4 in 1
BIF Usage
Index Maintenance Costs
Quiet Times
Audit

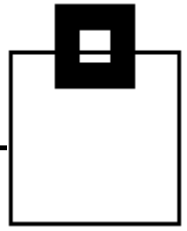
Roy Boxwell

SOFTWARE ENGINEERING GmbH

&

SEGUS Inc

AGENDA



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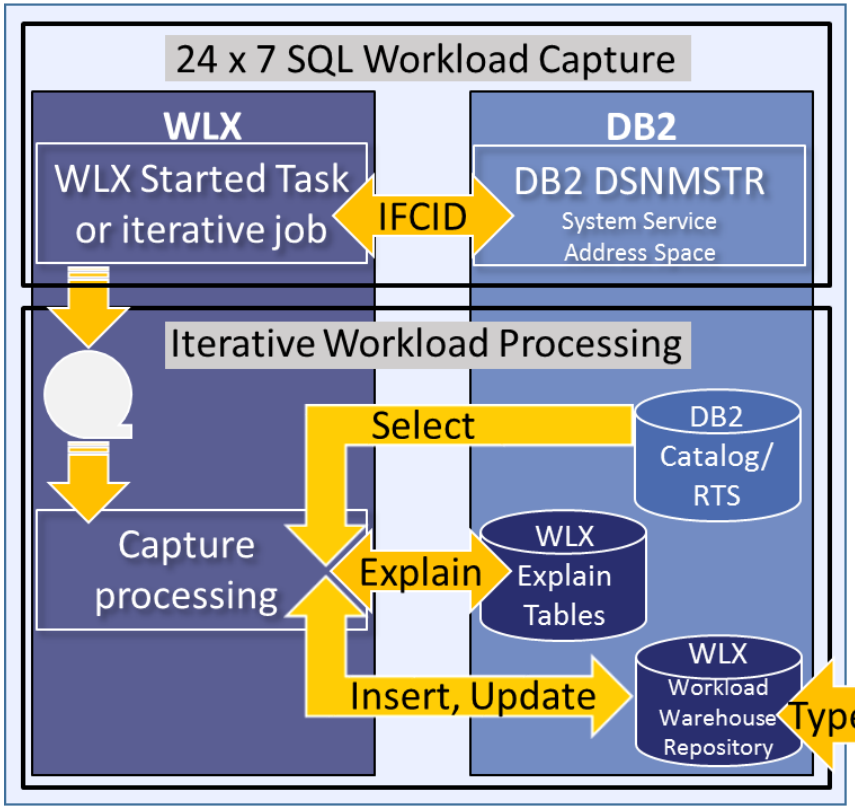
WLX - How it works

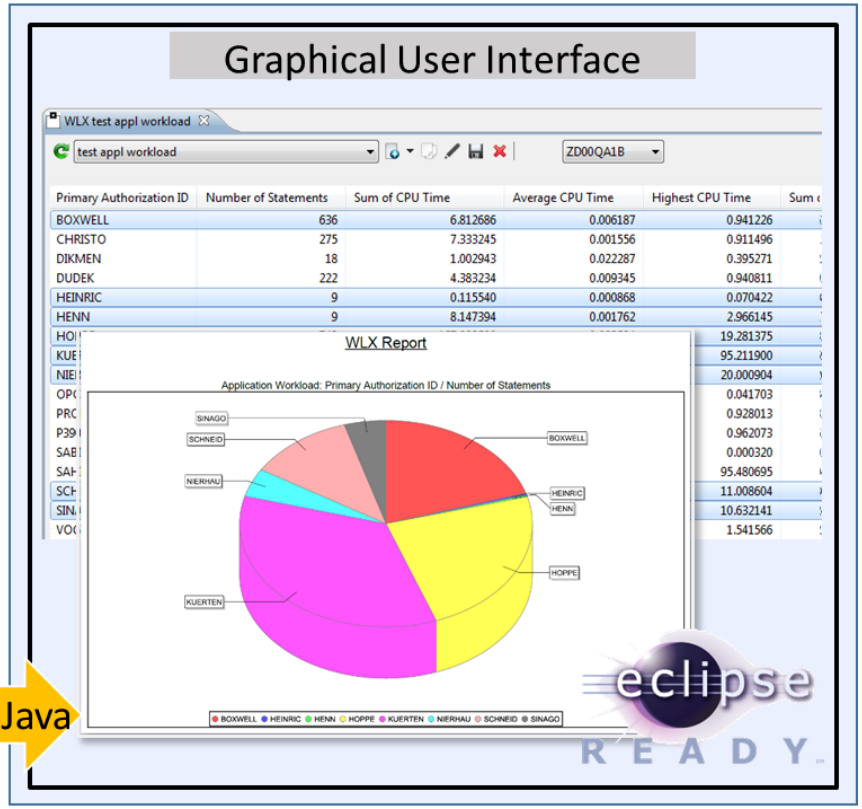
Captures the hard to get SQLs, even the ones that disappear …

Mainframe Engine



Type 4 Java

Workstation Engine



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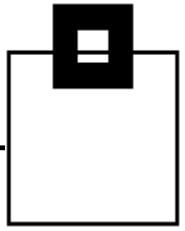

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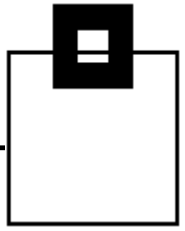

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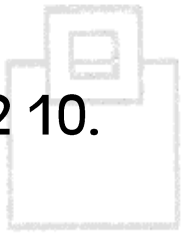

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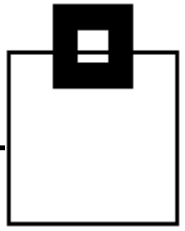

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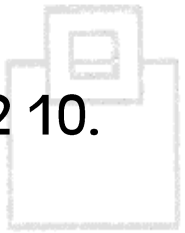

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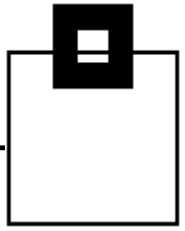

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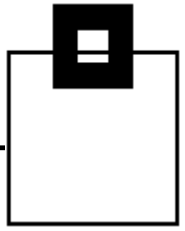

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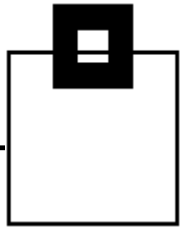

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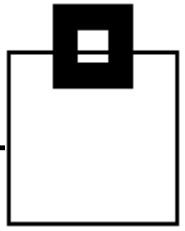
Then they discovered TRIM…so BIF_COMPATIBILITY got a new value: V9_TRIM for LTRIM, RTRIM, and STRIP which also included all of the above…

BIF Usage - Fixes



BIF: Built-In Function: CHAR, VARCHAR, SPACE etc.

Two new SCHEMAs: SYSCOMPAT_V9 and SYSCURRENT (Just for CHAR, VARCHAR and all the TRIM stuff. They must be added before SYSIBM in the path of course!)

DB2 11: APPLCOMPAT – New ZPARM introduced.

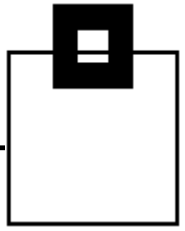
V10R1 after migration

V11R1 after install

If set to V10R1 then DB2 10 NFM behavior is guaranteed for the next two releases. So in DB2 13 it will all go horribly wrong…That's about seven years from now!

DB2 11: Two new BIF's - CHAR9 and VARCHAR9.

BIF Usage - Fixes



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Now at this point everyone agreed, well at least Roy, that it was getting pretty silly. So then the IFCID 366 was born. This IFCID is output whenever DB2 detects a *possible* change of behavior from the current release to the next release.

Within this IFCID are a bunch of fields (for the full details please look in your <db2hlq>.SDSNMACS(DSNDQW05) member) including a QW0366FN field that is a number (ICI – Incompatible Change Indicator) that started at 1 and went to 3 with the initial version. A “1” meant a CHAR decimal problem, a “2” meant a VARCHAR decimal problem, and a “3” meant a TIMESTAMP problem.

BIF Usage - Fixes

BIF: Built-In Function: CHAR, VARCHAR, SPACE etc.

Now it has 10 numbers for DB2 10 and 17(!) for DB2 11.

People also started getting lots of 366's and so the 376 was born, but only for DB2 11. This is an aggregated version of the 366.

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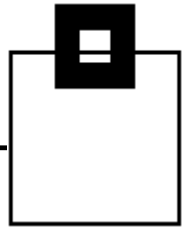

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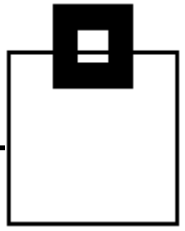

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This was "sub-optimal"…

BIF Usage - Fixed!

BIF: Built-In Function: CHAR, VARCHAR, SPACE etc.

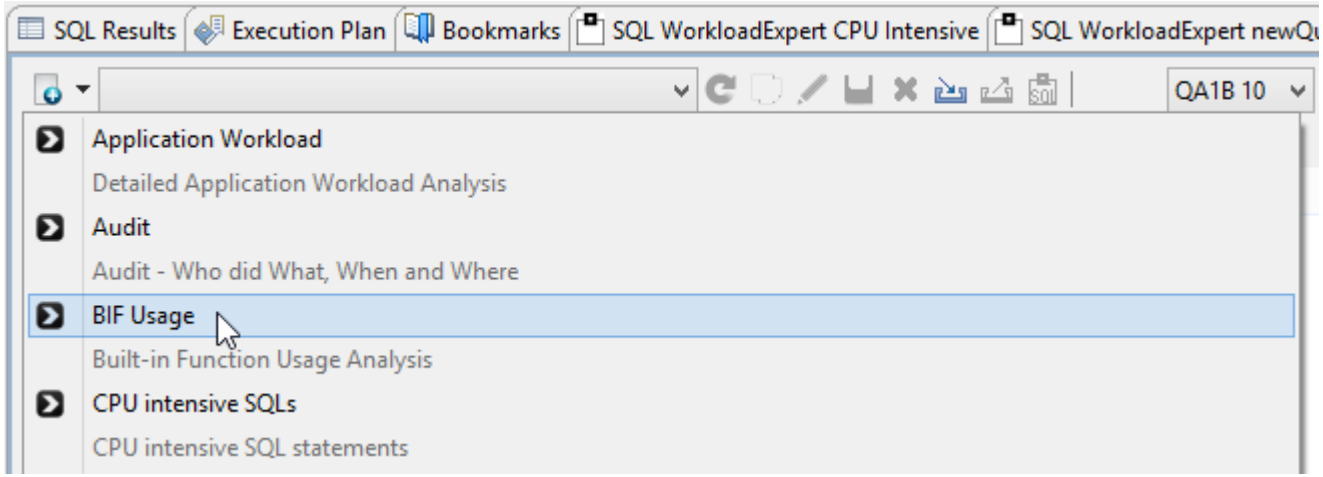
With SQL WorkloadExpert you can easily capture
all of the DSC and
all of the Static SQL (SSC) and
all of the 366's or 376's

