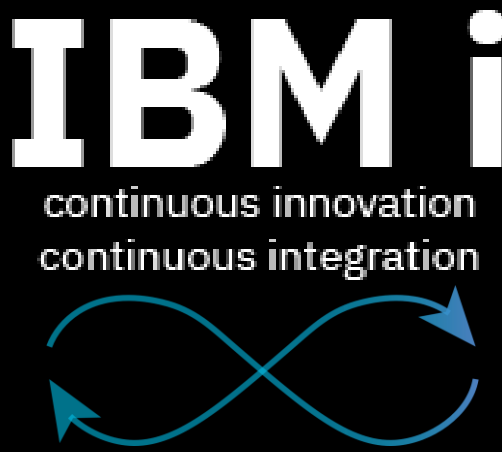
A practical approach to IBM i SQL performance



Morten Buur Rasmussen
morten.buur.rasmussen@dk.ibm.com

Goal of this 60 min presentation

In this session, we'll cover and talk about:

IBM i Access Client Solutions (ACS) – the free tool available to you

Using SQL Plan Cache for SQL performance analysis, incl properties, QRO Hash …

Using DB Monitor traces for deeper investigation

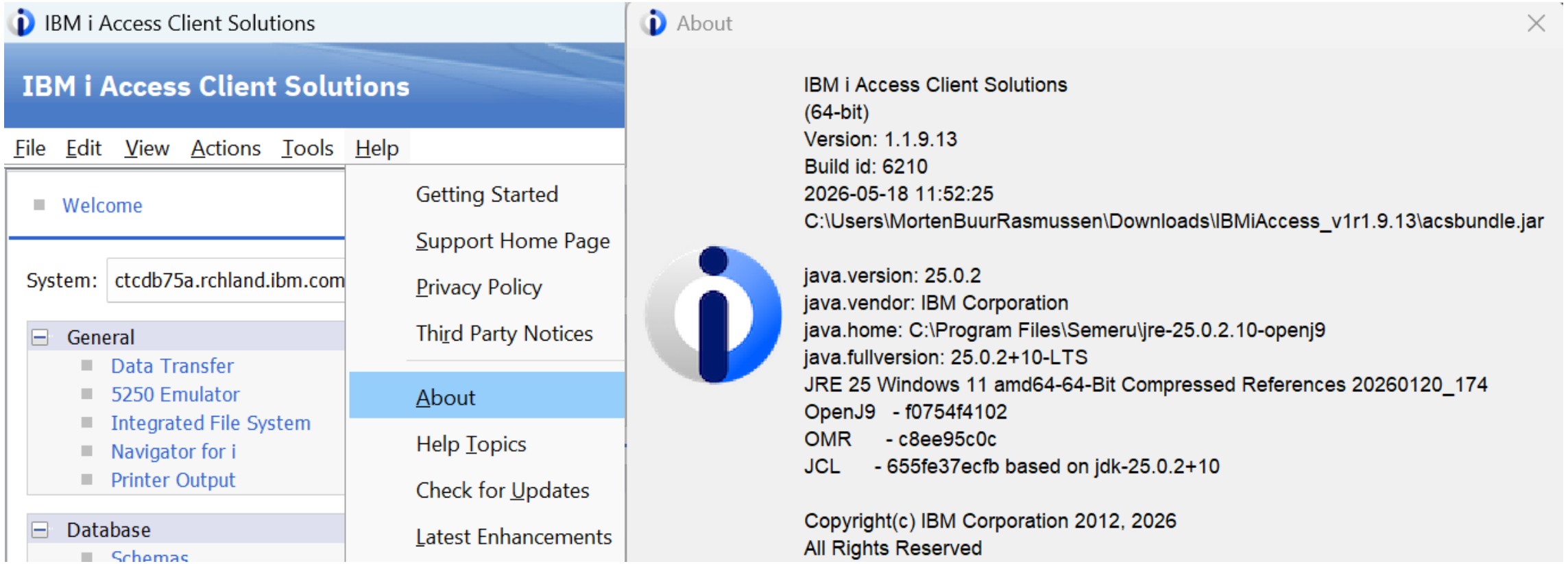
Understanding query execution with Visual Explain

How to view and interpret performance data effectively

Quick wins for improving SQL performance

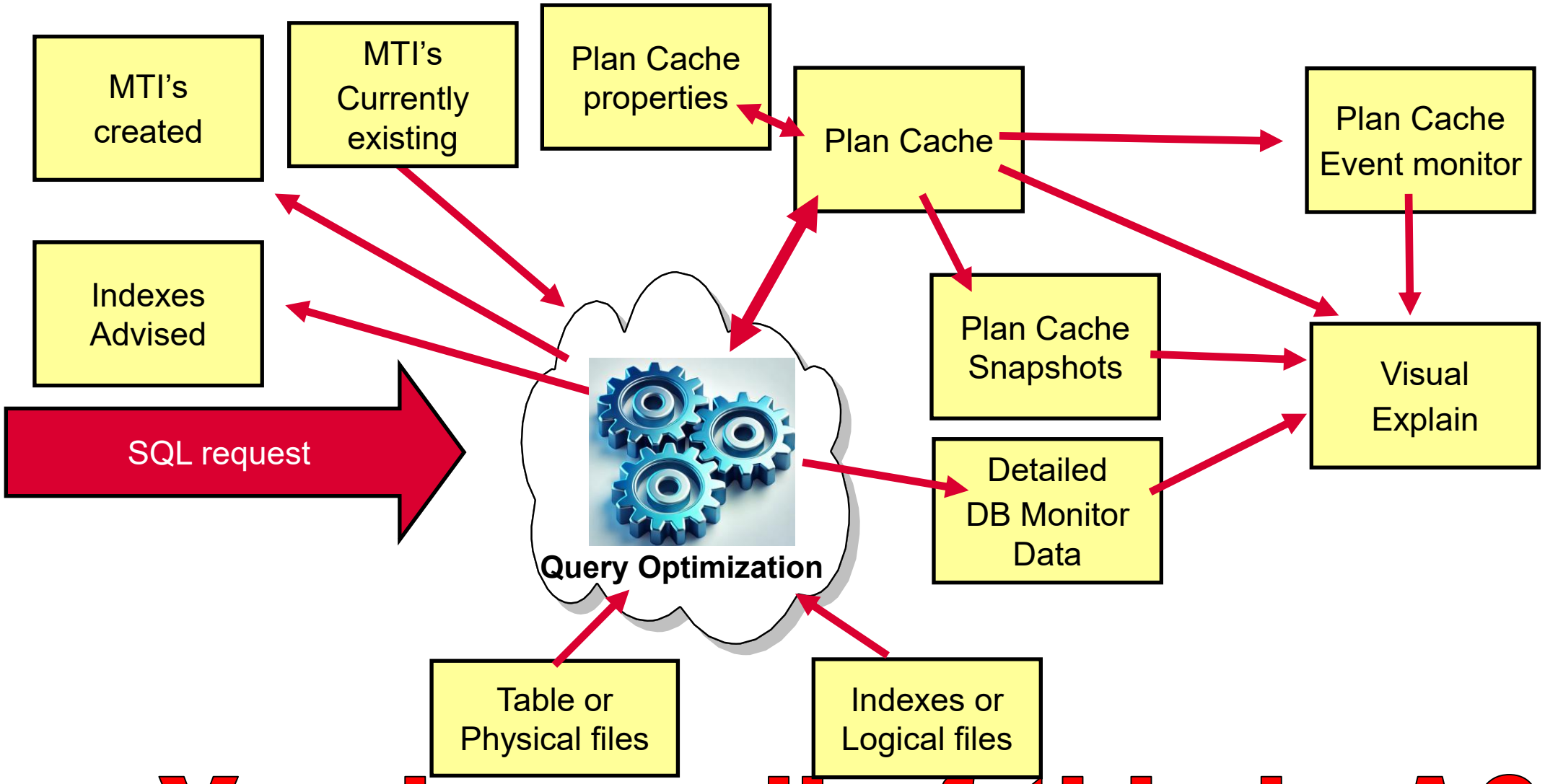
IBM i Access Client Solutions (ACS)

ACS 1.1.9.13 – use the latest!



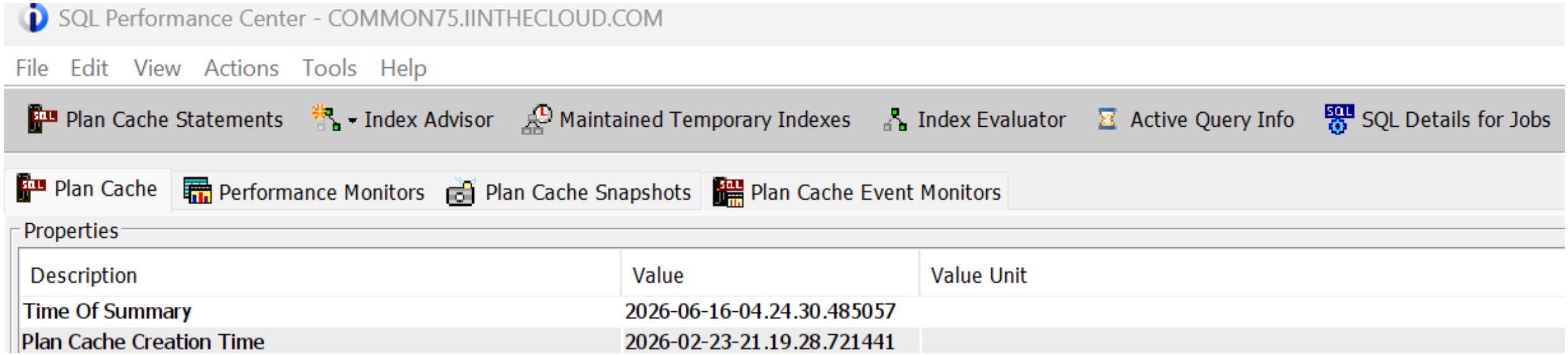
https://www.ibm.com/resources/mrs/assets/DownloadList?source=swg-ia&lang=en_US

SQL request related to ACS tools

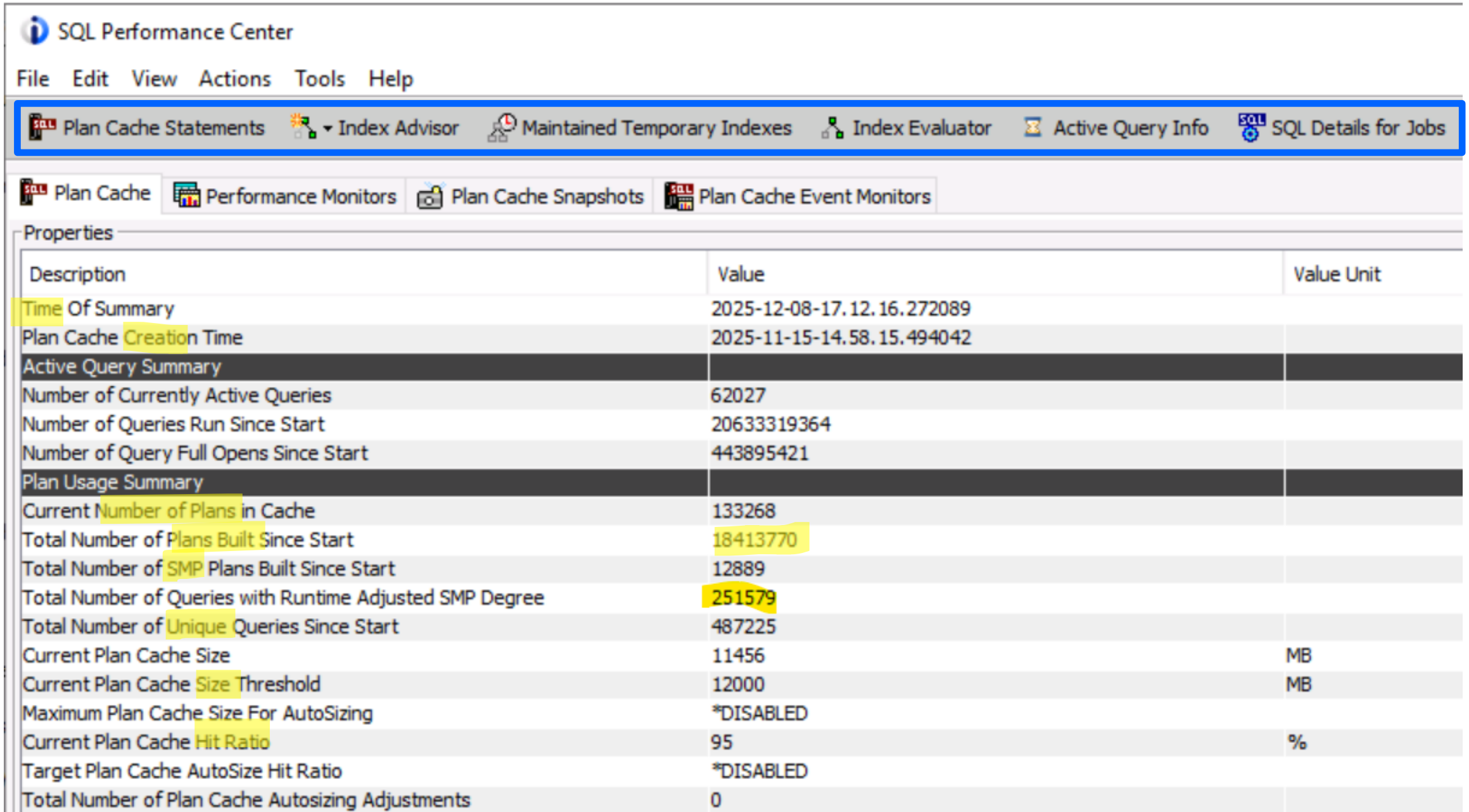


You have all of this in ACS

SQL Performance Center – Launch Pad



SQL Performance Center – Plan Cache Properties



Description	Value	Value Unit
Time Of Summary	2025-12-08-17.12.16.272089	
Plan Cache Creation Time	2025-11-15-14.58.15.494042	
Active Query Summary		
Number of Currently Active Queries	62027	
Number of Queries Run Since Start	20633319364	
Number of Query Full Opens Since Start	443895421	
Plan Usage Summary		
Current Number of Plans in Cache	133268	
Total Number of Plans Built Since Start	18413770	
Total Number of SMP Plans Built Since Start	12889	
Total Number of Queries with Runtime Adjusted SMP Degree	251579	
Total Number of Unique Queries Since Start	487225	
Current Plan Cache Size	11456	MB
Current Plan Cache Size Threshold	12000	MB
Maximum Plan Cache Size For AutoSizing	*DISABLED	
Current Plan Cache Hit Ratio	95	%
Target Plan Cache AutoSize Hit Ratio	*DISABLED	
Total Number of Plan Cache Autosizing Adjustments	0	

