which we don't have the code. So let's do](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=191.479) [a quick comparison and see how those](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=194.22849999999997) [worked and why plan forcing is so much](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=197.07366666666667) [more convenient. The USE PLAN hint](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=202.34433333333345) [requires that the entire XML definition of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=205.24723076923075) [the plan be specified in the query hint,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=208.02138461538456) [which is really, really cumbersome. So](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=211.82436363636359) [let's alter that procedure so that the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=214.54064285714287) [plan is now forced using the USE PLAN](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=215.99414285714278) [hint, and keep in mind that we don't have](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=217.74760000000003) [a plan forcing from Query Store any](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=220.03180000000015) [longer. I removed the plan forcing](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=222.3805) [earlier. If we run that query, it runs](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=225.04750000000004) [using the required plan. But what happens](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=228.4746363636363) [if we make that plan invalid? I'm going to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=231.14566666666667) [go and drop one of the indexes referenced](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=233.6995714285714) [in that plan and then run the store](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=235.35442857142846) [procedure again. And this time we get an](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=238.90321428571428) [error. The plan is not valid, and so the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=243.58835714285715) [query with the USE PLAN hint fails. This](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=247.11053333333328) [is not ideal. Firstly, we've potentially](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=250.13425) [got queries failing in production.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=252.85975000000002) [Secondly, we don't have anywhere where](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=255.131) [this is kept track of. This isn't recorded](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=257.423) [in any DMVs, and unless we're looking for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=260.24174999999997) [user errors, we might not see this, at](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=262.66508333333314) [least not until the users start](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=264.8811538461539) [complaining about it. And addition to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=266.521) [this, it's got the same downside as the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=269.0780909090909) [Query Store forced plans. If a new index](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=272.1579230769231) [is created which is better than the one](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=274.68838461538473) [referenced in the plan, the query won't](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=276.60823076923066) [use it because the plan is forced. A plan](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=278.11) [guide with the USE PLAN hint works much](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=281.8610714285714) [the same way. The downside of plan guides](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=285.0084) [is they're quite finicky. They're quite a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=287.84413333333333) [pain to get working to be honest. The](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=290.1194) [couple of times I've used them, I've ended](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=292.3443571428571) [up spending quite a bit of time trying to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=294.13921428571405) [get the plan guide to be used. The correct](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=296.59045454545463) [combination of parameter values is very,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=299.791) [very specific. On the plus side, the plan](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=302.41300000000007) [guide doesn't have the same behavior as](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=304.9451428571428) [the USE PLAN hint applied to the query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=306.87964285714276) [when the indexes are dropped. The query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=309.5511666666668) [runs, and the plan guide is unsuccessfully](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=312.1166) [applied. However, like with the USE PLAN](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=315.1077) [hint, that's not kept track of anywhere.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=317.1153076923077) [There are no DMVs, which track plan guide](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=318.959) [failures. If we want to detect a plan](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=321.89500000000015) [guide failing, we need to have Profiler or](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=323.9592666666665) [Extended Events running looking for the appropriate event.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=8&mode=live&start=325.899)

[**Summary**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=9&mode=live)

[In this module, we looked at what query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=9&mode=live&start=0.3) [regressions are and the common reasons why](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=9&mode=live&start=2.9363076923076923) [are they occur. We took a trip down memory](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=9&mode=live&start=5.157384615384615) [lane and looked at how difficult it was to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=9&mode=live&start=7.737615384615383) [detect query performance regressions](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=9&mode=live&start=10.293272727272727) [before Query Store and how much easier it](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=9&mode=live&start=11.426) [is to detect it now using the Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=9&mode=live&start=13.998000000000003) [Store's regression report. We touched on](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=9&mode=live&start=16.766666666666666) [the details of the query regression report](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=9&mode=live&start=19.285666666666664) [and discussed what the various columns](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=9&mode=live&start=21.9247) [mean, which aggregation expression is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=9&mode=live&start=23.844100000000005) [best, and how important the selection of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=9&mode=live&start=25.372) [the intervals are. And we looked at plan](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=9&mode=live&start=27.54114285714286) [forcing, so how to choose what plan and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=9&mode=live&start=30.39828571428572) [query should execute with and how to track](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=9&mode=live&start=32.95476923076924) [whether plan forcing has failed. In the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=9&mode=live&start=35.01015384615388) [next module, we'll look at the Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=9&mode=live&start=37.43733333333333) [Store's resource consumption reports and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=9&mode=live&start=40.116) [see how easy they make it to obtain](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=9&mode=live&start=41.748500000000014) [performance baselines of queries or for the entire system. See you there.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m2&clip=9&mode=live&start=44.4628)

[**Tracking Resource Consumption**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live)

[**Introduction**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live)

[Hello, and welcome to the third module of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=3) [this Pluralsight course on Solving Real](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=6.131999999999999) [World Problems using the SQL Server Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=8.5306) [Store. In the previous module, we looked](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=11.444699999999997) [at one of the Query Store built-in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=13.234999999999996) [reports, the Regressed Queries report. In](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=14.838) [this module, we're going to look at the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=17.312181818181816) [other three built-in reports, the Top](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=20.361272727272723) [Resource Consuming Queries report, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=22.335818181818173) [Overall Resource Consumption report, and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=24.602857142857143) [the Tracked Query report. Before we get](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=27.7162) [into the details of the report though,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=32.22476923076923) [we're going to have a look at why we want](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=33.70823076923078) [to track resource consumption, both](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=36.17927272727271) [overall and per query. We'll see just how](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=37.61615384615385) [difficult it was to track resource](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=40.721384615384636) [consumption before we had the Query Store](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=43.04633333333334) [and how easy the Query Store makes it now.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=45.74950000000001) [We'll also look at various configuration](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=48.6970909090909) [options that the resource consumption](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=50.733375) [reports have. And we'll look at the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=53.46025) [Tracked Query report, which allows a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=55.91475000000001) [developer or DBA to keep an eye on](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=57.551250000000024) [problematic queries or track the impact of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=59.673) [performance optimization or other known](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=61.522) [and expected changes. So why are we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=65.11825) [interested in tracking performance](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=68.75353846153847) [consumption in the first place? There are](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=70.23107692307694) [several reasons to do so. At the per-query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=72.89636363636365) [level, it allows us to identify queries](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=76.16981818181821) [running for a long time, which can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=78.66372727272723) [indicate which parts of the application](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=81.02499999999999) [may be slow, and it also allows us to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=82.89699999999998) [identify queries which on aggregate](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=86.01053846153849) [consume a lot of resources. This can be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=87.8251538461539) [useful when we're trying to tune the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=90.33807692307691) [overall system allowing us to identify](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=92.423) [which queries consume the most CPU or](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=94.68063636363632) [process the most data overall over a known](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=97.77184615384614) [period of time. At the per-database level,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=102.61123076923072) [tracking resource consumption allows us to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=105.97319999999998) [see trends over time tracking how the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=108.294) [database's resource consumption increases](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=111.34250000000003) [or occasionally decreases over time. This](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=113.39916666666667) [can be helpful when trying to extrapolate](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=117.41641666666668) [when new hardware will be needed or trying](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=119.28133333333338) [to decide whether multiple databases can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=121.73899999999999) [be consolidated onto a single server. And](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=123.82699999999998) [we'll look at these in more detail later](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=125.94800000000002) [in the module. In versions of SQL Server](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=129.4302) [before 2016, if we wanted to calculate](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=134.12775) [resource consumption by query or overall,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=137.115) [we had two primary options. We could use](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=140.30263636363634) [the dynamic management views, the DMVs, or](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=144.0842307692308) [we could run an Extended Events session.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=146.70976923076933) [There are other options. SQL Profiler was](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=149.78650000000002) [one, but it was deprecated back in 2012,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=152.72092857142854) [so I prefer not to use it unless I'm](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=155.34207142857133) [working on antique versions of SQL Server.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=158.3054615384615) [Good third-party monitoring tools will](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=160.616) [also be able to generate these stats. They](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=162.55016666666666) [often do so my running Extended Events](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=165.54141666666666) [sessions in the background or polling DMVs](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=167.52533333333324) [for the data. I'm not going to talk about](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=169.6452) [third-party tools though. Not everyone has](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=172.60379999999998) [them, and it's not practical to expect](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=174.3559230769231) [everyone to go and buy a tool. Let's start](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=176.14307692307696) [by considering the DMVs. The problem with](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=179.96240000000006) [using the DMVs is two-fold. The DMV that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=183.37875) [contains query performance information is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=186.70187499999997) [sys. dm\_exec\_query\_stats, and it's got](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=188.405) [related information in sys.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=190.87187500000005) [dm\_exec\_sql\_text and sys.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=193.33780000000002) [dm\_exec\_cached\_plans. Like most DMVs,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=196.29520000000005) [these are memory only. They're not](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=198.54899999999998) [persisted to disk, and so when SQL is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=201.08499999999992) [restarted, all the data in the DMVs is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=204.29942857142854) [lost. Another problem with](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=207.41371428571418) [exec\_query\_stats is the stats are tied to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=208.71227272727273) [the query's plan in cache. If the plan is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=210.83390909090912) [removed from cache, the aggregated query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=214.37845454545464) [performance statistics are lost as well.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=216.77433333333332) [There are quite a few things that can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=219.135) [flush the cache outside of an explicit](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=221.41100000000006) [command. One that catches a lot of people](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=223.40250000000012) [by surprise is a database restore. Not](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=226.04061538461548) [necessarily a full database restore,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=228.35263636363635) [though that certainly will do it, but log](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=229.82581818181814) [restores as well. When it comes to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=232.40025000000003) [individual plans, there's even more that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=234.9698333333334) [can remove a plan from cache.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=237.11560000000003) [Modifications to the schema of any table](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=239.233) [that the query references will result in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=241.80072727272733) [the query's plan being invalidated and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=244.2582727272727) [regenerated on the next execution, and so](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=246.2388181818181) [will data changes significant enough to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=248.52899999999997) [trigger a statistics update. Modifications](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=250.485) [to a stored procedure or function will](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=252.813) [remove any plans for that stored procedure](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=255.93154545454544) [or function. And plans can also be aged](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=258.69845454545464) [out of cache if the queries they're](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=261.1016153846154) [associated with haven't run for a while.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=262.983) [And a while is not a defined period of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=265.2459999999999) [time. It depends on the amount of memory](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=268.12053846153844) [SQL Server has, any memory pressure the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=270.56669230769216) [server's under, and a bunch of other](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=272.85600000000005) [things. Lastly, if the query has the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=275.2570000000002) [RECOMPILE hint or the procedure has the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=277.75953846153834) [recompile option, the plan is never cached](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=280.279) [at all. This means that the data in the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=284.0473333333335) [DMV is not going to date from when the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=286.5226875000001) [server started, as is the case for many](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=288.321) [other DMVs. The query's performance](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=291.85619999999983) [characteristics are aggregated in the DMV,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=293.95300000000003) [and they're aggregated over the time that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=296.379) [that plan has been in cache, so aggregated](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=298.6906153846153) [since the query was last compiled.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=302.51) [Extended Events don't have these problems,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=308.024) [but the Extended Events session needs to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=310.35439999999994) [be running for the entire period of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=312.94490909090905) [interest, and the data volumes generated](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=315.36436363636346) [can get quite nasty. The data in Extended](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=318.2033333333334) [Events is not aggregated, and so we've got](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=321.56499999999994) [detailed information from every single](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=324.299) [execution of the queries. There's one](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=327.44455555555555) [system I work on that generates a couple](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=330.3999230769231) [of gigabytes of Extended Events trace data](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=332.1556153846153) [every 10 minutes during business hours. If](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=334.63879999999995) [I wanted to trace the per-query resource](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=337.70016666666663) [consumption of every query involved in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=339.9693333333332) [their month end process, I'd need to run](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=341.8735) [the Extended Events session for four days.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=344.3034999999998) [I'd probably end up dealing with over half](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=346.5689166666668) [a terabyte of trace data. Never mind](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=349.32779999999997) [analyzing that; storing it and moving it](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=352.39239999999984) [is going to be hard enough. Plus, if the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=355.19890909090896) [job doesn't start for whatever reason,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=358.50138461538455) [we've missed that data. The job might not](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=360.4721538461536) [start because SQL agent is stopped.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=363.064) [Perhaps daylight savings shifts have](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=364.981) [caused the job's start time not to occur.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=367.32023076923076) [Perhaps the job was disabled or its](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=371.063) [schedule was disabled. There are a bunch](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=373.3855999999999) [of reasons why a job might not start when](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=375.1415333333333) [it is supposed to start. If this was](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=376.85273333333333) [something like a month end process that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=379.2960000000001) [we're trying to track, we're looking at](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=381.63725) [waiting an entire month before we can try](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=383.5850000000001) [again. If it was a financial year end](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=385.96538461538455) [process instead, well, I just don't want](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=388.5001538461537) [to be stuck in that situation to be honest.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=0&mode=live&start=394.817)

[**Demo - Tracking Resource Consumption with DMVs**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live)

