

# Stronger, Smarter Operations: How a Large Italian Bank Reinvented Data Resiliency Management with IZBR

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## **Rebecca Levesque**

Chief Revenue Officer and  
Technical Advisor to IBM

[rebecca.levesque@21cs.com](mailto:rebecca.levesque@21cs.com)

## **Fabio Riva**

IBM zStack AIOps Tech Sales  
Senior IT Architect

[fabio.riva@it.ibm.com](mailto:fabio.riva@it.ibm.com)



# DATA RESILIENCY CHALLENGES

# Data Resiliency challenges

Comply with regulations & audits



Address the skills gap



Reducing processing costs



Quickly identify data at risk



Automate resiliency processes



Single source of truth for backups



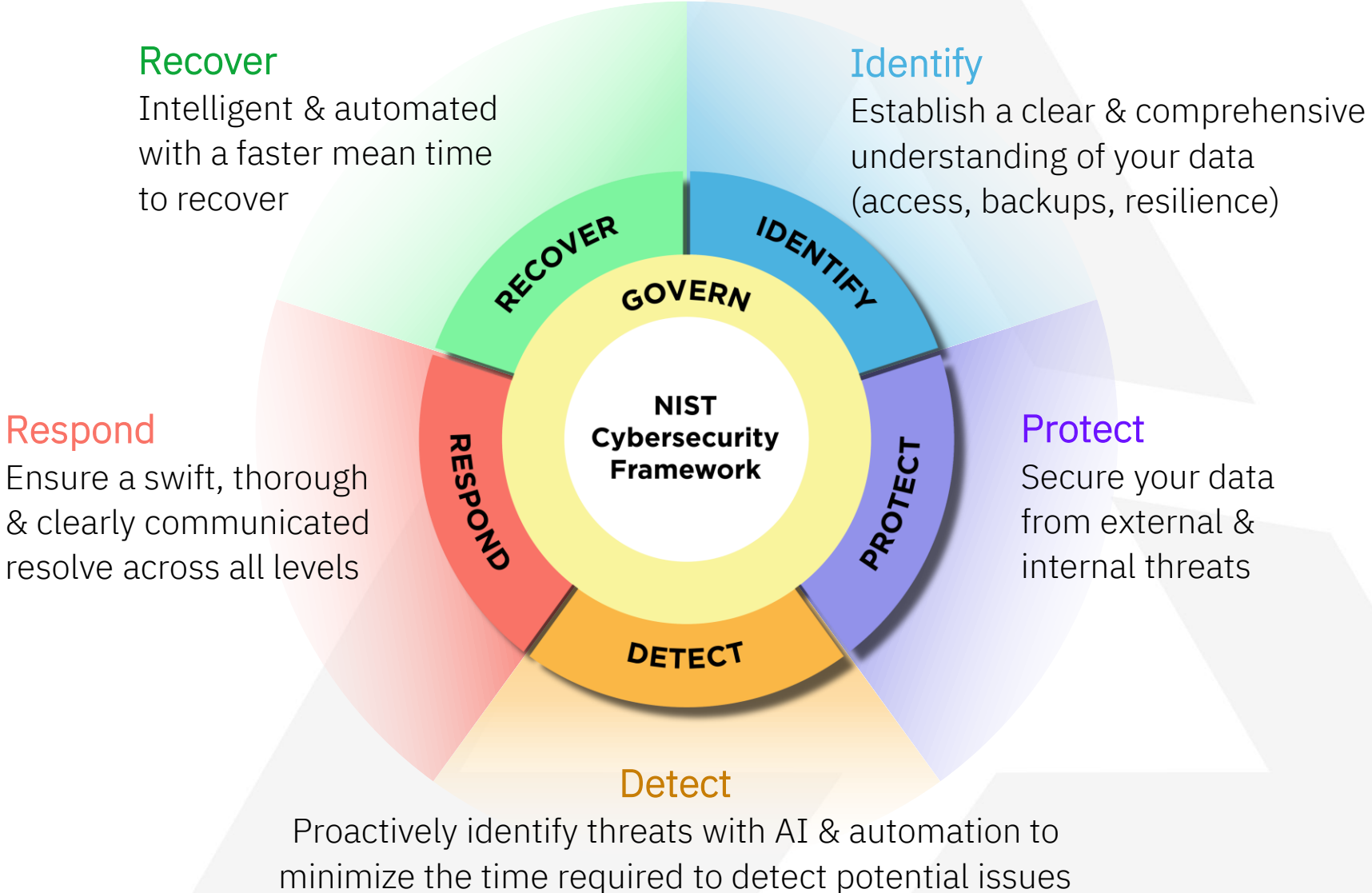
Surgically recover any data set



Perform forensic analysis



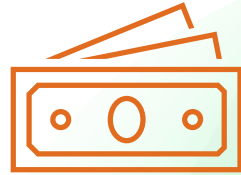
# Data Resiliency Journey



# IZBR supporting Data Resiliency Journey

## Recover

Intelligent & automated with a faster mean time to recover

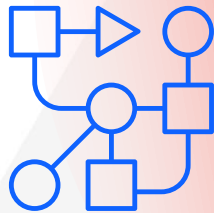


### IZBR Foundation

Simplify Recovery

## Respond

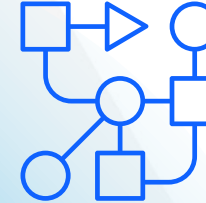
Ensure a swift, thorough & clearly communicated resolve across all levels



### New IZBR Foundation

Integration with TDz to respond to Cyber Events<sup>1</sup>

## IZBR



## Identify

Establish a clear & comprehensive understanding of your data (access, backups, resilience)

### IZBR Foundation

Identify critical data and its flow  
Identify data relation with Db2

## Protect

Secure your data from external & internal threats

### IZBR Foundation

Identify and report on classic and immutable backup copies.  
Identify unexpected accesses

