An Audit a day keeps the lawyers at bay!

Ulf Heinrich, SEGUS

Agenda

1. Audit – do you need it, do you care?!
2. Audit needs and musts
3. Solution overview and their Pros/Cons
4. The viable way – let Db2 do the magic!
5. Examples from the insurance industry

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Audit – do you need it, do you care?!

YES!

Audit – do you need it, do you care?!

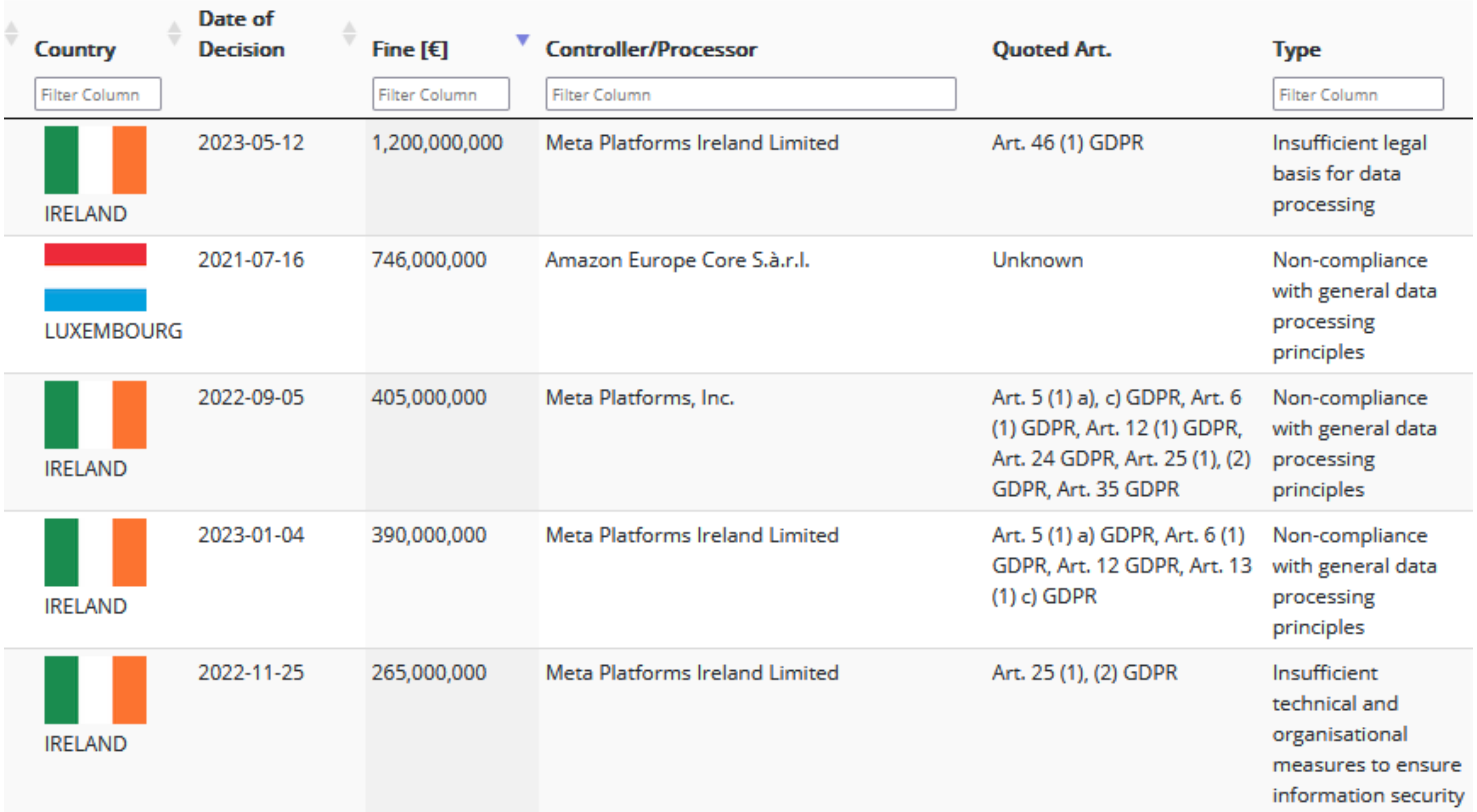
GDPR is in force and companies are paying mega-bucks!

Just go here:

https://www.enforcementtracker.com/

And sort by “Fine” descending…

Audit – do you need it, do you care?!



Country	Date of Decision	Fine [€]	Controller/Processor	Quoted Art.	Type
IRELAND	2023-05-12	1,200,000,000	Meta Platforms Ireland Limited	Art. 46 (1) GDPR	Insufficient legal basis for data processing
LUXEMBOURG	2021-07-16	746,000,000	Amazon Europe Core S.à.r.l.	Unknown	Non-compliance with general data processing principles
IRELAND	2022-09-05	405,000,000	Meta Platforms, Inc.	Art. 5 (1) a), c) GDPR, Art. 6 (1) GDPR, Art. 12 (1) GDPR, Art. 24 GDPR, Art. 25 (1), (2) GDPR, Art. 35 GDPR	Non-compliance with general data processing principles
IRELAND	2023-01-04	390,000,000	Meta Platforms Ireland Limited	Art. 5 (1) a) GDPR, Art. 6 (1) GDPR, Art. 12 GDPR, Art. 13 (1) c) GDPR	Non-compliance with general data processing principles
IRELAND	2022-11-25	265,000,000	Meta Platforms Ireland Limited	Art. 25 (1), (2) GDPR	Insufficient technical and organisational measures to ensure information security

Audit – do you need it, do you care?!

Art. 83 GDPR General conditions for imposing administrative fines

- Each SA shall ensure that the imposition of administrative fines (…) be ***effective, proportionate and dissuasive.***
- When deciding (…) due regard shall be given to the following:
  - the nature, gravity and duration of the infringement taking into account the nature scope or purpose of the processing concerned as well as the number of data subjects affected and the level of damage suffered by them;
  - the intentional or negligent character of the infringement;
  - ***any action taken by the controller or processor to mitigate the damage suffered by data subjects;***
  - ***the degree of responsibility of the controller or processor taking into account technical and organisational measures implemented by them pursuant to Articles 25 and 32;***

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Audit needs and musts

Focusing on the major area of concern – the database server:

Audit Logging Requirements	Cobit (SOX) FIEL	PCI DSS	HIPAA	CMS ARS	GLBA	ISO 17799 27001	NERC	NIST 800-53 FISMA	GDPR
SELECTs against sensitive data		X	X	X	X	X		X	X
Insert, Update, Delete	X			X		X			X
Access violations	X	X	X	X	X	X	X	X	X
Schema Changes	X	X	X		X	X	X	X	
Grants/Revokes	X	X	X	X	X	X	X	X	X

Audit needs and musts

- Critical activities that enterprises should be auditing
  - **Privileged Users**
  - Access/changes/deletion to critical data
  - Access using inappropriate channels
  - Schema modifications
  - Unauthorized addition of user accounts