SQL Performance Center – Plan Cache properties

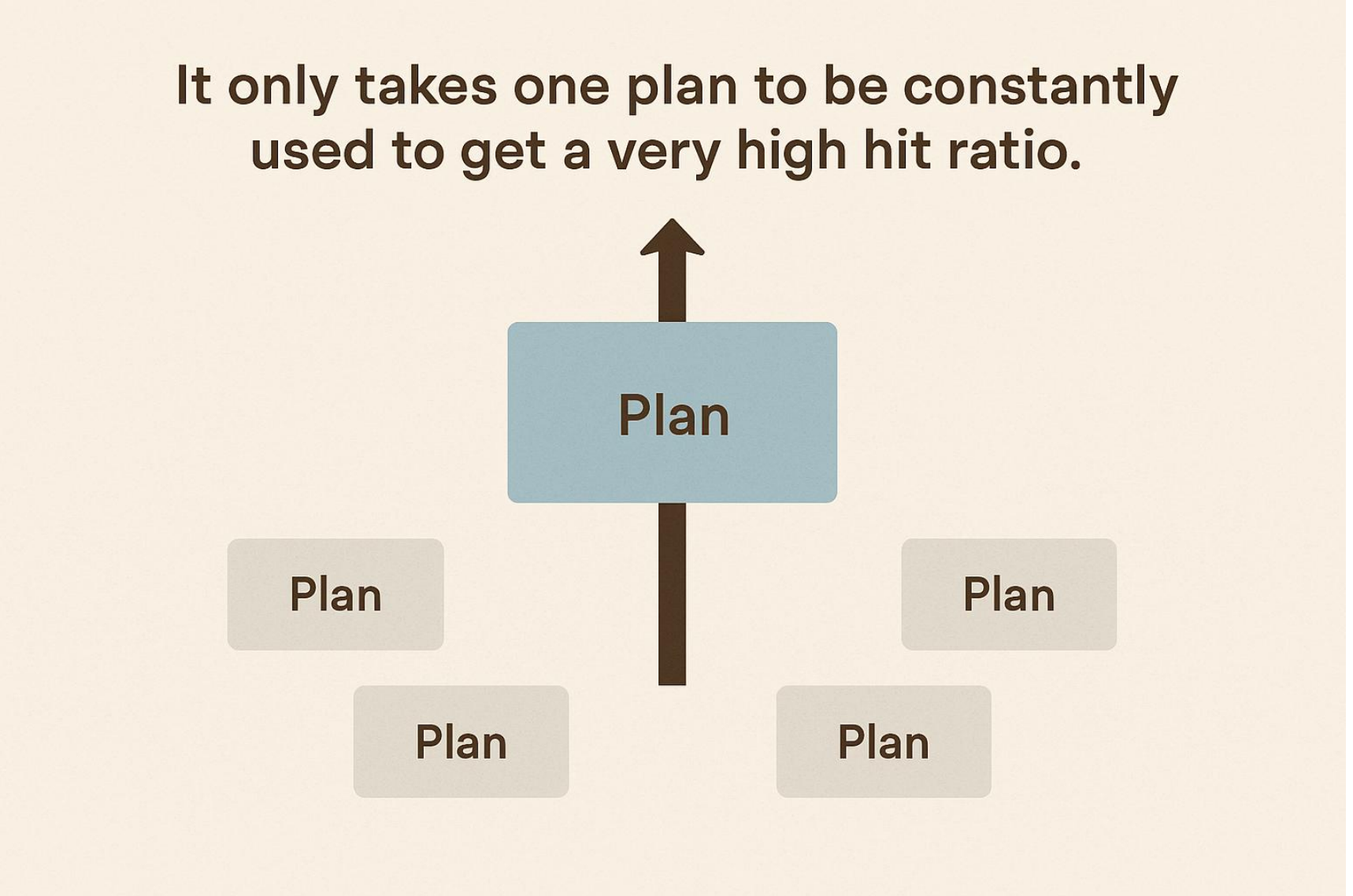
Total Number of Unique Queries Since Start	487225	
Current Plan Cache Size	11456	MB
Current Plan Cache Size Threshold	12000	MB
Maximum Plan Cache Size For AutoSizing	*DISABLED	
Current Plan Cache Hit Ratio	95	%
Target Plan Cache AutoSize Hit Ratio	*DISABLED	
Total Number of Plan Cache Autosizing Adjustments	0	

What is a good hit ratio?

Plan Cache Hit ratio

Often good to modify the Plan Cache size to be higher than the default.

Like minimum size 2Gb
Larger 4-6GB
Bigger 12-16GB



SQL Performance Center – Plan Cache Statements

SQL Plan Cache Statements - COMMON75.IINTHECLOUD.COM(Common75)

Filters to ap...

- [ ] Minimum runtime for the longest execution
  1 Seconds
- [ ] Statements that ran on or after this date ar
  June 15, 2026, 10:45:48 AM
- [ ] Top 'n' most frequently run statements:
  25
- [ ] Top 'n' statements with the largest total ac
  25
- [ ] Top 'n' statements with the most temporar
  25
- [ ] Top 'n' statements with the most CPU usag
  25
- [ ] Top 'n' statements with the most database
  25
- [x] Statements the following user has ever run
  TIMMR
- [ ] Statements identified by the specified QRO
- [ ] Statements that are currently active
- [ ] Statements for which indexes have been ac
- [ ] Statements for which statistics have been a
- [ ] Include statements initiated by the operati

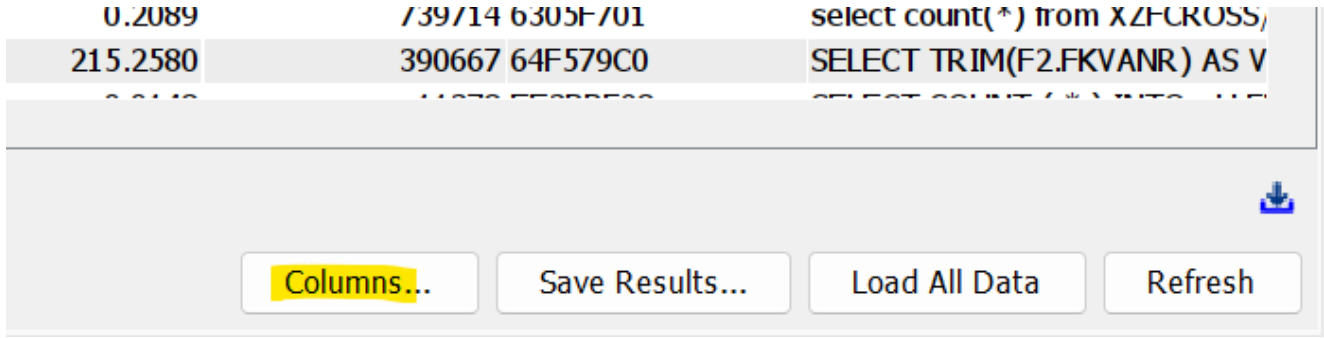
Refreshed at 10:47 AM (2)

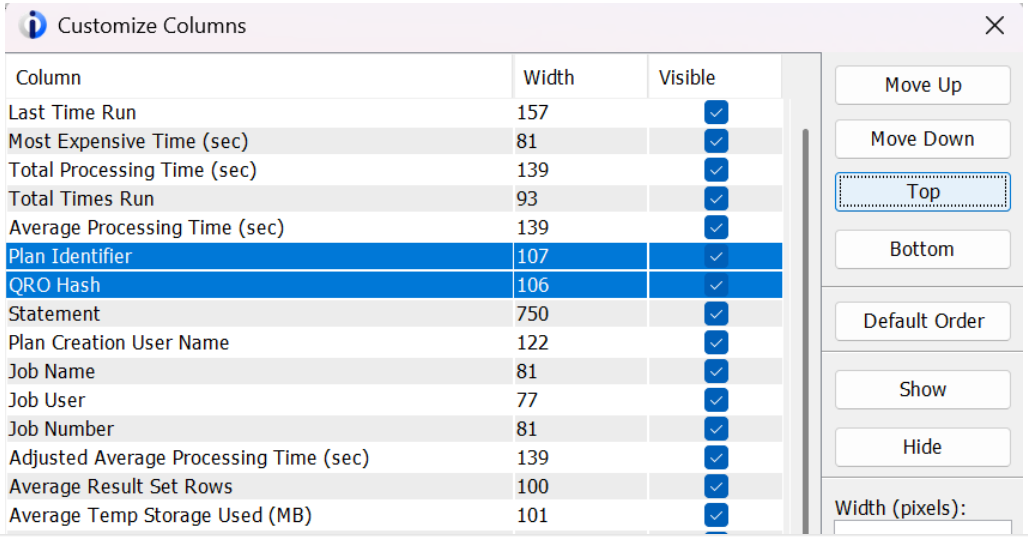
Filters applied:

- Statements that user 'TIMMR' has ever run

Last Time Run	Most Expensive Time (sec)	Total Processing Time (sec)	Total Times Run	Average Processing Time (sec)	Statement
2026-06-15 23:55:20.737065	9.4038	617.7504	227	2.7213	SELECT COUNT (*) INTO : H : H FR
2026-06-14 23:55:11.852946	11.0361	591.8142	58	10.2036	WITH ILEVEL (IVERSION , IRELEASE
2026-06-14 23:55:20.038966	9.4897	465.6207	53	8.7852	WITH ILEVEL (IVERSION , IRELEASE
2026-05-21 13:36:50.254938	47.7259	101.5464	4	25.3866	DECLARE SQL_TABLE_CURSOR_CVE
2026-06-16 04:46:17.250668	14.1089	32.4424	696	0.0466	insert into coolstuff . exit_tracker sel
2026-06-11 15:01:20.146752	30.7268	30.7361	2	15.3680	SELECT PATH_NAME, DATA_SIZE, C
2026-06-11 15:00:38.585865	27.5156	27.5156	1	27.5156	VALUES SYSTOOLS.GENERATE_SPRE
2026-04-24 10:21:58.807256	3.9962	25.8487	9	2.8720	SET : H : H = SYSTOOLS . HTTPGET(
2026-03-13 17:07:12.592759	3.5302	6.6762	2	3.3381	SELECT * FROM SYSTOOLS.FIRMWA
2026-04-30 09:13:55.835632	4.2502	4.2502	1	4.2502	-- https://www.ibm.com/docs/en/i/7
2026-06-16 04:35:05.262637	0.0593	2.5736	89	0.0289	SELECT COUNT (*) INTO : H : H FR
2026-03-13 11:41:09.647035	1.2071	1.2071	1	1.2071	SELECT A.*, DEC(DECFL(
2026-06-11 15:00:46.227069	0.3733	0.3733	1	0.3733	-- Check QSYS2.ACTIVE_JOB_INFO f
2026-06-11 15:00:25.482223	0.3668	0.3668	1	0.3668	DECLARE C_FIND_DSPOVR_OUTPUT
2026-06-11 14:59:16.271458	0.3562	0.3562	1	0.3562	CALL QSYS2.IFS_WRITE_UTF8(PAT
2026-06-11 14:58:48.057708	0.3548	0.3548	1	0.3548	SELECT MAX(LENGTH(SPOOLED_FI
2026-06-11 14:58:38.304989	0.3546	0.3546	1	0.3546	CALL QSYS2.IFS_WRITE_UTF8(PAT
2026-06-11 14:53:02.323296	0.3528	0.3528	1	0.3528	SELECT USER_NAME, COUNT(*
2026-06-11 14:54:47.588643	0.3511	0.3511	1	0.3511	SELECT SPOOLED_FILE_NAME,
2026-06-11 14:54:42.064364	0.3508	0.3508	1	0.3508	SELECT OUTPUT_QUEUE_NAME,
2026-06-11 14:59:14.946010	0.3058	0.3058	1	0.3058	SELECT JOB_NAME, AUTHORIZ
2026-06-11 14:52:16.413531	0.1230	0.1682	2	0.0841	SELECT spooled_data as LINE FROM
2026-06-11 14:58:55.869002	0.1455	0.1455	1	0.1455	VALUES SYSTOOLS . SEND_EMAIL (
2026-06-11 14:52:11.330670	0.0870	0.0870	1	0.0870	select CURRENT_NUMERIC_VALUE,
2026-03-13 17:14:04.900987	0.0313	0.0579	2	0.0289	SELECT * FROM QSYS2.GROUP_PTF_
2026-06-15 23:55:11.677393	0.0003	0.0557	227	0.0002	SET : H : H = (WITH ILEVEL (IVERS
2026-03-13 17:13:17.833320	0.0271	0.0533	2	0.0266	-- system status page SELECT * FRO
2026-06-15 23:55:30.209417	0.0000	0.0024	909	0.0001	VALUES (CASE WHEN : H : H IS NUL

SQL Performance Center – Plan Cache Statements





Filters applied:

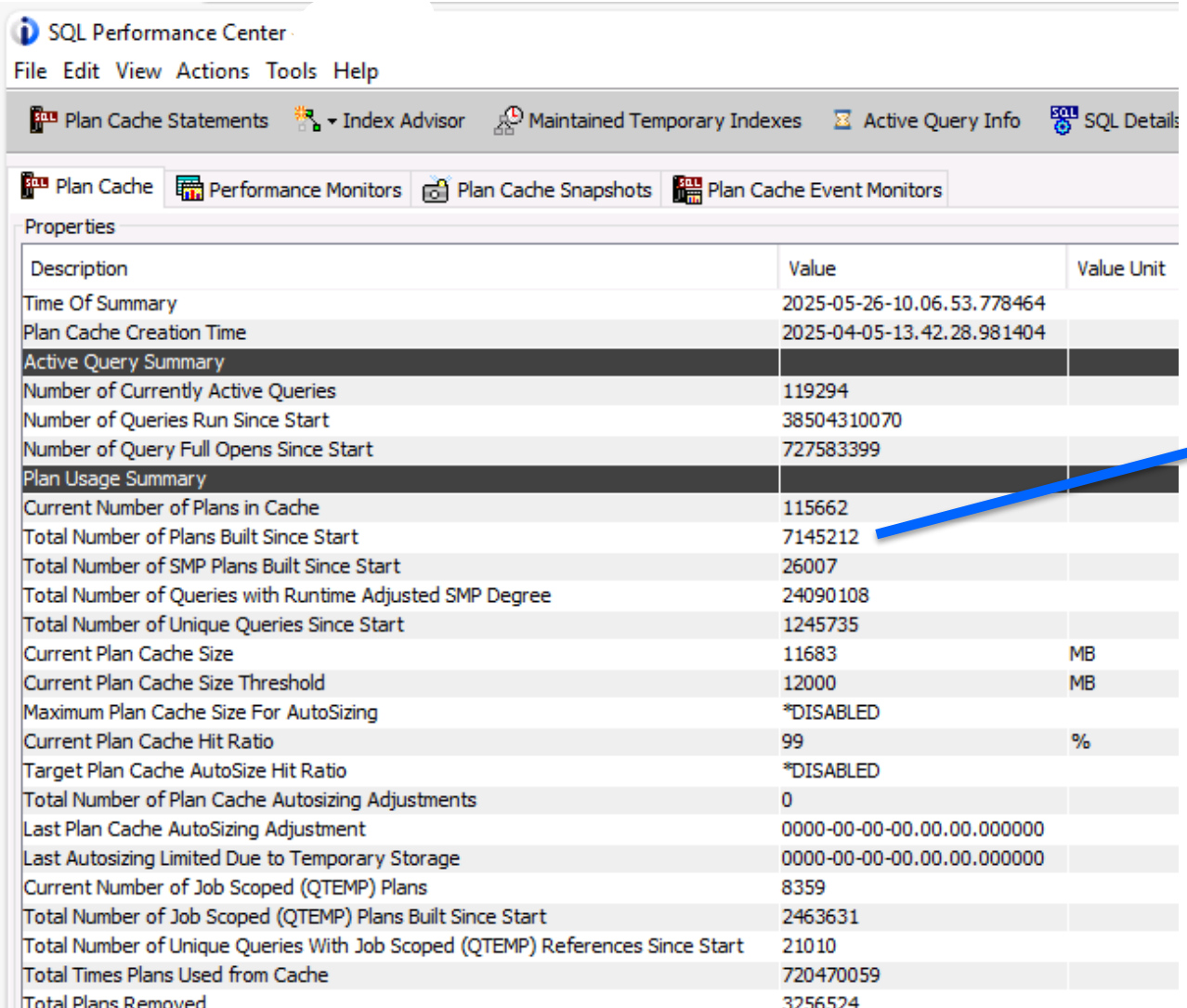
- Statements that user 'TIMMR' has ever run