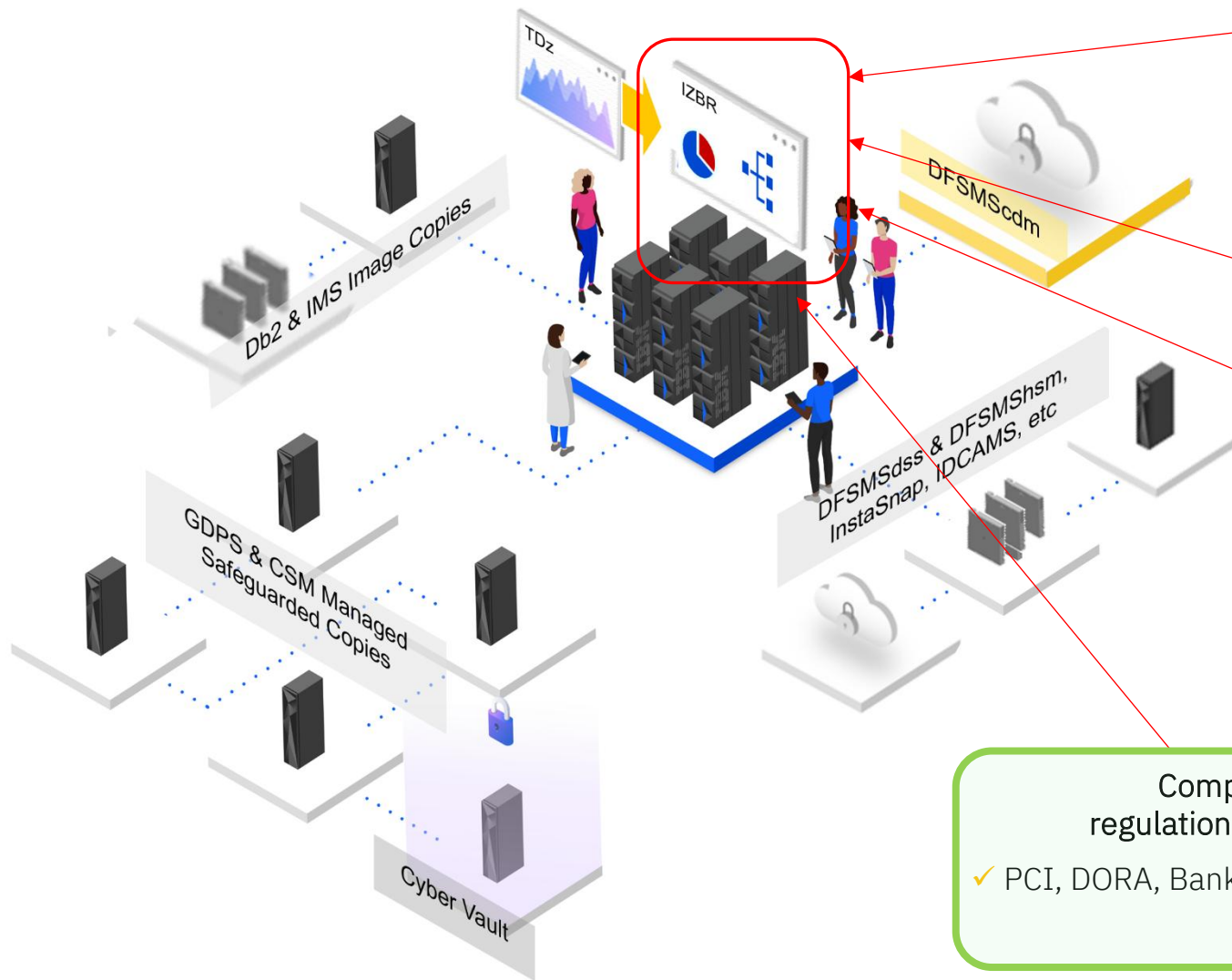
## Detect



Proactively identify threats with AI & automation to minimize the time required to detect potential issues

<sup>1</sup>[Statement of Direction AD25-0976 8 Apr 2025](#)

# Simplified, Centralized, Persona-Driven Data Resiliency



Single source of truth leveraged by *All Personas*

Persona based dashboards:

- ✓ LOB Owner
- ✓ Compliance Team
- ✓ Application Owners
- ✓ Storage Admins

**Simplification**  
Reduce processing cost

- ✓ Reduce excessive backups, etc

**Robust Data Resiliency**

- ✓ Identify critical data
- ✓ Identify missing backups
- ✓ Identify all downstream jobs that may need to rerun after a restore to complete recovery
- ✓ Forensics aids