Audit needs and musts

- Critical activities that enterprises should be auditing
  - End Users
    - Unusual access to excessive amounts of data
    - Access to data outside standard working hours
    - Access to data through inappropriate channels
  - Developers, Analysts and System Administrators
    - Access to live production systems
  - IT Operations
    - Inappropriate changes to DB/DB applications

Audit needs and musts

- … or in other words:
  Collect as much data as you can, because you probably don't know today what you'll need tomorrow
  → **breach patterns do change!!!**
- Make sure you include:
  - SELECTs (against sensitive data)
  - DDL
  - DML
  - DCL
  - Utilities (online + offline)
  - Commands
  - Assignment, or change of a user ID/authorization – **especially privileged users**

Audit needs and musts

- Be careful what happens outside of a known (critical) table:
  - Consider clones
  - Consider backups
  - Consider extended statistics in catalog tables, like SYSCOLDIST + SYSKEYTGTDIST
  - Consider utility output (REORG, RUNSTATs)
  - Consider UNLOADs
  - Consider Replication
  - Consider access to the underlying VSAM cluster

- Also consider your INSTALL SYSADM/SYSOPR

  → Sorry DBAs, but Auditing requires a separation of duties

Audit needs and musts

- Most Home-Grown Solutions are based on the Db2 Audit Trace:
  - Class 1, 2, 7, 8 have very little overhead
    - Access violations (Class 1 IFCID 140)
    - GRANTs/REVOKEs (Class 2 IFCID 141)
    - Assignment, or modification of a user ID/authorization (Class 7 IFCIDs 55, 83, 87, 169, 319)
    - Db2 utility (Class 8 IFCIDs 23, 24, 25, 219, 220)
  - Class 3 (IFCID 142) has very little overhead
    - DDL (only for TB having the AUDIT ALL attribute)

Audit needs and musts

- Most Home-Grown Solutions are based on the Db2 Audit Trace:
  - Class 4, 5 (IFCIDs 143, 144) has up to 5% overhead
    - 1st INSERT/UPDATE/DELETE, SELECT in a UOR
  - Class 10 (IFCIDs 270, 271) has low overhead
    - Trusted context Create/Alter and Column mask/Row permission Create/Drop/Alter
  - IFCIDs 90, 91 have very little overhead
    - Db2 Commands

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Solution overview and their Pros/Cons

Additional Tools:

- Pros:
  - There are various solutions to choose from
  - Usually easy to use and more powerful than native Db2 options

- Cons:
  - Vendors charge for it
  - Implementation and processing overhead may be significant
  - Additional appliances lead to more vulnerability and administration overhead

Solution overview and their Pros/Cons

Additional Tools:

- What are the differences?
  - Good solutions have efficient data collectors and share repositories for Audit, Performance Management, Accounting, Analytics …
  - Some solutions use hooks into the Db2 address space to capture SQL activity – errors can bring down Db2, or the entire LPAR, thus they try to protect Db2 by encapsulating the “foreign” code
  - Some solutions need additional appliances (easily up to 100+ virtual appliances)→ all SQL captured is sent (unencrypted!) through the network. If the connection gets lost they try to cache it. Keep in mind that attackers do DDoS attacks!

Solution overview and their Pros/Cons

There are a variety of existing resources Db2 already provides/comes with:

- Db2 Log
- Db2 Memory (DSC/EDM)
- Db2 Exits
- Db2 Trace

Solution overview and their Pros/Cons

Db2 Log:

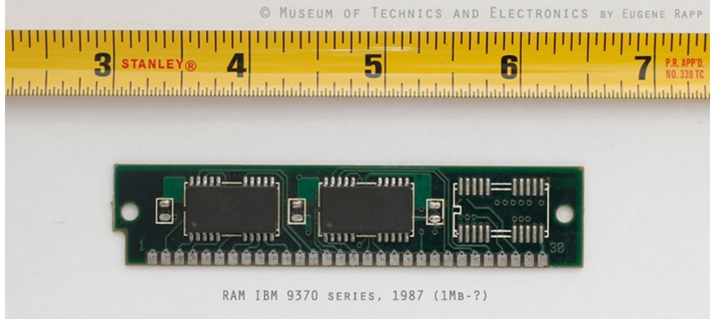
- Pros:
  - Comes with Db2 and supports all versions
  - No additional overhead
  - No additional costs (except you want to keep logs for a longer period of time than currently and, of course, your analysis)
  - Most companies have log analysis tools they're already familiar with

- Cons:
  - Not all required data is logged
    - SELECTs are especially lacking

Solution overview and their Pros/Cons

Db2 Memory (DSC/EDM):

- Pros:
  - Comes with Db2 and supports all versions
  - No additional overhead
  - No additional costs (except for storing and processing)
- Cons:
  - Not all required data is there
  - Usually you can't access it yourself, unless you hook into it
  - The information is volatile and can get lost quickly


© Museum of Technics and Electronics by Eugene Rapp

RAM IBM 9370 series, 1987 (1Mb-?)

Solution overview and their Pros/Cons

Db2 Exits:

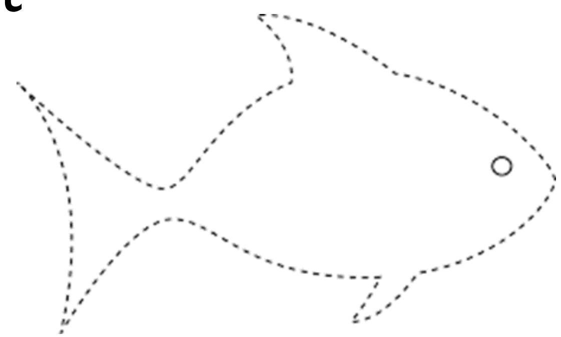
- Pros:
  - Partially comes with Db2 and supports all versions
  - No additional costs (except for storing and processing)
- Cons:
  - Not all required data is there
  - Lots of coding necessary to catch and process the data
  - The overhead may be significant

Solution overview and their Pros/Cons

Db2 Trace:

- Pros:
  - Comes with Db2 and supports all versions
  - No additional costs (except for storing and processing the collected data)
  - Most companies have trace data analysis tools they're already familiar with

- Cons:
  - Depending on the scope (number of IFCIDs/classes), and the type (SMF, OPX, GTF, SRV), the overhead may be significant
  - You need to build your own repository
  - If not using OPX you lose time!



Solution overview and their Pros/Cons

Db2 Trace:

- What are the differences:
    - There are different types of traces:
        - Statistics, Accounting, Audit, Monitor, Performance, Global
    - There are different classes
    - There are hundreds of individual IFCIDs

→ Depending on your choice, the overhead is unmeasurable to significant

→ A key difference in cost is the trace destination!

- SMF, OPX, GTF, SRV

Solution overview and their Pros/Cons

Db2 Trace:

- What are the differences:
    - Processing the data requires simple to more sophisticated knowledge:
        - SMF: System Management Facility:
          Most commonly used, easy to process (use DSN1SMFP) – Once a day "cuts" cost 24 hours
        - OPn/OPX: Buffer Destination Trace
          very efficient, but Assembler needed to process (DSN1SDMP is pretty poor)
        - GTF: Generalized Trace Facility:
          Used for detailed monitoring
        - SRV: Serviceability Routine:
          I have never seen it used

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The viable way – let Db2 do the magic

The most reliable/efficient solution is based on those reliable and robust Db2 key functions we've been using for ages.