Last Time Run	Most Expensive Time (sec)	Total Processing Time (sec)	Total Times Run	Average Processing Time (sec)	Plan Identifier	QRO Hash	Statement
2026-06-15 23:55:20.737065	9.4038	617.7504	227	2.7213	118	4C4CBCFE	SELECT COUNT (*) INT
2026-06-14 23:55:11.852946	11.0361	591.8142	58	10.2036	5427	16C03518	WITH ILEVEL (IVERSIOI
2026-06-14 23:55:20.038966	9.4897	465.6207	53	8.7852	5428	58330358	WITH ILEVEL (IVERSIOI
2026-05-21 13:36:50.254938	47.7259	101.5464	4	25.3866	40875	1B17EF65	DECLARE SQL_TABLE_C
2026-06-16 04:46:17.250668	14.1089	32.4424	696	0.0466	53	BEFAFBFF	insert into coolstuff . exit
2026-06-11 15:01:20.146752	30.7268	30.7361	2	15.3680	198681	CAB2C54A	SELECT PATH_NAME, DA
2026-06-11 15:00:38.585865	27.5156	27.5156	1	27.5156	198664	772BB8C5	VALUES SYSTOOLS.GENE
2026-04-24 10:21:58.807256	3.9962	25.8487	9	2.8720	27607	EDE8836A	SET : H : H = SYSTOOLS
2026-03-13 17:07:12.592759	3.5302	6.6762	2	3.3381	31467	4AD6B049	SELECT * FROM SYSTOC
2026-04-30 09:13:55.835632	4.2502	4.2502	1	4.2502	120021	31A62FCE	-- https://www.ibm.com
2026-06-16 04:35:05.262637	0.0593	2.5736	89	0.0289	157011	D1E496D5	SELECT COUNT (*) INT
2026-03-13 11:41:09.647035	1.2071	1.2071	1	1.2071	31412	1730D100	SELECT A.*, DEC(
2026-06-11 15:00:46.227069	0.3733	0.3733	1	0.3733	198680	30167767	-- Check QSYS2.ACTIVE_

Plan Identifier

The Plan Identifier is simply the sequence number of when the plan was created in the Plan Cache

- This is very useful as it shows if it's a new plan or maybe a plan frequently replaced



Description	Value	Value Unit
Time Of Summary	2025-05-26-10.06.53.778464	
Plan Cache Creation Time	2025-04-05-13.42.28.981404	
Active Query Summary		
Number of Currently Active Queries	119294	
Number of Queries Run Since Start	38504310070	
Number of Query Full Opens Since Start	727583399	
Plan Usage Summary		
Current Number of Plans in Cache	115662	
Total Number of Plans Built Since Start	7145212	
Total Number of SMP Plans Built Since Start	26007	
Total Number of Queries with Runtime Adjusted SMP Degree	24090108	
Total Number of Unique Queries Since Start	1245735	
Current Plan Cache Size	11683	MB
Current Plan Cache Size Threshold	12000	MB
Maximum Plan Cache Size For AutoSizing	*DISABLED	
Current Plan Cache Hit Ratio	99	%
Target Plan Cache AutoSize Hit Ratio	*DISABLED	
Total Number of Plan Cache Autosizing Adjustments	0	
Last Plan Cache AutoSizing Adjustment	0000-00-00-00.00.00.000000	
Last Autosizing Limited Due to Temporary Storage	0000-00-00-00.00.00.000000	
Current Number of Job Scoped (QTEMP) Plans	8359	
Total Number of Job Scoped (QTEMP) Plans Built Since Start	2463631	
Total Number of Unique Queries With Job Scoped (QTEMP) References Since Start	21010	
Total Times Plans Used from Cache	720470059	
Total Plans Removed	3256524	

Filters applied:

● Top 50 statements with largest accumulated runtime

Last Time Run	Most Expensive Time (sec)	Total Processing Time (sec)	Total Times Run	Average Processing Time (sec)	Plan Identifier	QRO Hash
2025-05-25 22:51:10.693314	3041.7060	598963.0981	711	[illegible]	4547444	4ABE62DA
2025-05-23 21:16:00.725051	0.5714	414144.8413	71489028	0.0005	274872	D7F4CAB9
2025-05-25 22:51:10.690422	4112.7888	362676.7582	180	2014.8708	4546719	4ABE62DA
2025-05-25 22:31:53.854328	3586.7432	268654.3092	204	1316.9328	3849760	1B8A42E5
2025-05-10 21:46:45.506772	218523.6756	218523.6756	1	218523.6756	4597099	CC314B8D
2025-05-23 20:18:29.942684	3.8358	176010.3125	108677	1.6195	4942787	BF73594F
2025-05-23 22:49:52.653033	6861.0855	163486.6513	31	5273.7629	277975	902E61AE
2025-05-24 03:29:28.940949	0.1965	136247.6002	6883078	0.0197	294092	DD3F6687
2025-05-05 10:28:15.598227	3340.7929	127620.9874	115	1109.7477	2804710	4ABE62DA
2025-05-25 15:18:47.919635	163.1879	104261.6845	1304	79.9552	289986	AFC0C097
2025-05-05 22:41:36.174810	103638.8819	103638.8819	1	103638.8819	3914057	A3EB4AD1
2025-05-26 10:09:50.435929	6.6296	100905.2308	33695	2.9946	69744	339BC40C
2025-05-25 22:24:07.972050	1570.6716	98458.2527	248	397.0090	3850853	1B8A42E5
2025-05-26 10:09:43.788586	1.6881	93811.0241	85907	1.0920	61788	14AF7C29
2025-05-24 03:20:14.349195	0.2370	77820.1100	3988664	0.0195	3317488	DD3F6687
2025-05-26 08:45:53.541383	2.5381	76543.0728	124546	0.6145	99920	663C5E97
2025-05-25 14:44:45.775780	2263.3636	67766.3711	415	163.2924	22576	1F5AB7F7
2025-05-03 07:05:18.948427	24198.3845	67073.8770	13	5159.5290	1196454	41E97FC7
2025-05-23 14:29:46.781889	47.9615	64376.5104	3659	17.5940	61515	AE9B38C4
2025-05-26 10:09:57.617572	0.1511	60183.5405	67133932	0.0008	1227156	4AF58A47
2025-05-15 03:06:39.933432	59711.6683	59711.6683	1	59711.6683	5510940	DEEE797E
2025-05-25 22:51:10.692771	3144.5804	56924.4967	190	299.6026	6452980	F3336E7E
2025-05-25 21:22:51.366246	244.3589	56390.3841	535	105.4025	5214976	BC939E54
2025-05-25 00:41:27.824598	28789.3581	51572.0536	19	2714.3186	3662187	41E97FC7
2025-05-26 03:05:54.902481	318.9975	49977.7810	245	203.9909	5227953	C107EF4F
2025-05-23 21:04:34.526449	16.1432	44776.0118	16894	2.6504	59151	79062854
2025-05-26 10:09:57.516740	9.7558	43614.3359	72630	0.6005	5574037	79918B91
2025-05-26 10:09:45.626594	6.2461	42133.5646	24344	1.7307	3745281	B73B25F8
2025-05-25 17:04:15.369893	1395.8859	41681.2788	64	651.2699	25111	DAB9349C

QRO Hash description

The QRO Hash description can be found several places, like here:

https://www.ibm.com/docs/en/i/7.5?topic=services-clear-plan-cache-procedure

The QRO hash is an internally generated identifier for an SQE query.
This identifier will be unique for each SQE query and uses implicit schema qualification.
If the SQE optimizer generates multiple plans for the same query, then multiple plans will have the same QRO hash.
Every plan will have a unique **Plan identifier**. The QRO hash for a statement may change on release boundaries or after loading PTFs.

In 7.5 the size is 8 hex, like ABCDEF01. Presented zeros are often removed. 7.6 is 16 hex.
In JobWatcher the QRO Hash in kept in a 16-hex field, like 00000000ABCDEF01.

SQL Performance Center – Plan Cache Statements

Filters to apply:

Minimum runtime for the longest execution of th
1 Seconds

☐ Statements that ran on or after this date and tir
June 15, 2026, 11:10:33 AM

☐ Top 'n' most frequently run statements:
25

☐ Top 'n' statements with the largest total accum
25

☐ Top 'n' statements with the most temporary sto
25

☐ Top 'n' statements with the most CPU usage:
25

☐ Top 'n' statements with the most database reac
25

☐ Statements the following user has ever run:
IBM

☐ Statements identified by the specified QRO hasl

☐ Statements that are currently active

☑ Statements for which indexes have been advise

☐ Statements for which statistics have been advis

☐ Include statements initiated by the operating sy

☐ Statements that reference the following objects
Schema Name

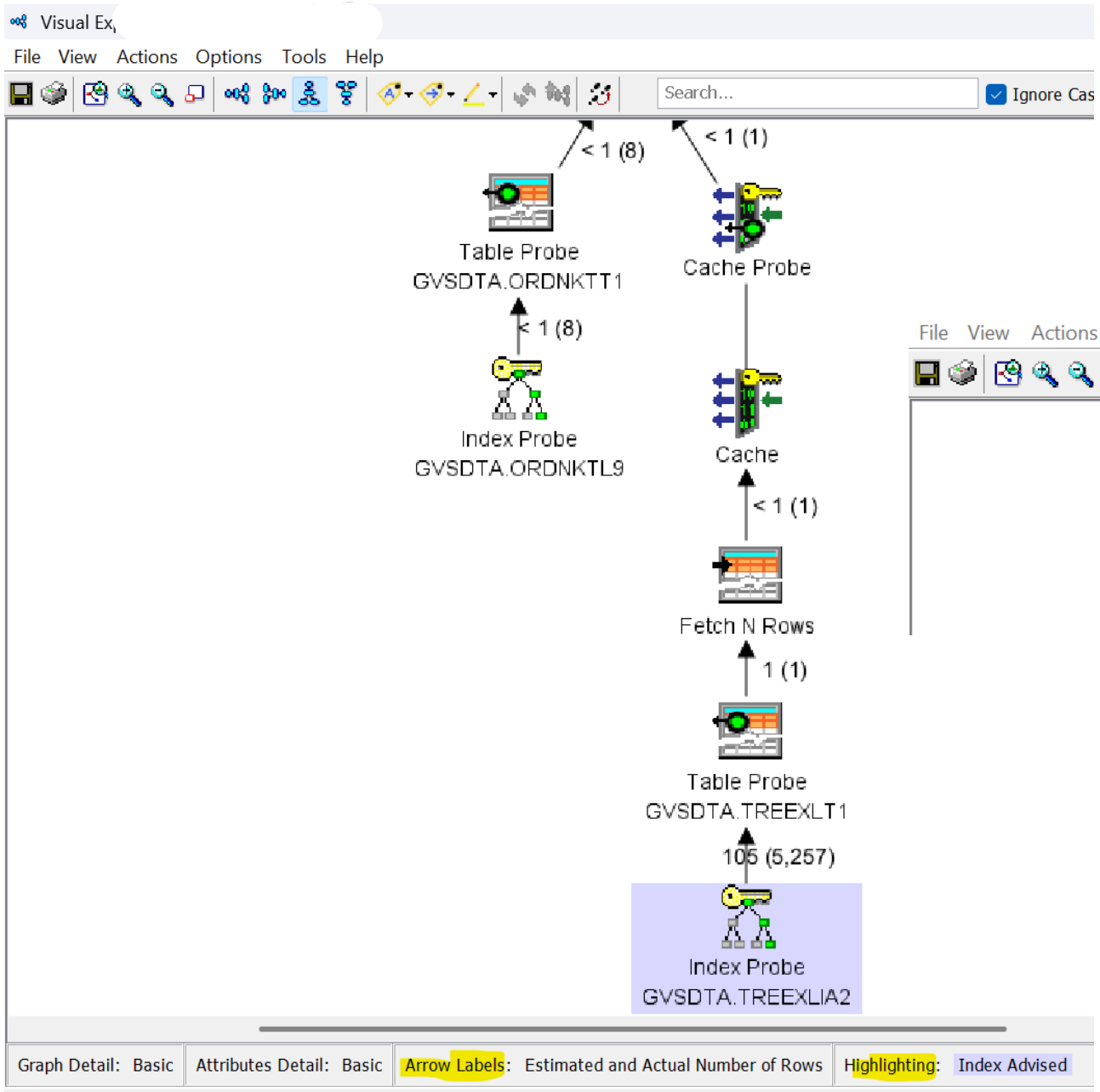
Refreshed at 11:19 AM (2)

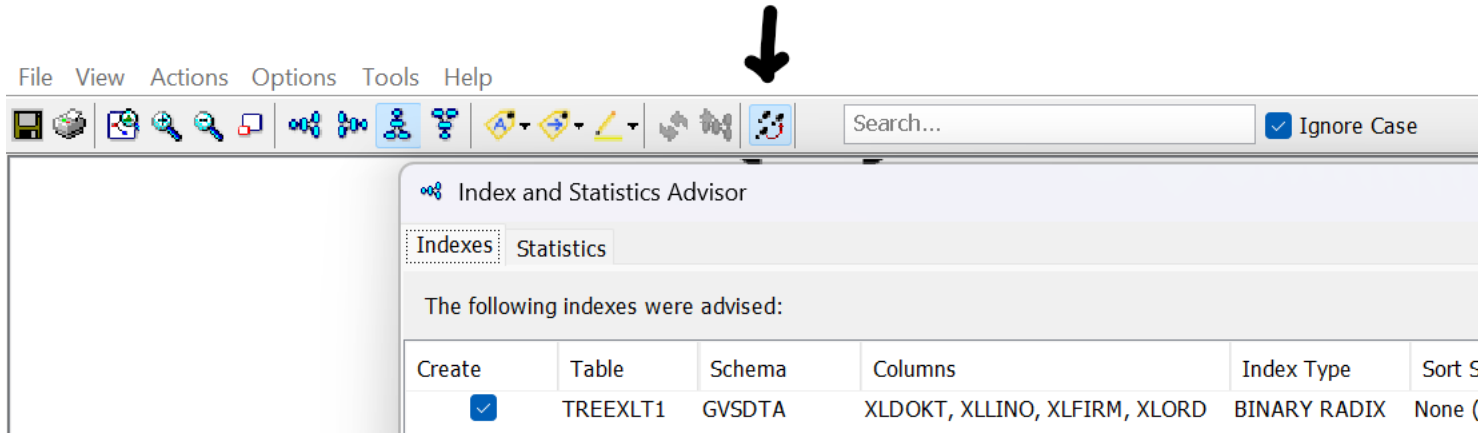
Filters applied:

- Statements for which indexes have been advised

Last Time Run	Most Expensive Time (sec)	Total Processing Time (sec)	Total Times Run	Average Processing Time (sec)	Plan Identifier	QRO Hash	Statement
2026-06-12 01:09:00.529107	51526.6435	156202.6485	5	31240.5297	502540	121D9CA4	SELECT TRIM(F2.FKVANF
2026-06-12 01:09:00.529108	57807.5402	57827.4162	2	28913.7081	482744	692ACF54	SELECT TRIM(F2.FKVANF
2026-06-12 01:09:00.003189	54537.6918	54537.6918	1	54537.6918	492887	121D9CA4	SELECT TRIM(F2.FKVANF
2026-06-16 10:47:39.127440	17.2822	5756.0762	5912	0.9736	45821	EB8D04C2	WITH input AS (SELECT
2026-06-16 11:02:46.921454	0.9506	3886.6082	49135	0.0791	49421	C50FB283	SELECT OKORD INTO : H
2026-06-16 10:33:43.103674	204.7543	3851.1699	32	120.3490	456836	770E63AC	SELECT T01.VAGRP, T01
2026-06-15 19:53:27.820423	574.5096	3619.9887	7	517.1412	308678	10C948C7	delete from xzuspcsrc2
2026-06-16 11:15:09.560328	10.2068	2340.4278	462	5.0658	211735	2B38EB9	SET : H : H = ((SELECT
2026-06-16 10:47:03.701164	30.7999	1731.3580	83	20.8597	57560	A48C546C	SELECT T01.VAGRP, T01
2026-06-16 11:15:04.841586	4.1025	1583.5234	2082	0.7605	55746	E5893C8A	SELECT * INTO : H ,: H ,:
2026-06-16 11:11:33.498176	5.7052	1210.3901	387	3.1276	55487	CB9A9881	SELECT KONCRN, FIRMA
2026-06-16 10:45:40.199384	36.9717	1185.6475	85	13.9487	36920	24200FA4	SELECT pdato as DT,SUM
2026-06-16 11:11:36.644008	5.1298	1177.8637	387	3.0435	55502	81439ACE	SELECT KONCRN, FIRMA
2026-06-08 19:55:02.562911	550.0005	1098.8341	2	549.4170	27079	10C948C7	delete from xzuspcsrc2
2026-06-16 11:17:13.396253	1.1622	1092.6648	750521	0.0014	61496	E8B831E6	SELECT IOLXT1 , IOLXT2
2026-06-15 20:30:15.695711	17.7248	1082.4666	97	11.1594	721069	CA10EC2	UPDATE RJLSPCDTA . VA
2026-06-16 11:17:51.754956	0.5497	1032.6610	7722	0.1337	8393	9ADD6DF0	select DOCJOBUID, DOCU
2026-06-16 11:01:36.884874	0.1262	995.3304	46723	0.0213	49518	365FDA22	select ? from RJLDTA/GE
2026-06-16 11:01:36.884874	0.1214	962.0299	46723	0.0205	49511	9910B052	select GDATAL from RJLD
2026-06-16 10:16:42.661893	1.6822	942.4898	2240	0.4207	35815	61536645	SELECT C.G7057L as PLU
2026-06-16 05:12:20.793037	0.0992	938.9510	59831	0.0156	37049	F46E31CE	select CONID from AWFC
2026-06-15 23:52:17.126660	126.3048	837.5335	7	119.6476	315454	EFF71E10	update XLBARRT a set (S
2026-06-14 20:52:06.547934	2.2729	836.3816	1056	0.7920	723063	417D7B89	SELECT T2.OKKODE,T2.C
2026-06-16 11:16:07.494092	24.5667	793.8519	47	16.8904	788727	CA10EC2	UPDATE RJLSPCDTA . VA
2026-06-15 05:33:44.517521	0.6969	786.4038	14859	0.0529	35476	C50FB283	SELECT OKORD INTO : H
2026-06-15 22:16:47.863419	780.4417	780.4417	1	780.4417	906340	D0EC687F	SELECT T01.T01FKFKDT,
2026-06-14 22:16:05.890120	764.8872	764.8872	1	764.8872	758728	E09A10BA	SELECT T01.T01FKFKDT,
2026-06-16 11:19:15.481041	0.0105	748.7733	42679761	0.0001	52735	8AFDE4B8	DECLARE RKVTABLE CUR
2026-06-16 10:00:49.952531	19.4382	669.2226	64	10.4566	40967	65505E11	SELECT T01.OKFIRM, T01
2026-06-10 12:31:09.426587	203.0379	658.1667	7	94.0238	389089	64F579C0	SELECT TRIM(F2.FKVANF
2026-06-14 04:17:01.469102	1.4921	654.1159	3130	0.2089	739714	6305F701	select count(*) from XZF

SQL Performance Center – Plan Cache Statements





SQL Performance Center – Index Advisor

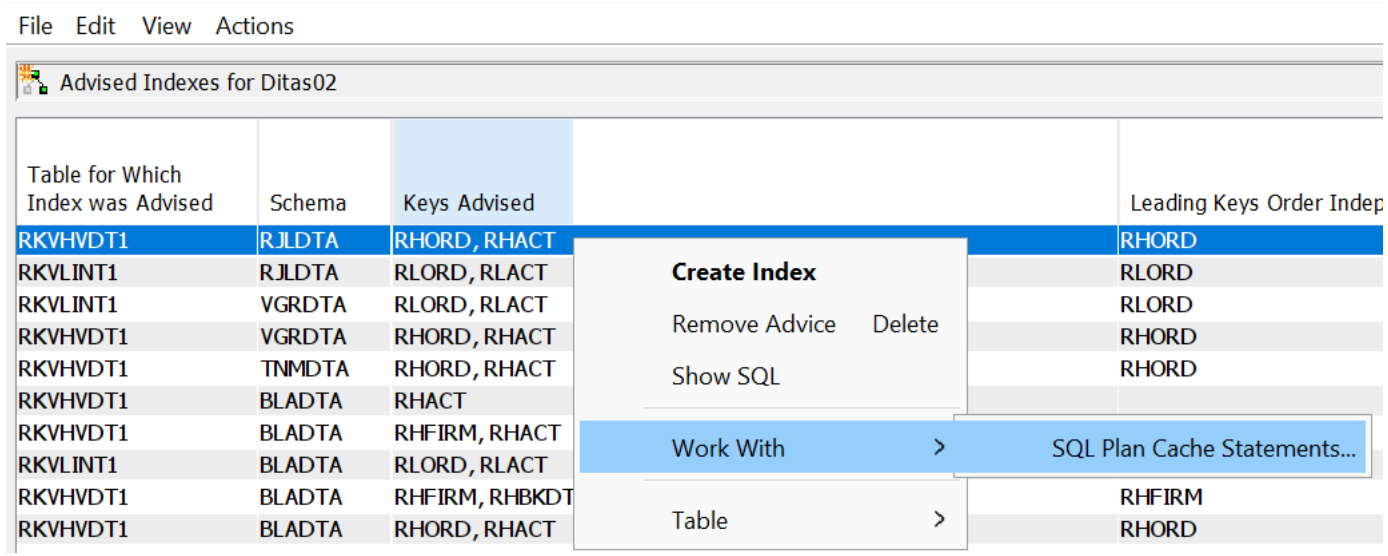
Advised Indexes f

File Edit View Actions

Advised Indexes for Ditas02

Table for Which Index was Advised	Schema	Keys Advised	Leading Keys Order Independent	Advised Index Type	Last Advised for Query Use	Times Advised for Query Use
RKVHVDT1	RJLDTA	RHORD, RHACT	RHORD	Binary Radix	06/16/2026 11:32:08 AM	9,416,760,917
RKVLINT1	RJLDTA	RLORD, RLACT	RLORD	Binary Radix	06/16/2026 11:32:08 AM	9,416,760,916
RKVLINT1	VGRDTA	RLORD, RLACT	RLORD	Binary Radix	06/16/2026 11:33:09 AM	6,080,998,999
RKVHVDT1	VGRDTA	RHORD, RHACT	RHORD	Binary Radix	06/16/2026 11:33:09 AM	6,080,998,992
RKVHVDT1	TNMDTA	RHORD, RHACT	RHORD	Binary Radix	06/30/2025 10:39:59 AM	4,768,378,107
RKVHVDT1	BLADTA	RHACT		Binary Radix	06/16/2026 11:23:28 AM	3,880,150,638
RKVHVDT1	BLADTA	RHFIRM, RHACT	RHFIRM	Binary Radix	06/16/2026 11:23:28 AM	3,880,150,500
RKVLINT1	BLADTA	RLORD, RLACT	RLORD	Binary Radix	06/16/2026 11:23:28 AM	3,880,150,497
RKVHVDT1	BLADTA	RHFIRM, RHBKDT	RHFIRM	Binary Radix	06/16/2026 11:23:28 AM	3,880,150,497
RKVHVDT1	BLADTA	RHORD, RHACT	RHORD	Binary Radix	06/16/2026 11:23:28 AM	3,880,150,497
RKVLINT1	BLADTA	RLFIRM, RLVGR, RLVNR, RLACT	RLFIRM, RLVGR, RLVNR	Binary Radix	06/16/2026 11:23:28 AM	3,879,568,741
RKVHVDT1	KLBDTA	RHACT		Binary Radix	06/16/2026 11:09:35 AM	2,896,219,493
RKVLINT1	KLBDTA	RLORD, RLACT	RLORD	Binary Radix	06/16/2026 11:09:35 AM	2,896,219,397
RKVHVDT1	KLBDTA	RHFIRM, RHACT	RHFIRM	Binary Radix	06/16/2026 11:09:35 AM	2,896,219,395
RKVLINT1	KLBDTA	RLFIRM, RLVGR, RLVNR, RLACT	RLFIRM, RLVGR, RLVNR	Binary Radix	06/16/2026 11:09:35 AM	2,896,219,394
RKVHVDT1	KLBDTA	RHORD, RHACT	RHORD	Binary Radix	06/16/2026 11:09:35 AM	2,896,219,394
RKVHVDT1	KLBDTA	RHFIRM, RHBKDT	RHFIRM	Binary Radix	06/16/2026 11:09:35 AM	2,896,219,394
RKVLINT1	KJEDTA	RLORD, RLACT	RLORD	Binary Radix	06/16/2026 10:50:34 AM	2,012,865,331
RKVHVDT1	KJEDTA	RHORD, RHACT	RHORD	Binary Radix	06/16/2026 10:50:34 AM	2,012,865,331
VARSAFT1	VGRDTA	KRKCN, KRFIRM, KRPRC, KRGRP, KRKNR, KRVNR, KRPRIL, KRTIDT	KRKCN, KRFIRM, KRPRC, KRGRP, KRKNR, KRVNR	Binary Radix	06/16/2026 11:02:16 AM	1,935,788,042
RKVHVDT1	ELLDTA	RHFIRM, RHACT	RHFIRM	Binary Radix	06/16/2026 11:32:28 AM	1,846,703,226
RKVHVDT1	ELLDTA	RHFIRM, RHBKDT	RHFIRM	Binary Radix	06/16/2026 11:32:28 AM	1,846,702,963
RKVLINT1	ELLDTA	RLORD, RLACT	RLORD	Binary Radix	06/16/2026 11:32:28 AM	1,846,702,902
RKVLINT1	ELLDTA	RLFIRM, RLVGR, RLVNR, RLACT	RLFIRM, RLVGR, RLVNR	Binary Radix	06/16/2026 11:32:28 AM	1,846,702,834
RKVHVDT1	ELLDTA	RHORD, RHACT	RHORD	Binary Radix	06/16/2026 11:32:28 AM	1,846,702,834
RKVHVDT1	ELLDTA	RHACT		Binary Radix	06/16/2026 11:32:28 AM	1,839,479,191
RKVLINT1	TSBDTA	RLORD, RLACT	RLORD	Binary Radix	08/26/2025 11:17:17 AM	1,814,553,512
RKVHVDT1	TSBDTA	RHORD, RHACT	RHORD	Binary Radix	08/26/2025 11:17:17 AM	1,814,553,512

SQL Performance Center – Index Advisor



SQL Performance Center – Index Advisor- old advises

Advised Indexes for

File Edit View Actions

Advised Indexes for Ditas02

Table for Which Index was Advised	Schema	Keys Advised	Leading Keys Order Independent	Advised Index Type	Last Advised for Query Use
KREPSTT1	ABTDTA	KPEXN2		Binary Radix	02/09/2022 11:35:03 AM
KREPSTT1	ABTDTA	KPEXN3		Binary Radix	02/09/2022 11:35:03 AM
KREPSTT1	ABTDTA	KPEXN4		Binary Radix	02/09/2022 11:36:54 AM
KREPSTT1	ABTDTA	KCEXA5		Binary Radix	02/09/2022 11:38:46 AM
KREPSTT1	ABTDTA	KCEXA6		Binary Radix	02/09/2022 11:38:56 AM
KREPSTT1	ABTDTA	KCEXA2		Binary Radix	02/09/2022 11:39:06 AM
KREPSTT1	ABTDTA	KCEXA3		Binary Radix	02/09/2022 11:39:06 AM
KREPSTT1	ABTDTA	KCEXA4		Binary Radix	02/09/2022 11:39:06 AM
KREPSTT1	ATHDTA	KCEXA2		Binary Radix	02/09/2022 11:40:17 AM
KREPSTT1	ATHDTA	KCEXA3		Binary Radix	02/09/2022 11:40:17 AM
KREPSTT1	ATHDTA	KCEXA4		Binary Radix	02/09/2022 11:40:17 AM
KREPSTT1	BORDTA	KCEXA2		Binary Radix	02/09/2022 11:40:17 AM
KREPSTT1	BORDTA	KCEXA3		Binary Radix	02/09/2022 11:40:17 AM
KREPSTT1	BORDTA	KCEXA4		Binary Radix	02/09/2022 11:40:17 AM
KREPSTT1	CBODTA	KCEXA2		Binary Radix	02/09/2022 11:40:27 AM

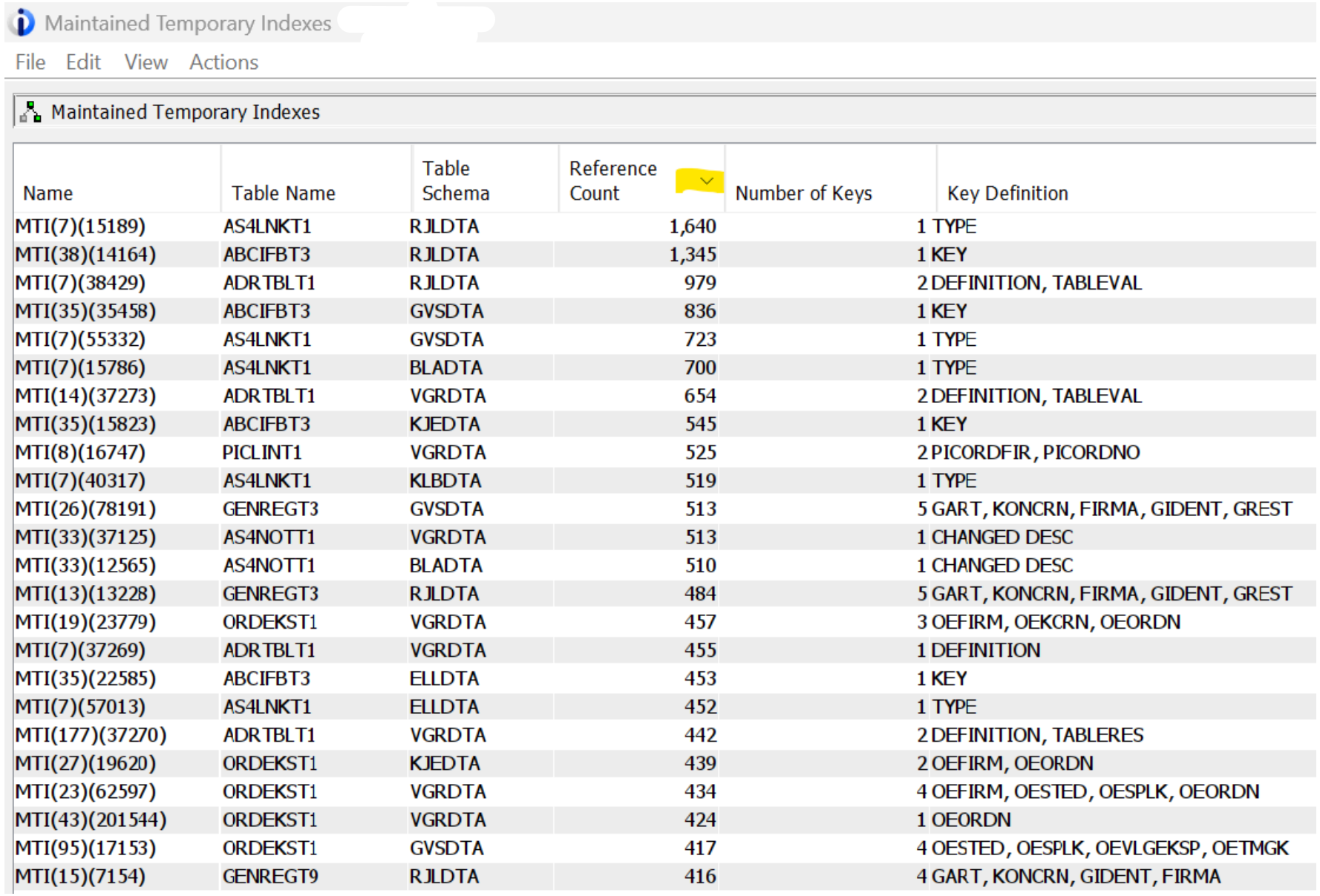
Run SQL Scripts - COMMON75.IINTHECLOUD.COM(Common75)

File Edit Search View Connection Run Explain Monitor Editor Tools Help

*Untitled 1

```
1
2 VALUES SYSIBMADM.QIBM_SYSIXADV_BY_DAYS;
3
4 CREATE OR REPLACE VARIABLE SYSIBMADM.QIBM_SYSIXADV_BY_DAYS INTEGER DEFAULT 90;
```