[In this demo, we're going to look at how](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=2.4) [we would capture resource consumption,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=4.752461538461539) [both per query and overall, in versions of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=6.346692307692308) [SQL Server before 2016. Let's start with](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=10.736230769230772) [the DMVs. The DMV that we want is sys.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=14.729384615384614) [dm\_exec\_query\_stats. I'm also going to use](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=20.12453846153847) [sys. dm. exec\_sql\_text to get the text of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=22.499000000000002) [the statement. If we run that query, we'll](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=25.339000000000006) [see a list of all the queries that have](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=27.625000000000007) [plans in cache, the times that those plans](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=29.989) [were created, and the resources that were](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=32.97619999999999) [used since that time. And we've got one](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=35.54633333333332) [row per query because that's how the query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=38.3354) [stats DMV works. The problem with this is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=40.996199999999995) [that these stats aren't since a certain](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=43.281692307692296) [point in time, and they aren't since SQL](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=45.08446153846151) [Server last started. Now since the plan](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=48.03210000000002) [was created, as indicated by the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=50.35227272727272) [creation\_time column, if I wanted to use](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=52.103181818181795) [this to track overall resource consumption](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=54.802000000000014) [over a period of time, or per query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=57.209) [resource consumption over a period of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=59.45023076923076) [time, I'd need to have a job which logged](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=61.0718125) [this to a table on a regular interval and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=63.05912500000001) [a query against the recorded results that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=65.53272727272729) [make sure we don't count queries twice,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=68.21309090909095) [that we only count the latest row for a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=70.4176923076923) [particular query and plan. This isn't](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=73.44814285714287) [hard, but it's not simple either. I'm not](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=76.16357142857146) [going to show that here because that's not](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=79.177) [the point of this course, but I will](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=80.36900000000001) [include scripts to that in the demos](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=82.82366666666664) [download. Moving on to Extended Events, I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=86.07633333333325) [would use much the same Extended Events](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=88.64349999999996) [session as I showed in the previous](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=91.04222222222222) [module. Sp\_statement\_competed and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=93.11577777777781) [sql\_statement\_completed are good events to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=94.78725) [use. I would run the Extended Events](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=98.22537499999999) [session over the time I'm interested in,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=100.12249999999999) [save the results to a table, and query it](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=101.70246153846153) [much like this. And because Extended](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=105.0366153846154) [Events returns the individual events, I've](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=107.38962500000001) [got one row per query execution. So to get](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=109.80091666666667) [my resource consumption per query or](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=112.87816666666663) [overall, I would need to aggregate this. I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=114.93763636363637) [want to aggregate by the query\_hash](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=117.60076923076923) [because that ensures that if I have](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=119.13538461538462) [queries of a similar form, but slightly](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=121.07518181818182) [different query texts, for example](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=123.91145454545453) [different embedded literals, they will be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=125.76799999999999) [aggregated into one row, not two. The](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=127.69099999999996) [rather complicated subquery is to just get](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=130.55853846153846) [the text for a particular query\_hash. And](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=133.67569230769232) [if we run that, we now have one row per](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=136.8355714285715) [query that ran against the server during](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=140.97915384615388) [the time that the Extended Events session](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=142.8136923076924) [was running, along with its TotalCPU](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=144.96480000000003) [usage, TotalDuration, and total of number](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=147.1704000000001) [of logical reads aggregated by the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=148.95845454545454) [query\_hash and with one of the query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=150.663) [statement texts show. If I want the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=155.26760000000007) [overall resource consumption, I just don't](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=158.18684615384612) [have a GROUP BY, and since I don't have a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=159.60561538461528) [GROUP BY, I don't need the complicated](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=162.07900000000006) [subquery to fetch the query text, and so](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=163.843) [it becomes a simple query with aggregations, but no GROUP BY.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=1&mode=live&start=165.94823076923072)

[**Demo - Tracking Resource Consumption with Query Store**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live)

[In this demo, we're going to look at how](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=0.7) [we would see the resource consumption both](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=2.6800000000000006) [per query and overall using the Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=4.8536) [Store. As we did last time, expand out the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=8.611200000000002) [database, expand out Query Store, and this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=11.450153846153842) [time the report that we're looking for is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=13.316384615384614) [the Top Resource Consuming Queries report.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=15.025923076923071) [The default settings for the report are](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=17.107818181818182) [the Last hour and Duration, and it's a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=20.46972727272727) [Total, which makes sense since this a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=22.921846153846147) [Resource Consuming Queries report. I'm not](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=25.013615384615385) [so much interested in duration, however. I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=27.423307692307702) [want to look at the CPU. So I'm going to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=29.998266666666666) [click on the Configure button, open the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=31.65093333333334) [configuration dialog, and change Duration](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=33.8462) [to CPU. I'm going to leave the Based On as](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=36.40320000000001) [Total because I want the total CPU usage](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=39.26013333333334) [per query at this point, and I'm going to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=41.078538461538464) [change the Time Interval to 12 hours. And](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=43.000384615384625) [immediately we can see the top 25 queries](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=45.427153846153836) [that consumed the most CPU over the last](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=48.285) [12 hours. If I hover the bars of the bar](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=51.605800000000016) [graph, I can see the query's text, its](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=54.51919999999998) [total CPU time, the number of times it's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=56.59984615384615) [executed, and the object name if it's a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=58.66261538461537) [part of a stored procedure. The scatter](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=60.86555555555556) [plot on the right shows me the total CPU](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=62.76157142857143) [usage used by that query over that 12 hour](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=64.70364285714287) [time period. At this point, it's per hour.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=67.48485714285712) [And in the bottom I can see the query's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=70.33) [plan. If the query had multiple plans,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=72.68170000000005) [then I can select the plans in the top](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=74.13914285714283) [right graph to view them in the bottom.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=76.12433333333333) [Similarly, I can look at the total](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=79.247) [resource consumption in terms of Logical](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=81.19300000000004) [Reads for the last 12 hours for the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=82.8711) [system. And again, I get the bar graph](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=85.1759) [with a scatter plot of the plans to the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=86.99875000000002) [right and the query plan in the bottom](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=88.972) [pane. This time I can see I've got one](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=91.80222222222223) [query that's doing the vast majority of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=94.27600000000001) [the logical reads in this system. All the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=96.10876923076923) [other ones are barely visible on the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=98.05092307692304) [bottom of the graph. For the overall](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=100.47945454545453) [resource consumption for the entire](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=103.88018181818175) [database, the Query Store report I want is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=105.68899999999998) [the Overall Resource Consumption. It looks](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=108.335) [a bit different to the other two graphs](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=110.75190909090905) [we've seen so far in this course. Because](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=113.44730000000001) [it's not recording individual queries, I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=115.33518181818182) [don't have any plans to look at, I don't](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=117.12427272727273) [have the top resource consuming queries, I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=119.612) [don't have the top regressed queries.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=121.45625) [Instead, what I've got are four graphs,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=123.19775) [Duration, Execution Count, CPU Time, and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=125.5428) [Logical Reads with the overall values for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=128.2242) [the database per unit of time. The default](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=130.90618181818186) [settings for this report are for the last](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=133.62781818181818) [hour, and so each bar on the graph shows a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=135.93109090909095) [500 interval. If I change that to Last](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=139.17509090909093) [day, then my bars turn into one hour](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=141.56385714285716) [intervals, and I can see that there's been](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=143.873) [absolutely no activity on this database at](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=145.93766666666664) [all before 3 o'clock on the day that this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=148.0074) [demo was recorded. Hovering over the bars](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=151.11959999999996) [gives me more information. It gives me the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=153.547) [total in terms of CPU, Duration, Logical](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=156.02166666666665) [Reads, Logical Writes, etc. for that time](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=157.91983333333326) [interval, and it shows me when the interval started and stopped.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=2&mode=live&start=160.10038461538468)

[**Why Do We Want to Track Resource Consumption?**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live)

[Now that we've seen how we can track](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=1.3) [resource consumption with the Query Store,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=3.540000000000001) [let's revisit why it's important in more](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=6.257200000000001) [detail. Let's say that we've got a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=11.847400000000004) [production sever that's running high on](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=14.392923076923083) [CPU. Not a comfortable 50 to 60%, but](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=16.139846153846165) [around 90% during the hours that the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=18.70349999999999) [application is used. That's not good.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=20.976) [We've got no room for growth, and we've](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=23.578000000000003) [got little space to accommodate spikes in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=26.9172) [activity. We either need to add more CPU](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=29.497400000000006) [power to the server, or we need to reduce](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=31.642600000000012) [the CPU used by the queries that run](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=34.07891666666667) [against this database. For the purposes of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=37.32625000000003) [this discussion, let's assume that adding](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=39.69000000000001) [CPU is not an option. When we're looking](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=41.409000000000034) [to reduce overall CPU usage, seeing how](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=46.49454545454546) [long individual queries run for is not all](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=51.121166666666674) [that interesting. That's not to say that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=54.58583333333336) [it's not useful at all. Identifying](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=57.00950000000001) [long-running queries is important when](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=58.93811111111111) [specific parts of an application are slow.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=60.793666666666674) [But if we're trying to reduce the overall](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=63.336) [CPU usage, we want to look for the queries](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=66.194) [that over a period of time consume the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=69.58160000000004) [most CPU. There was a system I looked at a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=72.56042857142856) [couple of years ago, where the average CPU](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=76.16257142857134) [was too high. After some investigation, it](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=79.1836666666667) [turned out that the query consuming the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=81.49363636363637) [most CPU was a tiny little query that ran](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=83.523) [in 20 ms and used about 15 ms of CPU time](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=86.94359999999998) [on every execution and executed thousands](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=91.86200000000004) [of times a minute. Individually it was](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=95.02760000000008) [inconsequential, but when all of its](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=98.3527) [executions were summed together over a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=100.78209999999999) [period of time, it used several times the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=102.98623076923074) [CPU of the next query down. A query like](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=105.865) [that is far more of a problem than a query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=108.94060000000003) [that runs for a long time, but doesn't run](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=112.10214285714285) [very often; well more of a problem in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=114.60221428571427) [terms of resource of consumption, anyway.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=117.97400000000005) [In the aforementioned system, fixing that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=120.626) [one query to not run as often reduced the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=122.7885) [overall CPU usage by about 40%. In the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=127.12933333333332) [same way, looking at a query's total reads](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=132.00142857142856) [over a period of time can let us identify](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=134.06314285714285) [queries that are processing lots of data.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=137.03774999999993) [That often turns out to be queries that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=139.759) [aren't using indexes efficiently or are](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=141.43390909090905) [doing lots of table index scans and as a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=142.99599999999998) [consequence are churning memory. Excessive](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=145.798) [table scans and memory churn lead to high](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=148.49799999999996) [IOU search and potentially and potentially](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=152.3826666666666) [I/O bottlenecks. The Query Store Top](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=154.96966666666654) [Resource Consumer's Report makes it](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=157.12472727272723) [trivially easy to identify the queries](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=158.74063636363627) [that are on aggregate using the most CPU](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=160.56176923076924) [or doing the most reads by selecting the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=162.91130769230773) [total aggregation option for the report.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=166.25538461538468) [If we do want to identify the queries with](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=168.87) [long individual execution times, we can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=171.8437500000001) [instead use the max aggregation option on](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=173.82975) [the report instead of total. This gets us](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=176.15083333333328) [queries with the longest individual](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=178.78745454545455) [durations, or highest individual CPU](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=180.432) [usage. When looking at this, I'd probably](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=184.28533333333334) [look mostly for duration as I've probably](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=186.82900000000004) [be looking for queries that are pain](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=188.89727272727274) [points for users, and users notice how](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=190.96418181818186) [long queries are running, not how much CPU](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=193.5597142857143) [they consume. These results do need to be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=196.97914285714293) [taken with a pinch of salt though. Not all](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=199.40092307692316) [long-running queries are a problem for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=201.9287777777778) [users. Background jobs aren't. Scheduled](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=204.0281111111112) [reports are not going to annoy users. Now](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=206.83690909090905) [there's nothing here that couldn't have](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=211.4012) [been captured with appropriately timed](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=212.9684) [Extended Events sessions, but the ease of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=214.49200000000002) [accessing the data and the preformatted](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=217.082) [output reduces the work needed to get the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=219.3505454545454) [useful results significantly. This means](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=222.1675) [we can spend more time fixing the problem](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=223.71166666666662) [rather than crunching the data and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=226.21390909090906) [formatting Excel graphs to identify the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=228.11427272727263) [problem. That was resource consumption per](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=233.56266666666664) [query. What about overall resource](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=236.5025) [consumption at a database level? Overall](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=238.416) [trends per database aren't as immediately](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=242.0195999999999) [actionable as per query ones are, but](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=245.17953846153844) [they're still very useful. One of the main](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=247.830923076923) [uses, in my opinion, is for database level](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=250.96628571428573) [performance baselines. All too often no](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=254.2068571428572) [one knows what normal is for a database's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=256.20133333333337) [performance, and fast and slow can be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=258.57) [subjective. If a user is impatient or in a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=262.03849999999994) [hurry, a query may feel slow, even though](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=264.99685714285704) [it's performing the same as usual. A](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=267.54125) [baseline gives us concrete historical](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=269.9187) [figures that the current performance can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=271.3472000000001) [be compared against. Tracking database](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=273.8262222222222) [level resource consumption also allows for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=277.1667777777777) [trends to be observed and checked. This](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=280.1206) [can be used to predict when hardware](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=282.7949230769231) [upgrades will be needed and may also be of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=284.5303846153847) [use when planning server consolidation.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=287.2797777777778) [Putting two databases that are busy at](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=289.167) [different times of the day onto the same](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=290.84484615384633) [server may be a better use of hardware](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=292.9082307692307) [resources than putting two databases that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=295.4091538461536) [are busy at the same time. Baselines make](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=298.04233333333326) [it easy to see when things are not normal.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=302.1737272727273) [If, for example, one Monday morning the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=305.507) [CPU consumption is two and half times what](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=307.5399166666666) [it was the previous week at the same time,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=309.8670000000001) [then it is very likely that something has](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=312.49200000000025) [gone wrong and needs to be investigated.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=315.3249166666666) [Having something to compare current](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=318.066) [performance to means that the first](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=319.41650000000004) [indication of a problem will not be the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=321.10692307692307) [users calling help desk and ideally means](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=323.82630769230764) [the problem can be spotted, investigated,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=326.31433333333337) [and resolved before the users even notice.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=328.571) [One time that this is especially valuable](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=332.938) [is after code changes, whether they be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=335.2702727272726) [application or database. I've lost track](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=337.6170000000001) [of how many times over the years I've seen](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=339.6450000000002) [application changes that were tested in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=342.36299999999994) [dev, tested in QA, and they were fine, and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=344.067) [when they were deployed to production, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=346.9849285714285) [system's performance degraded severely.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=349.90033333333326) [There are a number of reasons why this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=352.489) [might happen. One of them is that all too](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=354.82740000000007) [often development systems have databases](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=357.2028333333333) [with far fewer rows than production. This](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=358.482) [might be because of space limitations on](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=360.88066666666674) [dev or because generating large volumes of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=363.2948333333333) [test data is hard, or in one case that I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=365.74774999999994) [remember, because developing on production](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=369.6439166666665) [levels of data was too slow. Whatever the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=371.676) [root reason is, the effects are the same.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=375.7247272727273) [Everything is fast on 10 rows, and so](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=379.15936363636376) [tables go into production without indexes,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=382.0500909090909) [queries go into production unable to use](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=383.8233636363636) [indexes, and what was fast on dev is as](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=386.12028571428567) [slow as anything in production, and it](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=389.2934285714285) [pulls the rest of the system down with it.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=391.51720000000006) [Another possible reason for this is the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=394.324) [dev servers typically have far lower have](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=396.3190000000002) [follow workload than production, and so](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=398.4004) [blocking problems or other concurrency](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=400.3695999999999) [related issues tended not to show up in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=402.16125000000005) [dev, and they first surface in production.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=405.1885833333335) [Having easy access to the database's total](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=408.23209090909074) [resource consumption now and historically](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=411.43499999999995) [means that such problems can be spotted](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=413.8899999999999) [easily and people can start investigating](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=416.60245454545446) [root causes probably also using the Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=418.679) [Store reports. Another use that might not](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=422.672111111111) [be so obvious is the ability to see that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=425.31335714285706) [things are normal. Let's just say that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=428.014) [I've run across a couple of cases in the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=430.7186923076922) [past of users blaming a slow server for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=433.94479999999993) [not being able to get their work finished](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=436.3655999999998) [on time, even when the server wasn't](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=439.49938461538454) [running slow. Being able to show that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=442.86530769230745) [things are running normally is highly](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=445.45866666666655) [underrated. It can save you an evening or](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=447.4166666666664) [a weekend of debugging a nonexistent problem to satisfy a particular manager.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=3&mode=live&start=449.7342307692307)