Exploiting them results in the most powerful solution:

- You benefit from rock solid features, like:
  - Security
  - Compression
  - Native Db2 functions
  - Extended Client Identification Registers, sqleseti()

The only question is: What key Db2 functions are needed?

The viable way – let Db2 do the magic

DSC and EDM provide detailed workload insights, including flushed statements:

- SQL text
- Statement ID
- Date/time
- Current status
- Resource consumption
- Identification/environmental data

The viable way – let Db2 do the magic

Using IFCIDs along with OPX buffers delivers in-depth information without the overhead and delay of SMF processing.

The absolute minimum requirement is to get the SQL that is running in the enterprise so at least:

316/318 Dynamic SQL (SELECT, INSERT, etc.)
(+317 for the full SQL statement)

400/401 Static SQL (SELECT, INSERT, etc.)
(+SYSPACKSTMT for the full SQL statement)

The viable way – let Db2 do the magic

Using IFCIDs along with OPX buffers delivers in-depth information without the overhead and delay of SMF processing.

23/24/25	Utility start, phase change, and stop
219/220	Utility Listdef and Template
55/83/87/169/319	SQLID setting
62/142	DDL and CREATE/ALTER/DROP for tables with AUDIT changes or all
90/91	Commands and their completion status

The viable way – let Db2 do the magic

Using IFCIDs along with OPX buffers delivers in-depth information without the overhead and delay of SMF processing:

140	Authorization failures
141	Authorization changes
143/144	AUDIT Table access
197	Console messages
269/270/271	Trusted Context and Column Masks/Row Permissions
361	Administrative Authority usage
404	LOAD Authority usage

Add the correlation headers to get detailed authentication data.

The viable way – let Db2 do the magic

- All IFCIDs listed have a much smaller footprint than a blanket AUDIT CHANGES/ALL
- This is integrated, reliable Db2 technology, OPX is the right target for efficient capturing.
- Store it in a repository and protect it using proven technology (e.g. RACF, ACF2, Top Secret)
  - Using Db2 tables with compression reduces storage requirements by exploiting proven, integrated technology.

→ No new vulnerabilities like:

  - Black Box appliance
  - Massive sensitive data transmissions over the network

The viable way – let Db2 do the magic

So now you have all that data for Audit. But also now think about what else you could do with all of it…

Just imagine the performance data contained within…or the usage analysis possible…

The possibilities are endless! This is a fantastic data source created for Audit but available for performance DBAs and even developers!

→ **Make it your enterprise wide common data capture and analytics repository**

The viable way – let Db2 do the magic

BUT:

Make sure it's secure!

- Control and audit access to the repository
- Checksum and digitally sign captured data and audit reports
- Alert via WTO if someone messes with the IFCIDs you've chosen
- Consider automatically cancelling threads of users violating the rules

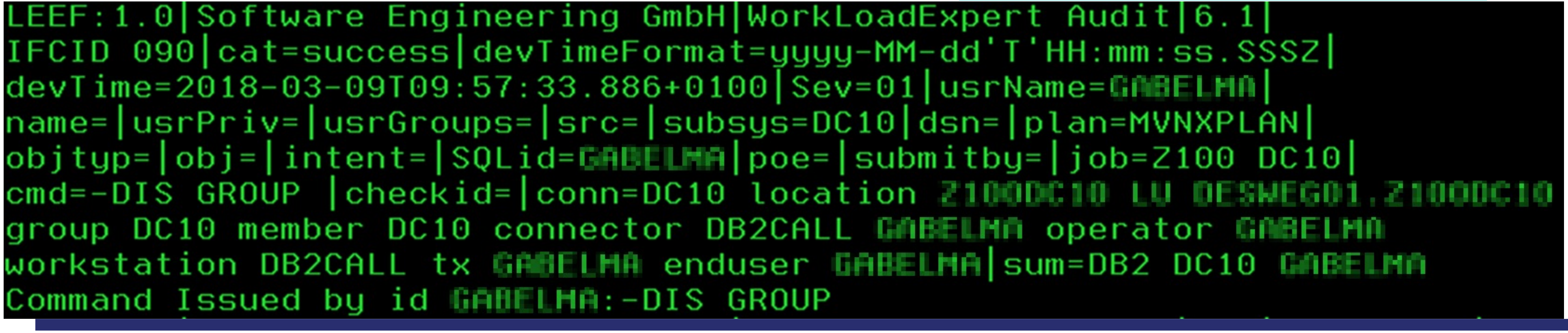
The viable way – let Db2 do the magic

Do your (automated) reporting/alerting/analytics as needed:

- SPUFI
- Batch Job
- Enterprise-wide reporting system
  - LEEF, SYSLOGGER, Data Lake (QRadar, Splunk, AlienVault, …)
- GUI (DRDA based queries are fully zIIP eligible)
  - Eclipse based
  - Zowe based

The viable way – let Db2 do the magic

Export the data in LEEF (Log Event Extended Format) or syslogger format for the SIEM system of your choice!

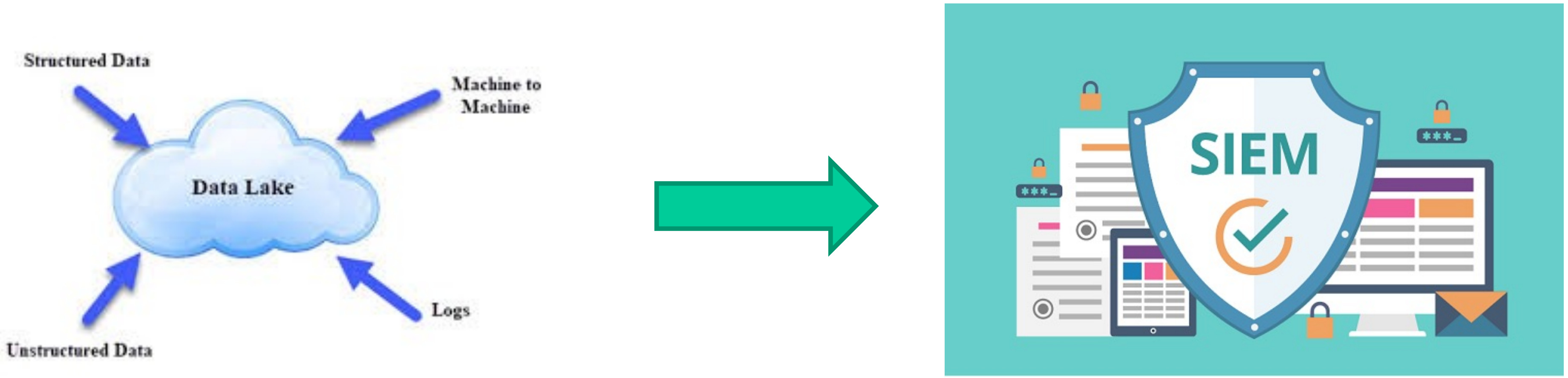


```
LEEF:1.0|Software Engineering GmbH|WorkLoadExpert Audit|6.1|
IFCID 090|cat=success|devTimeFormat=yyyy-MM-dd'T'HH:mm:ss.SSSZ|
devTime=2018-03-09T09:57:33.886+0100|Sev=01|usrName=[redacted]|
name=|usrPriv=|usrGroups=|src=|subsys=DC10|dsn=|plan=MVNXPLAN|
objtyp=|obj=|intent=|SQLid=[redacted]|poe=|submitby=|job=Z100 DC10|
cmd=-DIS GROUP |checkid=|conn=DC10 location [redacted]
group DC10 member DC10 connector DB2CALL [redacted] operator [redacted]
workstation DB2CALL tx [redacted] enduser [redacted]|sum=DB2 DC10 [redacted]
Command Issued by id [redacted]:-DIS GROUP
```

The viable way – let Db2 do the magic

These days most z/OS Audit systems collect data and transfer to a Data Lake of your choice for post processing every one or two hours e.g. WorkLoadExpert, zSecure etc.