**Comply with regulations and audits**

- ✓ PCI, DORA, Bank of England , etc

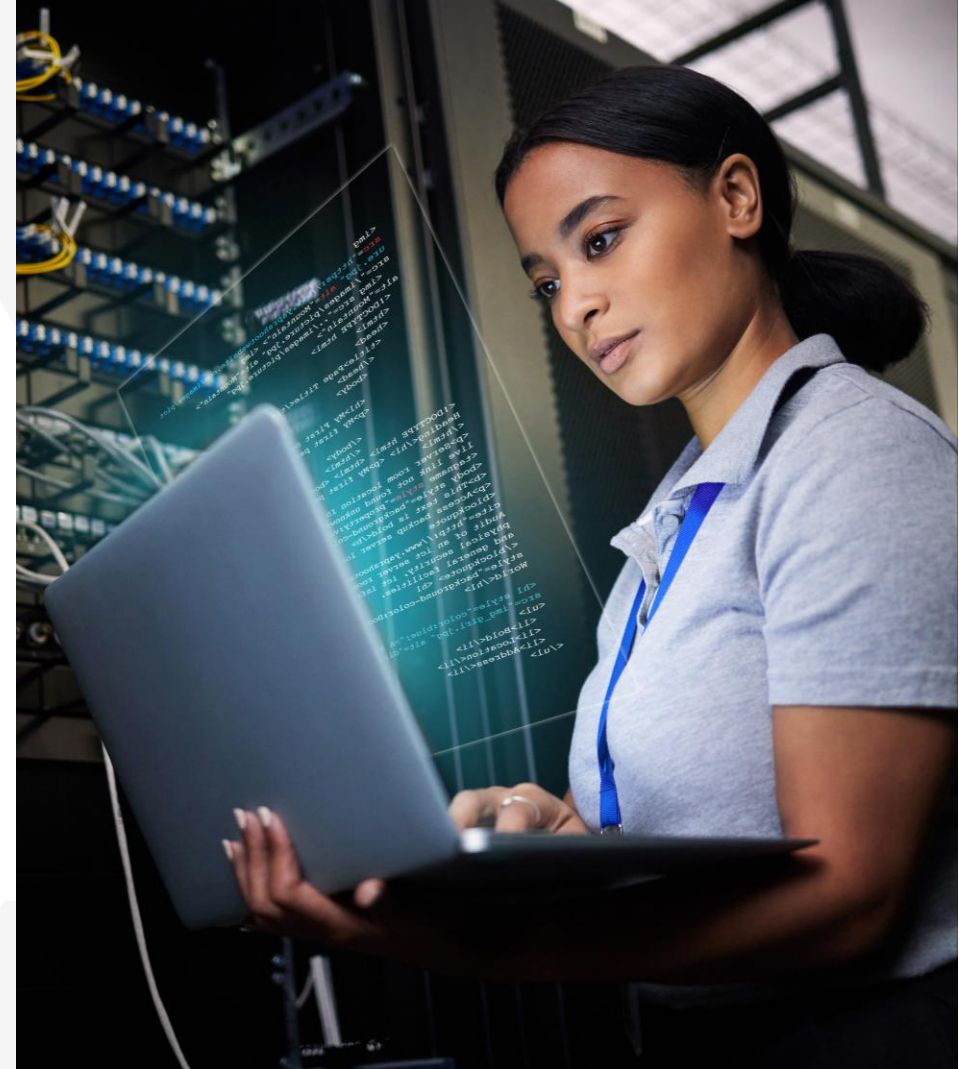
# Regulatory compliance

## IZBR can assist with the following compliance items.

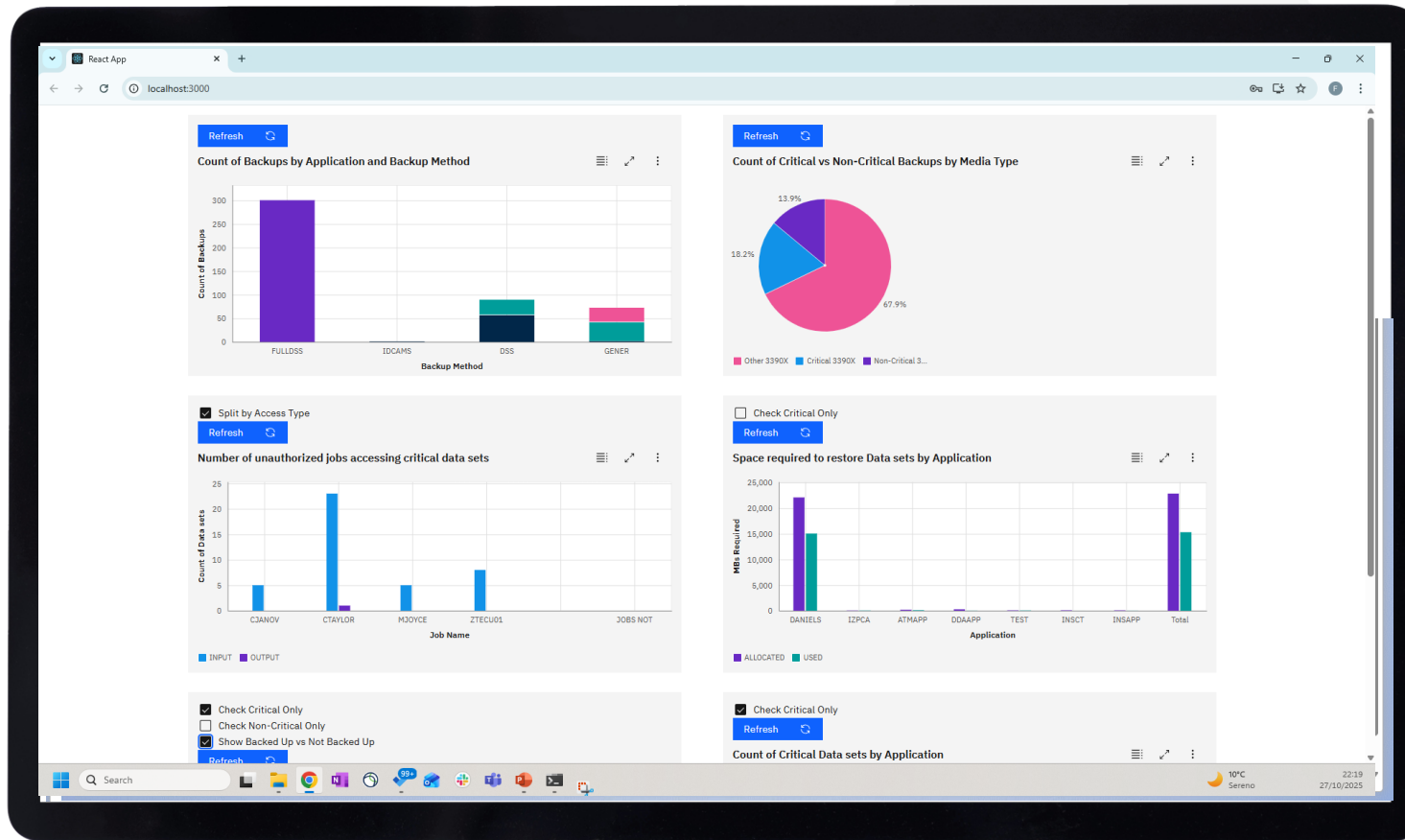
- Full inventory of datasets backups
- Analysis and inventory of datasets usage
- Audit reporting to prove compliance
- Complete inventory of datasets in Safe Guarded copies (3D Virtual Catalog)
- Determining jobs/users that read or updated files using Timeliner Cascade reports

Comply with regulations and audits

✓ PCI, DORA, Bank of England , etc



# Resiliency dashboards



Use the **web reporting REST API** to extract your IZBR data for use in off-platform reporting or graphical tools.

Sample graphs, charts, and code are provided to help you use the RESTful API.