SQL Performance Center - MTIs



Name	Table Name	Table Schema	Reference Count	Number of Keys	Key Definition
MTI(7)(15189)	AS4LNKT1	RJLDTA	1,640	1	TYPE
MTI(38)(14164)	ABCIFBT3	RJLDTA	1,345	1	KEY
MTI(7)(38429)	ADRTBLT1	RJLDTA	979	2	DEFINITION, TABLEVAL
MTI(35)(35458)	ABCIFBT3	GVSDTA	836	1	KEY
MTI(7)(55332)	AS4LNKT1	GVSDTA	723	1	TYPE
MTI(7)(15786)	AS4LNKT1	BLADTA	700	1	TYPE
MTI(14)(37273)	ADRTBLT1	VGRDTA	654	2	DEFINITION, TABLEVAL
MTI(35)(15823)	ABCIFBT3	KJEDTA	545	1	KEY
MTI(8)(16747)	PICLINT1	VGRDTA	525	2	PICORDFIR, PICORDNO
MTI(7)(40317)	AS4LNKT1	KLBDTA	519	1	TYPE
MTI(26)(78191)	GENREGT3	GVSDTA	513	5	GART, KONCRN, FIRMA, GIDENT, GREST
MTI(33)(37125)	AS4NOTT1	VGRDTA	513	1	CHANGED DESC
MTI(33)(12565)	AS4NOTT1	BLADTA	510	1	CHANGED DESC
MTI(13)(13228)	GENREGT3	RJLDTA	484	5	GART, KONCRN, FIRMA, GIDENT, GREST
MTI(19)(23779)	ORDEKST1	VGRDTA	457	3	OEFIRM, OEKCRN, OEORDN
MTI(7)(37269)	ADRTBLT1	VGRDTA	455	1	DEFINITION
MTI(35)(22585)	ABCIFBT3	ELLDTA	453	1	KEY
MTI(7)(57013)	AS4LNKT1	ELLDTA	452	1	TYPE
MTI(177)(37270)	ADRTBLT1	VGRDTA	442	2	DEFINITION, TABLERES
MTI(27)(19620)	ORDEKST1	KJEDTA	439	2	OEFIRM, OEORDN
MTI(23)(62597)	ORDEKST1	VGRDTA	434	4	OEFIRM, OESTED, OESPLK, OEORDN
MTI(43)(201544)	ORDEKST1	VGRDTA	424	1	OEORDN
MTI(95)(17153)	ORDEKST1	GVSDTA	417	4	OESTED, OESPLK, OEVLGEKSP, OETMGK
MTI(15)(7154)	GENREGT9	RJLDTA	416	4	GART, KONCRN, GIDENT, FIRMA

SQL Performance Center - MTIs

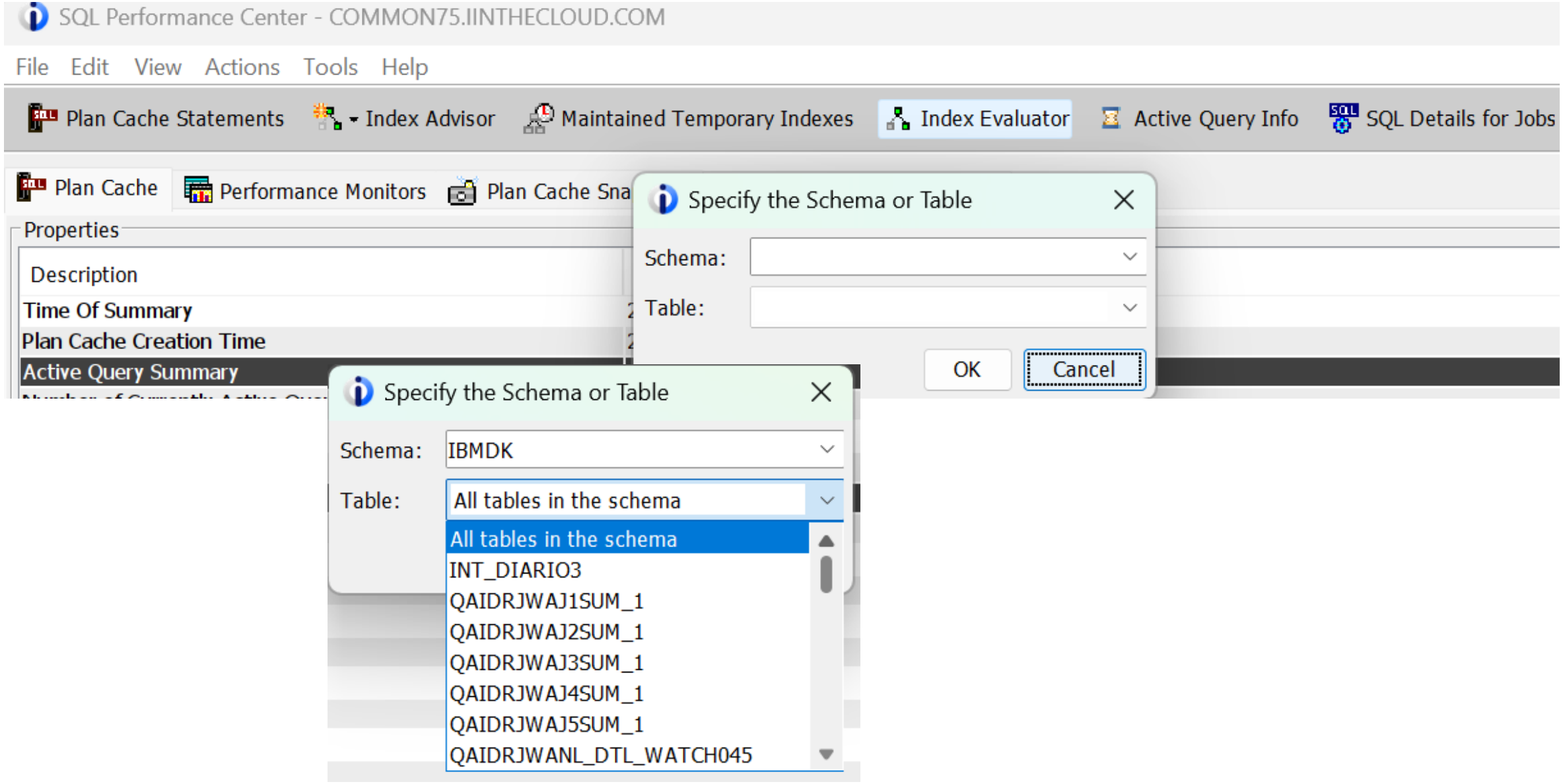
Maintained Temporary Index

File Edit View Actions

Maintained Temporary Indexes

Name	Table Name	Table Schema	Reference Count	Size (bytes)	Number of Keys
MTI(11)(21070)	AWFCONT1	RJLDTA	21	12,180,703,752	2
MTI(76)(299538)	QAPYJWSTK	QIDRDATA2	3	2,198,264,328	1
MTI(76)(297037)	QAPYJWSTK	QIDRDATA2	5	2,147,932,680	1
MTI(76)(294678)	QAPYJWSTK	QIDRDATA2	5	2,013,710,856	1
MTI(11)(49447)	AWFCONT1	KJEDTA	15	1,778,829,832	2
MTI(82)(513107)	DEBWWWT1	VGRDTAQ	3	1,141,013,000	3
MTI(11)(742169)	AWFCONT1	VGRDTA	8	939,973,128	2
MTI(11)(59308)	AWFCONT1	MDIDTA	2	822,528,520	2
MTI(360)(11529)	FAKLINT1	RJLDTA	18	620,939,784	4
MTI(664)(798874)	FAKSTAT1	RJLDTA	43	604,142,088	3
MTI(346)(249799)	FAKSTAT1	RJLDTA	76	570,645,000	1
MTI(594)(922979)	ORDHSTT1	VGRDTA	4	537,033,224	4
MTI(115)(332822)	FAKLINT1	RJLDTA	38	469,944,840	2
MTI(223)(209018)	FAKLINT1	RJLDTA	98	469,924,360	3
MTI(24)(325148)	PSTREGT1	RJLDTA	72	436,369,928	1
MTI(693)(352774)	FAKSTAT1	GVSDTA	52	386,038,280	4
MTI(314)(55213)	ORDNKTT1	VGRDTA	60	386,038,280	2

SQL Performance Center – Index Evaluator



SQL Performance Center – Index Evaluator

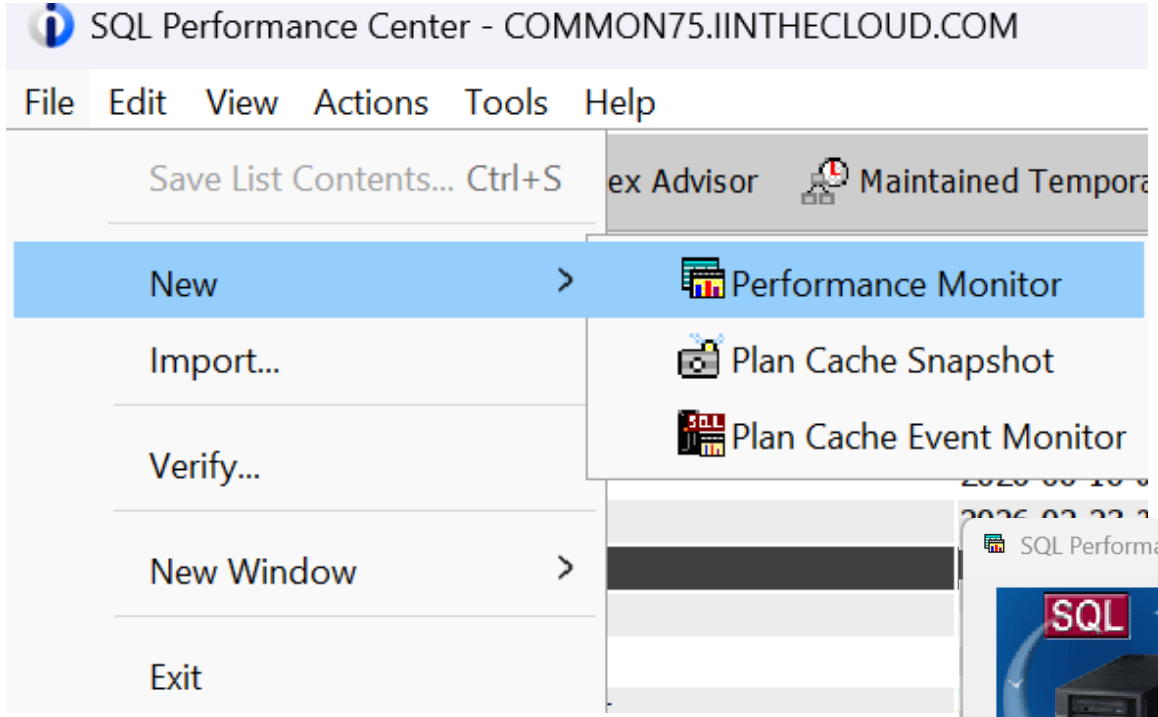
Indexes for tables in IBMDK - COMMON75.IINTHECLOUD.COM(Common75)