[**Tracked Query Report**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live)

[The last report that Query Store provides](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=1) [built in is the Tracked Query report. The](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=3.957499999999999) [Tracked Query report allows for a single](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=7.201833333333333) [query's performance to be monitored over](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=9.209666666666669) [time. It's got much the same format as the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=10.996833333333331) [Top Resource Consuming Queries report](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=13.876083333333325) [does, except that any query can be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=16.347666666666665) [observed. The report requires that a query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=20.11308333333334) [ID is specified. The ID can be obtained](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=22.959666666666667) [from other reports or from the Query Store](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=25.692999999999998) [catalog views. The Tracked Query report](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=28.219399999999993) [also allows you to search for a query from](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=30.205133333333336) [the report. The query has to have been](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=33.251933333333334) [captured by Query Store to have a query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=35.65219999999999) [ID, and hence it has to have run at least](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=37.94979999999998) [once. Unfortunately, the report doesn't](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=41.20970000000001) [save query IDs from one viewing to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=42.937454545454536) [another, and so queries of interest will](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=45.383) [have to be recorded somewhere else and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=47.391416666666686) [entered in each time. It's also not](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=49.67138461538462) [possible to open two tracked query reports](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=52.63023076923078) [without having two full copies of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=55.22489999999999) [Management Studio open, nor is it possible](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=57.03269999999998) [to have multiple queries tracked at the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=59.341999999999985) [same time. Hopefully these will be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=61.717636363636366) [improvements added in future versions of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=63.923454545454554) [Management Studio. One place I can think](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=66.23400000000001) [of where the Tracked Query report will be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=69.17400000000002) [exceedingly useful is when doing query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=73.27025) [optimizations. After deploying the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=76.67375000000001) [optimizations to production, it's a good](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=78.10090909090908) [idea to see how the query is performing to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=79.82072727272725) [make sure that the optimizations had the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=82.72149999999998) [desired effect. We can't use the other](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=85.25054545454545) [reports though. The query shouldn't show](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=88.2834545454545) [up in the Performance Regressions report.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=90.72560000000001) [If it does, something's gone rather badly](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=93.089) [wrong. It also shouldn't show up in the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=96.30112500000004) [Top Resource Consuming Queries report.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=98.94341666666664) [Before the optimization yes, very likely;](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=100.503) [after it, I certainly hope not. So what we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=103.27000000000002) [can do here is look up the query's query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=106.71218750000003) [ID in the Query Store catalog views and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=108.73775000000009) [then use the Tracked Query reports to see](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=110.80600000000001) [how much of an improvement the optimization made.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=4&mode=live&start=113.14200000000002)

[**Demo - Tracked Query Report**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live)

[The last report that I want to discuss in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=4) [this module is the Tracked Query report.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=7.515062499999997) [To use this report, we first need to get](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=10.249) [the query ID of a query that we're](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=12.108625000000007) [interested in looking at, and we can do](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=13.843230769230768) [this from the Query Store catalog views.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=16.149076923076915) [The column is found in sys.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=18.702727272727273) [query\_store\_query and is used as a foreign](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=21.50418181818182) [key in most of the other tables. In this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=24.232583333333327) [case, I'm going to look for a query with a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=27.152733333333334) [specific piece of text to it. Let's say](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=29.191399999999998) [that I've got a query that looks at a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=31.030857142857137) [particular column of a particular table,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=33.241) [and I want to track its performance. So I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=34.96623076923076) [can search through the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=37.721666666666664) [query\_store\_query\_text catalog view,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=39.206999999999994) [search on the query\_text, and get the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=40.321) [query ID out. And in this case, our query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=44.21789999999999) [has a query\_id of 38. Back to Object](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=48.4810909090909) [Explorer, Query Store, and open the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=52.063) [Tracked Queries report. Enter the query ID](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=54.905) [that we're looking for in the search box,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=57.44971428571429) [top left, and click the Search button, and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=59.69714285714289) [we get that query's performance over time.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=62.45269230769229) [By default, we're looking at the average](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=65.012) [duration over the time periods. We get the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=67.16975000000001) [scatter plot in the top and the query's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=69.4506) [plan on the bottom. And like with previous](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=71.42286666666665) [reports, if the query has multiple plans,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=73.54100000000001) [they'll be shown in different colors,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=75.522) [different symbols, and we'll be able to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=76.98490909090911) [click through them and see the different](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=78.7892857142857) [plans in the bottom panel. In this case, I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=80.83778571428566) [want to see the query's CPU times, and I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=83.12200000000001) [want to see maximum time it had taken in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=84.96925000000007) [each interval. So I can click the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=87.7735) [Configure button, change the Metric to CPU](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=89.82876923076925) [Time, and the Statistic to Maximum. And my](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=91.68484615384621) [report immediately shows me that I had an](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=95.44475000000003) [outlier in terms of performance. Between 9](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=98.88174999999998) [o'clock and 10 o'clock that evening, that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=101.07683333333327) [query was taking substantially more CPU](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=103.50945454545452) [than it normally does. It's not going to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=105.676) [tell us why. It might be that the query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=108.05054545454546) [was processing more data at that point](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=110.31100000000004) [than normal. We'd have to do more](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=111.90933333333341) [investigation to figure out exactly why.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=113.82009090909091) [It's not a plan problem though. We've only](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=115.565) [got one plan for this query. Hovering over](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=118.92442857142856) [the entries on the graph gets us the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=121.92466666666668) [information like the total max, min,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=123.8473333333334) [average CPU time, the number of times a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=125.49815384615383) [query executed in that interval, and when](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=127.83846153846147) [the interval started and ended. And we can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=131.32518181818185) [go and look at the plan in the bottom](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=135.9143846153846) [panel. If I want to look at the query's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=141.69653846153838) [text, I can click the View Query button,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=143.9091333333334) [and that opens the query's text in a new](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=145.74335714285712) [tab in Management Studio. I can also set](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=149.88657142857133) [the Tracked Query report to Auto-Refresh.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=153.3988) [The default is 5 seconds, which is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=155.905) [probably a little bit too frequent, unless](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=157.5397692307693) [we're looking for some strange behaviors,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=159.19527272727274) [so I'm going to change it to 30 seconds.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=160.72090909090915) [This can be very useful when trying to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=163.42478571428572) [debug an ongoing problem. If we know that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=166.12364285714287) [a particular query is behaving strangely,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=168.5014999999999) [can open the Tracked Query report, search](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=170.3270909090909) [for that query, and we can monitor that query's performance over a period of time.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=5&mode=live&start=172.90372727272728)

[**Summary**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=6&mode=live)

[In this module, we've looked at the three](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=6&mode=live&start=2) [of the built-in Query Store reports, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=6&mode=live&start=3.958153846153845) [Top Resource Consuming Queries report, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=6&mode=live&start=6.214285714285715) [Overall Resource Consumption report, and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=6&mode=live&start=9.3553) [the Tracked Query report. We discussed why](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=6&mode=live&start=12.156799999999999) [we want to track resource consumption,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=6&mode=live&start=15.188749999999999) [both at the query level and at the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=6&mode=live&start=16.770249999999997) [database level. We looked at how we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=6&mode=live&start=19.20061538461539) [would've tracked this kind of information](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=6&mode=live&start=21.496076923076934) [in the days before the Query Store and at](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=6&mode=live&start=23.251499999999997) [the disadvantages of the various methods.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=6&mode=live&start=26.118000000000002) [And we looked at how much easier it is to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=6&mode=live&start=28.722) [track this information now that we do have](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=6&mode=live&start=31.047714285714292) [the Query Store. And finally, we discussed](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=6&mode=live&start=33.25533333333333) [the Tracked Query report. In the next](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=6&mode=live&start=35.49066666666666) [module, we'll have a look at the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=6&mode=live&start=38.2746153846154) [architecture behind all this magic, how](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=6&mode=live&start=41.15) [the Query Store records its information](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=6&mode=live&start=43.20363636363637) [for us, and what configuration options we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=6&mode=live&start=45.2525) [have for tweaking its behavior. See you there.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m3&clip=6&mode=live&start=47.61499999999999)

[**Configuration and Architecture**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live)

[**Query Store Architecture**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live)