This data is typically RACF, SMF and Master Log data on its way to e.g. QRadar, Splunk, AlienVault et al



The viable way – let Db2 do the magic

Use a GUI front end:

Exploit and integrate into Eclipse based GUI front ends

- GUIs can come as a Plug-in for
  - IBM Rational
  - IBM Data Studio
  - Eclipse native
- Existing Db2 connections are used to connect to the mainframe
- Interactive dialogs allow complex and powerful analysis
- Export features can create PDF reports and allow MS Excel handover
- Use Zowe – It rocks! (example coming up…)

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Example from the insurance industry

The Auditors' Requirements:

- **Who are the privileged users?**
  - Db2 database administrators (DBA)

- **How is Db2 data changed?**
  - Online transactions system (CICS)
  - Nightly batch processing
  - Data correction by the DBA‘s
    (= main focus of the audit)

- **Who, did what and when?**
  - All data saved in mainframe Db2 tables

Example from the insurance industry

Captured Db2 data:

- Any Update, Delete, Insert activity
  - static and dynamic SQL
- DDL (e.g. Create or Alter Table/Index)
- Grant's and Revoke's of access rights
- Db2 console commands

Example from the insurance industry

Process of the monthly audit - part 1:

- (Currently) the following reports are provided to external auditors (KPMG):
  - All Db2 DDL changes (Create, Alter, Drop)
  - All data changes (Update, Insert, Delete) performed by the DBA’s, executed by a batch job called A400DB2
  - All Grant's and Revoke's of access rights performed by the DBA's
  - Job output of the Audit started task and random samples of regular Audit batch jobs

Example from the insurance industry

Process of the monthly audit - part 2:

- Audit / segregation of duty
  - Verify all Audit jobs to check if Audit is constantly capturing
  - Select random samples and cross-check requested changes
    - Requests can originate from an change system,
    - Or have been placed by e-mail
  - Compare the request with the DBA job (activity) and the Audit report data - everything has to match
  - Create and digitally sign the monthly audit report

Example from the insurance industry

Process of the monthly audit - roles:

- Who performs which role depends on the staff capacity
- If there is a security administrator (SECADM) available, or an internal revision group they should do the audit
- In our case many services are outsourced to IBM, thus the DBA's provide all the data described in part 1 to SOFTWARE ENGINEERING/SEGUS as an external and independent partner, doing the audit and reporting to KPMG

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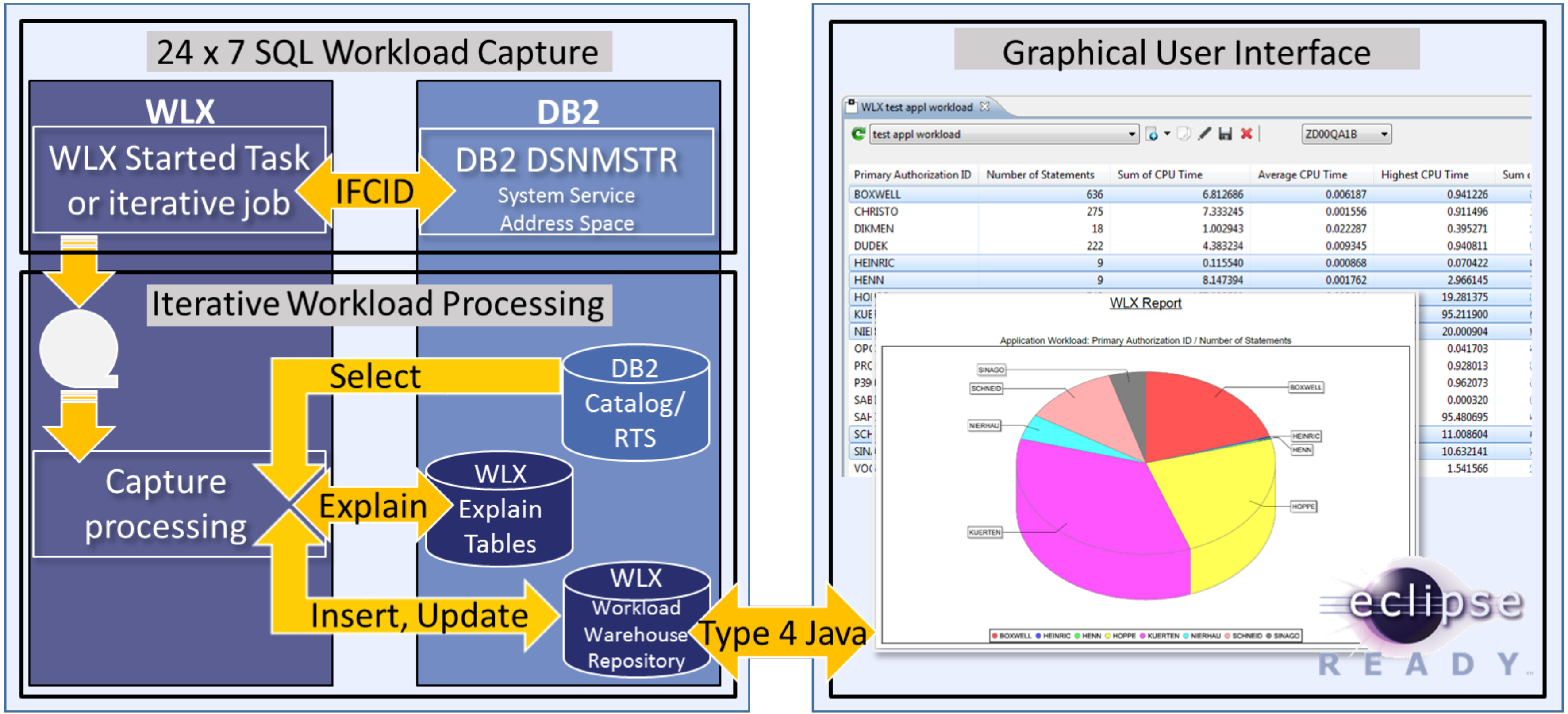
6. **Bonus: Zowe sample showcase**