Comply with regulations and audits  
✓ PCI, DORA, Bank of England , etc

# Simplification & Cost reduction: avoid duplication

```

Menu Utilities Compilers Help
BROWSE DB2GCFG.IZBR.V1R2.REPORTS(BKUPDUP) - 05.94 Line 0000000000 Col 001 132
Command ==> Scroll ==> CSR
***** Top of Data *****
          IZBR - IBM Z BATCH RESILIENCY                25 OCT 2025 15:45:26 PAGE: 1
    5698-BR1 COPYRIGHT TERAACLOUD APS 1993,2023
  BACKDUP: LIST OF FILES WITH DUPLICATE BACKUPS

DATA SET NAME                APPLID    BKUPMETH  BKUP JOB  BKUP JOB#  BACKUP DATE/TIME  LAST CHANGED DATE/TIME
-----
IZBRDEMO.TESTING.CT1.PS      INSCT     GENER    INSCT07A  JOB01304   2025294  10:56:11  2025297  10:56:11
IZBRDEMO.TESTING.CT1.PS      DDAAPP    DSS       BACKDDA   JOB00752   2025293  15:05:17  2025297  10:56:11
IZBRDEMO.TESTING.CT1.PS      INSCT     GENER    INSCT07A  JOB00598   2025293  10:56:12  2025297  10:56:11
IZBRDEMO.TESTING.CT1.PS      DDAAPP    DSS       BACKDDA   JOB00030   2025292  15:05:19  2025297  10:56:11
IZBRDEMO.TESTING.CT1.PS      INSCT     GENER    INSCT07A  JOB09888   2025292  10:56:12  2025297  10:56:11
IZBRDEMO.TESTING.CT1.PS      INSCT     GENER    INSCT010  JOB09186   2025291  10:56:11  2025297  10:56:11
IZBRDEMO.TESTING.CT1.PS      INSCT     GENER    INSCT07A  JOB09183   2025291  10:56:10  2025297  10:56:11
IZBRDEMO.TESTING.CT1.PS      INSCT     GENER    INSCT07A  JOB8457    2025290  10:56:12  2025297  10:56:11
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IZBRDEMO.TESTING.CT1.PS      INSCT     GENER    INSCT011  JOB7186    2025288  10:56:13  2025297  10:56:11
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IZBRDEMO.TESTING.CT1.PS      INSCT     GENER    INSCT07A  JOB5292    2025285  10:56:11  2025297  10:56:11
IZBRDEMO.TESTING.FILEIN.PS   ATMAPP    DSS       BACKATM   JOB01444   2025294  15:00:17
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IZBRDEMO.TESTING.INVENTORY   DDAAPP    DSS       BACKDDA   JOB00752   2025293  15:05:17
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IZBRDEMO.TESTING.INVENTORY   DDAAPP    DSS       BACKDDA   JOB00030   2025292  15:05:19
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IZBRDEMO.TESTING.INVENTORY   ATMAPP    DSS       BACKATM   JOB09321   2025291  15:00:16
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IZBRDEMO.TESTING.LOADLIB     INSAPP    DSS       BACKKINS  JOB00755   2025293  15:10:19
IZBRDEMO.TESTING.LOADLIB     DDAAPP    DSS       BACKDDA   JOB00752   2025293  15:05:17
IZBRDEMO.TESTING.LOADLIB     ATMAPP    DSS       BACKATM   JOB00749   2025293  15:00:15
IZBRDEMO.TESTING.LOADLIB     INSAPP    DSS       BACKKINS  JOB00033   2025292  15:10:21
IZBRDEMO.TESTING.LOADLIB     DDAAPP    DSS       BACKDDA   JOB00030   2025292  15:05:19
IZBRDEMO.TESTING.LOADLIB     ATMAPP    DSS       BACKATM   JOB00028   2025292  15:00:15
IZBRDEMO.TESTING.LOADLIB     ATMAPP    DSS       BACKATM   JOB09321   2025291  15:00:16
IZBRDEMO.TESTING.LOADLIB     INSAPP    DSS       BACKKINS  JOB07912   2025289  15:10:20
IZBRDEMO.TESTING.PARMLIB     ATMAPP    DSS       BACKATM   JOB01444   2025294  15:00:17
  
```

Simplification  
Reduce processing cost  
✓ Reduce excessive backups, etc

# Simplification & Cost reduction: avoid duplication

```
Menu Utilities Compilers Help
BROWSE DB2GCFG.IZBR.V1R2.REPORTS(BKUPDUP) - 05.94
Command ==>
Line 0000000000 Col 001 132
Scroll ==> CSR
***** Top of Data *****
IZBR - IBM Z BATCH RESILIENCY
5698-BR1 COPYRIGHT TERAACLOUD APS 1993,2023
BACKDUP: LIST OF FILES WITH DUPLICATE BACKUPS
25 OCT 2025 15:45:26 PAGE: 1
```

DATA SET NAME	APPLID	BKUPMETH	BKUP JOB	BKUP JOB#	BACKUP DATE/TIME	LAST CHANGED DATE/TIME
IZBRDEMO.TESTING.CT1.PS	INSCT	GENER	INSCT07A	JOB01304	2025294 10:56:11	2025297 10:56:11
IZBRDEMO.TESTING.CT1.PS	DDAAPP	DSS	BACKDDA	JOB00752	2025293 15:05:17	2025297 10:56:11
IZBRDEMO.TESTING.CT1.PS	INSCT	GENER	INSCT07A	JOB00598	2025293 10:56:12	2025297 10:56:11
IZBRDEMO.TESTING.CT1.PS	DDAAPP	DSS	BACKDDA	JOB00030	2025292 15:05:19	2025297 10:56:11
IZBRDEMO.TESTING.CT1.PS	INSCT	GENER	INSCT07A	JOB09888	2025292 10:56:12	2025297 10:56:11

```
***** Top of Data *****
IZ BRATCH RESILIENCY
TERAACLOUD APS 1993,2023
LES WITH DUPLICATE BACKUPS
25 OCT 2025 15:45:26
```