[Hello, and welcome to the fourth module in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=2) [this course on Solving Real World Problems](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=3.873846153846152) [with the SQL Server 2016 Query Store. In](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=6.940111111111111) [this module, we're going to look at the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=13.87325) [Query Store architecture and how data gets](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=16.27525) [into the Query Store tables. We'll look at](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=18.764444444444447) [how to enable Query Store in a database](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=21.409999999999997) [and what options there are for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=23.169999999999987) [customization. Query Store consists of two](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=28.797250000000002) [sections, the Query and Plan Store, which](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=32.32890909090909) [holds the queries, their definitions and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=34.940777777777775) [their plans, and the Runtime Stats Store,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=37.10544444444444) [which stores the runtime statistics for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=39.44699999999999) [the queries and plans. When a query runs,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=41.391) [after the optimize phase is completed, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=53.099) [Query and Plan Store is checked to see](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=55.84806666666667) [whether the query is already known. If](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=58.64059999999999) [not, both the query and its plan are](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=61.0868) [added. If the query's already there, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=63.901199999999974) [plans for it are checked to see whether](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=65.91038461538459) [the newly compiled plan already exists in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=68.18199999999999) [Query Store. If not, that new plan is then](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=70.54799999999994) [added. The query then executes. Once](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=75.13758333333334) [execution has finished, the runtime](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=78.271) [statistics are added to the Runtime Stats](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=79.96099999999997) [Store. At this point the query, plan, and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=82.633) [runtime stats are stored in memory only.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=86.56099999999999) [It's done this way to keep the overhead](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=89.4772857142857) [down. At a later point in time, the data](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=92.57214285714281) [will be written to the Query Store tables](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=94.85926666666666) [on disk. The write back process for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=97.87866666666667) [queries, plans, and runtime statistics is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=102.66408333333334) [asynchronous. It's done by a background](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=105.15058333333334) [process on a schedule by default every 15](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=107.57285714285715) [minutes. While this has the desired effect](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=110.78542857142858) [of reducing overhead in that we don't need](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=112.78850000000003) [to add an additional write to the data](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=115.30185714285714) [file for each query, it does mean that we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=118.94928571428572) [can potentially lose some Query Store data](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=121.94835714285715) [if the server unexpectedly shuts down. To](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=123.59385714285716) [keep the space requirement sane, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=126.78100000000002) [individual execution characteristics of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=129.92839999999998) [every query is not stored. Instead, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=131.64999999999995) [runtime statics, the reads, writes, CPU](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=134.7066) [usage, duration, memory consumption, etc.,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=137.42040000000006) [etc. are aggregated and then stored. The](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=139.79666666666662) [aggregation is per query, plan, and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=143.1869) [runtime statistics interval. By default,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=145.8683) [this interval is an hour. So if a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=147.84171428571432) [particular query has a single plan and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=150.37257142857158) [runs a thousand times over a 3 hour](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=152.49660000000003) [period, at the end of that we will have 3](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=154.7862000000001) [rows of runtime statistics for that query, one for each hour-long period.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=0&mode=live&start=157.826076923077)

[**Demo - Adding Queries and Plans to Query Store**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live)

[In this demo, I'm going to show a query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=2) [and plan being added to Query Store, along](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=4.5014) [with its runtime statistics. We'll also](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=7.034454545454545) [look at the Query Store tables, see how](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=9.630818181818183) [the data is aggregated, and how much data](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=12.542846153846153) [we can lose in an unexpected server](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=15.125) [restart. I'm going to start by purging the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=23.122499999999988) [Query Store's data. This is not something](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=26.551899999999993) [you'll do in a production system. I'm](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=28.447599999999998) [doing it here so that the Query Store is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=30.113142857142858) [empty when we start. I've got here a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=32.74242857142857) [fairly simple query against the station's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=35.13609090909091) [TransitLog and Shipments tables. If you](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=36.973727272727274) [were to see the query's data in the Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=39.32076923076922) [Store, we need to join a few tables](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=42.914) [together. Sys. query\_store\_query is the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=45.538000000000025) [basic table. We will join it to sys.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=46.992545454545464) [query\_store\_query\_text to get or filter on](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=49.504) [the query's text, then through sys.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=52.74399999999999) [query\_store\_plan to the runtime statistics](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=55.540600000000005) [to get the aggregated runtime statistics.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=57.50160000000002) [At this point, if I run this, I have no](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=60.06745454545455) [results. There are no queries in Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=64.27914285714286) [Store matching that filter. If I go back](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=66.83214285714286) [to my query against TransitLog table and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=69.35961538461538) [run it, and then come back and look at the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=71.2296923076923) [Query Store, I've now got one row here.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=74.3215) [The count\_executions is 1, this query has](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=76.879) [only executed once, and we've got its](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=79.57400000000004) [last\_execution\_time. At the moment, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=82.55750000000002) [aggregation interval is set to 15 minutes,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=84.73963636363636) [so this runtime statistics interval is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=87.21509090909095) [from 8 until 8:15 p. m. If I go and run](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=89.49166666666666) [the query against the TransitLog table a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=92.83942857142858) [few more times, and then come back and run](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=94.1224285714286) [the query against the Query Store again, I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=95.9681538461539) [still have only one row. We've got an](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=97.908) [execution\_count of 6 for our query against](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=100.59599999999999) [the TransitLog table. It has run multiple](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=102.86457142857144) [times, but since they all ran within the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=104.86538461538464) [same runtime statistics interval, I still](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=106.97615384615392) [only have one row. So I'm going to wait a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=109.67499999999997) [few minutes now and run the query again](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=113.03179999999996) [after 8:15, which will put it into a new](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=114.9101999999999) [runtime statistics interval. I've run the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=118.2831818181818) [query twice more, and now if we look at](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=120.20079999999999) [the Query Store's data, we have two rows](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=122.42319999999997) [for that query, one with the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=124.70515384615388) [execution\_count of 6, as we saw](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=126.55453846153853) [previously, and one with an](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=128.698) [execution\_count of 2. This would be the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=130.60675000000006) [new runtime statistics interval, the one](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=132.6832727272727) [that started at 8:15. It's interesting](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=134.08018181818176) [that the last\_execution\_time is still 8](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=137.01577777777777) [minutes passed 8. I don't know if this is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=139.69650000000001) [a bug or perhaps an effect of the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=142.0297500000001) [asynchronous write back. I'm not 100%](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=144.63309999999998) [sure. So that's the runtime statistics](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=147.24729999999997) [intervals. Now let's have a look at the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=150.28216666666668) [effects of the write back interval. I've](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=152.35869230769228) [got a different query, a COUNT\* against](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=154.05880000000002) [TransitLog table, so let me run that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=156.61940000000007) [quickly. And now if I query the Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=158.7446666666666) [Store data, I've now got three rows, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=160.97453333333317) [two rows we saw previously and one row for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=163.6958571428572) [this new query, COUNT\* from TransitLog.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=167.05671428571426) [It's only run once, so it's only present](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=169.911) [in the runtime interval that started at](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=171.95592307692317) [8:15. My data flush interval is set to 15](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=174.15683333333334) [minutes, the same as my aggregation](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=178.3095833333332) [interval. So at this point, our new query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=180.34561538461531) [is only present in memory; it hasn't yet](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=182.865) [been written down to the Query Store's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=184.87792307692303) [tables. And so I'm going to do something](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=186.82866666666666) [that you probably shouldn't do to a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=189.59933333333345) [production server and terminate the SQL](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=192.9235384615384) [Server process. SHUTDOWN WITH NOWAIT means](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=196.0813846153845) [that SQL Server terminates on the spot. It](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=198.71618181818187) [doesn't have time to do any cleanup. Let](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=201.80253846153846) [me restart the instance, and then we'll](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=204.34284615384604) [see what we have in Query Store. And we're](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=206.73110000000003) [back to one row. Firstly, our query that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=210.04184615384614) [did a COUNT\* against the TransitLog table](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=212.84923076923067) [is nowhere to be seen. It hadn't been](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=215.74066666666664) [written to disk when we terminated the SQL](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=218.92975) [Server process, and so it doesn't show up](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=221.3050833333334) [in the Query Store tables once we restart.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=224.4659333333333) [We've also lost the second runtime](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=227.739) [statistics interval for our other query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=229.5275454545455) [though because that also had not been](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=231.41916666666665) [written back to disk. The query and plan](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=234.22733333333323) [had, along with the older runtime](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=237.3410909090909) [statistics interval, but not the new one.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=239.60472727272725) [This is the effect of the asynchronous](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=241.93480000000002) [write back. If SQL Server terminates, you](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=244.21306666666672) [can lose all the data in the Query Store since the last data flush.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=1&mode=live&start=245.99292857142854)

[**Default Configuration Settings**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live)

[On a newly created or newly upgraded](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=1.5) [database, the Query Store is disabled. I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=4.7393846153846155) [wish it was enabled by default, that would](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=7.750583333333333) [certainly make debugging problems on](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=9.627249999999998) [client servers easier, but that's just not](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=11.422) [feasible. The risk of there being an](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=15.240500000000004) [unacceptable performance degradation from](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=17.598) [Query Store is just too high, and so Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=18.806) [Store is disabled by default on earthed](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=21.137000000000004) [SQL Server instances. For Azure SQL DB,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=23.599090909090904) [however, it is on by default on new](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=26.92663636363635) [databases. My general recommendations for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=30.30933333333333) [Query Store is that it should be turned on](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=32.386) [for any production database. The insights](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=34.8326153846154) [it can provide into query performance is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=36.6142) [invaluable, and it's well worth the small](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=39.04389999999998) [overhead that we'll likely cause. For](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=41.339363636363636) [development or test databases where any](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=43.30354545454546) [form of query performance tuning or query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=45.34681818181819) [performance investigation may be needed at](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=47.79609090909092) [some point, then I would also recommend](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=49.97027272727276) [turning Query Store on. It doesn't need to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=52.3261111111111) [be turned on for administration databases](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=54.68199999999999) [or other databases that you don't really](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=56.25849999999997) [care about the performance of or databases](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=58.62400000000001) [that aren't used very often. The default](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=61.29627272727273) [size for Query Store is 100 MB. That's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=64.54618181818182) [something that will very likely need to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=67.70399999999997) [change, especially on databases with large](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=70.175) [numbers of queries, or if you want to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=72.73166666666667) [aggregate the queries at a higher](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=75.24269230769232) [granularity than the default, or if you](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=76.7219230769231) [want to store the Query Store data for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=78.38964285714285) [long periods of time. What I would](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=80.2690714285714) [recommend here is leaving Query Store the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=82.85000000000004) [default size and monitoring its size](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=85.46963636363637) [carefully for the first couple of days](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=87.11145454545459) [after tuning it on, and then adjusting the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=89.05246153846154) [maximum size as necessary to store the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=91.30969230769232) [kind of history that you want to see](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=93.92399999999998) [stored. Speaking of history, the default](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=97.20399999999995) [for the history is 30 days. That may by](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=99.63354545454548) [okay, but probably not. It's going to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=103.002) [depend on what you want to see. If you](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=105.20699999999998) [want to be able to track back three month](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=107.64566666666664) [end processes and see how their](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=109.7672666666666) [performances changed over time, then the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=112.19022222222219) [retention is going to need to be turned up](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=114.32457142857143) [and probably the size along with it. If](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=116.05514285714288) [all you care about though is the last](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=117.96342857142858) [couple of weeks of data or even the last](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=120.0937142857143) [couple of days of performance data, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=122.44514285714284) [default is probably fine. I wouldn't turn](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=124.32881818181818) [it down though. There's very little reason](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=126.56754545454542) [to turn it down. The default data flush](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=130.27449999999996) [interval is 15 minutes. As we saw earlier,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=134.7615) [the query's plans and runtime statistics](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=137.65300000000005) [are first written to the Query Store](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=139.3810000000001) [in-memory stores and later written to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=141.717) [disk. This setting defines when later is.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=143.82900000000004) [By default, the in-memory stores are](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=146.71027272727272) [flushed to disk every 15 minutes. This](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=149.18546153846154) [means that at most 15 minutes of query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=151.75769230769222) [statistics will be lost in the case of an](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=154.5648571428571) [unexpected shutdown. On the other hand, it](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=157.47442857142843) [means we can lose up to 15 minutes of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=159.6971764705883) [query performance data. Is that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=162.5342941176472) [acceptable? Well again, it's going to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=164.15316666666664) [really depend on what the Query Store](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=166.17266666666657) [data's been used for. If it's been used](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=168.36223076923073) [for some complicated query tracking that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=170.610846153846) [absolutely must be correct, that value](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=173.005) [should probably be turned down. I would](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=175.90757142857143) [caution against turning it up though. The](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=179.44475) [higher the value for the flush interval,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=182.28361538461536) [the more data will need to be written to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=184.07992307692297) [disk each time a flush happens, which](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=186.4679230769231) [means there's more chance to see disk I/O](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=188.40153846153856) [spikes when the interval is higher than if](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=190.63614285714294) [it's left at the default. To be honest,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=192.879) [this is probably a setting best left](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=195.70792307692304) [alone, unless there's a good reason to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=198.4727272727273) [change it. The default aggregation](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=201.96127272727284) [interval for the runtime statistics is 1](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=204.23845454545457) [hour. This is the granularity at which the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=207.2261818181819) [query runtime statistics are stored. I'd](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=210.66416666666674) [probably want lower than this in most](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=213.17891666666665) [cases, maybe 15 minutes. However, setting](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=215.72633333333323) [it smaller does mean that Query Store will](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=217.76514285714285) [take up more space. It's a tradeoff, and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=220.0977142857144) [the best value here will depend on the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=222.25784615384612) [workload and the kind of query performance](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=224.24553846153833) [problems that are happening. If there are](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=226.29099999999997) [queries that vary widely in performance](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=228.18149999999997) [within a half hour period, the setting](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=229.5664999999999) [probably needs to be lower than an hour.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=231.63700000000003) [It can't be set to arbitrary values. The](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=234.393) [options that you have for the aggregation](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=236.95238461538472) [interval are at 1 minute, 5 minutes, 10](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=239.28836363636364) [minutes, 15 minutes, half an hour, 1 hour,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=242.23381818181824) [and 1 day. I can't see much value in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=245.87799999999993) [aggregating it a day, but maybe someone](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=250.3505714285715) [will. By default, in the earthed version](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=253.93057142857157) [of SQL Server, all queries are captured by](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=256.44950000000006) [Query Store. This is one setting that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=259.06066666666663) [differs between SQL Server and Azure SQL](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=261.1734999999999) [DB. In Azure SQL DB, the capture mode is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=263.29046666666665) [set to Auto, meaning that low cost queries](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=266.0162666666666) [are not captured by Query Store. In full](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=269.1024999999999) [SQL Server, however, the default is All,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=272.20176923076923) [so all queries are captured regardless of their cost.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=2&mode=live&start=274.36746153846144)