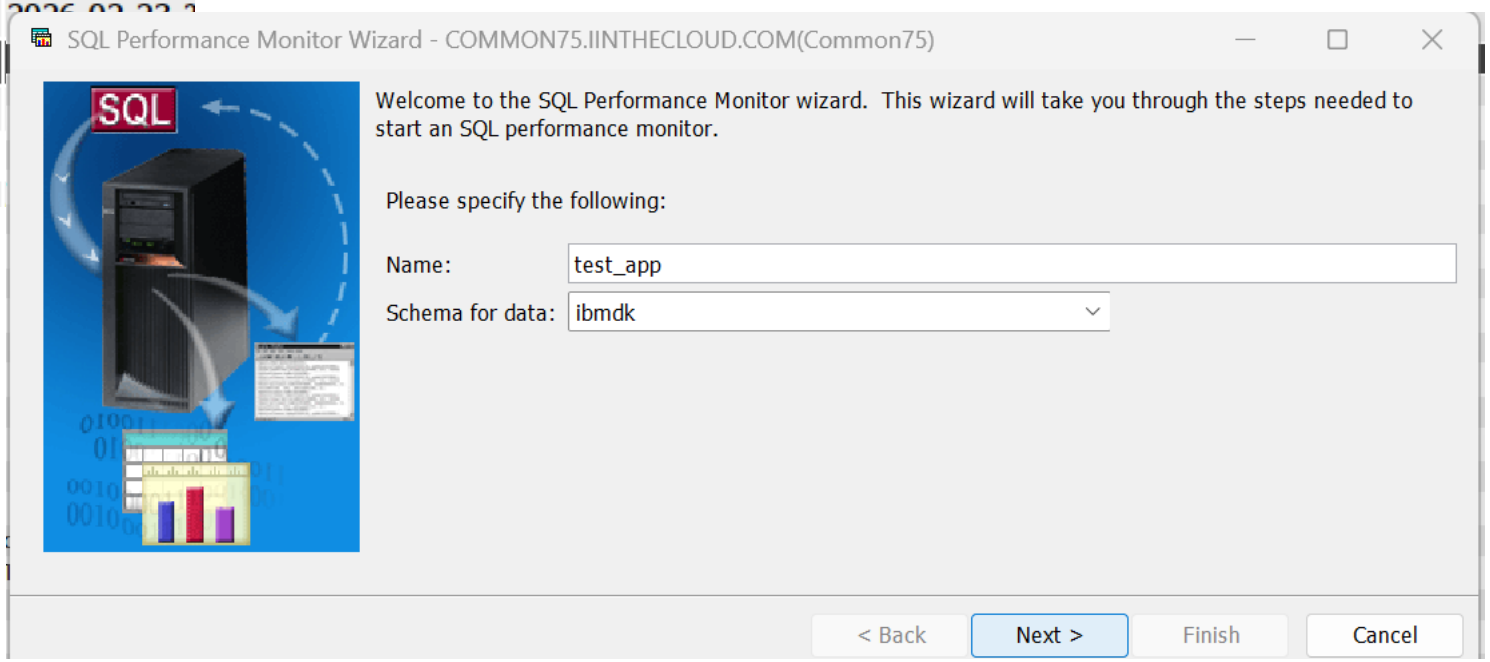
File Edit View Actions

Indexes for tables in IBMDK

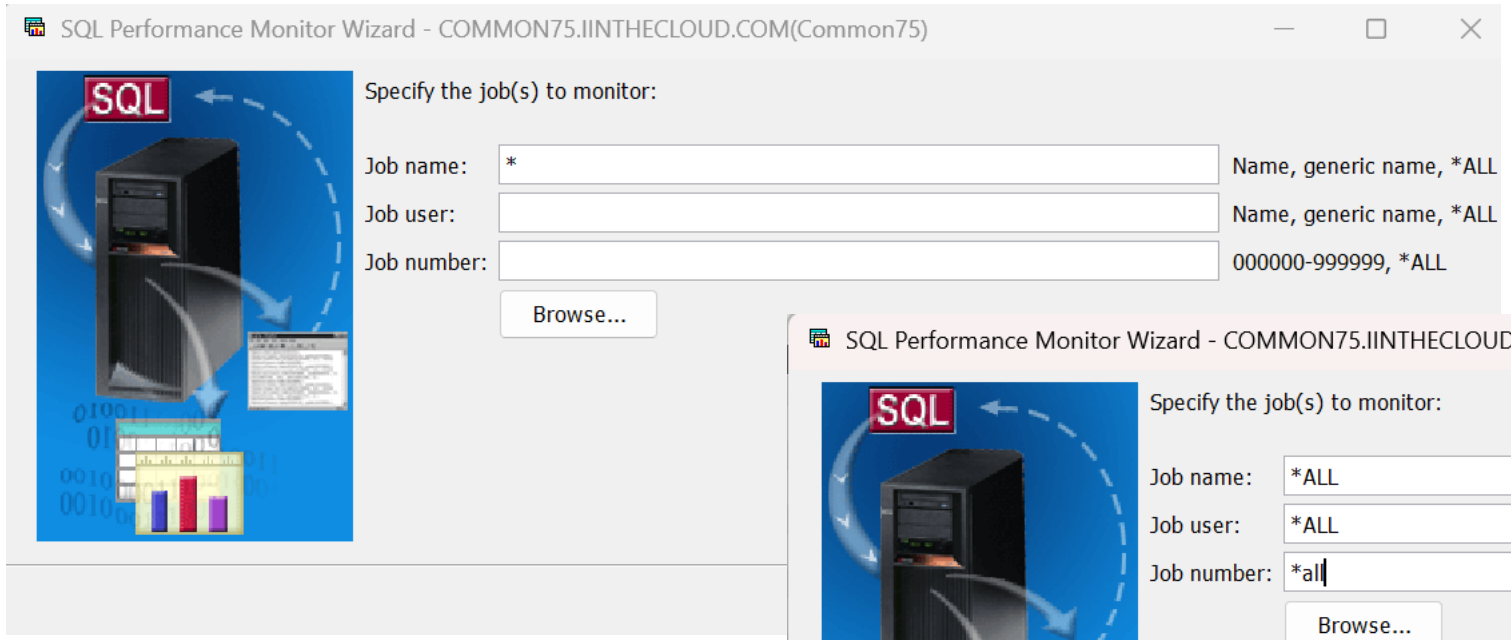
Name	System Name	Schema	Type	Owner	Date Created	Last Build	Last Query Use	Last Query Statistics Use	Query Use Count
Q_IBMDK_INT_D00001_ID_DIARY_00001		IBMDK	Primary Key Constraint	SCOTTF	12/22/2021 08:09:29 AM	12/22/2021 08:09:29 AM			0
Q_IBMDK_QAIDR00001_INTERVAL_00001		IBMDK	Primary Key Constraint	CAROL	10/08/2019 05:51:24 AM	10/08/2019 05:51:24 AM			0
Q_IBMDK_QAIDR00002_TASKCOUNT_00001		IBMDK	Primary Key Constraint	CAROL	10/08/2019 05:51:48 AM	10/08/2019 05:51:48 AM			0
Q_IBMDK_QAIDR00004_INTERVAL_00001		IBMDK	Primary Key Constraint	CAROL	10/08/2019 05:49:40 AM	10/08/2019 05:49:40 AM			0
Q_IBMDK_QAIDR00005_INTERVAL_00001		IBMDK	Primary Key Constraint	CAROL	10/08/2019 05:49:40 AM	10/08/2019 05:49:40 AM			0
Q_IBMDK_QAIDR00006_INTERVAL_00001		IBMDK	Primary Key Constraint	CAROL	10/08/2019 05:49:55 AM	10/08/2019 05:49:55 AM			0
Q_IBMDK_QAIDR00009_INTERVAL_00001		IBMDK	Primary Key Constraint	CAROL	10/08/2019 05:51:52 AM	10/08/2019 05:51:52 AM			0
Q_IBMDK_QAIDR00015_INTERVAL_00001		IBMDK	Primary Key Constraint	CAROL	10/08/2019 05:52:19 AM	05/12/2022 03:45:11 PM			0
QAIDRJWIDX1_WATCH045	QAIDR00019	IBMDK	Index	CAROL	10/08/2019 05:52:25 AM	10/08/2019 05:52:30 AM			0
QAIDRJWIDX11_WATCH045	QAIDR00029	IBMDK	Index	CAROL	10/08/2019 05:52:56 AM	10/08/2019 05:52:56 AM		01/09/2023 10:23:48 AM	0
QAIDRJWIDX2_WATCH045	QAIDR00020	IBMDK	Index	CAROL	10/08/2019 05:52:30 AM	10/08/2019 05:52:35 AM			0
QAIDRJWIDX3_WATCH045	QAIDR00021	IBMDK	Index	CAROL	10/08/2019 05:52:35 AM	10/08/2019 05:52:40 AM			0
QAIDRJWIDX4_WATCH045	QAIDR00022	IBMDK	Index	CAROL	10/08/2019 05:52:40 AM	10/08/2019 05:52:45 AM			0
QAIDRJWIDX5_WATCH045	QAIDR00023	IBMDK	Index	CAROL	10/08/2019 05:52:45 AM	10/08/2019 05:52:50 AM			0
QAIDRJWIDX6_WATCH045	QAIDR00024	IBMDK	Index	CAROL	10/08/2019 05:52:50 AM	10/08/2019 05:52:55 AM			0
QAIDRJWIDX7_WATCH045	QAIDR00025	IBMDK	Index	CAROL	10/08/2019 05:52:55 AM	05/12/2022 03:45:15 PM			0
QAIDRJWIDX8_WATCH045	QAIDR00026	IBMDK	Index	CAROL	10/08/2019 05:52:55 AM	05/12/2022 03:45:15 PM			0
QAIDRJWIDX9_WATCH045	QAIDR00027	IBMDK	Index	CAROL	10/08/2019 05:52:55 AM	10/08/2019 05:52:55 AM			0
QAPYJWIJVS		IBMDK	Keyed Physical File	CAROL	10/08/2019 05:51:53 AM	05/12/2022 03:45:16 PM			0
QAPYJWINTI		IBMDK	Keyed Physical File	CAROL	07/05/2019 10:39:46 AM	07/05/2019 10:39:46 AM		01/09/2023 10:23:47 AM	0
QAPYJWJVM		IBMDK	Keyed Physical File	CAROL	07/05/2019 10:39:46 AM	05/12/2022 03:45:16 PM			0
QAPYJWJVTH		IBMDK	Keyed Physical File	CAROL	07/05/2019 10:39:46 AM	05/12/2022 03:45:16 PM			0
QAPYJWPRC		IBMDK	Keyed Physical File	CAROL	07/05/2019 10:39:46 AM	07/05/2019 10:39:47 AM		01/09/2023 10:23:48 AM	0
QAPYJWPROC		IBMDK	Keyed Physical File	CAROL	07/05/2019 10:39:47 AM	07/05/2019 10:39:47 AM			0
QAPYJWSQL		IBMDK	Keyed Physical File	CAROL	07/05/2019 10:39:47 AM	07/05/2019 10:39:47 AM			0
QAPYJWSQLH		IBMDK	Keyed Physical File	CAROL	07/05/2019 10:39:47 AM	07/05/2019 10:39:47 AM			0
QAPYJWSTK		IBMDK	Keyed Physical File	CAROL	07/05/2019 10:39:47 AM	07/05/2019 10:39:53 AM			0
QAPYJWSTS		IBMDK	Keyed Physical File	CAROL	07/05/2019 10:39:53 AM	07/05/2019 10:39:58 AM		01/09/2023 10:23:47 AM	0
QAPYJWSYS		IBMDK	Keyed Physical File	CAROL	07/05/2019 10:39:58 AM	07/05/2019 10:39:58 AM	01/09/2023 10:23:47 AM	01/09/2023 10:23:48 AM	6
QAPYJWTDE		IBMDK	Keyed Physical File	CAROL	07/05/2019 10:39:58 AM	07/05/2019 10:40:00 AM	01/09/2023 10:23:47 AM	01/09/2023 10:23:48 AM	6

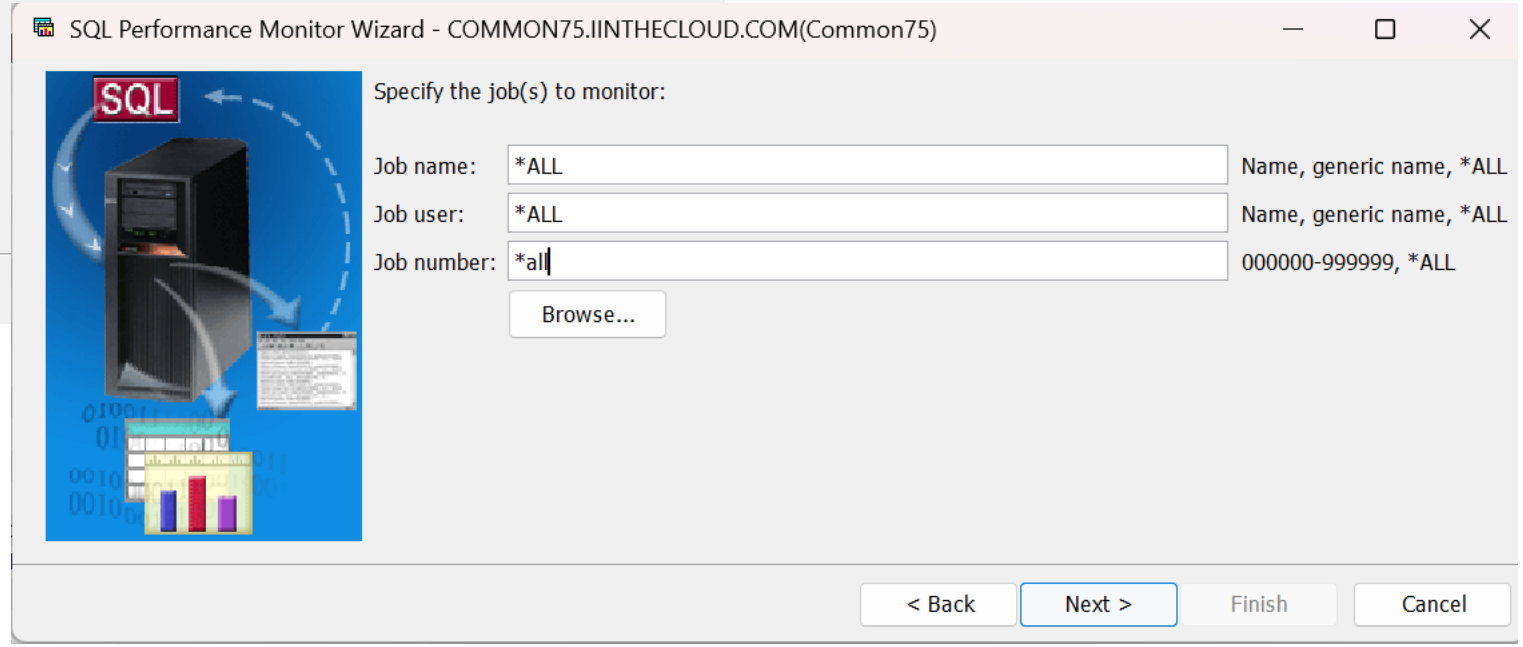
SQL Performance Center – Performance Monitor