Sample showcase

Efficient data collector for your desired scope of Audit

Mainframe Engine

Workstation Engine

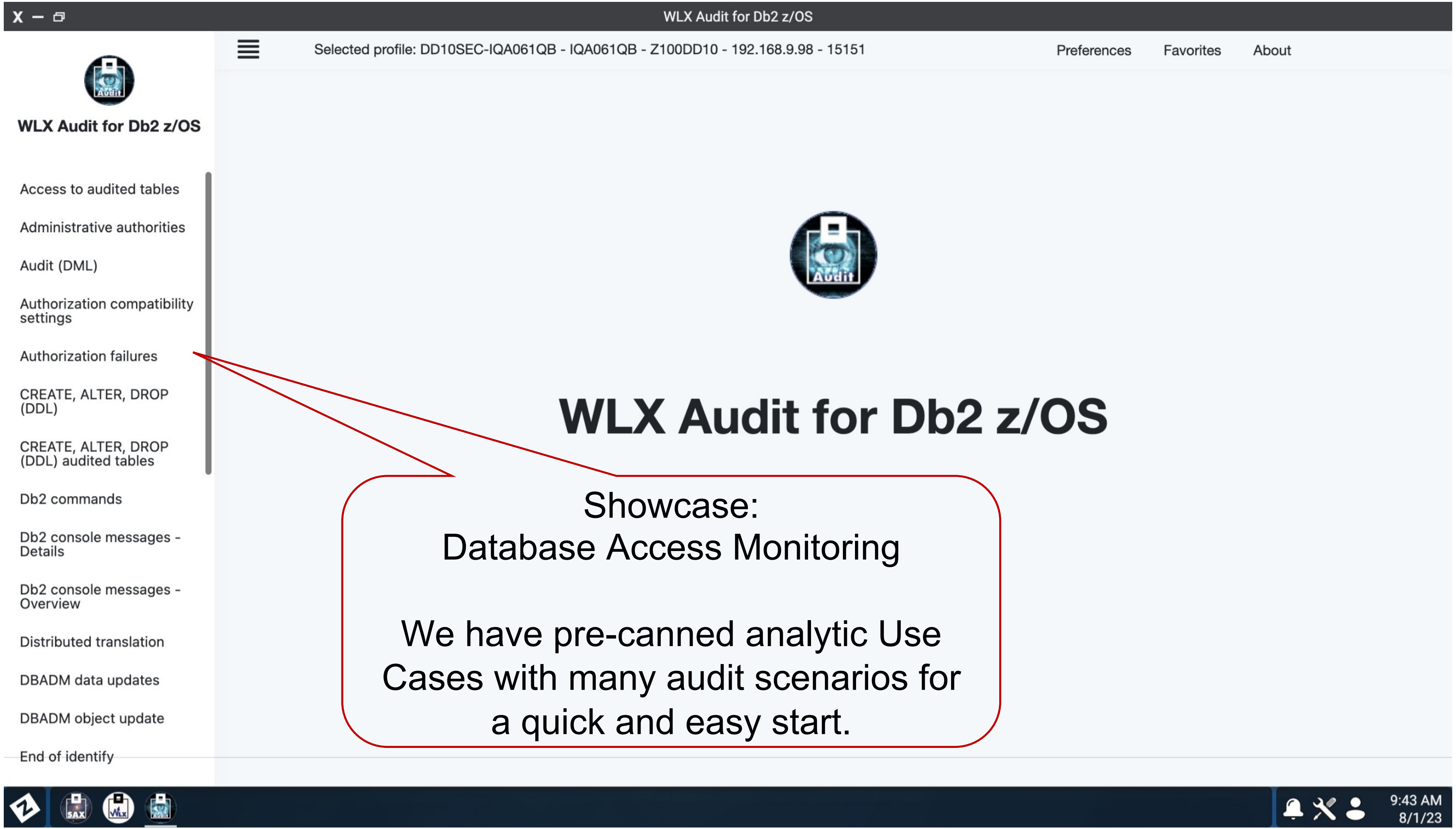

24 x 7 SQL Workload Capture
WLX
WLX Started Task or iterative job
IFCID
DB2
DB2 DSNMSTR
System Service Address Space
Iterative Workload Processing
Select
DB2 Catalog/ RTS
Capture processing
Explain
WLX Explain Tables
Insert, Update
WLX Workload Warehouse Repository
Type 4 Java
Graphical User Interface
WLX test appl workload
test appl workload
ZD00QA1B
WLX Report
Application Workload: Primary Authorization ID / Number of Statements
SINAGO
SCHNEID
NIERHAU
KUERTEN
BOXWELL
HEINRIC
HENN
HOPPE
● BOXWELL ● HEINRIC ● HENN ● HOPPE ● KUERTEN ● NIERHAU ● SCHNEID ● SINAGO
eclipse
READY

Primary Authorization ID	Number of Statements	Sum of CPU Time	Average CPU Time	Highest CPU Time	Sum
BOXWELL	636	6.812686	0.006187	0.941226	
CHRISTO	275	7.333245	0.001556	0.911496	
DIKMEN	18	1.002943	0.022287	0.395271	
DUDEK	222	4.383234	0.009345	0.940811	
HEINRIC	9	0.115540	0.000868	0.070422	
HENN	9	8.147394	0.001762	2.966145	
HO				19.281375	
KUE				95.211900	
NIE				20.000904	
OP				0.041703	
PR				0.928013	
P39				0.962073	
SAB				0.000320	
SAH				95.480695	
SCH				11.008604	
SIN				10.632141	
VO				1.541566	