[**Demo - Effects of Aggregation Interval and Query Capture Mode**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live)

[In this demo, we're going to look at how](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=3) [to enable Query Store, change some of its](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=5.334461538461538) [configuration options, and see the effect](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=7.298666666666666) [of the changes of those configuration](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=8.688666666666666) [options. To access the Query Store](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=15.674399999999997) [properties for the GUI, we'd right-click](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=18.720000000000006) [the database, select Properties, and then](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=20.418000000000013) [go to the Query Store tab. To enable Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=23.08327272727272) [Store, which is needed on a new database](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=26.7475) [or a database upgraded to SQL Server 2016,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=28.895499999999995) [we'll change the Operation Mode from Off](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=31.87183333333333) [to Read Write. I should mention that you](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=34.911) [can't in the current version of Management](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=37.24761538461536) [Studio. Both enable Query Store and change](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=39.4718) [its properties at the same time. If you](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=42.14510000000001) [try, you get an error. So you'd need to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=44.56574999999999) [change the Operation Mode to Read Write,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=47.23984615384615) [click OK, then go back to the Properties](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=49.37107692307692) [and change the settings as you wish. For](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=53.45953846153848) [now, I'm just going to change the Max Size](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=57.78773333333333) [and the Stale Query Threshold. That](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=60.2063333333333) [controls how long a query will stay in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=61.78153846153846) [Query Store before being removed for being](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=63.633846153846164) [too old. Now that Query Store is enabled,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=67.1989090909091) [we can look at the data that it contains.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=74.236) [I've got a job which is running a simple](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=77.28460000000004) [query against the TransitLog table every 5](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=80.54018181818181) [minutes. Currently, the aggregation](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=83.3942727272727) [interval for Query Store is set to its](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=84.71127272727274) [default, 1 hour. If I let the job run a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=87.136) [few times and then query the Query Store](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=90.74412499999994) [views, I can see one row for that query.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=93.73881818181819) [All of its current executions have](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=97.473) [occurred within one runtime stats](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=99.18299999999998) [interval, the one that started at 8 p. m.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=100.608) [And if I leave this for roughly 30 minutes](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=103.08059999999998) [and come back, I'll have two rows, one for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=105.71553846153847) [the 8 p. m. interval and one for the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=108.67515384615389) [interval that started at 9 p. m. If I now](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=111.53893333333336) [go into the Query Store Properties and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=114.50723076923076) [change the aggregation interval to 5](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=116.25776923076918) [minutes and leave the job to run a little](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=118.04235714285716) [bit longer, when I come back, I've got](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=121.14542857142864) [four rows for the runtime statistics, one](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=124.19999999999997) [row for the interval that ran between 8 p.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=126.78746666666666) [m. and 9 p. m., one for the interval](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=128.78966666666662) [between 9 p. m. and 9:05, and one for the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=131.1054666666667) [interval between 9:05 and 9:10. This is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=134.11413333333348) [the effect of changing the aggregation](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=136.96407692307687) [interval. The more granular the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=139.51315384615376) [aggregation interval, the more rows you're](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=141.12636363636364) [going to have in the runtime statistics](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=142.9089090909091) [for those queries, as you'll get one row](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=145.29492307692308) [for each interval in which that query ran.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=148.3492222222222) [The other setting that I'd like to show](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=153.287) [the effect of is the query capture mode.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=155.441) [By default in SQL Server 2016, that is set](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=157.595) [to All. This is one of the settings that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=161.7096363636364) [differs between SQL Server 2016 and Azure](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=164.29) [SQL DB, as in SQL DB it's set to Auto. So](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=166.166) [with the setting set to All, I'm going to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=170.9014) [run a very simple query against the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=173.20000000000007) [StarSystems table, and then we'll go and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=175.25379999999998) [have a look in Query Store. And Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=177.97259999999991) [Store has captured that query along with](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=180.98649999999998) [its runtime statistics. We see a row for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=183.3787499999999) [that query in the sys. query\_store\_query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=186.26108333333337) [table. Now I'm going to set the Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=188.48958333333343) [Capture Mode to Auto and run another very](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=190.53749999999994) [simple query, this time against the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=193.60455555555555) [Sectors table. And this time when I go and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=201.94788888888885) [look in Query Store, that query's not](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=206.42813333333325) [there. With the Capture Mode set to Auto,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=208.1272666666665) [that query is considered too cheap to be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=210.0526923076923) [captured by Query Store; it's not worth](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=212.26800000000003) [storing. This may or may not be important.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=214.97350000000012) [If you've got a lot of really cheap](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=216.76186666666666) [queries that you do want to track though,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=218.364) [you'd probably want the Query Store](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=220.41333333333338) [Capture Mode to be All, not Auto. If,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=222.09155555555554) [however, if you're trying to save space](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=224.62361538461536) [and ignore the very cheap queries that you](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=226.33592307692297) [don't care about, setting it to Auto might](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=229.29439999999997) [be the best option. Now I've been using](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=233.92213333333322) [the GUI up until now, but all of this can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=237.09474999999998) [be done via T-SQL as well. The database](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=239.24162499999994) [catalog view that contains the Query Store](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=241.95099999999996) [settings is sys.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=244.76644444444443) [database\_query\_store\_options, and all of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=246.37277777777774) [the options that we've seen in the GUI are](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=248.5145555555555) [present in that catalog view. We can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=251.75338461538473) [change the query\_store\_options from T-SQL](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=254.05354545454546) [as well using an ALTER DATABASE statement,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=255.57990909090907) [ALTER DATABASE SET QUERY\_STORE = ON, and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=258.5399999999999) [then in brackets the properties that we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=262.29554545454545) [want to set. The = ON is optional if Query Store is already enabled.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=3&mode=live&start=264.2383636363638)

[**Configuring Sized-based Cleanup**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=4&mode=live)

[By default, in both SQL Server and Azure](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=4&mode=live&start=1.5) [SQL DB, the Query Store uses a size-based](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=4&mode=live&start=4.388000000000001) [cleanup method. This means that once the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=4&mode=live&start=7.158333333333333) [size of the data in the Query Store](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=4&mode=live&start=9.273499999999999) [reaches 90% of its max defined size, all](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=4&mode=live&start=12.104583333333336) [the data and cheaper queries will be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=4&mode=live&start=15.089666666666666) [discarded, and they get discarded until](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=4&mode=live&start=17.124333333333333) [the size of the Query Store data reaches](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=4&mode=live&start=19.032333333333334) [80% of the max size. There's not really](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=4&mode=live&start=22.013666666666673) [much that can be tweaked with regard to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=4&mode=live&start=24.68142857142857) [the cleanup's behavior. The only thing you](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=4&mode=live&start=26.826571428571413) [can do is turn it off. If it is turned](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=4&mode=live&start=28.8198) [off, then when Query Store reaches its max](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=4&mode=live&start=31.791800000000002) [size, it goes read only, and no more data](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=4&mode=live&start=34.24149999999998) [can be collected. That's not ideal, so](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=4&mode=live&start=36.987) [it's a good idea to leave the size-based](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=4&mode=live&start=39.101) [cleanup enabled and make sure that Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=4&mode=live&start=41.43533333333332) [Store is correctly sized for the workload and for the desired history retention.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=4&mode=live&start=43.435)

[**Demo - Effects of Size-based Cleanup and Running Query Store out of Space**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live)

[In this demo, we're going to see how the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=0) [size-based cleanup works and what happens](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=3.866538461538461) [if Query Store runs out of space entirely.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=7.2328) [Currently the Query Store max size is set](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=13.824) [to 500 MG, and it's got 2 MG of data in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=15.751000000000007) [it, and our cleanup mode is set to auto](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=18.502399999999998) [meaning as the Query Store fills up all](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=20.97559999999999) [the queries and all the runtime stats will](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=24.5878125) [be thrown away. Before I change the Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=29.048312499999994) [Store size, I'm going to quickly check](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=31.959846153846147) [what the oldest queries and oldest runtime](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=33.69423076923076) [stats are and make a note of them so that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=35.42169230769229) [we can see the difference once the cleanup](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=41.03461538461539) [starts. (Working) And both our oldest](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=51.3989230769231) [query and our oldest runtime statistics](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=55.27100000000001) [date from the 2nd of May at around about 8](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=57.19250000000002) [pm, and this demo is being recorded 2 days](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=59.98100000000002) [after that. I still have the sample](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=62.59615384615385) [application that I used in previous demos](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=65.86623076923078) [running, so there's a workload running](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=68.79660000000001) [against this database, and there's data](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=70.58040000000005) [going into Query Store constantly. To](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=73.63144444444445) [force a size-based cleanup to occur, I'm](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=76.93166666666667) [going to set the MAX\_STORAGE\_SIZE for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=78.53933333333339) [Query Store to 1 MG. Now it's already](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=80.25261538461538) [bigger than that. We saw in the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=83.43107692307692) [database\_query\_store\_options view that the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=86.02979999999998) [current size of the Query Store is 2 MB,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=87.43659999999996) [so this is going to trigger an immediate](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=90.88837499999997) [cleanup. And if we go back and run our](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=94.02937499999993) [queries again and see what the oldest](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=95.9126666666667) [queries and oldest runtime stats are in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=97.217) [the Query Store, they're now from the 4th](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=99.50809999999996) [of May at 20 to 8, which is right when](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=101.875) [this demo is being recorded. So the Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=104.64500000000001) [Store ran out of space, and the size-based](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=107.65724999999998) [cleanup kicked in and removed all of the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=110.4135) [older queries and older runtime stats](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=112.55349999999999) [intervals. Now I do recommend in general](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=117.0193333333333) [leaving the SIZE\_BASED\_CLEANUP\_MODE on,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=120.21399999999998) [but let's turn it off and see what we can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=121.784) [break. The Query Store's max size has been](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=125.16399999999994) [set to 1 MB, and it's been told that it's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=127.09986666666668) [now allowed to clean up any older data.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=129.49759999999998) [And my application is still stunning, so](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=131.784) [there is still data being added to the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=133.60516666666663) [Query Store constantly. If I go and query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=137.95890909090912) [database\_query\_store\_options again, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=146.1) [Query Store is now READ\_ONLY. And if we go](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=147.91799999999998) [and consult the documentation, READ\_ONLY](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=152.88218181818186) [reason 65536 will be out of space. Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=155.29990909090918) [Store ran out of space, and so it has](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=158.39339999999999) [stopped capturing new data. It's not](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=161.583) [sufficient at this point just to go and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=164.74050000000003) [set the Query Store's max size larger and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=168.46599999999998) [turn the size-based cleanup back on. If we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=170.73799999999991) [do that and then go and query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=172.93833333333333) [database\_query\_store\_options again, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=174.826) [Query Store is still READ\_ONLY despite its](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=176.655625) [max size being 50 MB and its current size](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=180.46353333333334) [only being 1 MB. If we want to get the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=183.87693333333334) [Query Store back into a read write state,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=186.72771428571423) [we need to explicitly set it back to read](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=188.506) [write, and it's done with an ALTER](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=191.51260000000005) [DATABASE command setting the Query Store's OPERATION\_MODE to READ\_WRITE.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=5&mode=live&start=194.517)

[**Conclusion**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=6&mode=live)

[In this module, we looked at the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=6&mode=live&start=2) [architecture of Query Store, the Query and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=6&mode=live&start=4.2215454545454545) [Plan Store, the Runtime Statistics Store,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=6&mode=live&start=6.37) [and the fact that data is stored in memory](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=6&mode=live&start=8.128) [temporarily and written to disk later. We](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=6&mode=live&start=11.437500000000002) [also looked at the important configuration](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=6&mode=live&start=14.186) [options, including the aggregation](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=6&mode=live&start=16.093999999999998) [interval, data flush interval, and how](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=6&mode=live&start=17.4593) [Query Store behaves when it fills up. In](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=6&mode=live&start=19.5539) [the next module, we're going to look at](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=6&mode=live&start=22.37507692307691) [some advanced uses of Query Store beyond the built-in reports. See you there.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m4&clip=6&mode=live&start=25.16166666666667)

[**Advanced Uses for Query Store**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live)

[**Using Query Store for Upgrade Tests**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live)