APPLID	BKUPMETH	BKUP JOB	BKUP JOB#	BACKUP DATE/TIME	LAST CHANGED DATE/TIME
INSCT	GENER	INSCT07A	JOB01304	2025294 10:56:11	2025297 10:56:11
DDAAPP	DSS	BACKDDA	JOB00752	2025293 15:05:17	2025297 10:56:11
INSCT	GENER	INSCT07A	JOB00598	2025293 10:56:12	2025297 10:56:11
DDAAPP	DSS	BACKDDA	JOB00030	2025292 15:05:19	2025297 10:56:11
INSCT	GENER	INSCT07A	JOB09888	2025292 10:56:12	2025297 10:56:11
INSCT	GENER	INSCT010	JOB09186	2025291 10:56:11	2025297 10:56:11
INSCT	GENER	INSCT07A	JOB09183	2025291 10:56:10	2025297 10:56:11

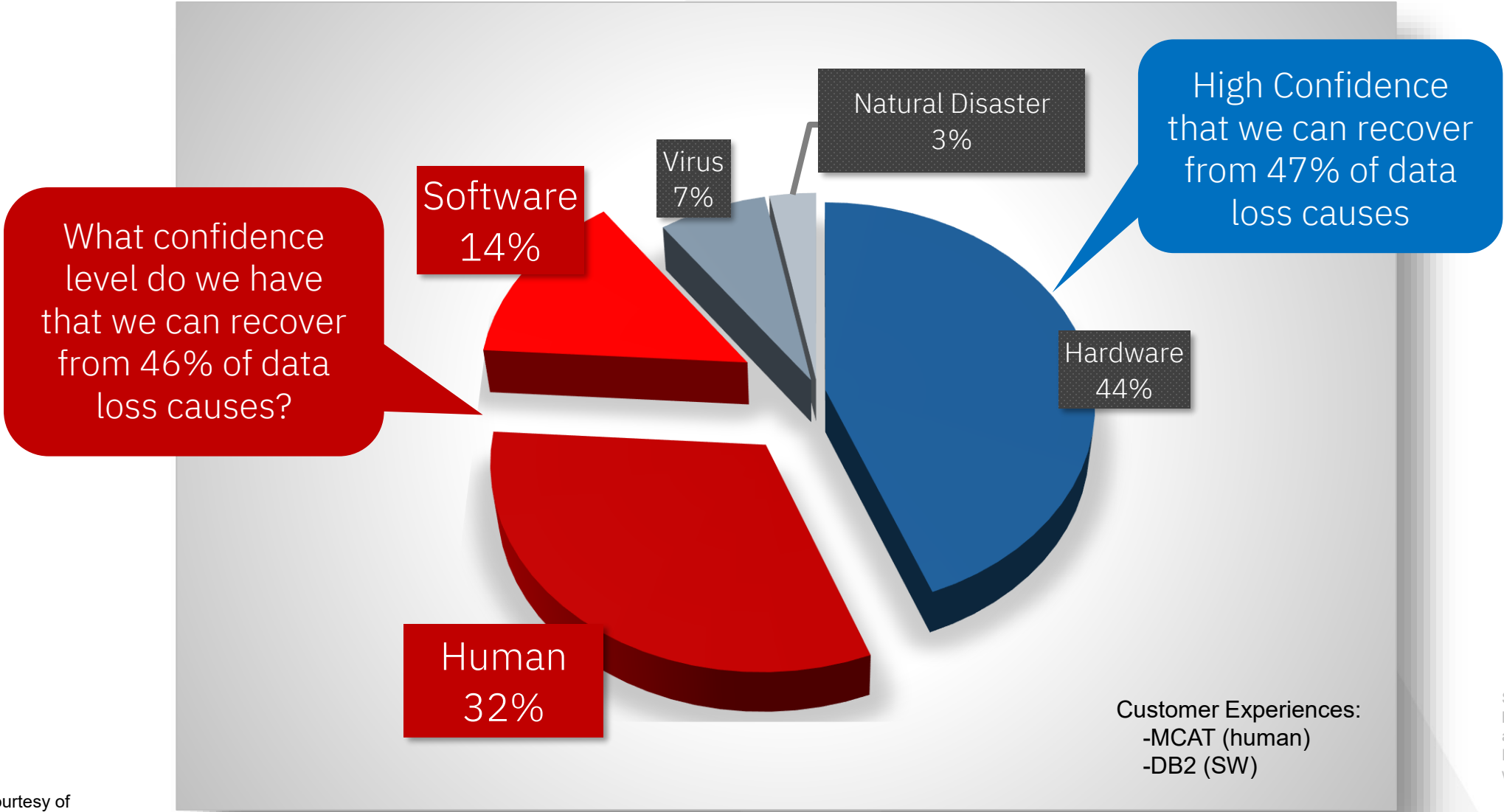
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IZBRDEMO.TESTING.INVENTORY