Benutzername: boxwell

Passwort: ••••••••

Sample showcase



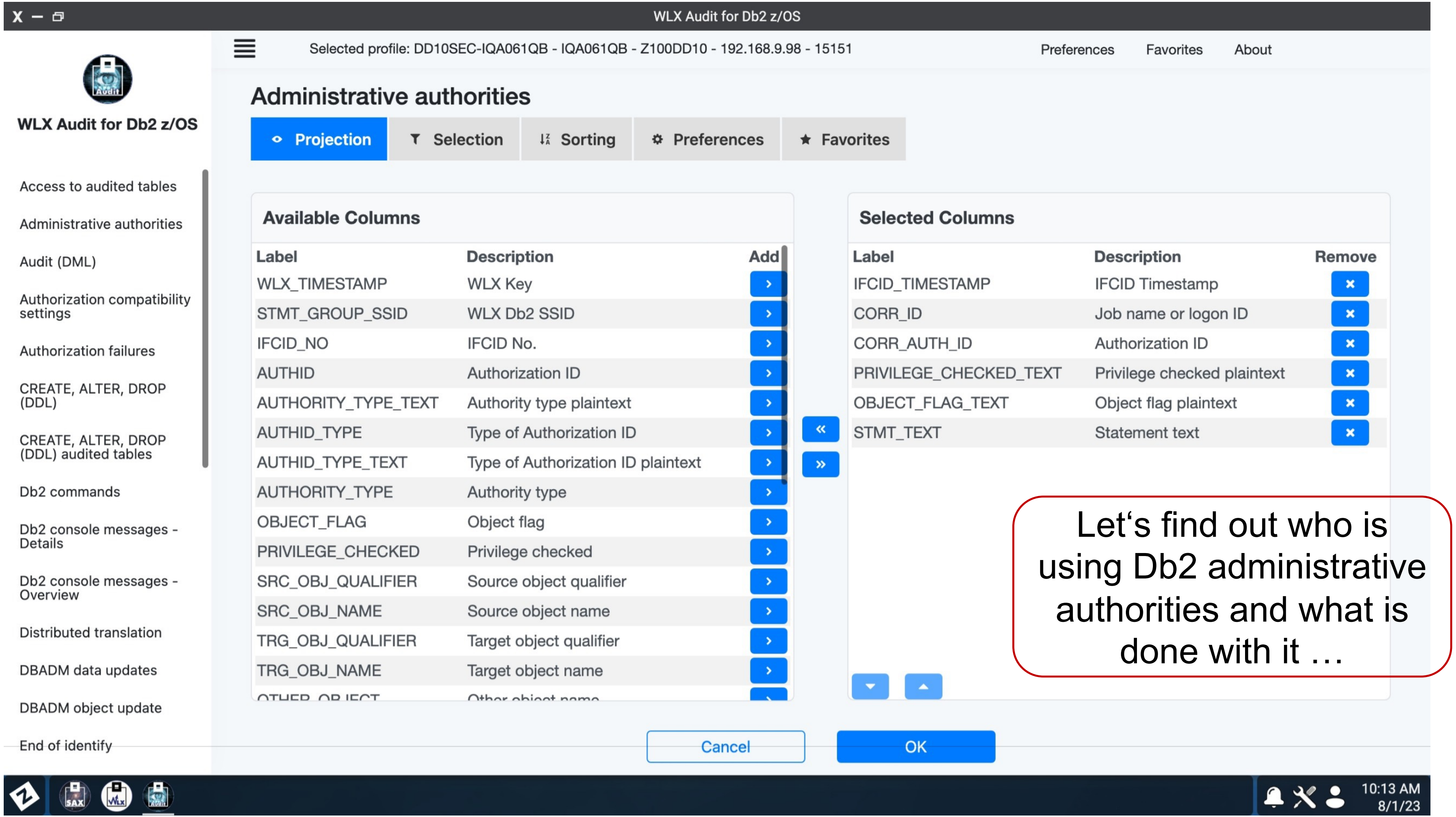
WLX Audit for Db2 z/OS

Selected profile: DD10SEC-IQA061QB - IQA061QB - Z100DD10 - 192.168.9.98 - 15151

Showcase:
Database Access Monitoring

We have pre-canned analytic Use Cases with many audit scenarios for a quick and easy start.

Sample showcase



WLX Audit for Db2 z/OS

WLX Audit for Db2 z/OS

Selected profile: DD10SEC-IQA061QB - IQA061QB - Z100DD10 - 192.168.9.98 - 15151

Preferences Favorites About

- Access to audited tables
- Administrative authorities
- Audit (DML)
- Authorization compatibility settings
- Authorization failures
- CREATE, ALTER, DROP (DDL)
- CREATE, ALTER, DROP (DDL) audited tables
- Db2 commands
- Db2 console messages - Details
- Db2 console messages - Overview
- Distributed translation
- DBADM data updates
- DBADM object update
- End of identify

Administrative authorities

Projection | Selection | Sorting | Preferences | Favorites

Available Columns

Label	Description	Add
WLX_TIMESTAMP	WLX Key	›
STMT_GROUP_SSID	WLX Db2 SSID	›
IFCID_NO	IFCID No.	›
AUTHID	Authorization ID	›
AUTHORITY_TYPE_TEXT	Authority type plaintext	›
AUTHID_TYPE	Type of Authorization ID	›
AUTHID_TYPE_TEXT	Type of Authorization ID plaintext	›
AUTHORITY_TYPE	Authority type	›
OBJECT_FLAG	Object flag	›
PRIVILEGE_CHECKED	Privilege checked	›
SRC_OBJ_QUALIFIER	Source object qualifier	›
SRC_OBJ_NAME	Source object name	›
TRG_OBJ_QUALIFIER	Target object qualifier	›
TRG_OBJ_NAME	Target object name	›
OTHER_OBJECT	Other object name	›

Selected Columns

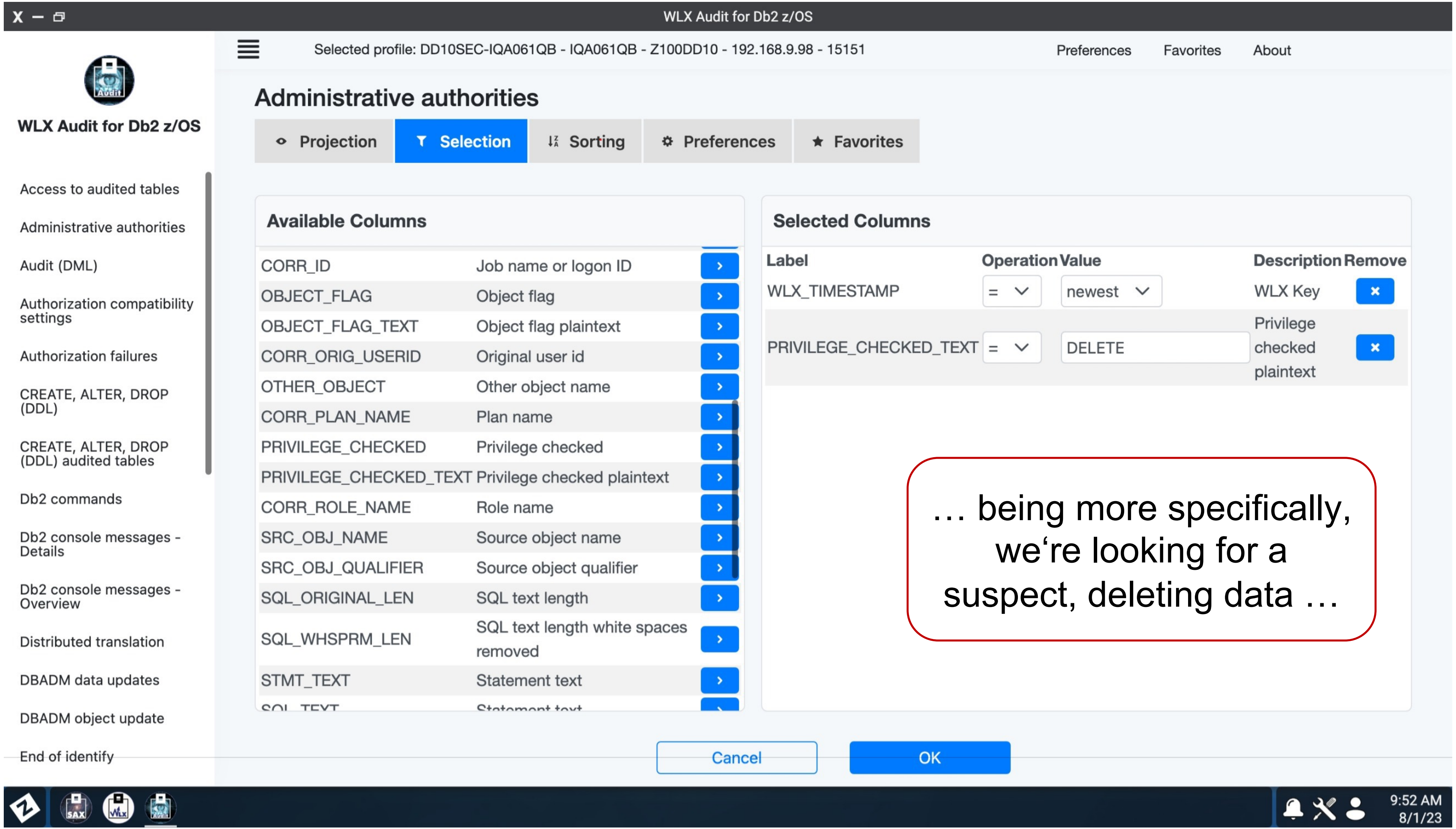
Label	Description	Remove
IFCID_TIMESTAMP	IFCID Timestamp	×
CORR_ID	Job name or logon ID	×
CORR_AUTH_ID	Authorization ID	×
PRIVILEGE_CHECKED_TEXT	Privilege checked plaintext	×
OBJECT_FLAG_TEXT	Object flag plaintext	×
STMT_TEXT	Statement text	×