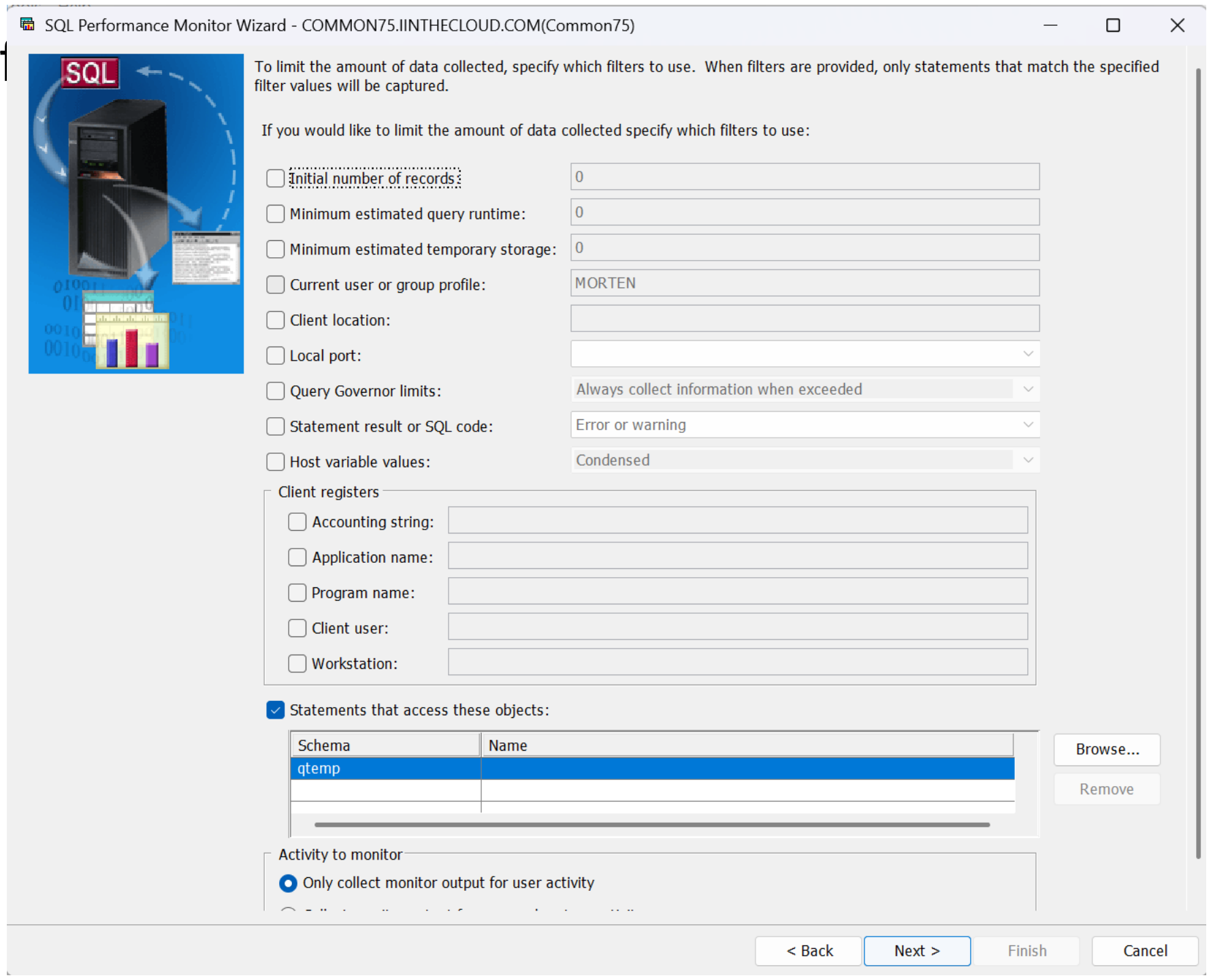


SQL Performance Center - Performance Monitor

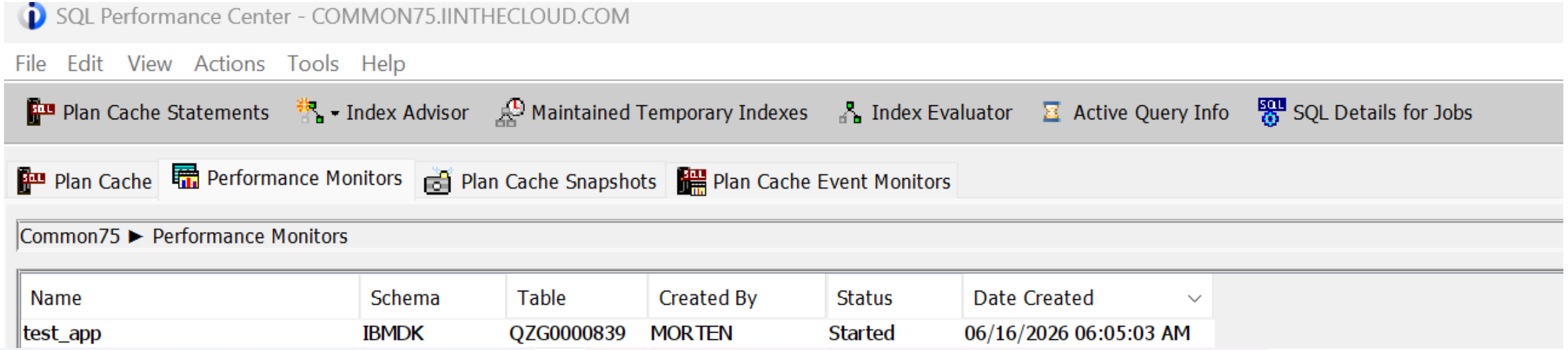


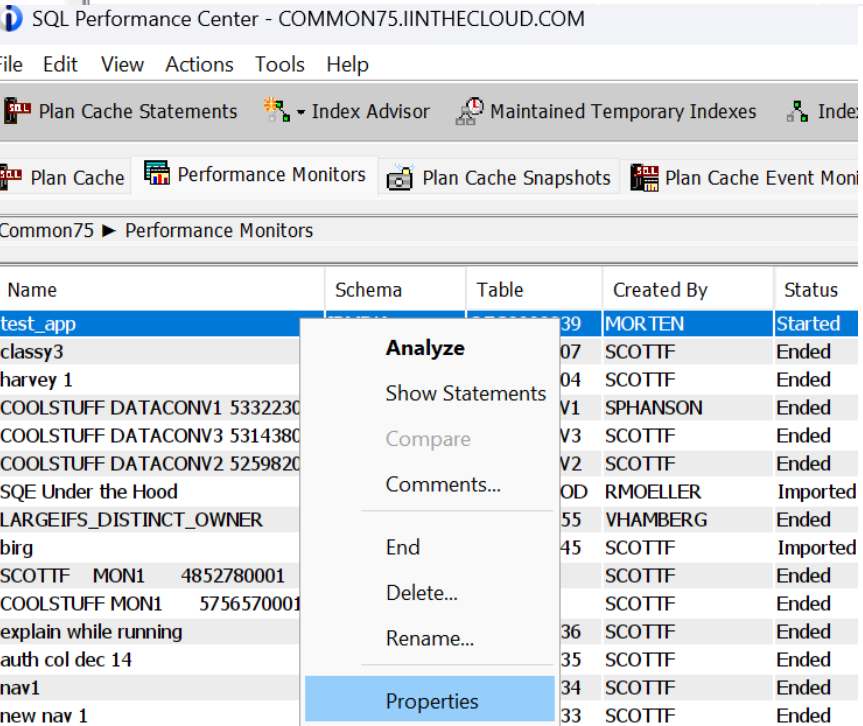


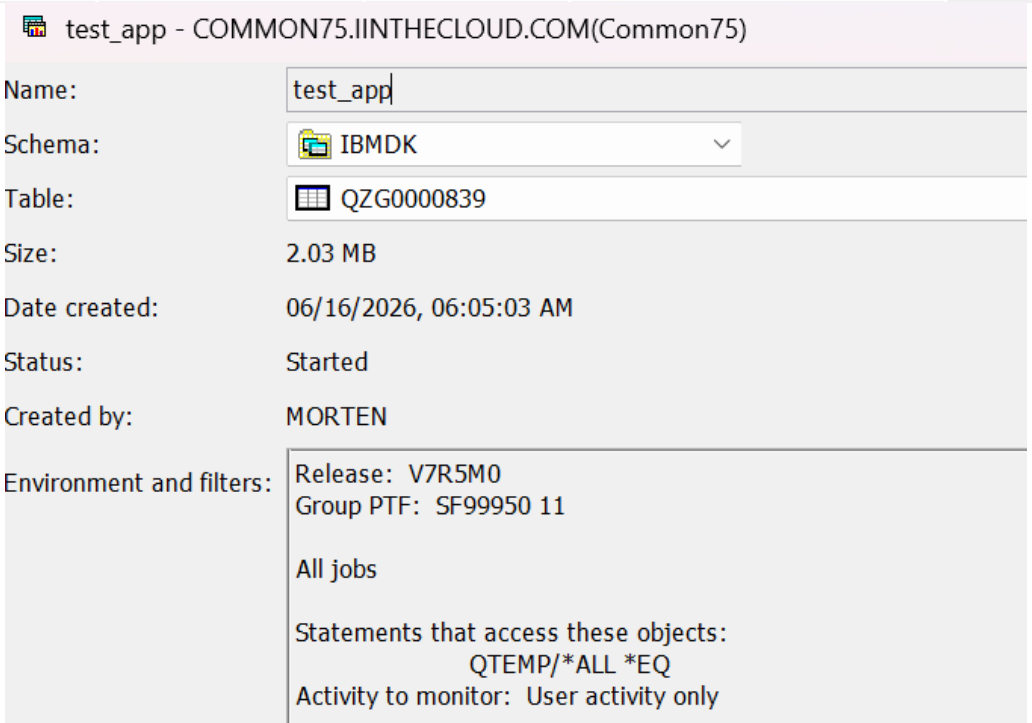
SQL Perf


SQL Performance Monitor Wizard - COMMON75.IINTHECLOUD.COM(Common75)
SQL
To limit the amount of data collected, specify which filters to use. When filters are provided, only statements that match the specified filter values will be captured.
If you would like to limit the amount of data collected specify which filters to use:
Initial number of records:
0
Minimum estimated query runtime:
0
Minimum estimated temporary storage:
0
Current user or group profile:
MORTEN
Client location:
Local port:
Query Governor limits:
Always collect information when exceeded
Statement result or SQL code:
Error or warning
Host variable values:
Condensed
Client registers
Accounting string:
Application name:
Program name:
Client user:
Workstation:
Statements that access these objects:
Schema
Name
qtemp
Browse...
Remove
Activity to monitor
Only collect monitor output for user activity
< Back
Next >
Finish
Cancel

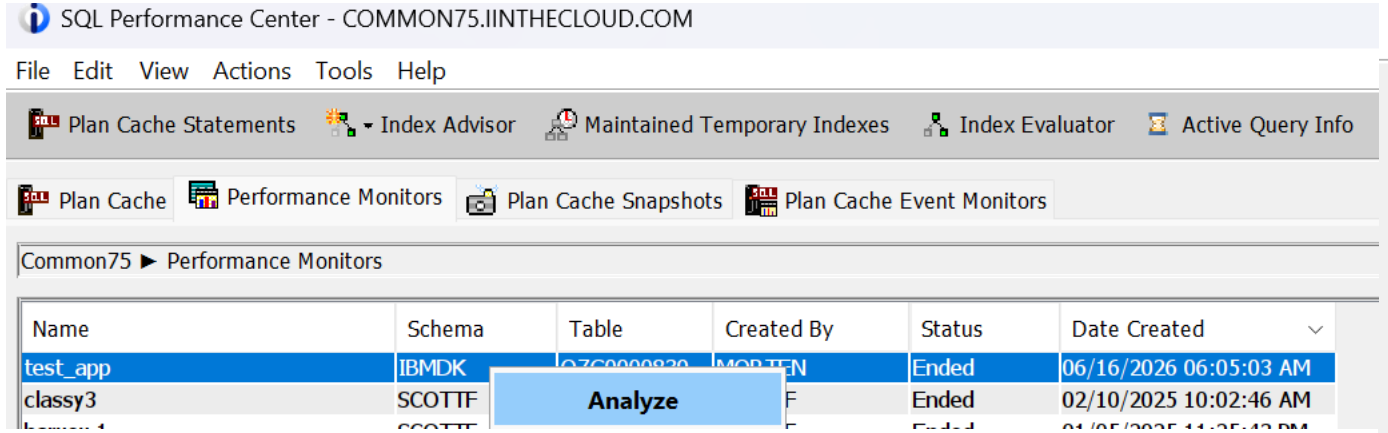
SQL Performance Center - Performance Monitor