IZBRDEMO.TESTING.INVENTORY
IZBRDEMO.TESTING.LOADLIB
IZBRDEMO.TESTING.LOADLIB
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IZBRDEMO.TESTING.LOADLIB
IZBRDEMO.TESTING.LOADLIB
IZBRDEMO.TESTING.LOADLIB
IZBRDEMO.TESTING.LOADLIB
IZBRDEMO.TESTING.LOADLIB
IZBRDEMO.TESTING.LOADLIB
IZBRDEMO.TESTING.PARMLIB
```

Simplification  
Reduce processing cost  
✓ Reduce excessive backups, etc



# IZBR AS DATA RESILIENCY MANAGER FOR Z/OS

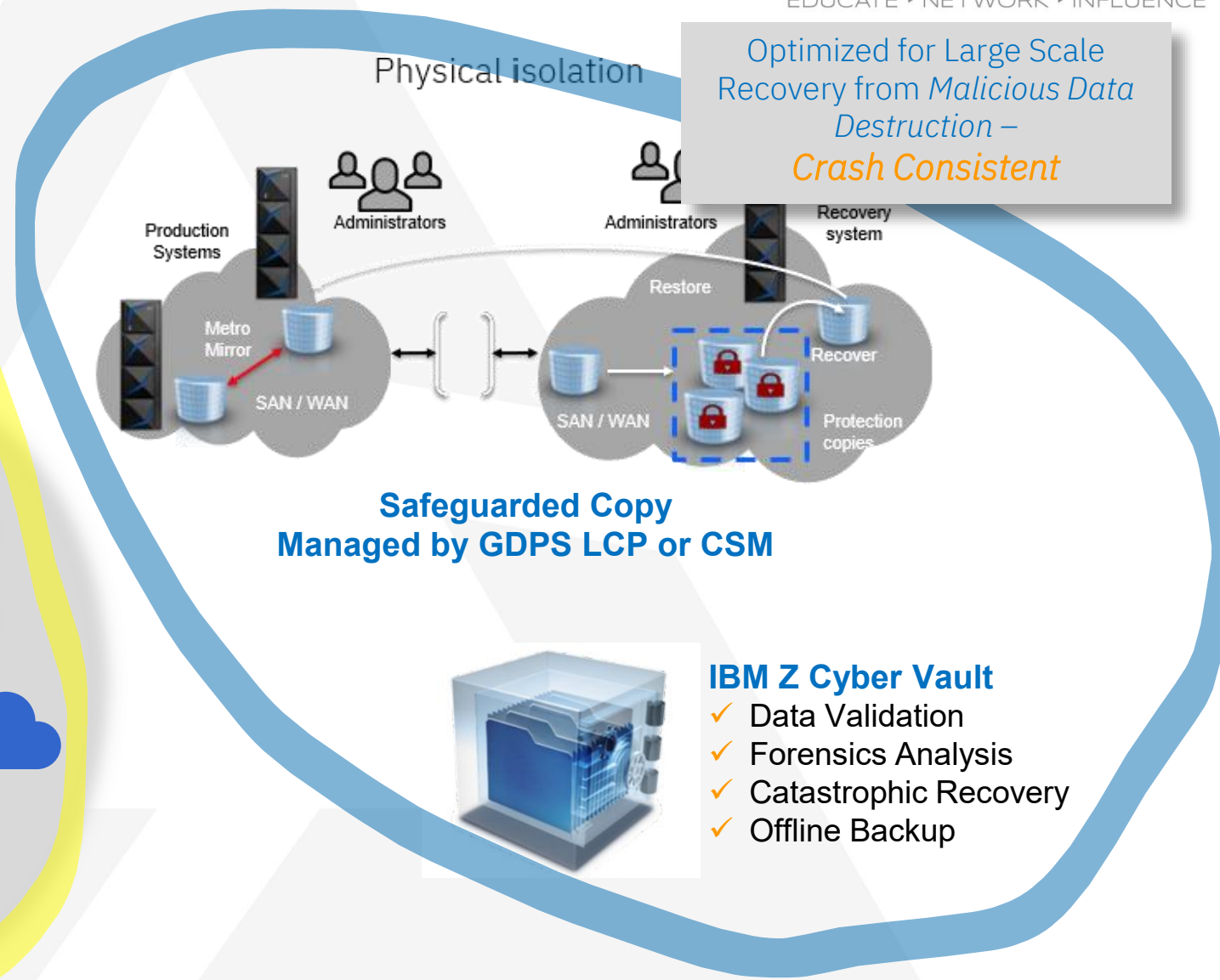
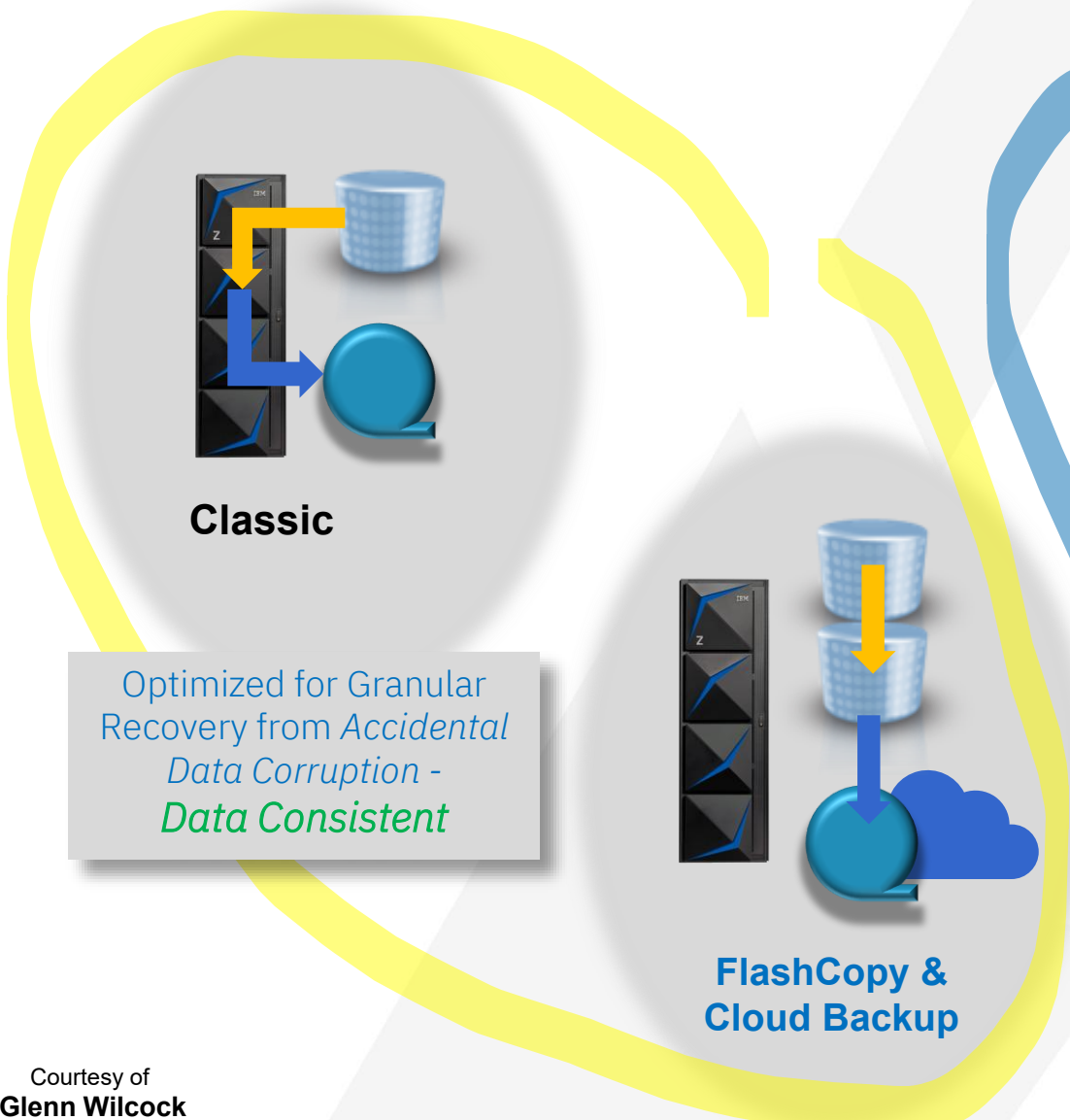
# Causes of data loss



Source:  