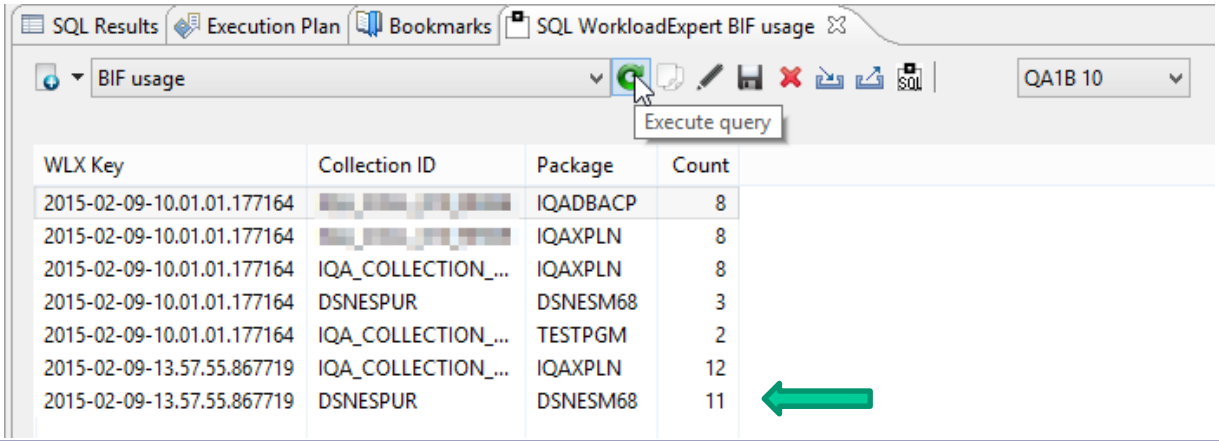
So that you get all the data you need at the time you need it all in one place.

Neat huh?

BIF Usage

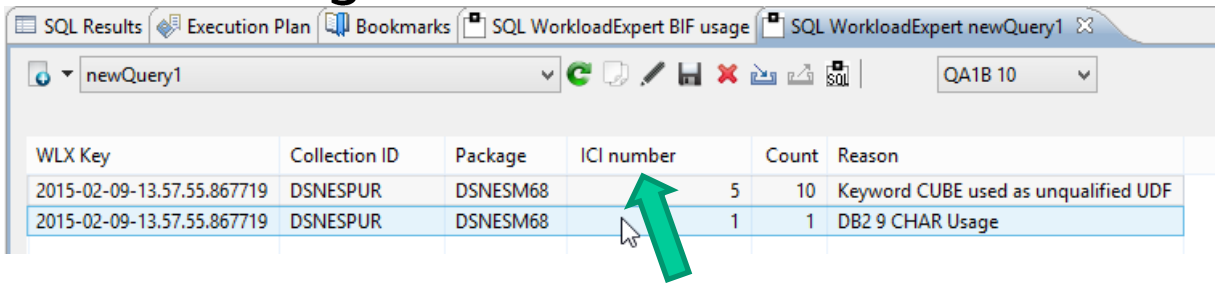
In SQL WorkloadExpert just select the BIF Usage:

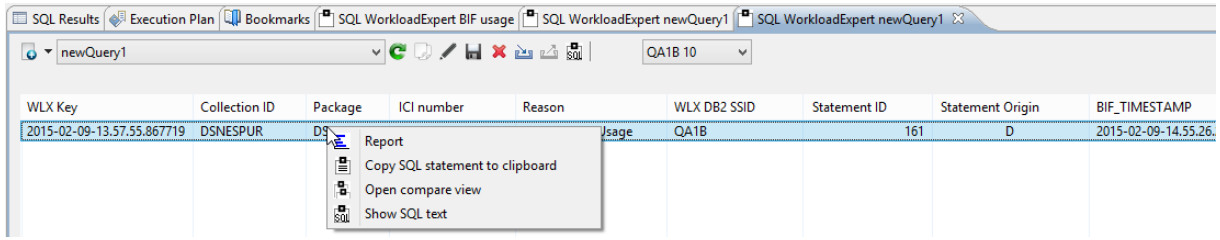


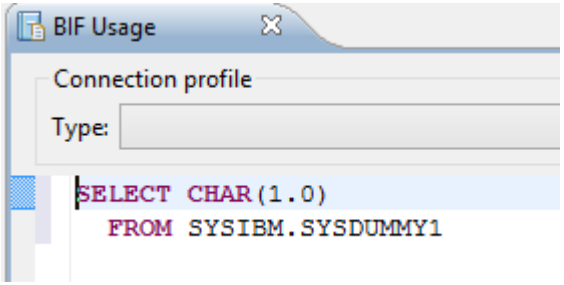


BIF Usage

Then drilling on down:







Yes indeed - a Decimal value!

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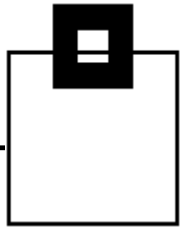

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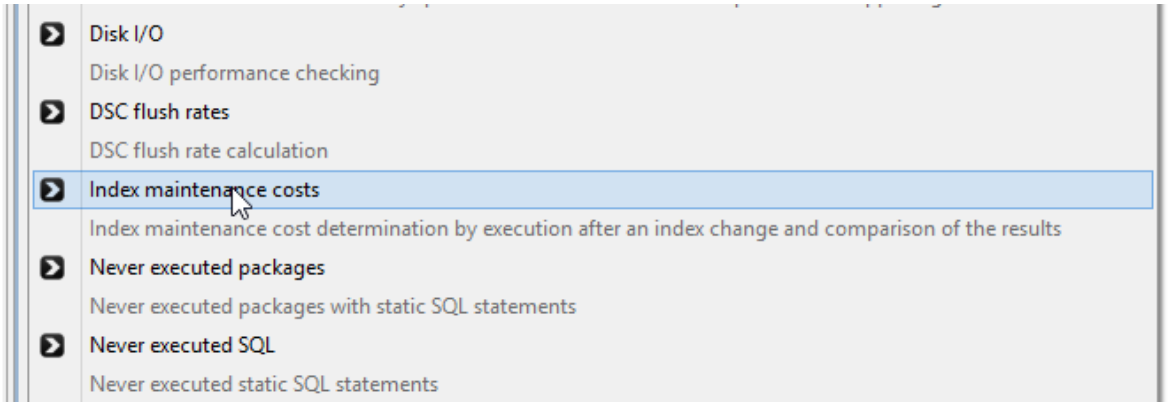
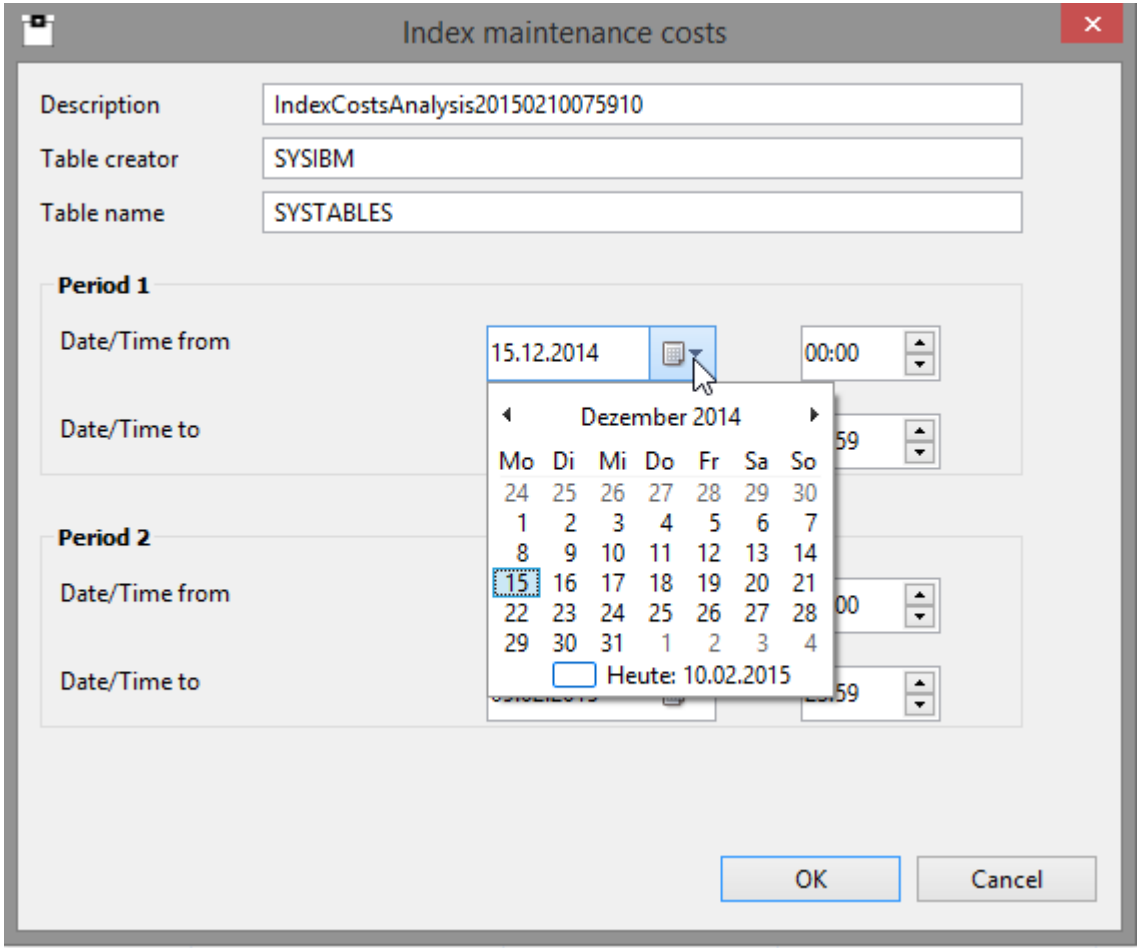
Index Maintenance Costs

Question: Does the index that you have recently created for performance reasons actually have a systemic impact or not?