[Hello, and welcome to the fifth module in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=1.5) [this course on Solving Real World Problems](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=3.7615384615384606) [with the SQL Server 2016 Query Store. In](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=6.361) [this module, we're going to look at some](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=10.791400000000001) [more complex uses of Query Store. Now I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=13.026600000000007) [should mention that these are not going to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=15.089266666666667) [be the main uses of Query Store, and it's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=16.63433333333333) [not necessary to do advanced complicated](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=19.105200000000004) [projects in order to get value from the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=21.363) [feature. I strongly suspect that most of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=24.228777777777765) [the value of Query Store is going to come](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=25.826428571428576) [from its built-in reports and for fairly](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=27.944214285714285) [simple queries from its system views.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=31.200714285714284) [Rather, this module is intended to give](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=33.992) [you ideas for other projects and other](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=36.126999999999995) [uses of Query Store that are more](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=38.59185714285714) [complicated than the built-in reports.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=41.88135714285711) [We're going to look at three scenarios,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=44.231) [all based on projects that I've done in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=46.02824999999998) [the past, all reasonably difficult, and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=48.306250000000006) [all able to benefit from Query Store. The](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=50.29475000000002) [three examples I'm going to go through are](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=52.98316666666667) [testing upgrades, whether it be database](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=55.8673) [version, database schema, or application;](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=58.94110000000002) [load tests, trying to see how much](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=61.45850000000001) [additional load a database or server can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=64.89025000000002) [handle before throughput starts to suffer;](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=67.95939999999999) [and tweaking configuration values. And for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=70.357) [this, I'm specifically going to look at](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=73.01928571428567) [the cost threshold for parallelism](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=77.01499999999999) [setting. Upgrades, whether they be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=79.97499999999998) [database version, database schema, or](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=82.3915) [application have a chance to negatively](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=84.6972) [affect query performance. One recent case](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=87.5844) [I've seen of this was in the upgrade to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=89.61814285714284) [SQL Server 2014, which, because of the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=91.38857142857135) [redesign cardinality estimator, caused a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=94.84262500000003) [small portion of queries to run slower](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=97.588) [after the upgrade than before. Testing for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=100.76949999999997) [a performance regressions is difficult;](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=104.16563636363637) [not impossible, just difficult. To do so,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=106.97472727272728) [we'd need to run the production workload](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=110.09407692307693) [against the test server before and after](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=112.1289230769231) [the upgrade and compare the performance of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=114.78900000000002) [all queries. The first time I did one of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=117.91800000000003) [these upgrade tests, which was for SQL](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=120.40700000000002) [Server 2012 to 2014, it took me a couple](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=122.002) [of weeks. Now admittedly most of that was](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=125.97018181818179) [in the setup beforehand and the data](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=128.41523076923076) [analysis afterwards, but it's still more](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=130.239) [time than I want to spend on such a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=132.22499999999994) [project. Query Store makes the whole](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=135.45000000000002) [process a lot easier with its Regressed](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=138.17400000000006) [Queries report. We can use Query Store,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=141.11216666666664) [which is only available on SQL Server](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=143.4507499999999) [2016, for testing upgrades to SQL Server](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=146.18666666666664) [2014 or 16 by using the compatibility](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=149.22058333333325) [level database setting to change the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=151.89750000000004) [behavior of the database engine. So if we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=154.141) [want to use Query Store to test for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=157.0878571428572) [performance regressions, upgrading from](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=160.21140000000003) [SQL Server 2012 to SQL Server 2014, what](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=162.03820000000007) [we can do is restore the database onto a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=165.09671428571426) [SQL Server 2016 instance and enable Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=167.8680714285713) [Store, and then go and set the database](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=171.11507692307686) [compatibility level to 2012's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=175.08828571428572) [compatibility level. At this point, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=177.26542857142854) [queries are going to behave as if they](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=179.4688571428571) [were running on SQL Server 2012. We can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=181.69857142857128) [then run a production workload against](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=184.78157142857137) [that database. Query Store captures the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=187.30714285714274) [performance results. We then go and change](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=189.85500000000002) [the compatibility level to 120, that's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=192.86799999999994) [2014's level. By changing the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=195.45999999999987) [compatibility level to 2014, we enable the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=197.24200000000005) [new cardinality estimator, and we can then](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=199.38400000000013) [run the workload again. Once the second](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=202.45299999999997) [replay is finished, we can use the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=205.07124999999996) [Regressed Queries report to identify](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=206.8824999999999) [queries that degraded in performance under](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=208.75900000000001) [the new cardinality estimator. One option](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=211.47700000000003) [for running the workloads is SQL Server's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=214.08283333333333) [Distributed Replay feature. This allows](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=216.86125) [for production workload to be captured](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=218.51366666666664) [with a server side trace and then replay it against a different server.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=0&mode=live&start=219.89866666666657)

[**Demo - Obtaining a Replay Trace and Preparing it for Replay**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live)

[In this demo, we're going to see how we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=1.4) [can use Distributed Replay and Query Store](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=3.982357142857141) [to do upgrade tests, and for this I'm](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=6.094666666666667) [specifically going to do an upgrade from](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=8.805333333333335) [SQL Server 2012 to 2014. This demo is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=11.967000000000002) [going to be in a couple of parts. Firstly,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=15.042818181818182) [I'll show you how to set up a replay](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=16.853785714285713) [trace, then we'll look at running](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=18.948857142857147) [Distributed Replay, and finally, we'll do](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=20.724999999999998) [the Query Store analysis. I have a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=23.259999999999994) [simulated workload running for my little](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=26.054299999999998) [application, and I'm going to pretend that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=28.262899999999988) [that is production workload and capture it](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=30.219) [for replay. This requires SQL Server](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=32.294636363636364) [Profiler, and fortunately not Extended](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=35.22045454545454) [Events at this point in time, just the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=37.53636363636364) [older Profiler. So I'm going to open](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=40.459272727272754) [Profiler and start a trace, and the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=42.45615384615384) [specific template that you want is the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=44.22876923076922) [TSQL\_Replay. That contains all of the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=47.609714285714304) [columns and all of the events necessary to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=49.36330769230769) [replay a trace. It's important not to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=51.335) [remove any columns or events from this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=53.771583333333346) [trace. I don't actually need to run the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=56.18716666666667) [trace from Profiler, and if this was a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=58.88783333333335) [production system, I certainly wouldn't](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=61.138818181818166) [want to run trace from Profiler. But](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=62.452) [writing the server side trace script is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=65.06183333333333) [tedious, so I want to use Profiler to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=67.66253333333334) [generate the script for me. This first](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=70.6086666666667) [part does not have to be done to a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=72.962) [production server. We're just generating](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=75.266) [the script to run the trace. Select](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=77.05566666666668) [TSQL\_Replay as the template, start the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=80.032625) [trace, immediately stop it, and then go to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=82.56237500000003) [the File menu and export the trace](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=85.69859999999998) [definition. This saves it as a. sql file,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=88.41319999999997) [which we can edit later. The next step](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=91.342) [would be to open that SQL file in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=93.87507142857143) [Management Studio and make some edits. The](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=95.78992857142859) [primary edit that's needed is the file](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=98.08999999999999) [name, but there are a few other things we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=100.85849999999998) [want to change as well. The first is the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=103.94015384615385) [size of the files. By default, the max](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=106.61580000000001) [size of the files is 5 MB, which is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=108.60940000000002) [completely inadequate. I'm going to set it](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=112.3825) [to a gigabyte. The second thing I want to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=114.69833333333332) [change is to add an end time. By default,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=117.0515333333333) [a server side trace will run until the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=119.8986) [files fill up or it is manually stopped.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=122.504) [But I want to run this for a fixed period](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=125.248) [of time. To do that, I'm going to declare](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=128.12133333333335) [an EndDate variable and set it to a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=130.42360000000005) [certain number of hours off the current](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=132.398) [time. Six hours in this case should be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=134.46999999999994) [more than enough. I need to specify the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=137.43229999999997) [file name. This needs to be a location](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=139.96566666666664) [that SQL Server can write to, so be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=142.19073333333327) [careful of writing it to roots of drives.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=144.60957142857137) [The SQL Server engine typically doesn't](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=147.093) [have permission to write to those. It](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=149.49999999999994) [should also be a fast local drive,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=152.20769230769233) [preferably one that does not have the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=154.31253846153854) [database files on it. Don't include the.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=156.80633333333336) [trc extension here. The file suffix is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=160.2725000000001) [added automatically. The last thing I'm](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=163.4213333333333) [going to do is to change the options,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=165.91633333333326) [which is the second parameter, to 2 from](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=168.78840000000002) [0. Two means rollover, meaning once the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=171.5089333333334) [first file has been filled it'll start](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=174.0064999999999) [writing to a second file. The number of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=176.44161538461537) [files it'll write is the last parameter of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=178.66253846153847) [the command. In this case, I'm going to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=180.893) [specify that as 5. Now it's highly](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=183.133) [unlikely that I'm going to need 5 files of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=186.10779999999994) [1 GB to hold 6 hours of trace results, but](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=190.15) [I do prefer to be cautious. Once we made](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=193.18187500000008) [all those changes, we can run the trace,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=195.85862500000002) [and it'll return the TraceID. In this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=198.14562500000005) [case, it'll be 2. One would be the default](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=200.14100000000002) [trace, of course. The TraceID isn't needed](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=202.68800000000016) [unless you plan to do any manual](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=204.69199999999998) [operations on the trace at a later point.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=206.71324999999993) [If we go to the directory that we're](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=209.30360000000002) [writing the trace files out, we can see](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=211.934) [the files there. It's got a size of 0 KB.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=214.53618181818186) [This is because SQL Server doesn't update](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=217.6755) [the file size with NTFS every time the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=219.839) [file's written to. It's unnecessary](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=222.36554545454538) [overhead. So it'll stat at 0 KB for quite](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=224.1503846153846) [some time. This is not something to be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=227.9186153846154) [concerned about. The size will go to its](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=229.92674999999994) [correct value when the traces stop. So I'm](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=231.57) [going to leave that for 6 hours to capture](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=233.24730769230771) [the trace, and then we'll come back and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=235.1566923076924) [set up the Distributed Replay portion.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=237.38100000000006) [Since we're doing an upgrade test, before](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=239.181) [I start running the Distributed Replay, I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=240.95836363636354) [need to set the database's compatibility](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=243.138) [level back to SQL 2012. This will disable](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=245.46600000000004) [the new cardinality estimator, and we'll](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=249.59772727272718) [get query performance as it would've been](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=252.47073333333336) [on a SQL Server 2012 box. This is our](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=255.03880000000012) [before test. So the trace has been](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=258.9257272727272) [captured, and the database's compatibility](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=262.8590909090907) [level has been set back to an older](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=264.6683846153846) [version. I've moved the trace files to my](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=267.16315384615376) [Distributed Replay controller. I am not](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=270.47799999999984) [going to go through the full setup of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=272.47881249999995) [Distributed Replay in this course. It's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=274.38231249999984) [really tedious. I will include a link in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=275.92892857142857) [the last module to an MSDN blog, which](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=278.7843571428571) [goes through the full configuration for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=282.1101818181819) [Distributed Replay. My Distributed Replay](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=285.19254545454567) [is not running on my production server.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=287.3228) [This is a separate machine, which is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=289.896) [solely there to throw the workload at my](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=291.51358333333343) [database server. I've got a controller set](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=293.96100000000007) [up with a single client. That's because](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=296.97566666666694) [I'm using Developer edition. Developer](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=299.913) [edition only allows for a single client.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=301.86812499999996) [If you need more than one client, you've](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=304.578) [got to go to Enterprise edition, which has](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=306.07769230769236) [a maximum of 16. With Distributed Replay,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=308.1589) [you've first got to preprocess the trace](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=310.828) [before you can run it. So I've got the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=313.8111666666668) [output file for my server side trace, and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=316.83426666666674) [I'm going to run through the preprocessor.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=318.6188000000002) [This is not typically very quick. As such,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=321.7783999999999) [I'm going to take a break here and come back once it's finished.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=1&mode=live&start=327.514)

[**Demo - Setting Database Compatibility Levels and Running Replays**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live)

[The preprocessing is finished, and we've](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=0.5) [got two additional files that have been](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=2.4303636363636363) [added to the trace's directory, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=4.919363636363636) [ReplayEvents. irf file, which is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=7.5604545454545455) [Distributed Replay's intermediate file,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=10.024818181818183) [and a TraceStats. xml file. These can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=12.31245454545455) [safely be copied around if you happen to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=15.631692307692308) [want to preprocess on one machine and run](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=17.47046153846154) [the replay from another one. With the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=20.236999999999995) [preprocess complete, I can now start](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=22.856) [running my replay against my test server.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=24.482000000000006) [The parameters I'm using here for the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=27.34400000000001) [replay option of Distributed Replay, -d is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=30.92975000000002) [the trace folder, it's the one with that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=33.665) [iof file in it, -s is my destination](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=36.626133333333335) [server, and -w is a comma-delimited list](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=39.578666666666685) [of my clients. In this case, I only have](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=42.25983333333333) [one, and it's on the same machine as the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=46.021083333333365) [controller, hence it goes by the name of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=48.28928571428569) [DRController1. The replay is also not very](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=50.9476) [quick. This is probably going to take a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=55.39470000000001) [couple of hours. In general, budget for it](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=57.69879999999999) [to take at least as long as the original](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=60.0936875) [capture was. In our case, we captured 6](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=63.117125) [hours of data, so this replay is probably](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=65.51914285714282) [going to take at least 6 hours. In some](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=67.826) [cases, it can be significantly slower.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=70.99460000000005) [I've had a replay of a 1 hour long](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=73.107) [workload take 14 hours. That was mostly](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=77.3667692307693) [because the server I was replaying it to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=80.30635714285714) [was significantly underpowered. In this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=83.09664285714283) [case, it should be comparable though. So](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=84.857) [I'm going to pause this recording and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=87.658) [resume it in roughly 6 hours. And six and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=92.27100000000004) [half hours later, the replay trace is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=97.48963636363635) [completed. This was just the first half of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=100.44045454545451) [the test though. What I'm going to do now](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=102.76459999999999) [is go into the SQL Server and change the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=104.9364) [compatibility mode of the database that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=106.971) [we're testing to 130 for SQL Server 2016.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=110.11071428571432) [With that done, I can restart the replay](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=114.297) [trace to run for another six and a half](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=116.66671428571428) [hours. By the way, if you notice any](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=119.48499999999999) [differences between the timestamps from](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=122.26099999999994) [the Distributed Replay shown here and the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=123.99681818181817) [Query Store reports that we'll see in the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=126.42772727272724) [next part of the demo, don't worry about](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=128.48883333333333) [it; I just recorded the demo out of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=130.98274999999998) [sequence. Alright, so this has probably](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=134.36874999999995) [got another six and half hours to run. I'm](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=136.1531538461538) [going to take a break here, and part three](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=138.52806666666666) [of this demo will be the analysis of the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=140.3016666666667) [results using Query Store. The replay](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=144.89550000000003) [trace did indeed finish in the expected](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=149.10723076923077) [six and half hours, so we can now go and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=151.2185384615385) [analyze the results. In previous versions](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=154.04585714285707) [of SQL Server, we'd probably used Extended](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=155.66671428571414) [Events sessions, and the analysis would](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=157.85300000000007) [require aggregating both Extended Events sessions and comparing the two.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=2&mode=live&start=160.499)