[https://www.researchgate.net/figure/An-alysis-of-causes-of-data-loss-Figure-3-How-Denial-Of-Service-DOS-attack-works\\_fig2\\_311470799](https://www.researchgate.net/figure/An-alysis-of-causes-of-data-loss-Figure-3-How-Denial-Of-Service-DOS-attack-works_fig2_311470799)

Courtesy of  
**Glenn Wilcock**  
z/OS DFSMS Chief Product Owner

# Protecting against Software and Human Caused Data Loss - Point in Time Captures



Courtesy of  
**Glenn Wilcock**  
z/OS DFSMS Chief Product Owner

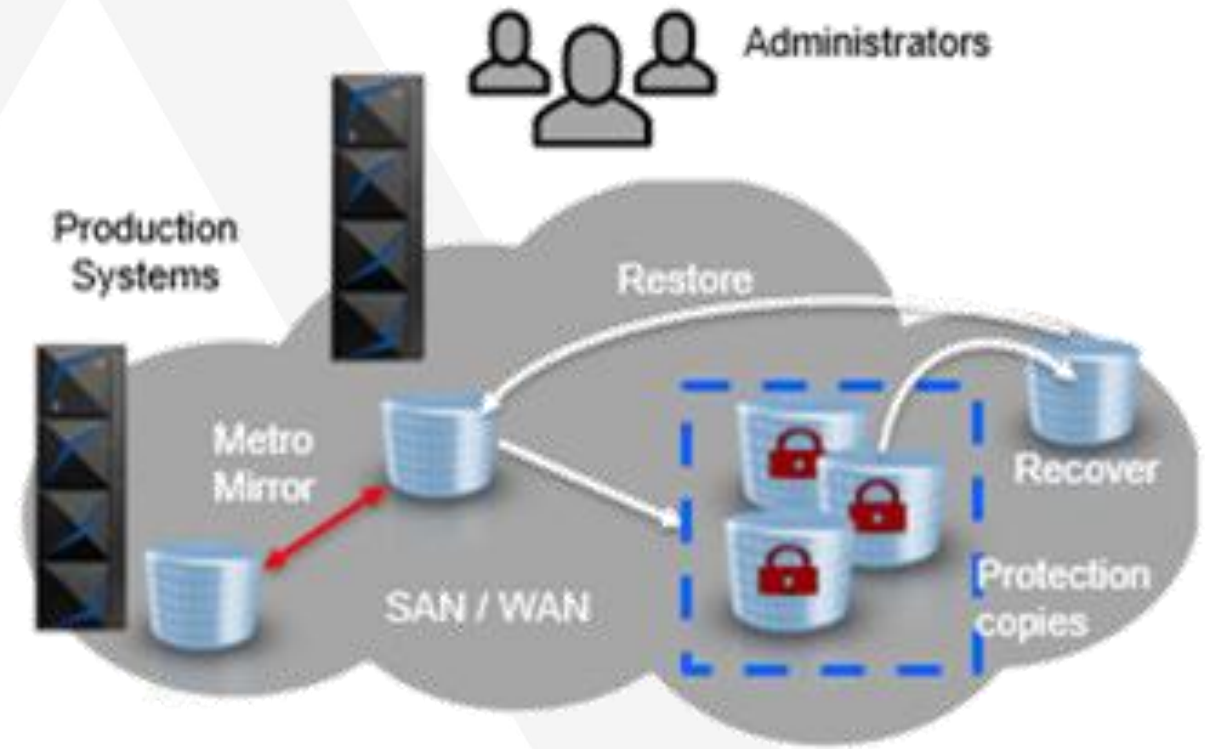
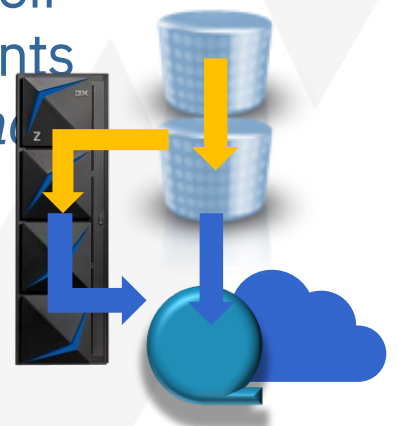
# 'Data Aware' Data Resiliency with IZBR

Protections  
against Software  
and Human  
Caused Data Loss:

BR  
cup  
enable  
e their  