Index Maintenance Costs

Give the Table Name and the date ranges:



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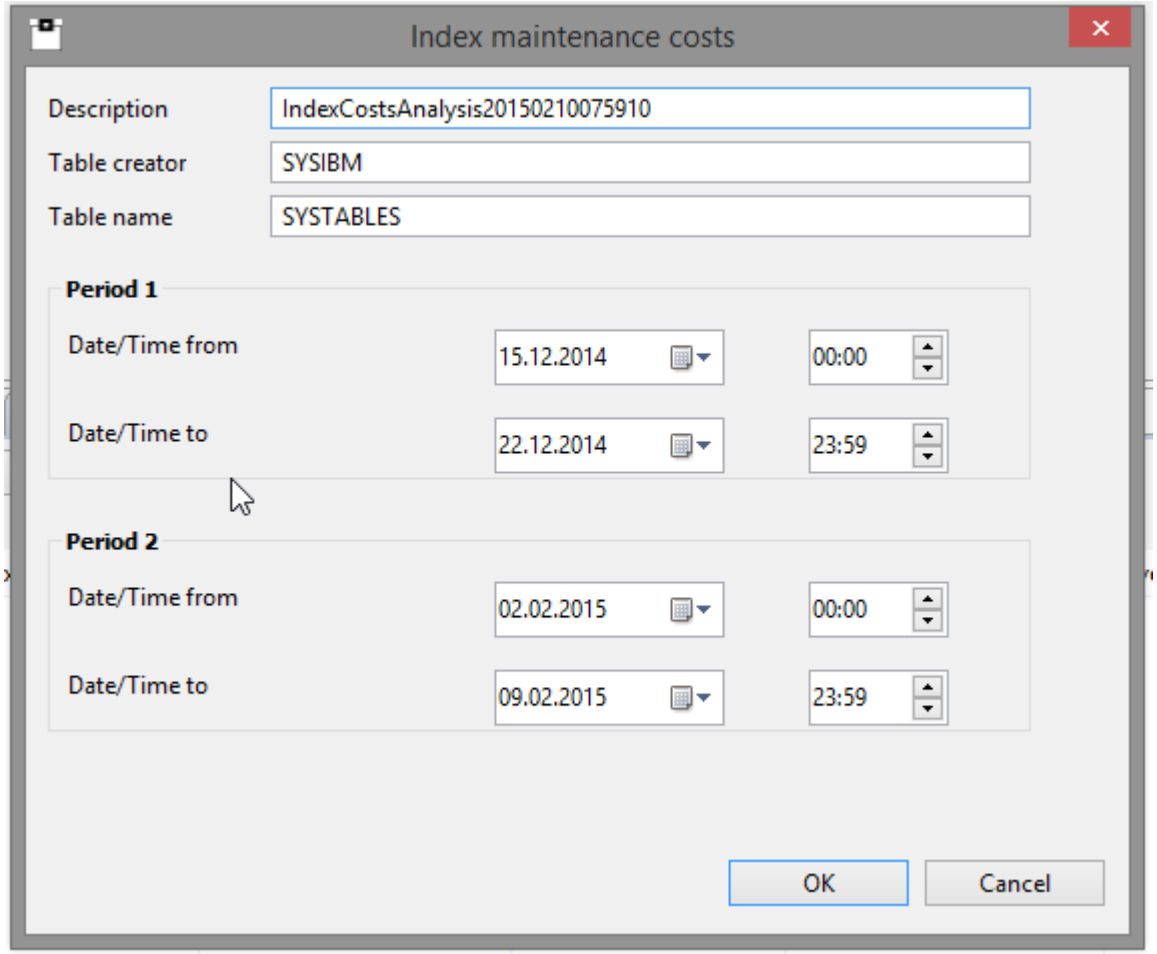
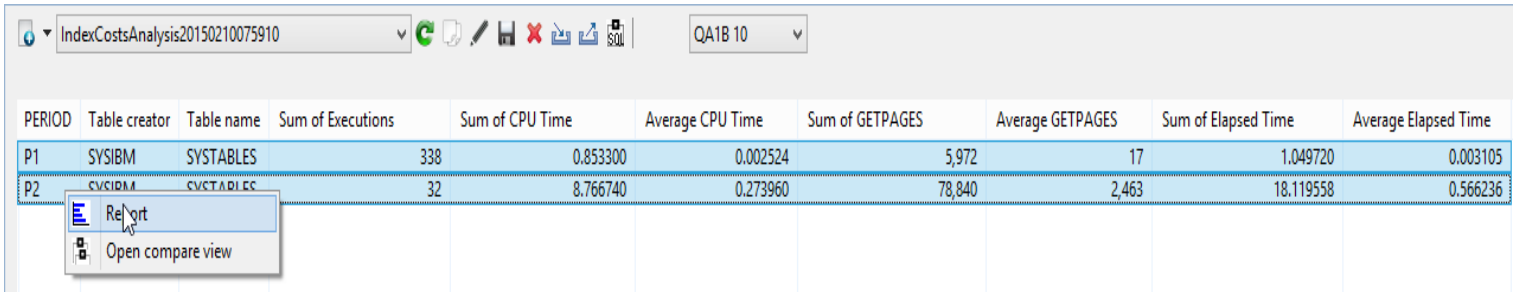


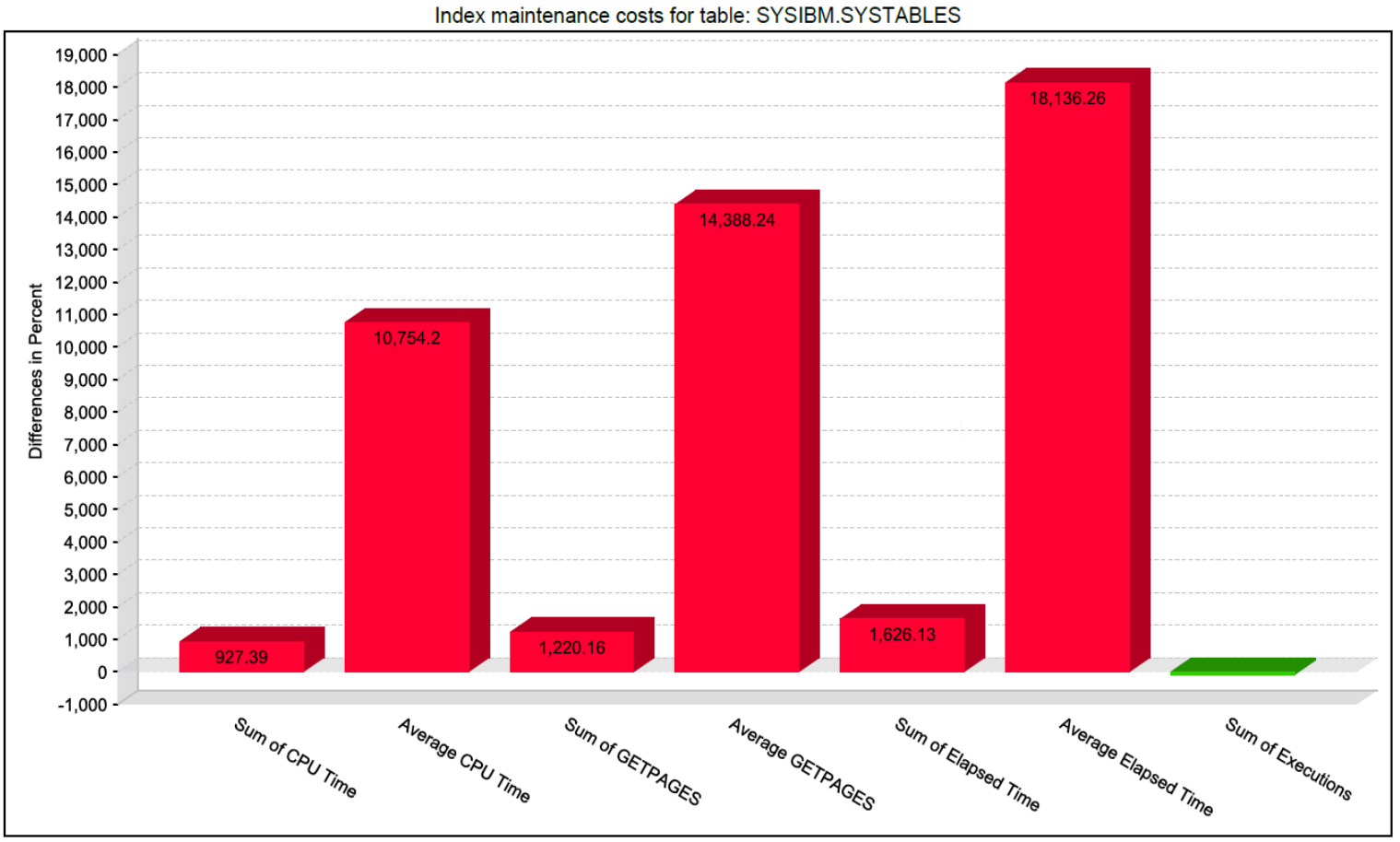
Index Maintenance Costs

Then select the report option in the context menu:



Index Maintenance Costs

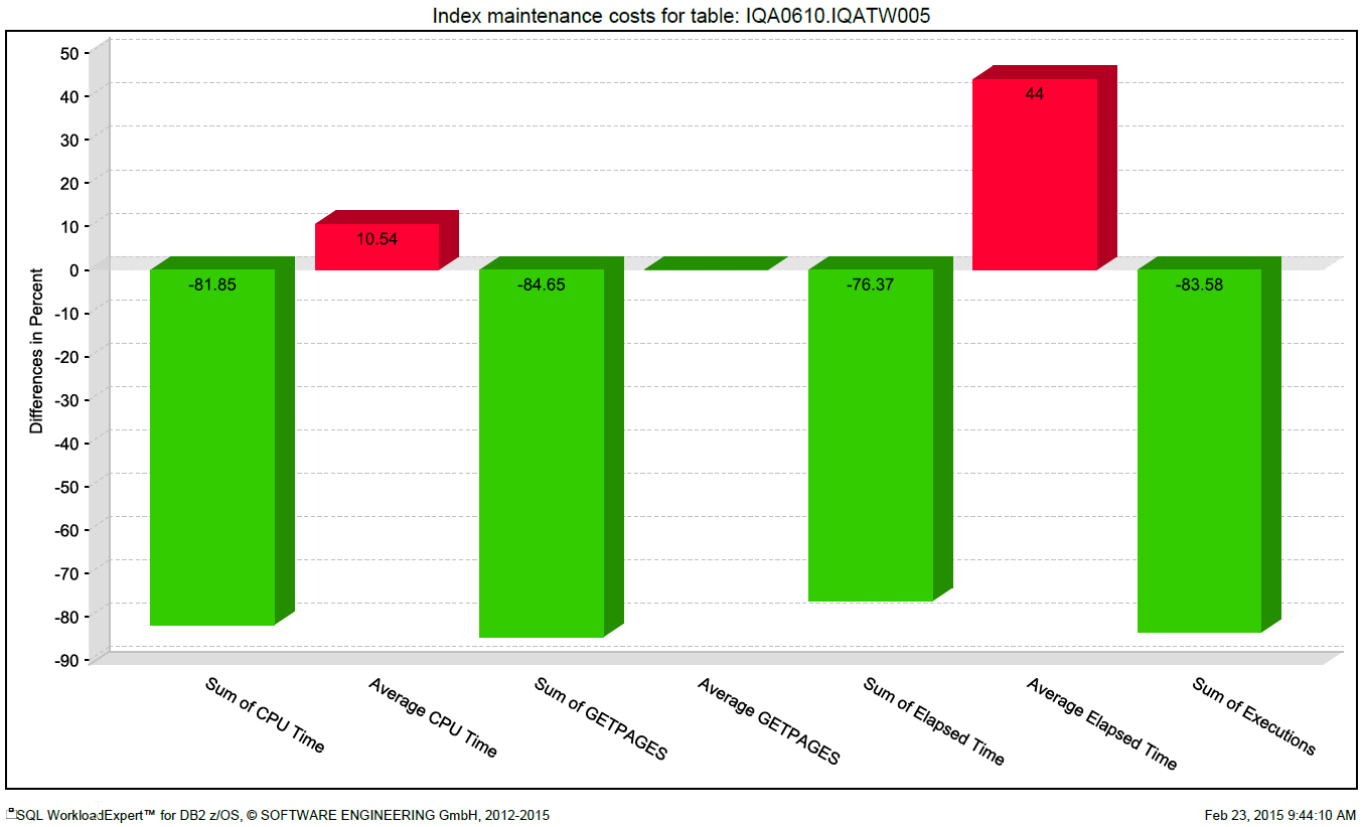
Then you see the result:



Index Maintenance Costs

Compare KPIs before and after Index creation. Especially twinned with Virtual Index usage this is a real winner!

WLX Report



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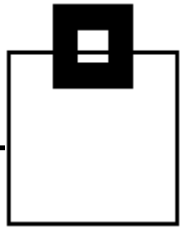

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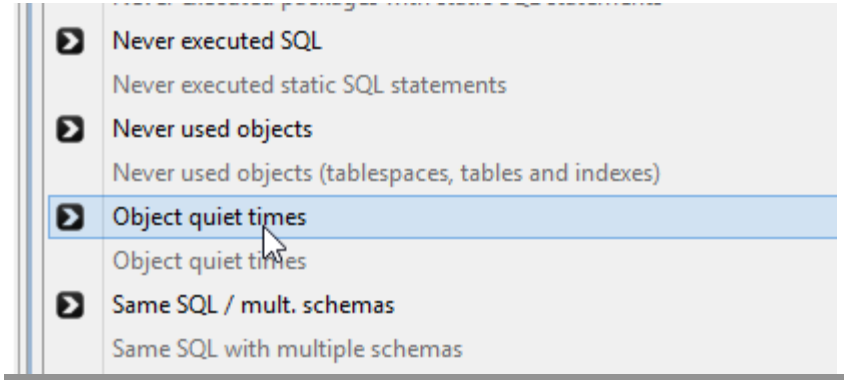

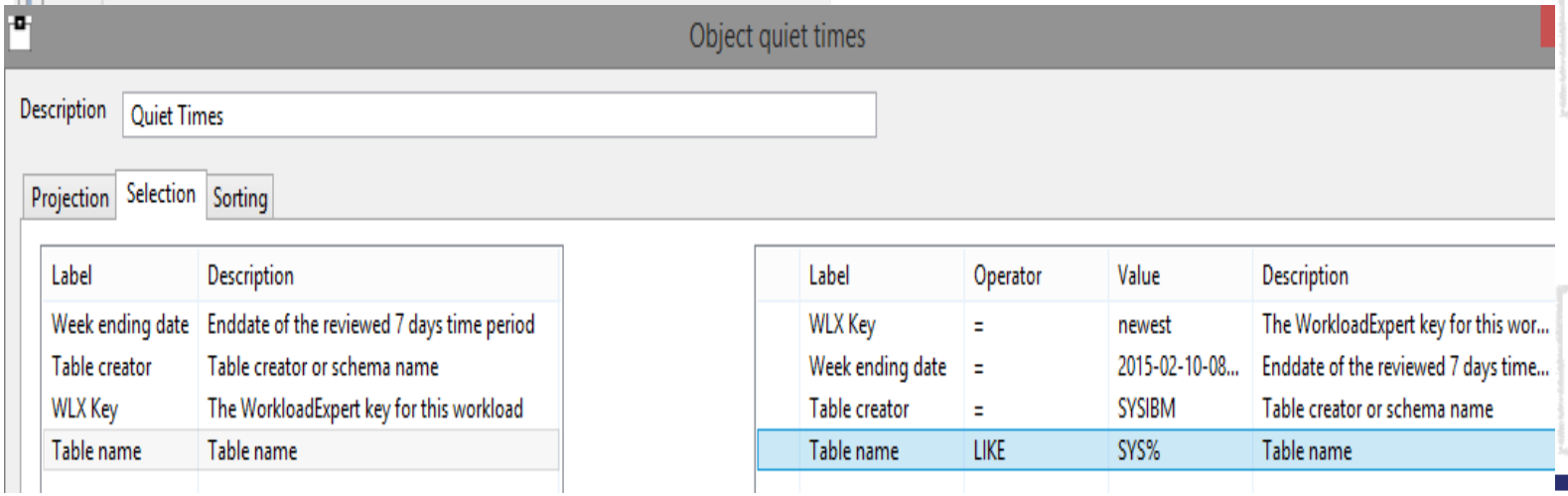

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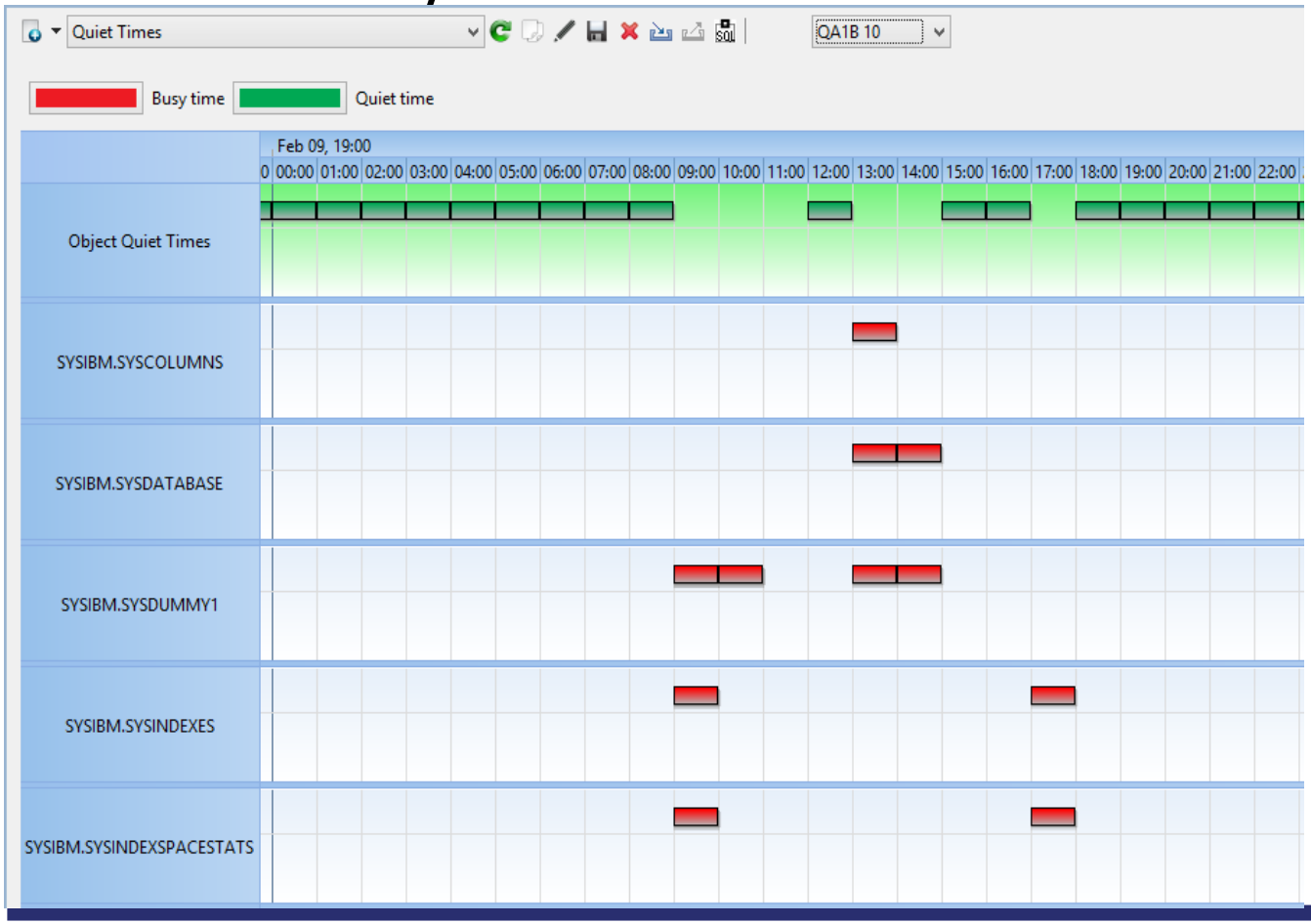

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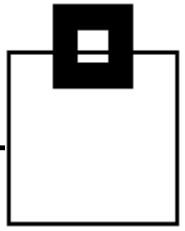