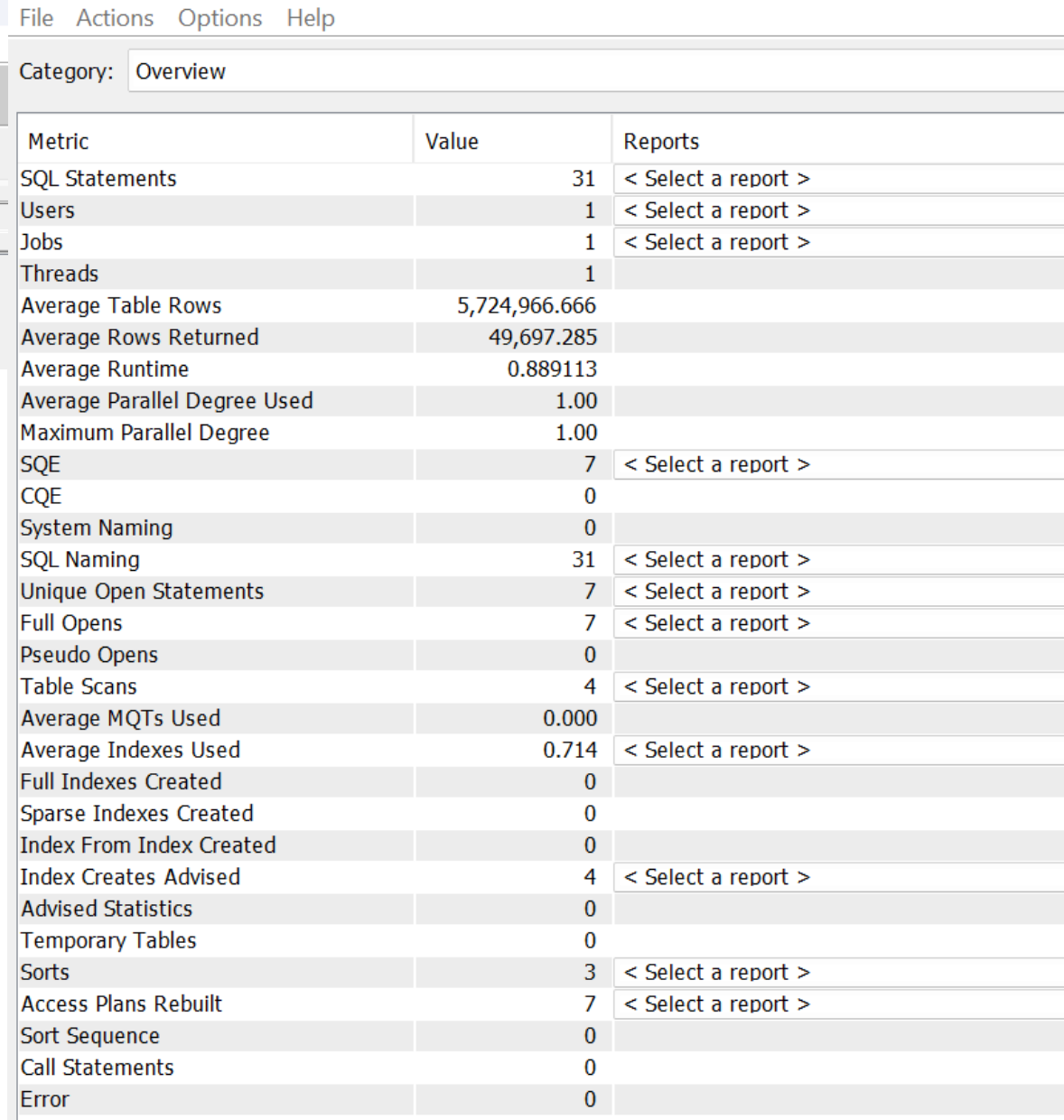




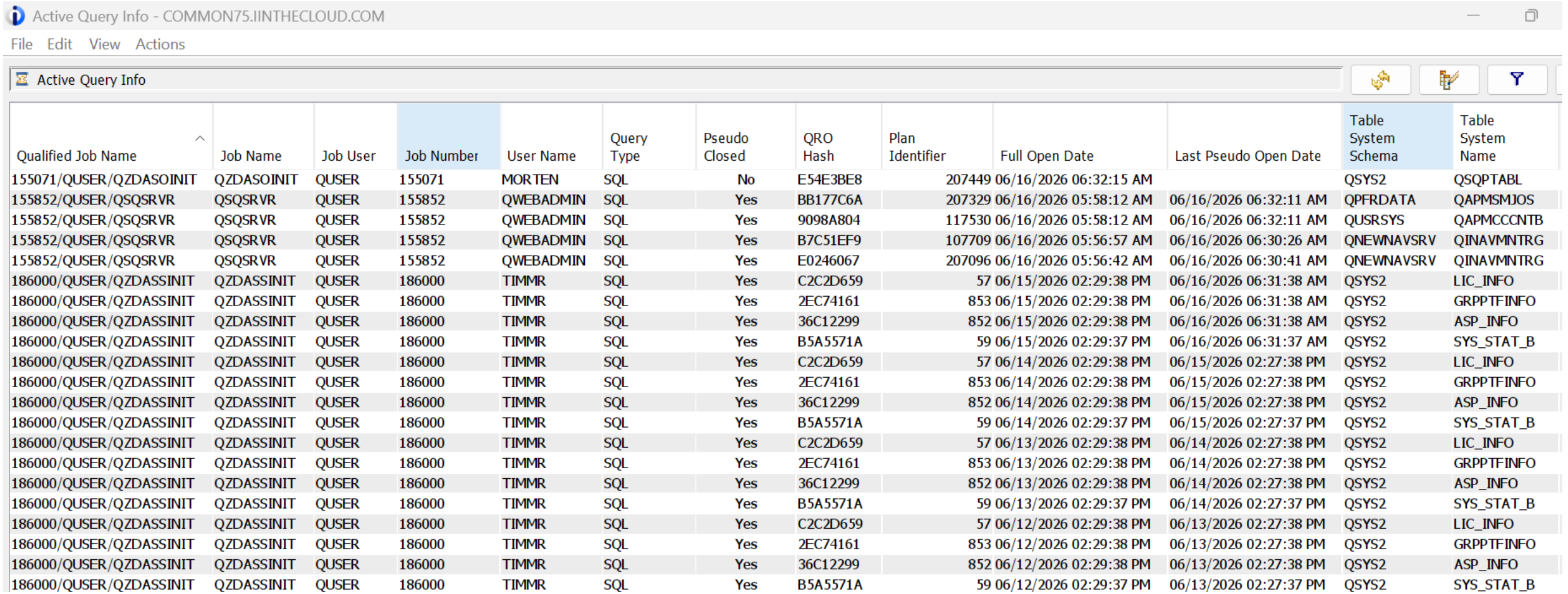


SQL Performance Center - Performance Monitor



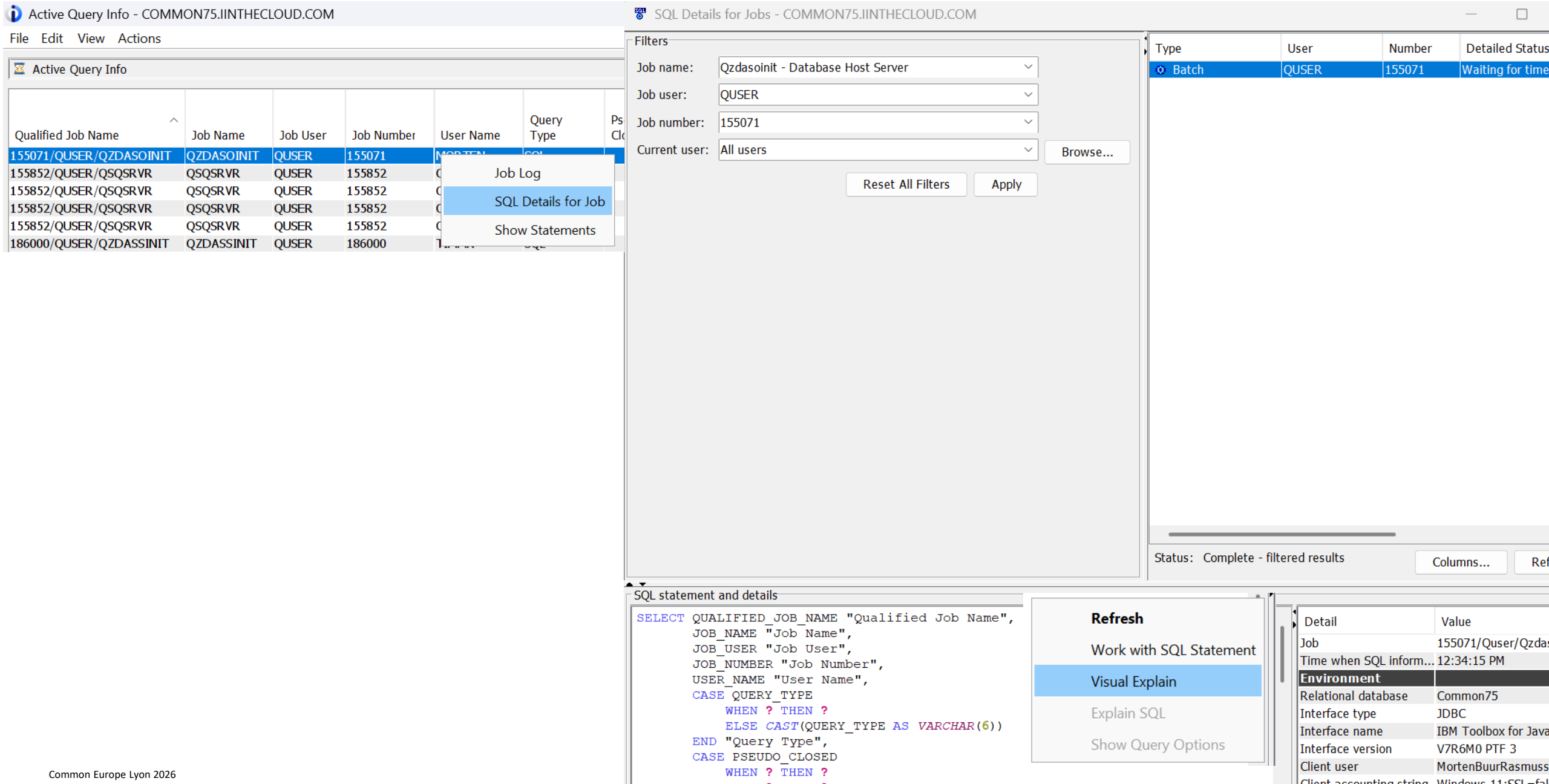


SQL Performance Center – Active Query Info

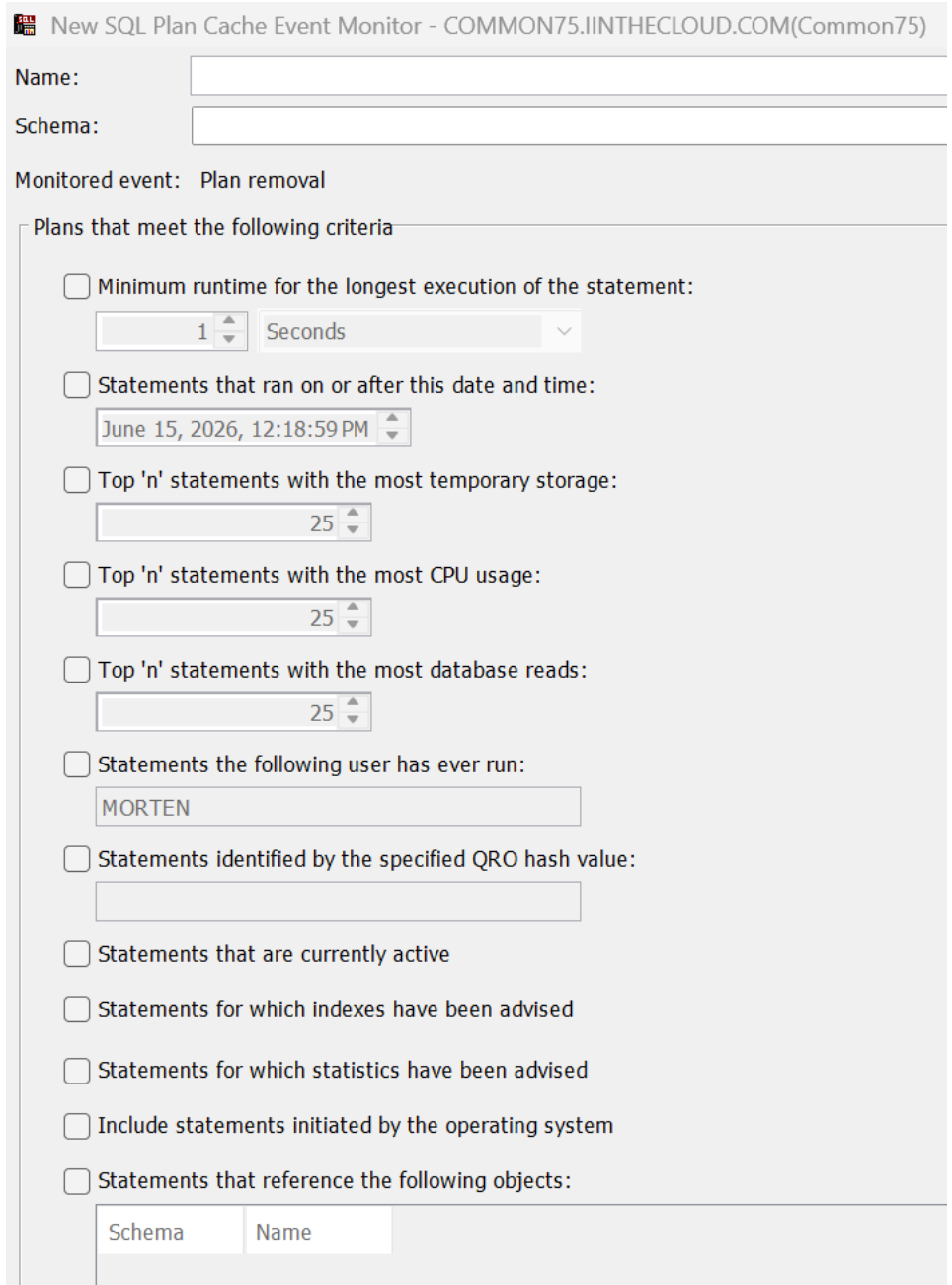


Qualified Job Name	Job Name	Job User	Job Number	User Name	Query Type	Pseudo Closed	QRO Hash	Plan Identifier	Full Open Date	Last Pseudo Open Date	Table System Schema	Table System Name
155071/QUSER/QZDASOINIT	QZDASOINIT	QUSER	155071	MORTEN	SQL	No	E54E3BE8	207449	06/16/2026 06:32:15 AM		QSYS2	QSQPTABL
155852/QUSER/QSQSRVR	QSQSRVR	QUSER	155852	QWEBADMIN	SQL	Yes	BB177C6A	207329	06/16/2026 05:58:12 AM	06/16/2026 06:32:11 AM	QPFRDATA	QAPMSMJOS
155852/QUSER/QSQSRVR	QSQSRVR	QUSER	155852	QWEBADMIN	SQL	Yes	9098A804	117530	06/16/2026 05:58:12 AM	06/16/2026 06:32:11 AM	QUSRSYS	QAPMCCCNTB
155852/QUSER/QSQSRVR	QSQSRVR	QUSER	155852	QWEBADMIN	SQL	Yes	B7C51EF9	107709	06/16/2026 05:56:57 AM	06/16/2026 06:30:26 AM	QNEWNAVSRV	QINAVMNTRG
155852/QUSER/QSQSRVR	QSQSRVR	QUSER	155852	QWEBADMIN	SQL	Yes	E0246067	207096	06/16/2026 05:56:42 AM	06/16/2026 06:30:41 AM	QNEWNAVSRV	QINAVMNTRG
186000/QUSER/QZDASSINIT	QZDASSINIT	QUSER	186000	TIMMR	SQL	Yes	C2C2D659	57	06/15/2026 02:29:38 PM	06/16/2026 06:31:38 AM	QSYS2	LIC_INFO
186000/QUSER/QZDASSINIT	QZDASSINIT	QUSER	186000	TIMMR	SQL	Yes	2EC74161	853	06/15/2026 02:29:38 PM	06/16/2026 06:31:38 AM	QSYS2	GRPPTFINFO
186000/QUSER/QZDASSINIT	QZDASSINIT	QUSER	186000	TIMMR	SQL	Yes	36C12299	852	06/15/2026 02:29:38 PM	06/16/2026 06:31:38 AM	QSYS2	ASP_INFO
186000/QUSER/QZDASSINIT	QZDASSINIT	QUSER	186000	TIMMR	SQL	Yes	B5A5571A	59	06/15/2026 02:29:37 PM	06/16/2026 06:31:37 AM	QSYS2	SYS_STAT_B
186000/QUSER/QZDASSINIT	QZDASSINIT	QUSER	186000	TIMMR	SQL	Yes	C2C2D659	57	06/14/2026 02:29:38 PM	06/15/2026 02:27:38 PM	QSYS2	LIC_INFO
186000/QUSER/QZDASSINIT	QZDASSINIT	QUSER	186000	TIMMR	SQL	Yes	2EC74161	853	06/14/2026 02:29:38 PM	06/15/2026 02:27:38 PM	QSYS2	GRPPTFINFO
186000/QUSER/QZDASSINIT	QZDASSINIT	QUSER	186000	TIMMR	SQL	Yes	36C12299	852	06/14/2026 02:29:38 PM	06/15/2026 02:27:38 PM	QSYS2	ASP_INFO
186000/QUSER/QZDASSINIT	QZDASSINIT	QUSER	186000	TIMMR	SQL	Yes	B5A5571A	59	06/14/2026 02:29:37 PM	06/15/2026 02:27:37 PM	QSYS2	SYS_STAT_B
186000/QUSER/QZDASSINIT	QZDASSINIT	QUSER	186000	TIMMR	SQL	Yes	C2C2D659	57	06/13/2026 02:29:38 PM	06/14/2026 02:27:38 PM	QSYS2	LIC_INFO
186000/QUSER/QZDASSINIT	QZDASSINIT	QUSER	186000	TIMMR	SQL	Yes	2EC74161	853	06/13/2026 02:29:38 PM	06/14/2026 02:27:38 PM	QSYS2	GRPPTFINFO
186000/QUSER/QZDASSINIT	QZDASSINIT	QUSER	186000	TIMMR	SQL	Yes	36C12299	852	06/13/2026 02:29:38 PM	06/14/2026 02:27:38 PM	QSYS2	ASP_INFO
186000/QUSER/QZDASSINIT	QZDASSINIT	QUSER	186000	TIMMR	SQL	Yes	B5A5571A	59	06/13/2026 02:29:37 PM	06/14/2026 02:27:37 PM	QSYS2	SYS_STAT_B
186000/QUSER/QZDASSINIT	QZDASSINIT	QUSER	186000	TIMMR	SQL	Yes	C2C2D659	57	06/12/2026 02:29:38 PM	06/13/2026 02:27:38 PM	QSYS2	LIC_INFO
186000/QUSER/QZDASSINIT	QZDASSINIT	QUSER	186000	TIMMR	SQL	Yes	2EC74161	853	06/12/2026 02:29:38 PM	06/13/2026 02:27:38 PM	QSYS2	GRPPTFINFO
186000/QUSER/QZDASSINIT	QZDASSINIT	QUSER	186000	TIMMR	SQL	Yes	36C12299	852	06/12/2026 02:29:38 PM	06/13/2026 02:27:38 PM	QSYS2	ASP_INFO
186000/QUSER/QZDASSINIT	QZDASSINIT	QUSER	186000	TIMMR	SQL	Yes	B5A5571A	59	06/12/2026 02:29:37 PM	06/13/2026 02:27:37 PM	QSYS2	SYS_STAT_B

SQL Performance Center – Active Query Info

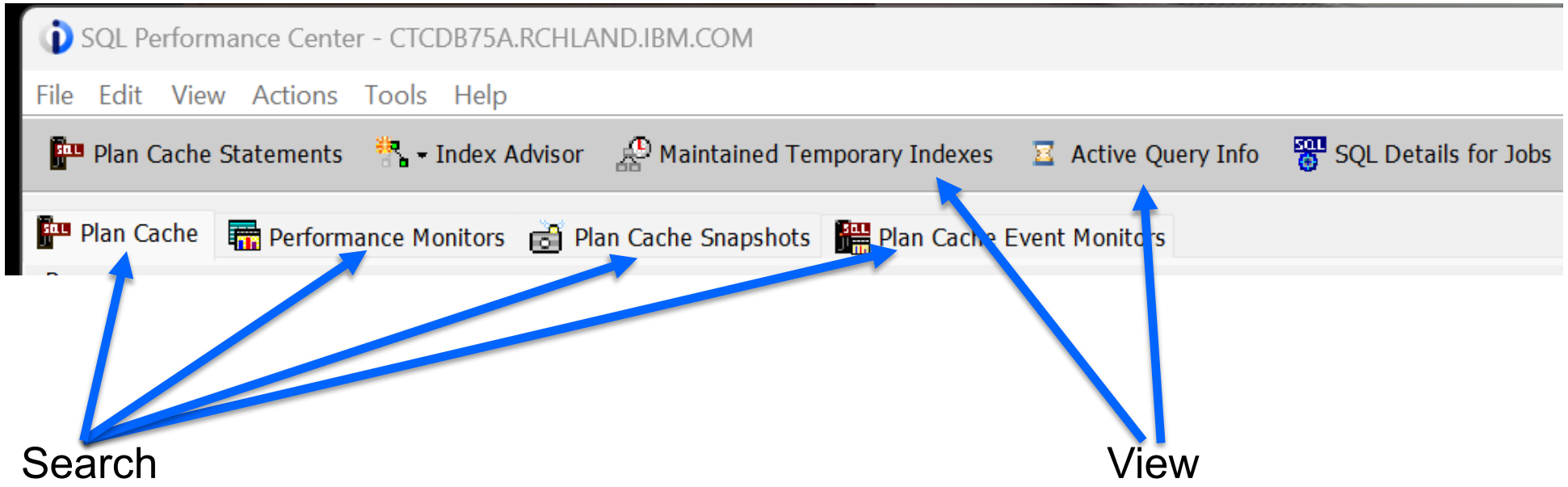


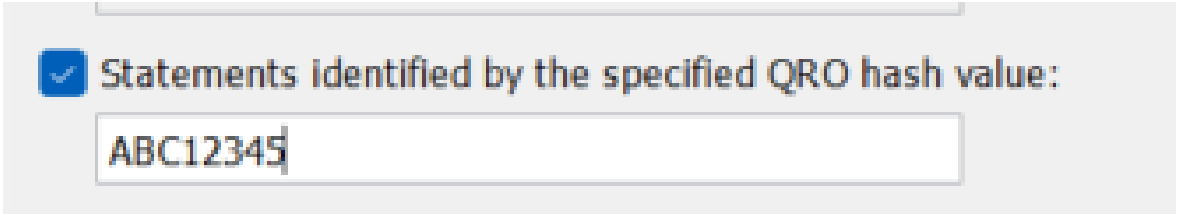
SQL Performance Center – Plan Cache event Monitor



ACS – QRO Hash search

QRO Hashes can be viewed or searched from everywhere in ACS





SQL Performance Center – Plan Cache Snapshots

- The Plan Cache is important to capture, but why do it manually!
- It can be done daily or weekly. The following simple procedure can be used to dump a Plan Cache Snapshot to the library SNAPSHOTS:

```
CREATE OR REPLACE PROCEDURE MYLIB.DUMP_PC_SNAPSHOT()
LANGUAGE SQL
BEGIN
DECLARE SNAP_NAME VARCHAR(10);
SET SNAP_NAME = 'PCS' CONCAT JULIAN_DAY(current date);
CALL QSYS2.DUMP_PLAN_CACHE('SNAPSHOTS', SNAP_NAME);
END;
```

- If you want to schedule it to run each Sunday morning at 2am, you can submit like this:

```
SBMJOB CMD(RUNSQL SQL('call MYLIB.DUMP_PC_SNAPSHOT()') COMMIT(*NONE)
NAMING(*SQL)) SCDDATE(*SUN) SCDTIME(020000)
```

Essential performance data to collect

- Collection Service 24/7 with 5 minutes interval
- Job Watcher 24/7 or what the business decide
- Plan Cache Snapshots daily, weekly or what the business decide

- On top of the standard days, it should be done before application update or OS update

- The information are useful for you to investigate differences

- IBM Support and the business partner can better support you with the data.

- If you do not collect the data, it can be difficult to find the reasons for performance differences. What about an example about that!

Key Takeaways

- ACS is a powerful free tool for IBM i SQL performance analysis and should be part of every admin and developer’s toolbox.
- SQL Plan Cache and DB Monitor provide valuable insight into how queries behave and where time is being spent.
- Visual Explain helps you understand access plans and makes it easier to spot inefficiencies in query execution.
- Good performance analysis starts with the right data and a structured approach to interpreting it.
- Small changes can deliver quick wins — better indexing, query tuning, and smarter analysis can significantly improve SQL performance.

Thank You!