Cancel OK

10:13 AM 8/1/23

Let‘s find out who is using Db2 administrative authorities and what is done with it …

Sample showcase



Selected profile: DD10SEC-IQA061QB - IQA061QB - Z100DD10 - 192.168.9.98 - 15151

Administrative authorities

Available Columns

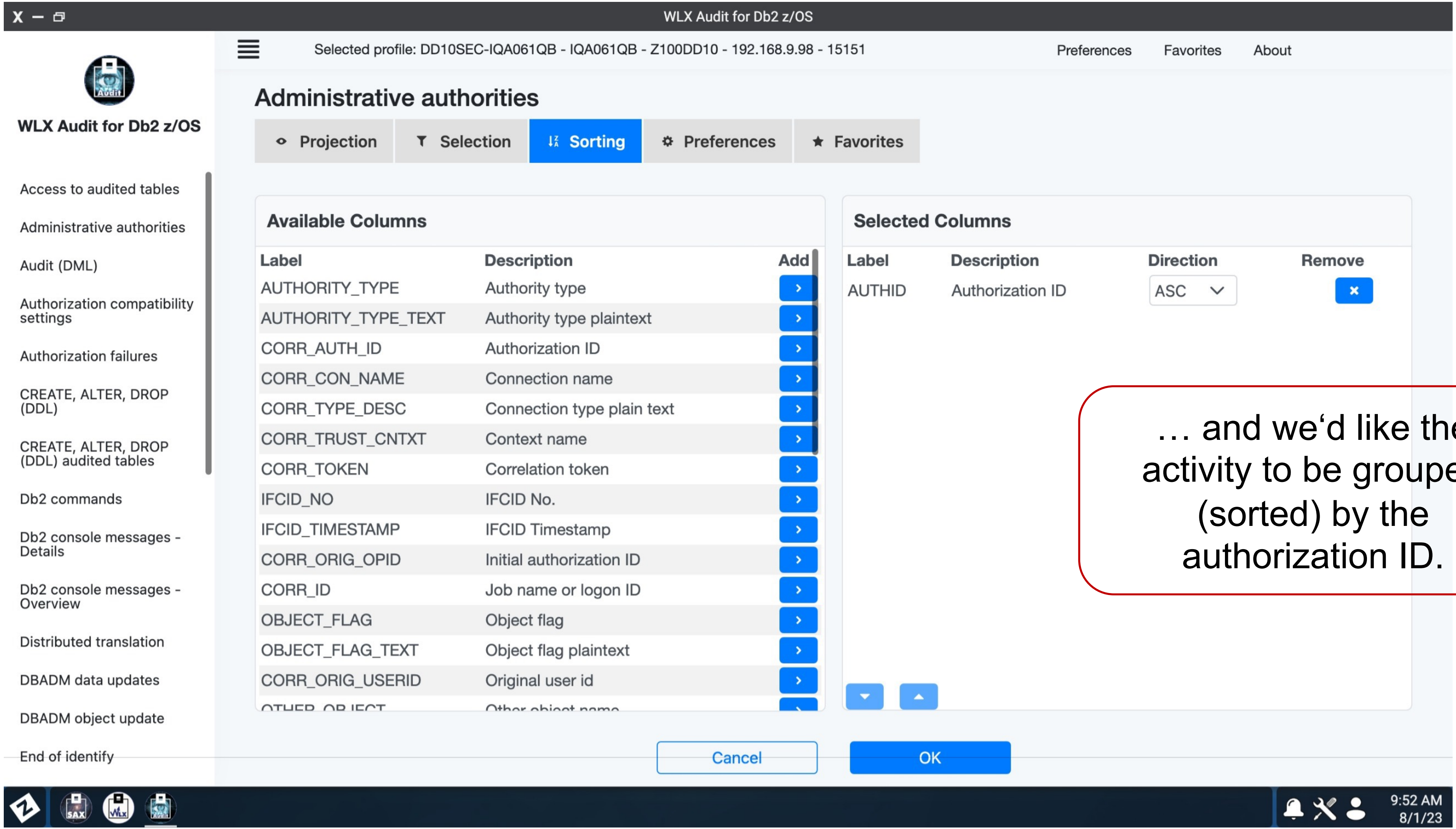
CORR_ID	Job name or logon ID	›
OBJECT_FLAG	Object flag	›
OBJECT_FLAG_TEXT	Object flag plaintext	›
CORR_ORIG_USERID	Original user id	›
OTHER_OBJECT	Other object name	›
CORR_PLAN_NAME	Plan name	›
PRIVILEGE_CHECKED	Privilege checked	›
PRIVILEGE_CHECKED_TEXT	Privilege checked plaintext	›
CORR_ROLE_NAME	Role name	›
SRC_OBJ_NAME	Source object name	›
SRC_OBJ_QUALIFIER	Source object qualifier	›
SQL_ORIGINAL_LEN	SQL text length	›
SQL_WHSPRM_LEN	SQL text length white spaces removed	›
STMT_TEXT	Statement text	›
SQL_TEXT	Statement text	›

Selected Columns

Label	Operation	Value	Description	Remove
WLX_TIMESTAMP	=	newest	WLX Key	×
PRIVILEGE_CHECKED_TEXT	=	DELETE	Privilege checked plaintext	×

… being more specifically, we‘re looking for a suspect, deleting data …

Sample showcase



WLX Audit for Db2 z/OS

Selected profile: DD10SEC-IQA061QB - IQA061QB - Z100DD10 - 192.168.9.98 - 15151

Access to audited tables
Administrative authorities
Audit (DML)
Authorization compatibility settings
Authorization failures
CREATE, ALTER, DROP (DDL)
CREATE, ALTER, DROP (DDL) audited tables
Db2 commands
Db2 console messages - Details
Db2 console messages - Overview
Distributed translation
DBADM data updates
DBADM object update
End of identify