[**Demo - Analysing the Test Results with Query Store**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live)

[Fortunately, we don't have to do any of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=0.1) [that because we've got Query Store. I'm](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=2.629714285714286) [looking for query regressions, so I'm](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=4.837583333333334) [going to use the Regressed Query report,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=6.701083333333336) [and I'm going to set the History interval](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=9.020153846153844) [to the time period in which I ran the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=12.084769230769224) [first replay trace and the current](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=15.375999999999996) [interval to the time period in which I ran](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=17.517999999999994) [the second replay trace. It's safe to use](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=20.531666666666666) [Total in this case because I had two](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=23.25973333333333) [identical traces running. So the number of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=26.05919999999999) [queries run per time interval would be the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=27.983769230769234) [same between the two, at least mostly.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=29.733307692307697) [When I look at the results of this, it's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=32.270999999999994) [quite clear that I have one query that has](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=35.594) [regressed quite severely in the upgrade to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=37.673000000000016) [SQL Server 2016. There is something about](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=40.4575) [this query that causes the new cardinality](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=42.983363636363634) [estimator to generate a plan that looks](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=44.965) [cheaper, but takes significantly longer to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=47.51562500000002) [run. We can tell that it's a plan- based](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=50.446153846153834) [regression because I have two plans for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=54.87761538461538) [this query, one that was running during](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=57.15692307692306) [the first replay trace when our](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=59.474999999999994) [compatibility level was 110 and one that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=61.54499999999999) [was in use during our second replay trace](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=63.70114285714287) [when the compatibility level was 130. At](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=65.94342857142857) [this point in a real project, I'd go and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=68.45581818181816) [analyze the two plans and see if I can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=71.53581249999999) [change the query to get improved](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=73.74924999999996) [performance with the new cardinality](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=75.62875) [estimator. I might also consider query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=77.86812499999998) [hints. Probably not index or joined hints.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=80.23016666666669) [They're a little bit too blunt for this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=82.91) [kind of thing. But I might be able to sue](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=84.66418181818179) [the legacy cardinality estimator hint that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=87.71276923076924) [was added with SQL Server 2016 SP1.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=89.762) [Alternatively, I could just use Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=92.40041666666662) [Store to force the old plan. That would](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=94.53961538461539) [work just as well. How I would fix this in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=96.57653846153852) [reality is a little beyond the scope of this demo and this course.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=3&mode=live&start=98.62379999999996)

[**Using Query Store for Load Tests**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live)

[Another use for Query Store is in testing](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=0.4) [to see how a database would perform under](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=2.7302857142857144) [load or testing to see whether additional](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=5.245272727272727) [databases can be consolidated onto the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=7.930727272727274) [same server. The basic principle is the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=10.240285714285712) [same for both. In load testing, we'd set](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=12.939285714285706) [up a server that's as close as possible to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=15.630666666666666) [a copy of production in terms of hardware,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=18.393066666666666) [and then restore the database that we're](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=20.741083333333343) [testing onto it. Once that's done, we then](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=22.908833333333337) [run the production workload against that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=25.74816666666668) [database. This would be our baseline, our](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=28.270799999999994) [current behavior. We'd then want to run](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=30.767749999999996) [the production workload twice in parallel,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=32.929909090909106) [then three times in parallel, then four,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=34.707) [and so on and see at what point the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=36.9425) [database's throughput suffers. Now I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=40.2602) [should emphasize that such a load test](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=42.9657) [does not guarantee that the production](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=46.698866666666675) [will handle a certain behavior. It tends](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=49.86366666666669) [to set a maximum though. If the copy of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=53.28671428571429) [production scales to let's say four times,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=56.8224285714286) [we know that the production server won't](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=60.04585714285715) [scale past that. It might not even scale](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=63.62435714285717) [that far though. You can get different](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=66.7984166666667) [behaviors on production and a test](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=69.095) [environment because of how the loads are](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=71.17590909090907) [run. Even with that caveat though, load](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=73.61723076923076) [tests like this are useful to getting](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=76.09253846153842) [ideas to how much head room there is for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=78.56471428571427) [an application. If, for example, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=81.73785714285708) [business is expecting to double the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=83.6531818181818) [workload within six months and our load](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=85.46845454545452) [test show that doubling the workload will](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=87.80600000000003) [cripple the server, then it's useful for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=90.16358333333332) [business to know that they might need new](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=92.42166666666671) [hardware before doubling their load. For](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=95.7697777777778) [consolidation, instead of running one](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=98.706) [system's workload multiple times, we'd](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=100.52600000000002) [have multiple databases, each with their](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=102.59219999999999) [own workload, and would test by adding](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=105.51479999999998) [them one by one and seeing at what point](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=107.68200000000003) [the throughput starts to suffer. Again,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=109.82940000000008) [this is not going to give us an absolute](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=111.50646153846155) [guarantee that multiple databases will](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=114.29133333333334) [behave well together, but it will almost](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=116.70800000000001) [certainly show when databases won't behave](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=119.38418181818183) [well together, and quite frankly it's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=121.22345454545457) [better than consolidating the databases in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=123.47388888888888) [the production environment and hoping that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=126.29433333333333) [things will work well. Again, Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=130.09033333333332) [Store's tracking of query performance](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=133.2748) [makes getting the results of this kind of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=134.90929999999997) [test easy, and like in the previous](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=137.41538461538454) [example, we can use Distributed Replay to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=139.5509230769229) [run the workloads. In this case, however,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=141.7306666666667) [instead of one Distributed Replay setup,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=144.10159999999996) [we'll need multiple of them, one for each](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=146.252) [copy of the workload that we intend to run against the server at the same time.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=4&mode=live&start=148.36228571428575)

[**Demo - Running Load Tests and Analysing Results with Query Store**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live)

[In this demo, I'm going to go through a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=3) [load testing scenario using multiple](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=5.566384615384615) [Distributed Replay setups to run my load](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=7.0355) [and Query Store to track the application](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=9.334999999999999) [behavior. The initial setup is very much](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=12.838249999999999) [the same as the previous demo. So if you](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=15.292500000000002) [haven't watched that, I would recommend](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=17.598571428571432) [that you go back and watch at least the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=18.761714285714298) [beginning part of it to see the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=21.415857142857142) [Distributed Replay setup. The main](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=24.364357142857138) [difference here is in the number of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=26.221000000000004) [controllers I have. In the previous demo,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=28.296500000000016) [I had a single Distributed Replay](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=30.687090909090905) [controller with a single client. In this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=32.93872727272727) [case, I have four Distributed Replay](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=36.07) [controllers, each with a single client.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=38.826) [And what I'm going to do is start running](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=41.49646153846155) [the first one and leave it for 2 hours,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=45.383571428571436) [then come back, stop that, restart it, and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=48.85564285714289) [start the second controller at the same](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=52.08261538461538) [time. At this point, we're now throwing](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=54.980076923076915) [twice the production load at our test](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=57.7447142857143) [server. Two hours after that, I'm going to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=60.48721428571432) [stop the two of them, restart them, and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=62.6725) [add a third, and 2 hours after that I'll](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=64.76758823529411) [do the same and add a fourth. So we've got](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=67.48188235294118) [an 8 hour long test, first 2 hours with](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=70.4953076923077) [production workload, second 2 hours with](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=73.20223076923081) [twice the production workload, next 2](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=76.30022222222219) [hours with 3 times, and then finally, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=79.00826666666667) [last 2 hours of the test are with 4 times](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=80.88933333333337) [the production workload. Now I'm not going](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=84.48499999999997) [to bore with 8 hours of demo, so I'll just](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=87.30999999999999) [start the first controller, and then we'll](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=90.74249999999996) [take a break and come back once it's all](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=93.95866666666666) [finished. Alright, so the four Distributed](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=98.51206666666664) [Replay controllers have finished their](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=100.48300000000003) [replays, and instead of sitting for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=102.0941) [several hours analyzing trace results to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=104.72869999999998) [see how our load test went, I'm going to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=106.93892857142859) [open the Query Store's Total Resource](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=109.61771428571434) [Consumption report. Before I open it,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=113.07433333333333) [let's talk about what I would expect. If](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=116.63445454545456) [the server I'm testing can handle four](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=120.74536363636363) [times the production workload, then I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=123.43590909090905) [would expect to see the CPU usage, the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=125.8796) [execution counts, the logical reads going](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=129.5448888888889) [up linearly. If the server can't handle](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=133.4682222222223) [the additional workload being thrown at](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=136.44725) [it, then I'd expect to see the execution](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=138.45274999999998) [count increase slower than linearly,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=140.74890909090902) [perhaps even decrease. So let's see which](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=143.0703) [it was. And we have a very striking](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=151.4724) [result. If we look at the first two bars](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=155.76659999999993) [on those graphs, that was the single](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=158.607) [production workload. The next two bars are](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=162.0673333333334) [double the production workload, and the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=164.23766666666668) [execution count is roughly double what it](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=165.87714285714287) [was in the first test. So our server can](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=168.30664285714295) [handle twice production workload, but that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=171.41472727272728) [looks like about it. Because in the next](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=173.4738181818182) [two bars, which is three times the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=176.26592307692312) [production workload been thrown at that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=178.68225) [server, the execution count's barely](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=180.58575000000002) [increased at all. The duration's gone up,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=182.6304285714286) [but the execution count hasn't. So we're](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=185.5508888888889) [executing just a couple percent more](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=188.3750769230769) [queries per hour than in the previous](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=190.75430769230763) [test, but the total duration is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=193.72220000000002) [significantly higher meaning each of these](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=196.67780000000008) [queries are taking much longer to run than](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=198.9000666666667) [they did previously. This is the point](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=201.3742000000001) [that the throughput started to fall off.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=203.18890909090905) [We're throwing more load at the server,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=204.741) [but we're getting fewer queries returned.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=207.67346153846157) [And when we look at four times the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=210.187) [production workload, it's all gone very,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=212.4873076923078) [very badly. The execution count is down](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=214.31938461538462) [back at what it was with one times the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=217.0800769230769) [production workload. If I was to look at](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=220.3815384615385) [these graphs, I'd say at best the server's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=223.0406153846155) [going to handle twice the current](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=225.99961538461537) [production workload, definitely not three,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=228.251) [and by the time it hits four we'll have a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=229.96281818181822) [very, very bad problem on our hands. To](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=234.78536363636368) [see an individual query's performance over](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=239.86907692307693) [the test, I can open the Tracked Queries](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=241.30353846153855) [report and enter the query ID of one of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=243.30707692307692) [the queries that was running in the test](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=245.86792307692306) [workload. And here we can see the similar](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=249.70838461538455) [pattern to what we saw on the Total](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=253.89366666666666) [Resource Consumption report. As the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=256.84299999999996) [workload increases, the duration increases](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=258.92322222222225) [fairly linearly. There's a few outliers,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=261.35877777777785) [but it's not too bad. However, if I switch](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=264.04455555555563) [to look at the CPU usage, we no longer](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=267.32611764705877) [have a linear graph. We can see the CPU](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=269.89588235294093) [usage increasing linearly up to about](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=272.45761538461545) [twice the production workload, slight](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=274.161153846154) [increase to three times, and then it just](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=275.78827272727267) [falls off a cliff. And the logical reads](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=278.613) [show very much the same pattern. So this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=283.27299999999985) [was a look at how a Distributed Replay](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=287.2945714285714) [along with Query Store can make doing load](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=289.400857142857) [tests much, much easier than in previous](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=291.63466666666665) [versions of SQL where we would have had to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=293.70083333333326) [have set analyzing trace reports for ages to get these kind of results.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=5&mode=live&start=295.8634285714287)

[**Using Query Store to Help Identify Optimal Configuration Values**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live)