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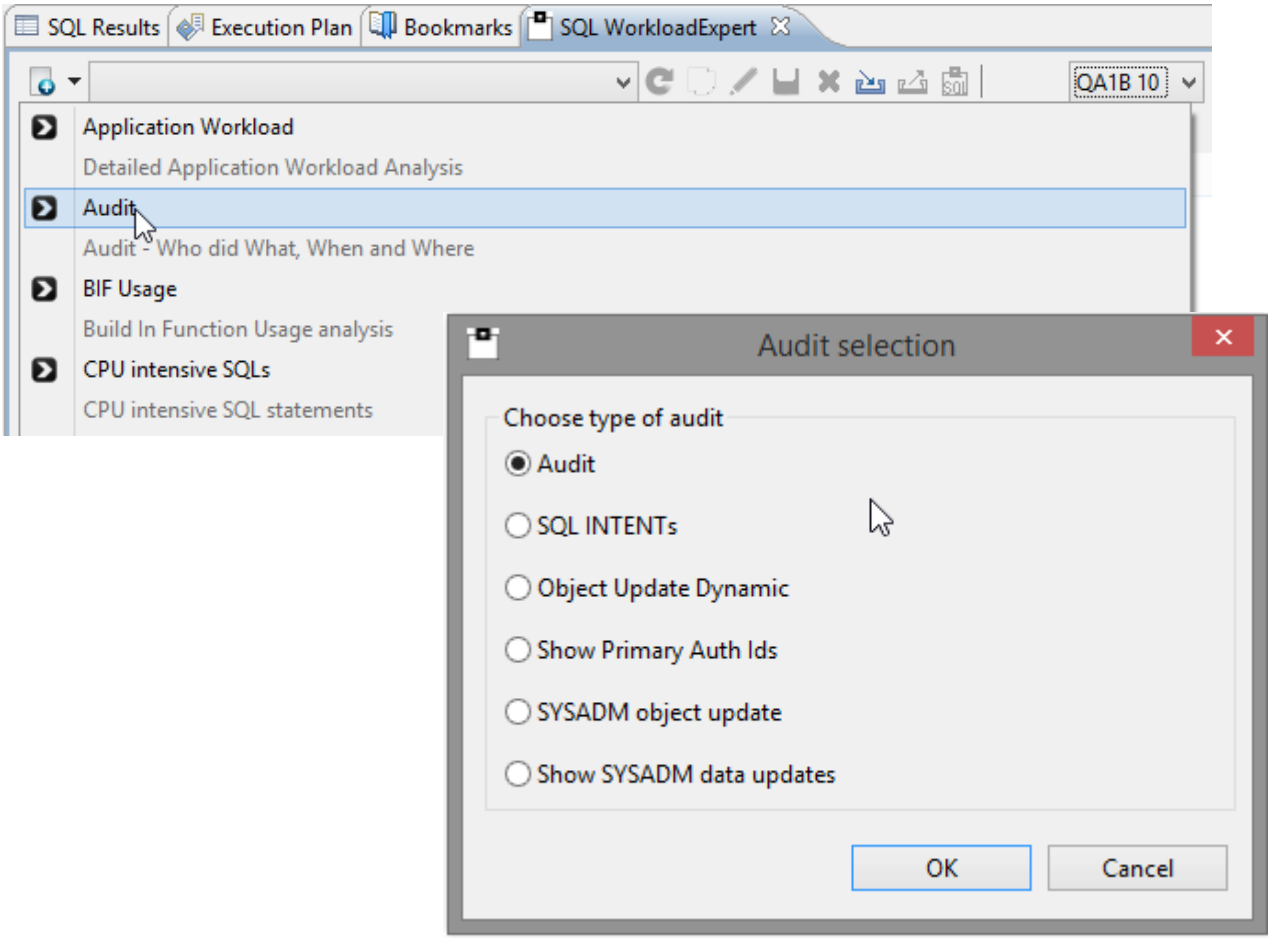

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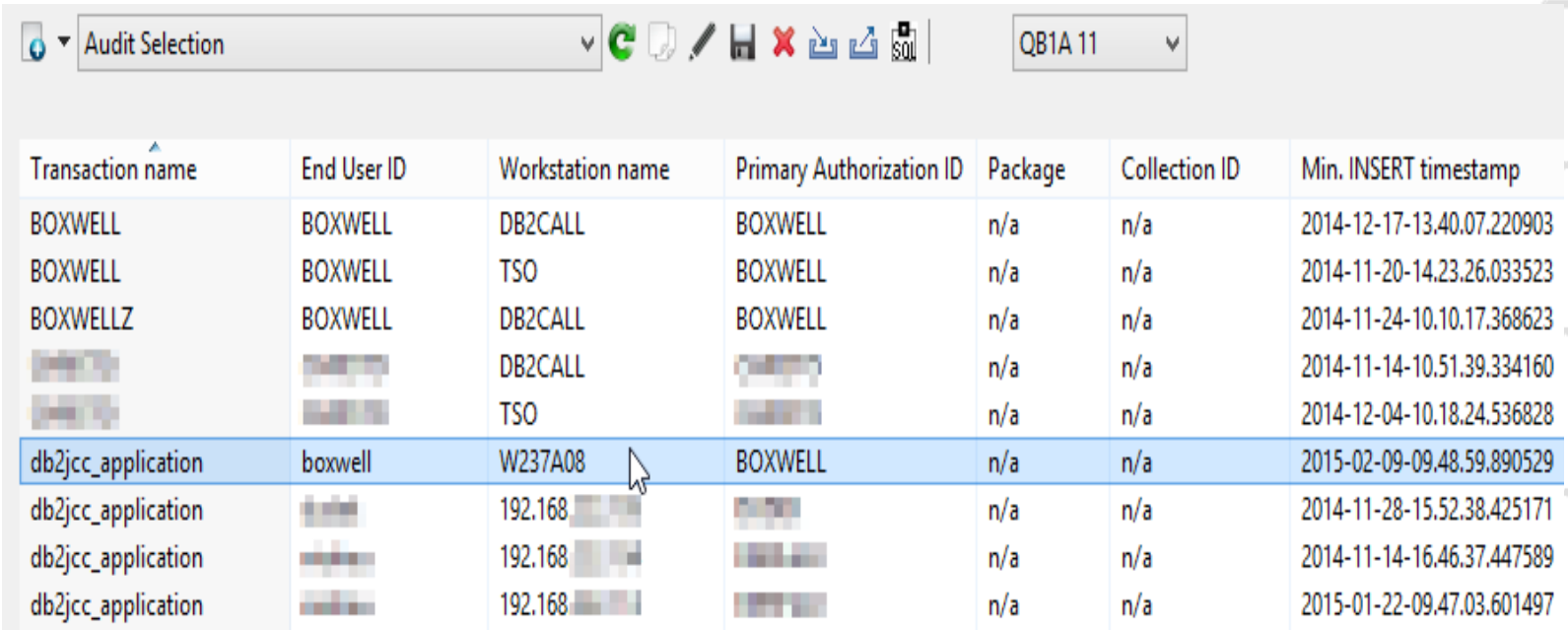

Transaction name	End User ID	Workstation name	Primary Authorization ID	Package	Collection ID	Min. INSERT timestamp
BOXWELL	BOXWELL	DB2CALL	BOXWELL	n/a	n/a	2014-12-17-13.40.07.220903
BOXWELL	BOXWELL	TSO	BOXWELL	n/a	n/a	2014-11-20-14.23.26.033523
BOXWELLZ	BOXWELL	DB2CALL	BOXWELL	n/a	n/a	2014-11-24-10.10.17.368623
[redacted]	[redacted]	DB2CALL	[redacted]	n/a	n/a	2014-11-14-10.51.39.334160
[redacted]	[redacted]	TSO	[redacted]	n/a	n/a	2014-12-04-10.18.24.536828
db2jcc_application	boxwell	W237A08	BOXWELL	n/a	n/a	2015-02-09-09.48.59.890529
db2jcc_application	[redacted]	192.168	[redacted]	n/a	n/a	2014-11-28-15.52.38.425171
db2jcc_application	[redacted]	192.168	[redacted]	n/a	n/a	2014-11-14-16.46.37.447589
db2jcc_application	[redacted]	192.168	[redacted]	n/a	n/a	2015-01-22-09.47.03.601497

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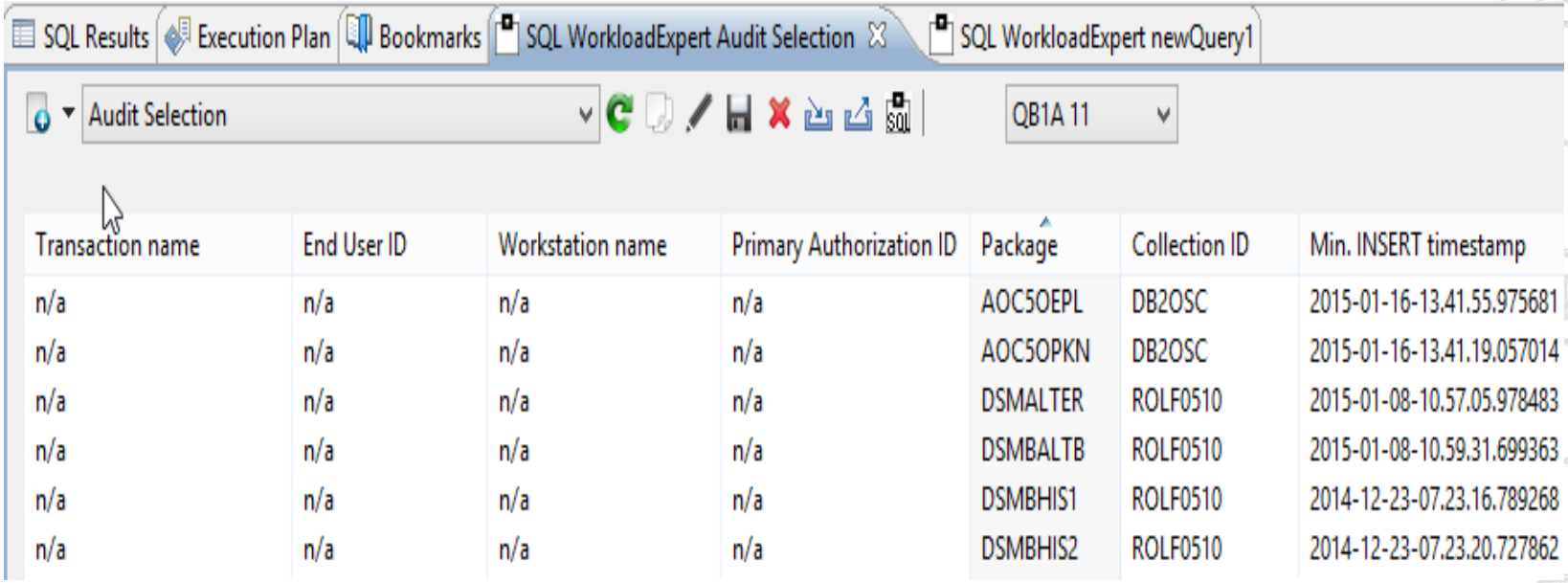
For static you also get the Package and Collection of course!