Administrative authorities

Available Columns

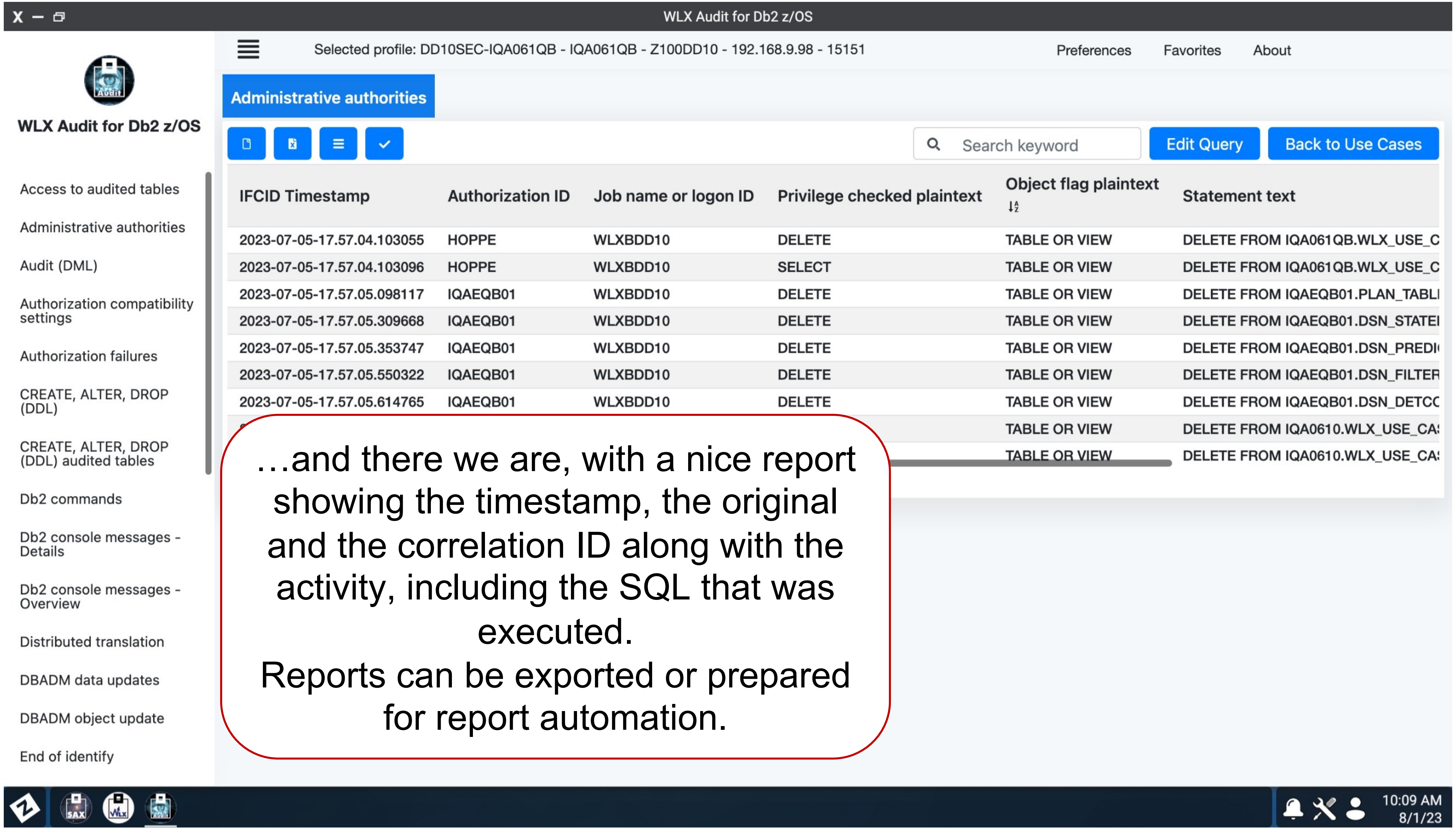
Label	Description	Add
AUTHORITY_TYPE	Authority type	›
AUTHORITY_TYPE_TEXT	Authority type plaintext	›
CORR_AUTH_ID	Authorization ID	›
CORR_CON_NAME	Connection name	›
CORR_TYPE_DESC	Connection type plain text	›
CORR_TRUST_CNTXT	Context name	›
CORR_TOKEN	Correlation token	›
IFCID_NO	IFCID No.	›
IFCID_TIMESTAMP	IFCID Timestamp	›
CORR_ORIG_OPID	Initial authorization ID	›
CORR_ID	Job name or logon ID	›
OBJECT_FLAG	Object flag	›
OBJECT_FLAG_TEXT	Object flag plaintext	›
CORR_ORIG_USERID	Original user id	›
OTHER_OBJECT	Other object name	›

Selected Columns

Label	Description	Direction	Remove
AUTHID	Authorization ID	ASC	×

… and we'd like the activity to be grouped (sorted) by the authorization ID.

Sample showcase



Selected profile: DD10SEC-IQA061QB - IQA061QB - Z100DD10 - 192.168.9.98 - 15151

WLX Audit for Db2 z/OS

- Access to audited tables
- Administrative authorities
- Audit (DML)
- Authorization compatibility settings
- Authorization failures
- CREATE, ALTER, DROP (DDL)
- CREATE, ALTER, DROP (DDL) audited tables
- Db2 commands
- Db2 console messages - Details
- Db2 console messages - Overview
- Distributed translation
- DBADM data updates
- DBADM object update
- End of identify

IFCID Timestamp	Authorization ID	Job name or logon ID	Privilege checked plaintext	Object flag plaintext ↓ᴬᶻ	Statement text
2023-07-05-17.57.04.103055	HOPPE	WLXBDD10	DELETE	TABLE OR VIEW	DELETE FROM IQA061QB.WLX_USE_C
2023-07-05-17.57.04.103096	HOPPE	WLXBDD10	SELECT	TABLE OR VIEW	DELETE FROM IQA061QB.WLX_USE_C
2023-07-05-17.57.05.098117	IQAEQB01	WLXBDD10	DELETE	TABLE OR VIEW	DELETE FROM IQAEQB01.PLAN_TABLI
2023-07-05-17.57.05.309668	IQAEQB01	WLXBDD10	DELETE	TABLE OR VIEW	DELETE FROM IQAEQB01.DSN_STATEI
2023-07-05-17.57.05.353747	IQAEQB01	WLXBDD10	DELETE	TABLE OR VIEW	DELETE FROM IQAEQB01.DSN_PREDI
2023-07-05-17.57.05.550322	IQAEQB01	WLXBDD10	DELETE	TABLE OR VIEW	DELETE FROM IQAEQB01.DSN_FILTER
2023-07-05-17.57.05.614765	IQAEQB01	WLXBDD10	DELETE	TABLE OR VIEW	DELETE FROM IQAEQB01.DSN_DETCC
				TABLE OR VIEW	DELETE FROM IQA0610.WLX_USE_CA
				TABLE OR VIEW	DELETE FROM IQA0610.WLX_USE_CA

…and there we are, with a nice report showing the timestamp, the original and the correlation ID along with the activity, including the SQL that was executed.
Reports can be exported or prepared for report automation.

Questions???

Many thanks for your attention and now….