[The third use I'm going to show for Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=1.7) [Store is a little more esoteric, that of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=3.786714285714285) [tracking the effects of configuration](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=6.7181) [setting changes. For the purposes of this,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=9.6716) [I'm going to use cost threshold for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=12.000083333333336) [parallelism option as an example. This](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=13.606) [option affects what queries will be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=16.448200000000003) [considered for parallel plans by the query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=19.208000000000002) [optimizer. The default value of five is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=22.23550000000001) [stupidly low, but determining an ideal](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=24.85) [value for a system is hard. Usually I'll](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=27.032) [just go with 25 for an analytics type](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=29.941714285714298) [workload and 50 for an OLTP type workload](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=32.9676) [and leave it at that. Getting an ideal](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=36.34199999999998) [value of cost threshold for a system](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=39.37036363636363) [involves identifying the queries that run](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=41.515545454545425) [better serially than in parallel,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=43.82800000000002) [identifying the queries that run better in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=45.834) [parallel than serially, and tweaking the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=48.18950000000001) [cost threshold so that the former will](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=49.9875) [serially and the latter run in parallel,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=51.82733333333333) [at least as much as possible. Previously,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=54.118909090909085) [this would require analyzing a trace](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=56.5725) [result for each tested value of cost](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=58.57949999999999) [threshold, averaging the query durations](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=61.037545454545466) [as seen in each trace and trying to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=62.8557272727273) [minimize those, or querying the plan cache](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=65.65392307692309) [after testing with each value, seeing](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=68.07) [which plans change from serial to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=70.20109090909091) [parallel, and whether their durations go](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=72.25023076923077) [up or down a result and using that to try](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=73.88961538461535) [and get an ideal value from the cost](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=76.69392307692306) [threshold. Both of these are a lot of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=79.02376923076918) [work. What we can do with Query Store is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=81.85293749999997) [make the cost threshold changes over a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=85.116) [period of time. If doing this in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=87.56810000000003) [production, I'd recommend changing no more](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=89.79814285714284) [than once a day. Changing the cost](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=91.56685714285709) [threshold is unlikely to cause major query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=93.8017) [performance regressions, but it does flush](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=96.265) [the plan cache, and that's not something](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=98.24833333333329) [you want to do all day every day. Once](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=100.25100000000002) [we've finished with this, we can then look](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=102.47107692307692) [at the most frequently run queries,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=104.05569230769233) [calculate their average durations for each](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=105.62054545454545) [value of cost threshold from the Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=107.9381818181818) [Store system views, and pick a value that](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=110.39033333333334) [minimizes the duration for as many as](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=112.977) [possible. The built-in Query Store reports](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=116.24249999999998) [aren't going to be all that helpful this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=117.88900000000002) [time, but we can query the data from the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=119.84564285714285) [Query Store system views and produce our own reports in Excel.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=6&mode=live&start=122.58742857142852)

[**Demo - Using Query Store to Obtain a Good Value for Cost Threshold for Parallelism**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live)

[In this demo, we're going to see how we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=1) [can use the Query Store to simplify](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=3.3285999999999993) [testing for optimal values of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=5.3896250000000006) [configuration settings. The configuration](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=7.932750000000002) [setting I'm going to use for this demo is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=9.474923076923076) [the cost threshold for parallelism](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=11.837076923076923) [setting. This time I'm not using](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=14.8205) [Distributed Replay. I certainly could;](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=18.27) [however, changes like this are often](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=20.381272727272727) [difficult to test properly in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=22.49981818181818) [non-production environments. The](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=25.024600000000003) [production environments are under](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=26.4712) [different loads to your test service, even](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=27.408000000000005) [with Distributed Replay, different access](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=29.756500000000003) [patterns, and so testing our configuration](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=32.700250000000004) [values is something is very difficult to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=35.527636363636354) [do not in production. And to be honest,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=38.5105) [it's not that dangerous a change to make](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=40.882500000000014) [in production as long as it's not made too](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=43.33284615384615) [frequently. So I'm going to pretend that I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=46.23638461538459) [have a workload running against my](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=48.41669230769233) [production server, and I'm doing my](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=50.009) [testing there. The value for cost](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=54.47749999999998) [threshold at the beginning of this test is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=56.890384615384605) [5, its default, and I have a job running](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=58.73715384615382) [every hour, which will increase it by 10.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=61.56061538461539) [If this was a real production server, I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=64.26681249999999) [wouldn't be doing that hourly. While the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=67.16231249999996) [change to cost threshold probably won't](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=69.55472727272728) [cause any problems, the flushing of the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=71.30290909090913) [plan cache is likely to have some](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=75.24438461538465) [undesirable effects. I'm going to leave](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=80.61230769230777) [that running for 9 hours and then see what](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=84.14874999999999) [results I have. Alright, the job finished](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=88.65493749999997) [running, the cost threshold is now 95, and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=92.34427272727272) [my test workload has been running the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=96.5767) [entire time. The Query Store built-in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=99.40960000000004) [reports are not likely to be very helpful](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=101.25185714285715) [this time. They're certainly useable, but](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=103.31757142857145) [they're going to be difficult to use. So](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=105.27436363636366) [I'm going to query the Query Store system](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=108.15427272727273) [views directly, and I'm going to use a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=111.02845454545452) [pivot so that the five most frequently run](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=112.9474285714286) [queries show up as columns, and there will](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=114.548) [be one row for each time interval that is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=117.2765714285714) [each value for cost threshold. Since I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=120.68612499999999) [know that I increased the cost threshold](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=123.54363636363635) [every hour, I can compute what it was just](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=125.59336363636359) [by knowing the start time and the start](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=127.76756250000004) [value. If you were doing this on](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=129.58306249999998) [production, you might need something a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=131.05699999999996) [little more complicated to track when the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=132.304) [cost threshold was changed. And there I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=136.8673636363637) [have the average duration for each of my](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=140.23657142857144) [five queries for each value for cost](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=142.2674285714287) [threshold for parallelism. I'm going to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=144.92957142857142) [take this into Excel and do a quick graph](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=146.93199999999996) [so we can analyze it easier. And by the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=148.66299999999987) [looks of things, we have one query whose](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=155.17092307692306) [duration improves with higher values for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=157.1573846153846) [the cost threshold. This will probably be](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=159.05514285714287) [a fairly cheap query, one where the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=161.16599999999994) [parallelism overhead outweighs the gains](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=163.02099999999984) [from running the query in parallel. And we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=165.0432) [have one query whose duration increases](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=168.3719090909091) [sharply with higher values of cost](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=170.4506363636364) [threshold. This will probably be a more](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=172.31145454545452) [expensive query, one that runs well](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=174.22818181818172) [parallel, but not well serially. So if I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=177.00949999999997) [was going to look at this, the sweet spot](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=180.043125) [for this system for cost threshold for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=181.62150000000003) [parallelism is 35. And that was very quick](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=183.43923076923076) [to do. I had to do this once on SQL 2008,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=186.4158461538461) [and it took days because I had to analyze](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=189.5513529411764) [the plan cache after every single change](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=191.9406923076923) [to try and work out what the optimal value was. Query Store makes much, much easier.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=7&mode=live&start=193.78653846153847)

[**Summary**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=8&mode=live)

[In this module, we've looked at three](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=8&mode=live&start=2) [advanced uses for Query Store, upgrade](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=8&mode=live&start=4.651833333333335) [tests, whether it be database version,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=8&mode=live&start=6.990111111111111) [database schema, or application; load or](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=8&mode=live&start=9.654777777777777) [consolidation tests; and testing for](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=8&mode=live&start=12.866666666666667) [optimal configuration values. In the next](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=8&mode=live&start=15.771250000000002) [module, the last module for this course,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=8&mode=live&start=18.4401) [I'll summarize everything that we've](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=8&mode=live&start=20.601) [looked at so far, as well as offering some](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=8&mode=live&start=21.898499999999995) [links to additional material. See you there.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m5&clip=8&mode=live&start=24.759333333333334)

[**Conclusion**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live)

[**Additional Material**](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live)

[Hello, and welcome the last module in this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=1.7) [course on Solving Real World Problems with](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=4.406000000000001) [the SQL Server 2016 Query Store. I](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=7.607666666666668) [promised in a few places in the course to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=11.520076923076923) [reference some additional material on the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=13.455769230769231) [topics above and beyond this course. The](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=15.860666666666669) [first one I'd like to mention is an](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=19.606928571428572) [article on some query patterns which are](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=21.422357142857155) [prone to poor performance in query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=23.410555555555558) [regressions. There are three particular](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=25.971222222222234) [query patterns that this article covers,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=27.928) [and they're all ones that I see in client](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=30.223) [systems on a fairly regular basis. It's](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=33.25360000000001) [worth having a look through this to see if](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=35.483769230769234) [you've got some optimal query patterns in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=37.37169230769233) [your system so you can fix them before you](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=39.404999999999994) [get query performance regressions, not](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=42.564) [afterwards. The second is an MSDN blog](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=46.852333333333334) [post on setting up Distributed Replay.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=50.06249999999999) [\_\_\_\_\_ This two part series covers the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=52.415) [installation process, security settings](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=54.79577777777779) [necessary for the client and controller,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=56.36024999999999) [decon changes, and firewall configurations](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=59.013) [necessary to allow the Distributed Replay](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=61.43244444444446) [clients to talk to the controller. The](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=64.25375) [link to the second article in this series](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=67.213875) [is in the comments of the first. I'd also](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=69.636875) [like to call attention to a couple of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=72.25516666666667) [Pluralsight courses which work well with](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=74.24783333333332) [this course. The first would be Erin](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=76.65733333333334) [Stellato's Introduction to Query Store](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=80.0021666666667) [course. She spends a bit more detail on](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=82.02766666666666) [the settings and configuration options and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=85.123) [forcing plans than I did, so it's possibly](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=87.31409090909095) [good to watch that one as well to get a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=89.70678571428573) [broader overview of the topic. Joseph](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=91.59607142857149) [Sack's Query Plan Analysis is an excellent](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=94.32909090909092) [course on reading execution plans and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=97.79236363636365) [using the insights to determine why](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=100.2545454545455) [queries are slow. So if you'd like to get](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=102.54830769230769) [into query tuning after finding out via](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=105.48369230769228) [Query Store which queries are slow, this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=108.03918181818185) [would be a great place to start. In this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=110.78325) [course, we've looked at some real world](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=114.4933076923077) [uses for Query Store in quite a bit of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=116.20238461538464) [detail. We first looked at tracking](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=118.65775) [regressed queries seeing why the DMVs and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=120.43224999999998) [the Extended Events we've used up until](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=122.90799999999997) [now have been painful at times and how](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=125.48335714285713) [much easier a Query Store makes it to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=128.64621428571422) [track regressed queries. We had a look at](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=131.83824999999996) [tracking resource consumption via Query](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=135.07891666666654) [Store, both at a query level and a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=136.93500000000003) [database level, and so why these are very](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=139.837) [useful for overall performance tuning and](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=142.76718181818183) [for benchmarks and baselines for your](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=145.57539999999997) [database. We looked at tracking individual](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=148.9941999999999) [queries in Query Store using the Tracked](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=150.9249090909091) [Queries report. This would be very useful](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=152.84) [if you've got a particular query which is](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=154.81400000000008) [very sensitive to performance changes, a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=157.68555555555554) [query perhaps that must run in a certain](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=160.2266666666667) [time period or the application surface.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=163.12000000000012) [It's also useful for tracking the results](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=165.29) [for performance tuning or application](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=168.96930769230764) [changes. We looked at Query Store](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=171.59738461538453) [architecture and configuration options,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=174.0902222222222) [how queries get into Query Store, how the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=175.664) [runtime statistics are aggregated, and the](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=178.389090909091) [effects of both the aggregation interval](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=180.33854545454548) [and the data flush interval. We also](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=182.19363636363644) [looked at size in Query Store and how](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=184.30315384615386) [Query Store behaves when it fills up. And](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=186.689) [finally, we had a look at some advanced](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=189.81585714285723) [uses for Query Store beyond the basic](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=193.07940000000002) [reports. We looked at using Query Store](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=196.2938000000001) [for upgrade testing. The example I used](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=198.8536666666667) [was a SQL 2012 to 2016 upgrade, but it](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=201.07466666666664) [works just as well for application changes](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=203.7086666666666) [as well. We looked at doing load tests,](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=206.07066666666668) [trying to figure out how much additional](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=208.83883333333333) [load the server can handle, also usable](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=210.80466666666666) [for consolidation tests. And finally, we](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=214.26900000000003) [looked at how we'll use Query Store to](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=217.22361538461536) [track the effects of configuration changes](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=218.85992307692294) [over time. I do hope you enjoyed this](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=221.84033333333332) [course, and I hope you're going to get a](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=224.3636) [lot of benefit out of Query Store in](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=226.22) [future and use it to solve a whole pile of](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=228.1272000000001) [very painful SQL Server problems. Thank you for watching.](https://app.pluralsight.com/player?course=solving-real-world-problems-sql-server-2016-query-store&author=gail-shaw&name=solving-real-world-problems-sql-server-2016-query-store-m6&clip=0&mode=live&start=230.99749999999997)