Transaction name	End User ID	Workstation name	Primary Authorization ID	Package	Collection ID	Min. INSERT timestamp
n/a	n/a	n/a	n/a	AOC5OEPL	DB2OSC	2015-01-16-13.41.55.975681
n/a	n/a	n/a	n/a	AOC5OPKN	DB2OSC	2015-01-16-13.41.19.057014
n/a	n/a	n/a	n/a	DSMALTER	ROLF0510	2015-01-08-10.57.05.978483
n/a	n/a	n/a	n/a	DSMBALTB	ROLF0510	2015-01-08-10.59.31.699363
n/a	n/a	n/a	n/a	DSMBHIS1	ROLF0510	2014-12-23-07.23.16.789268
n/a	n/a	n/a	n/a	DSMBHIS2	ROLF0510	2014-12-23-07.23.20.727862

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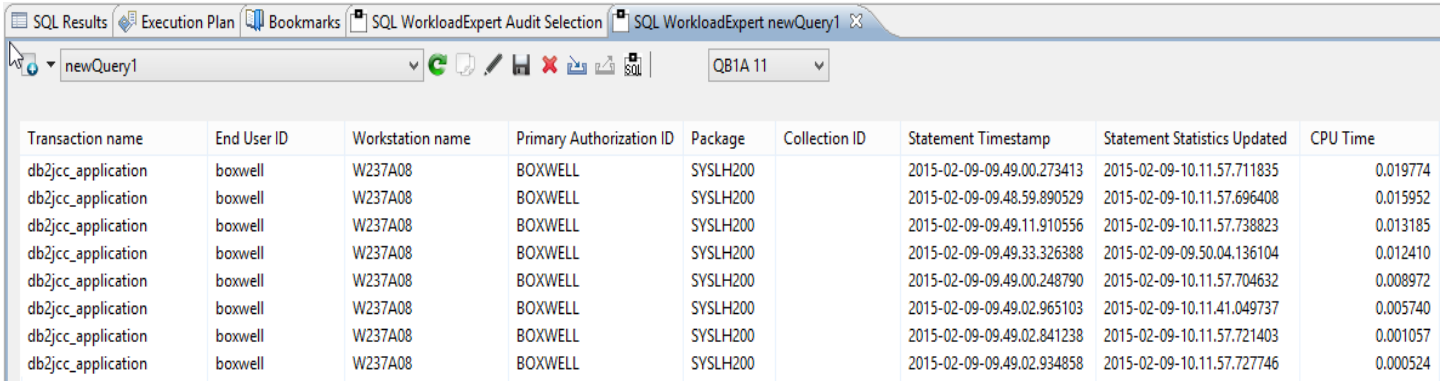
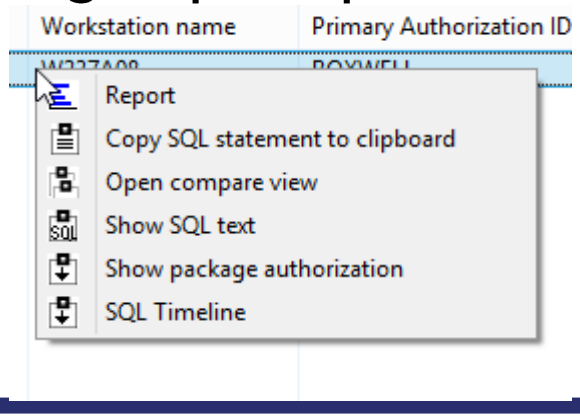


Transaction name	End User ID	Workstation name	Primary Authorization ID	Package	Collection ID	Statement Timestamp	Statement Statistics Updated	CPU Time
db2jcc_application	boxwell	W237A08	BOXWELL	SYSLH200		2015-02-09-09.49.00.273413	2015-02-09-10.11.57.711835	0.019774
db2jcc_application	boxwell	W237A08	BOXWELL	SYSLH200		2015-02-09-09.48.59.890529	2015-02-09-10.11.57.696408	0.015952
db2jcc_application	boxwell	W237A08	BOXWELL	SYSLH200		2015-02-09-09.49.11.910556	2015-02-09-10.11.57.738823	0.013185
db2jcc_application	boxwell	W237A08	BOXWELL	SYSLH200		2015-02-09-09.49.33.326388	2015-02-09-09.50.04.136104	0.012410
db2jcc_application	boxwell	W237A08	BOXWELL	SYSLH200		2015-02-09-09.49.00.248790	2015-02-09-10.11.57.704632	0.008972
db2jcc_application	boxwell	W237A08	BOXWELL	SYSLH200		2015-02-09-09.49.02.965103	2015-02-09-10.11.41.049737	0.005740
db2jcc_application	boxwell	W237A08	BOXWELL	SYSLH200		2015-02-09-09.49.02.841238	2015-02-09-10.11.57.721403	0.001057
db2jcc_application	boxwell	W237A08	BOXWELL	SYSLH200		2015-02-09-09.49.02.934858	2015-02-09-10.11.57.727746	0.000524

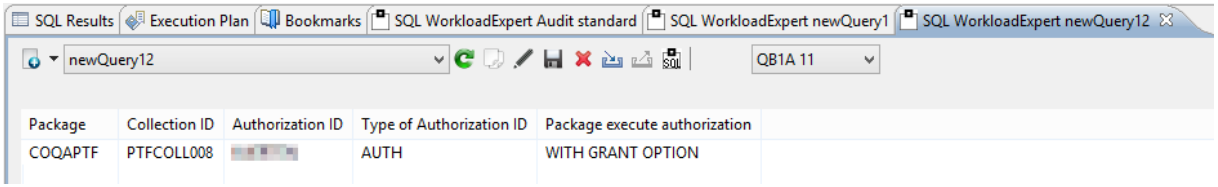
Right-clicking to pull up the context menu you can see more:



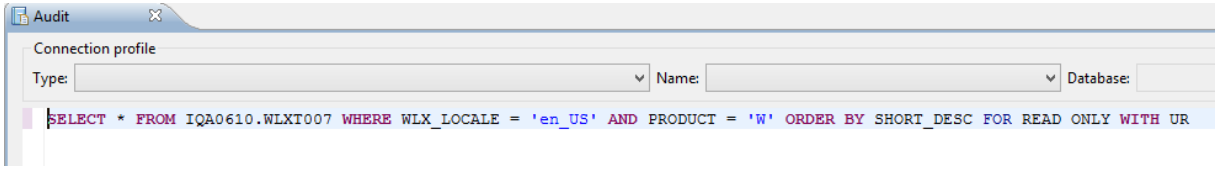
Audit

Question: Do you know who is doing what to which table and when?

Package Authorizations are then all listed:



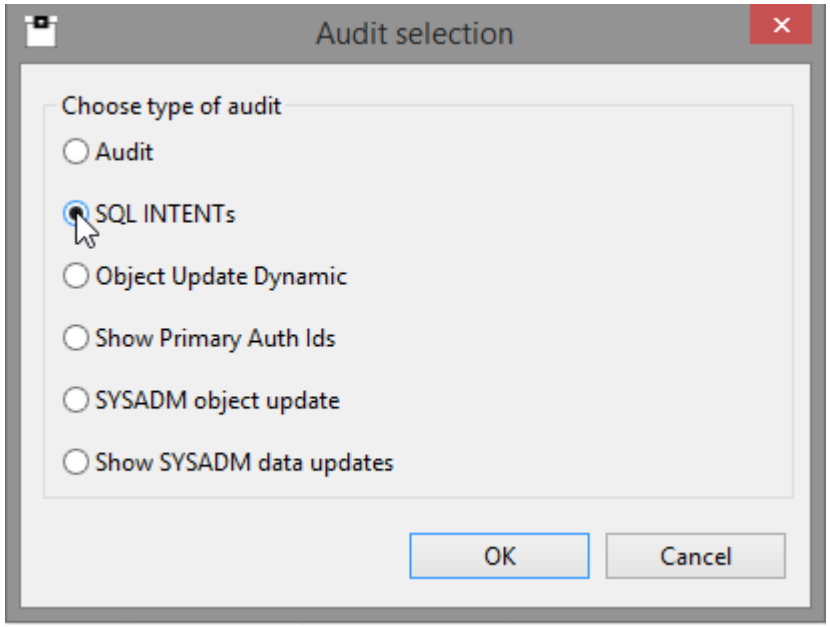
Or even the executed SQL Text:



Audit

Question: Do you know who is doing what to which table and when?

SQL Intents – Update or just Read ???



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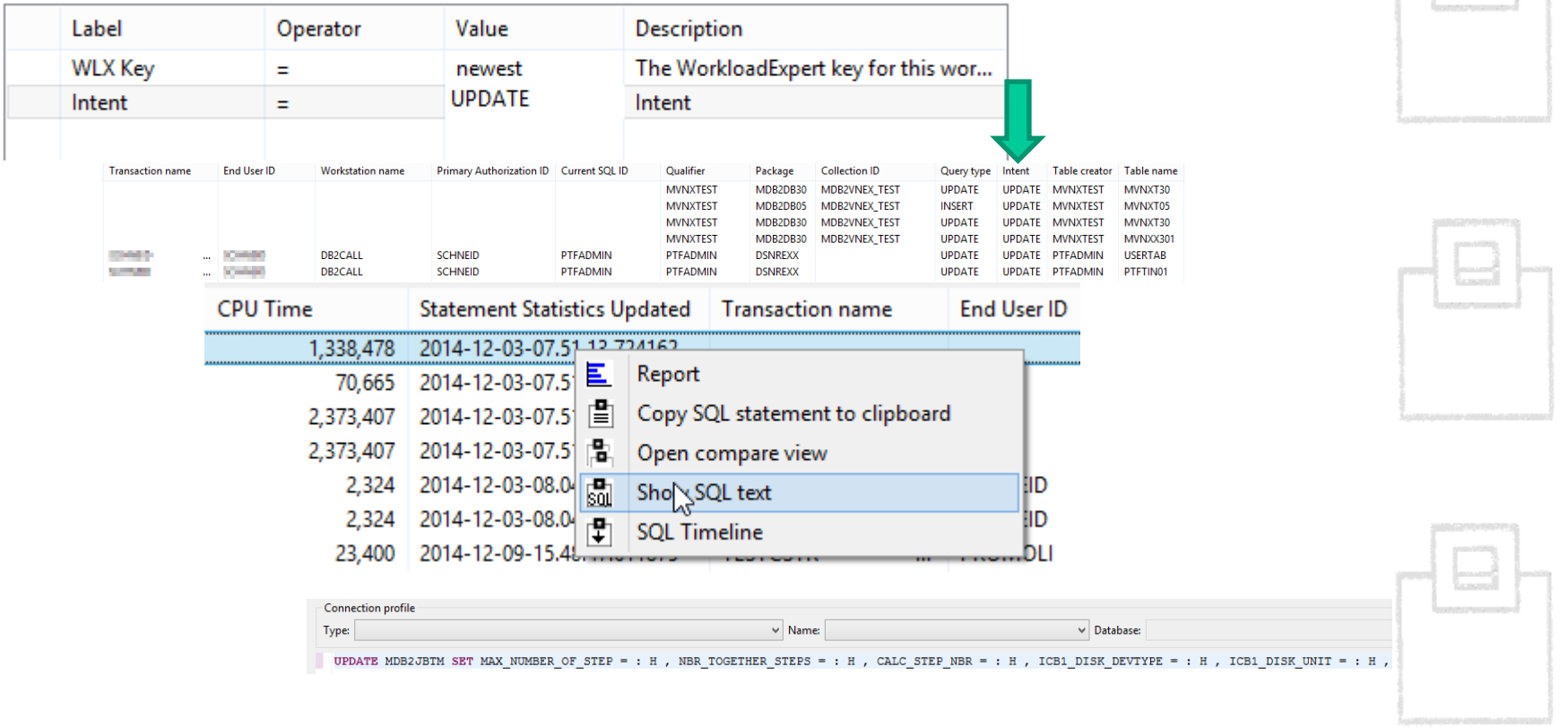
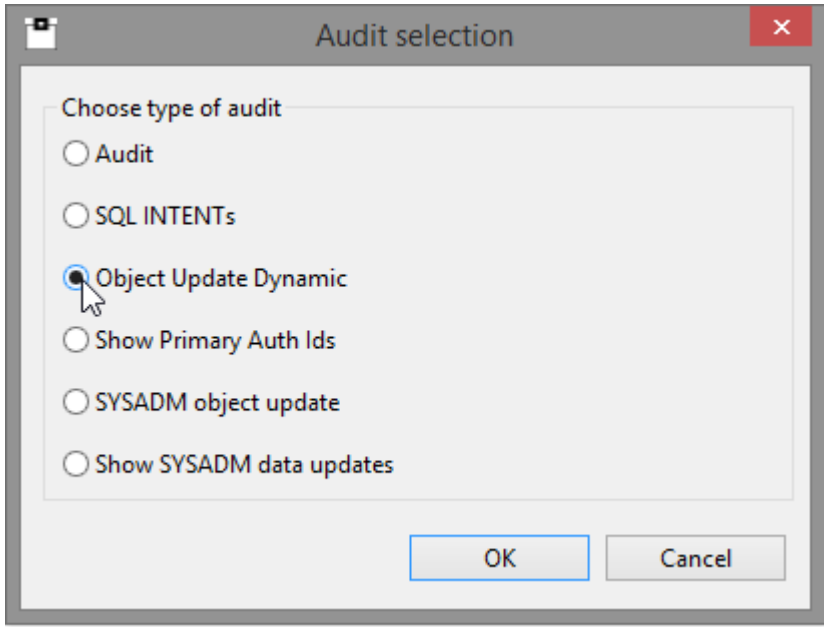
SQL Intents – Update or just Read ???



Audit

Question: Do you know who is doing what to which table and when?

Dynamic SQL updates???



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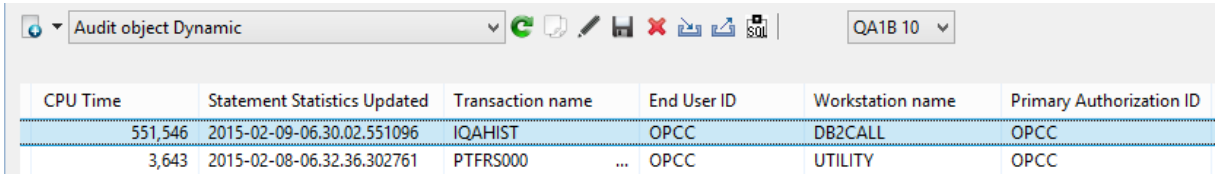
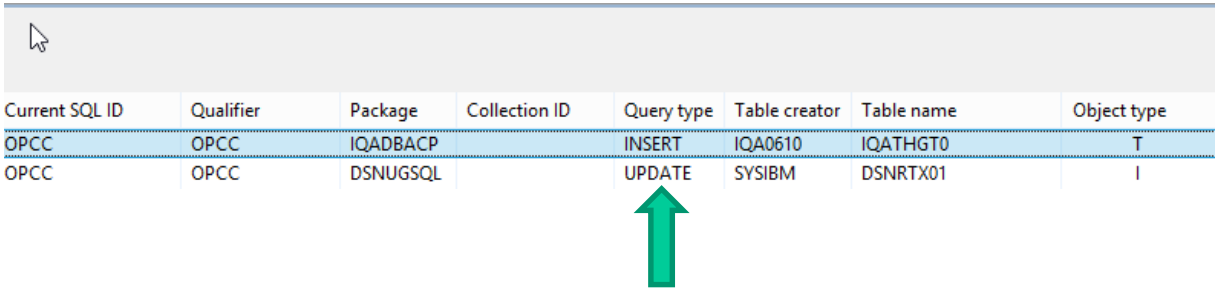
Question: Do you know who is doing what to which table and when?

Dynamic SQL updates???



CPU Time	Statement Statistics Updated	Transaction name	End User ID	Workstation name	Primary Authorization ID
551,546	2015-02-09-06.30.02.551096	IQAHIST	OPCC	DB2CALL	OPCC
3,643	2015-02-08-06.32.36.302761	PTFRS000 ...	OPCC	UTILITY	OPCC

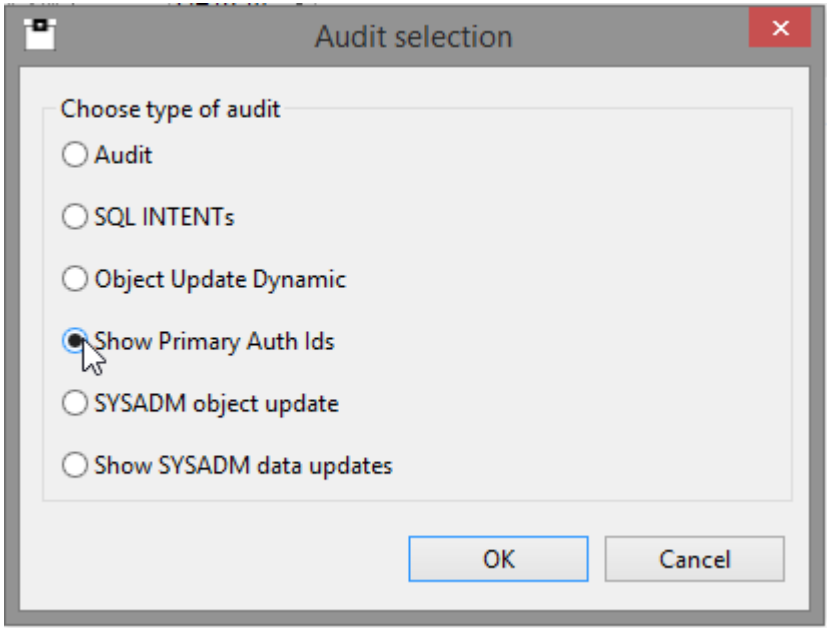


Current SQL ID	Qualifier	Package	Collection ID	Query type	Table creator	Table name	Object type
OPCC	OPCC	IQADBACP		INSERT	IQA0610	IQATHGT0	T
OPCC	OPCC	DSNUGSQL		UPDATE	SYSIBM	DSNRTX01	I

Audit

Question: Do you know who is doing what to which table and when?

How many Primary Authorization Ids do you have and how active are they?



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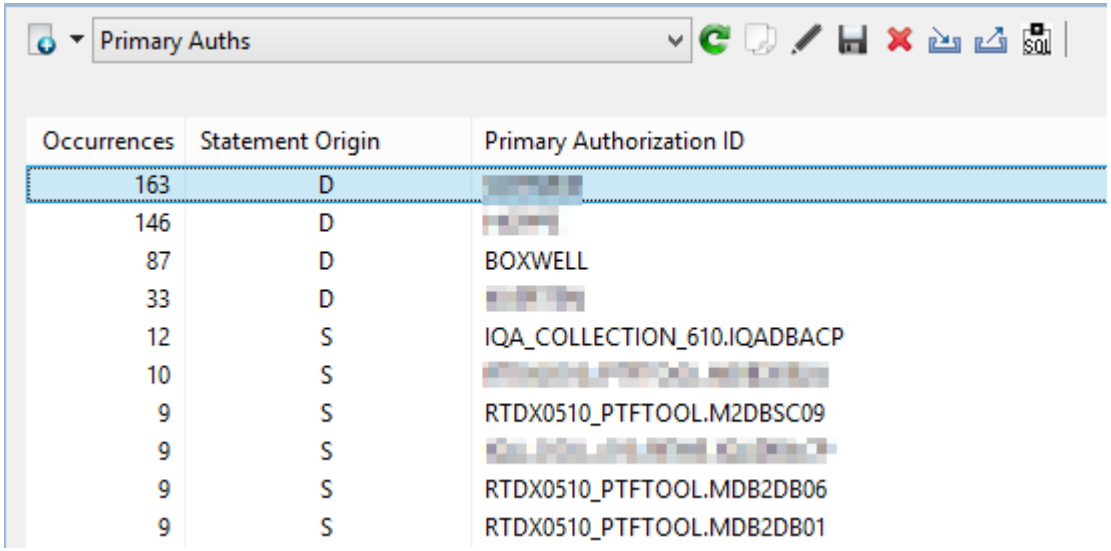
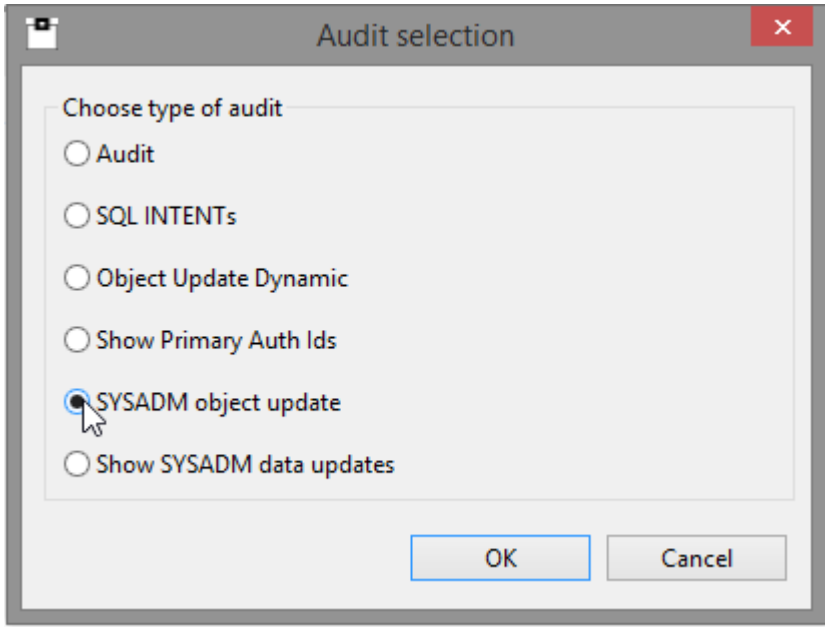


Occurrences	Statement Origin	Primary Authorization ID
163	D	[redacted]
146	D	[redacted]
87	D	BOXWELL
33	D	[redacted]
12	S	IQA_COLLECTION_610.IQADBACP
10	S	[redacted]
9	S	RTDX0510_PTFTOOL.M2DBSC09
9	S	[redacted]
9	S	RTDX0510_PTFTOOL.MDB2DB06
9	S	RTDX0510_PTFTOOL.MDB2DB01

Audit

Question: Do you know who is doing what to which table and when?

Which User objects were updated with a Primary Authorization Id that has SYSADM authorization?



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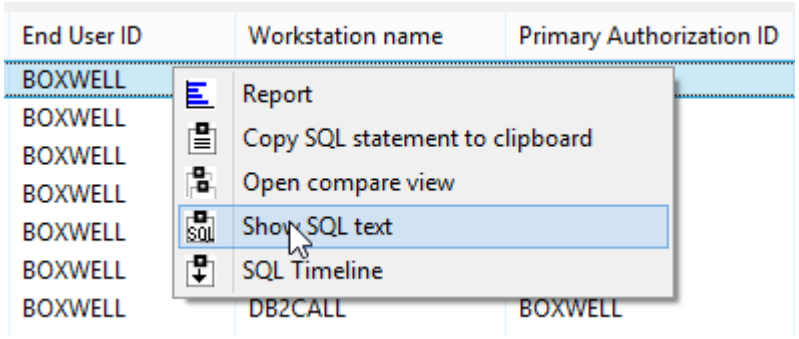
Transaction name		End User ID	Workstation name	Primary Authorization ID	Current SQL ID	Qualifier	Package	Query type	Table creator	Table name	Object type
WLX0QA1B	...	BOXWELL	DB2CALL	BOXWELL	BOXWELL	BOXWELL	IQADBACP	UPDCUR	IQA0610	IQATXX00	T
WLX0QA1B	...	BOXWELL	DB2CALL	BOXWELL	IQAXXX02	IQAXXX02	IQADBACP	DELETE	IQAXXX02	PLAN_TABLE	T
WLX0QA1B	...	BOXWELL	DB2CALL	BOXWELL	IQAXXX02	IQAXXX02	IQADBACP	DELETE	IQAXXX02	DSN_STATEM...	T
WLX0QA1B	...	BOXWELL	DB2CALL	BOXWELL	IQAXXX02	IQAXXX02	IQADBACP	DELETE	IQAXXX02	DSN_PREDICA...	T
WLX0QA1B	...	BOXWELL	DB2CALL	BOXWELL	IQAXXX02	IQAXXX02	IQADBACP	DELETE	IQAXXX02	DSN_FILTER_T...	T
WLX0QA1B	...	BOXWELL	DB2CALL	BOXWELL	IQAXXX02	IQAXXX02	IQADBACP	DELETE	IQAXXX02	DSN_DETCOST...	T
WLX0QA1B	...	BOXWELL	DB2CALL	BOXWELL	IQAXXX02	IQAXXX02	IQADBACP	UPDATE	IQA0610	IQAXXX001	I
WLX0QA1B	...	BOXWELL	DB2CALL	BOXWELL	IQAXXX02	IQAXXX02	IQADBACP	UPDATE	IQA0610	IQATXX00	T
WLX0QA1B	...	BOXWELL	DB2CALL	BOXWELL	IQAXXX02	IQAXXX02	IQADBACP	UPDATE	IQA0610	IQAXXX001	I



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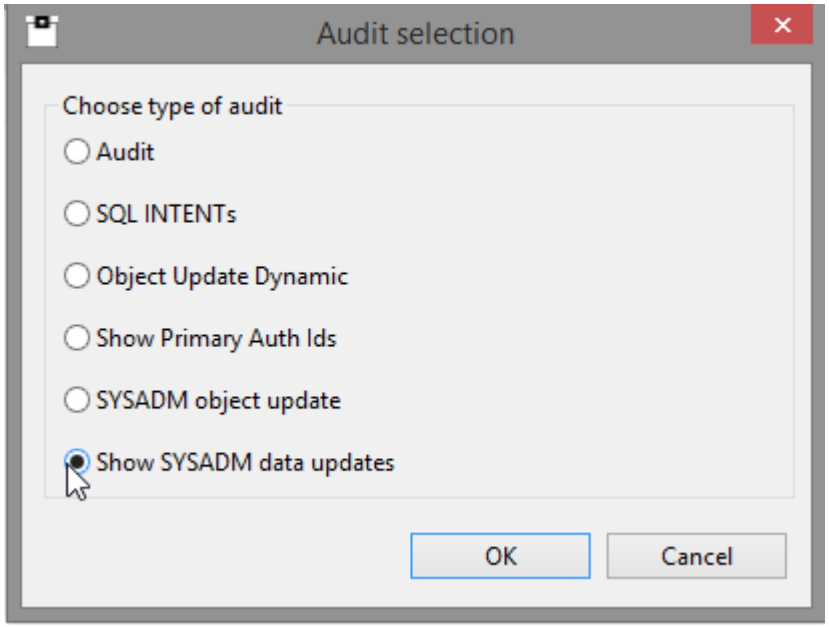

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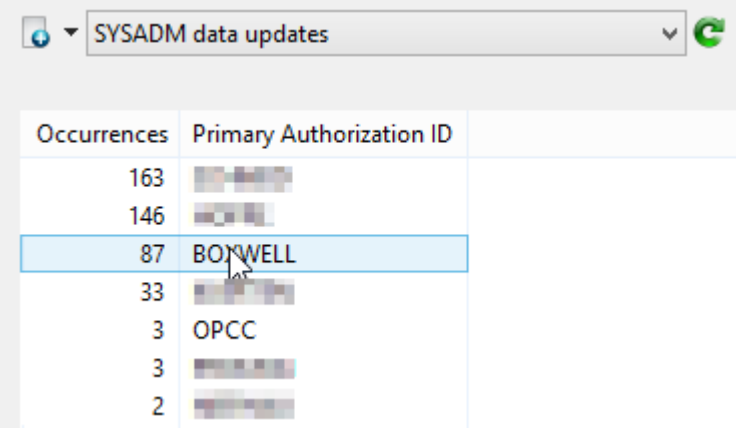
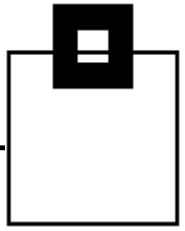


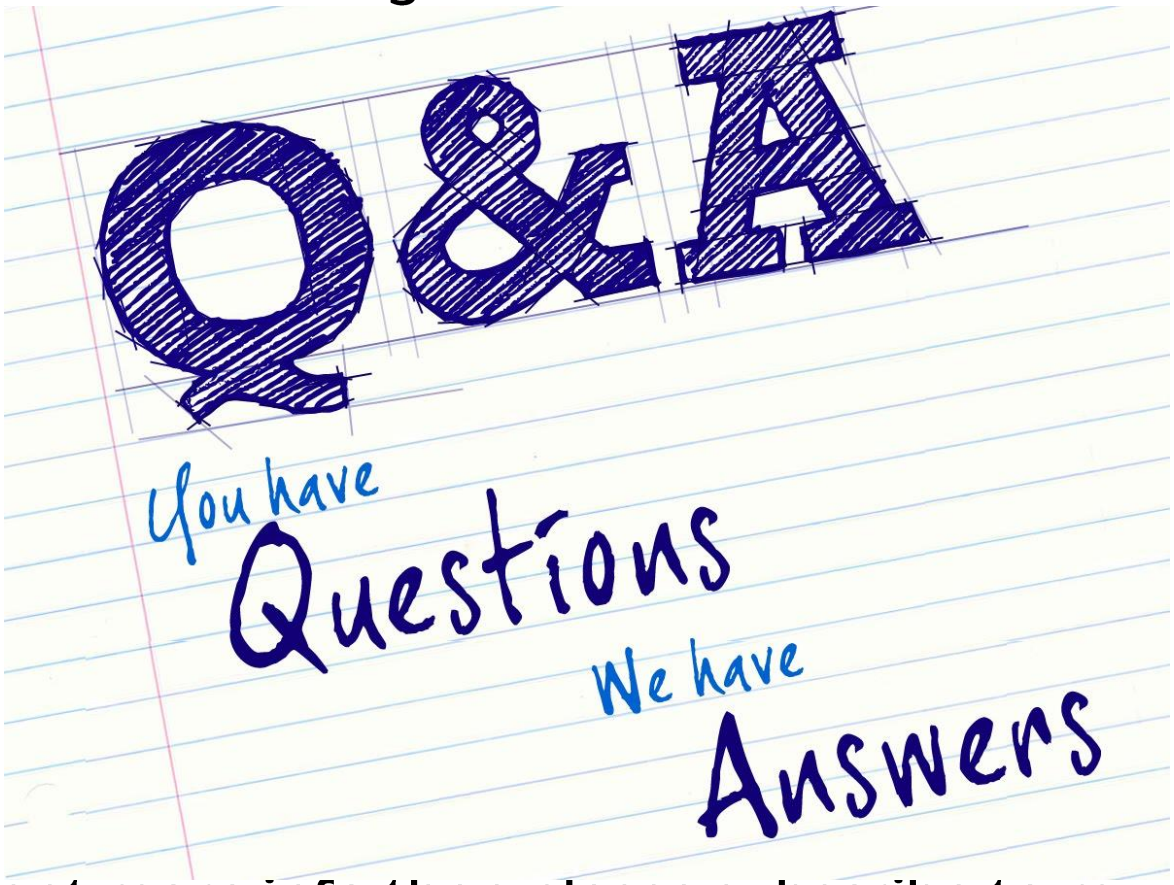
AGENDA



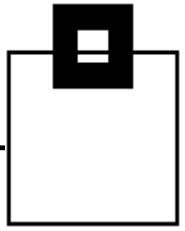
1. WLX - How it works
2. BIF Usage: Where's the BIF?
3. Index Maintenance Costs: Is this index really good?
4. Quiet Times: Is this table not in use?
5. Audit: Who is doing what to which data from where?
6. Q&A Session

Q&A

Thank you for listening!



If you want more info then please subscribe to my newsletter by going to www.seg.de or www.segus.com



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SEGUS Inc

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