ments  
hand

Classic,  
FlashCopy,  
Cloud Backup

Data Resiliency



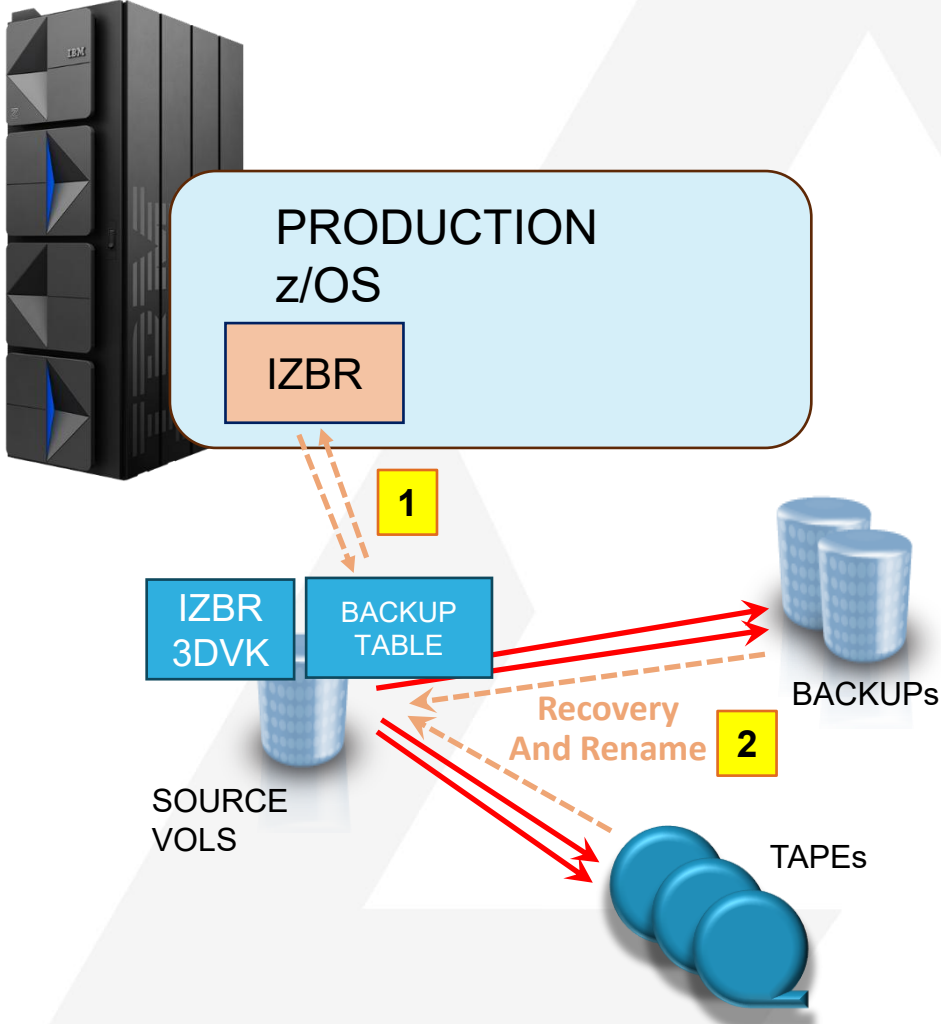
Discrete, individual backup copies optimized for Granular Recovery from Accidental Data Corruption

Discrete, individual backup copies and surgical recovery from Safeguarded Copy / Cyber Vault environments

Many, enterprise-wide undo logs, optimized for Large Scale Recovery from Malicious Data Destruction

Courtesy of  
**Glenn Wilcock**  
z/OS DFSMS Chief Product Owner

# Recovery with IZBR – automatic JCL creation

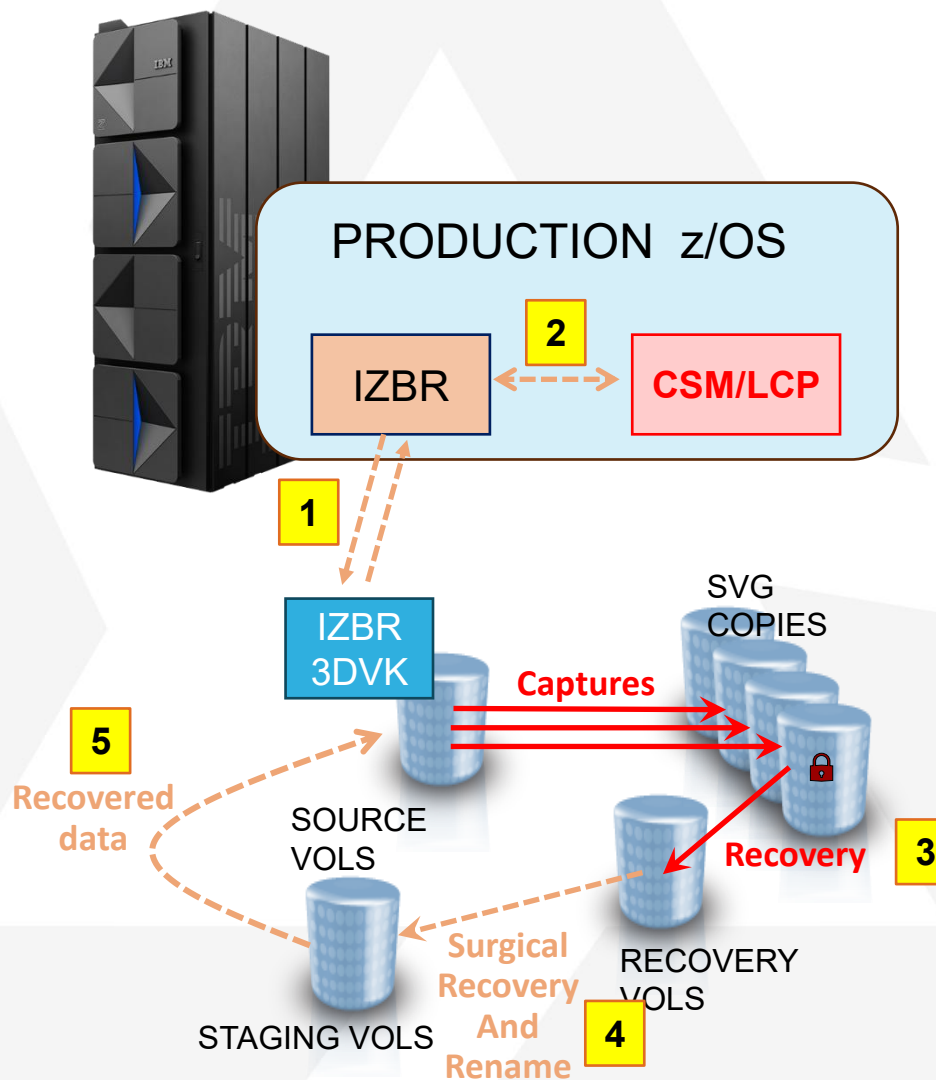


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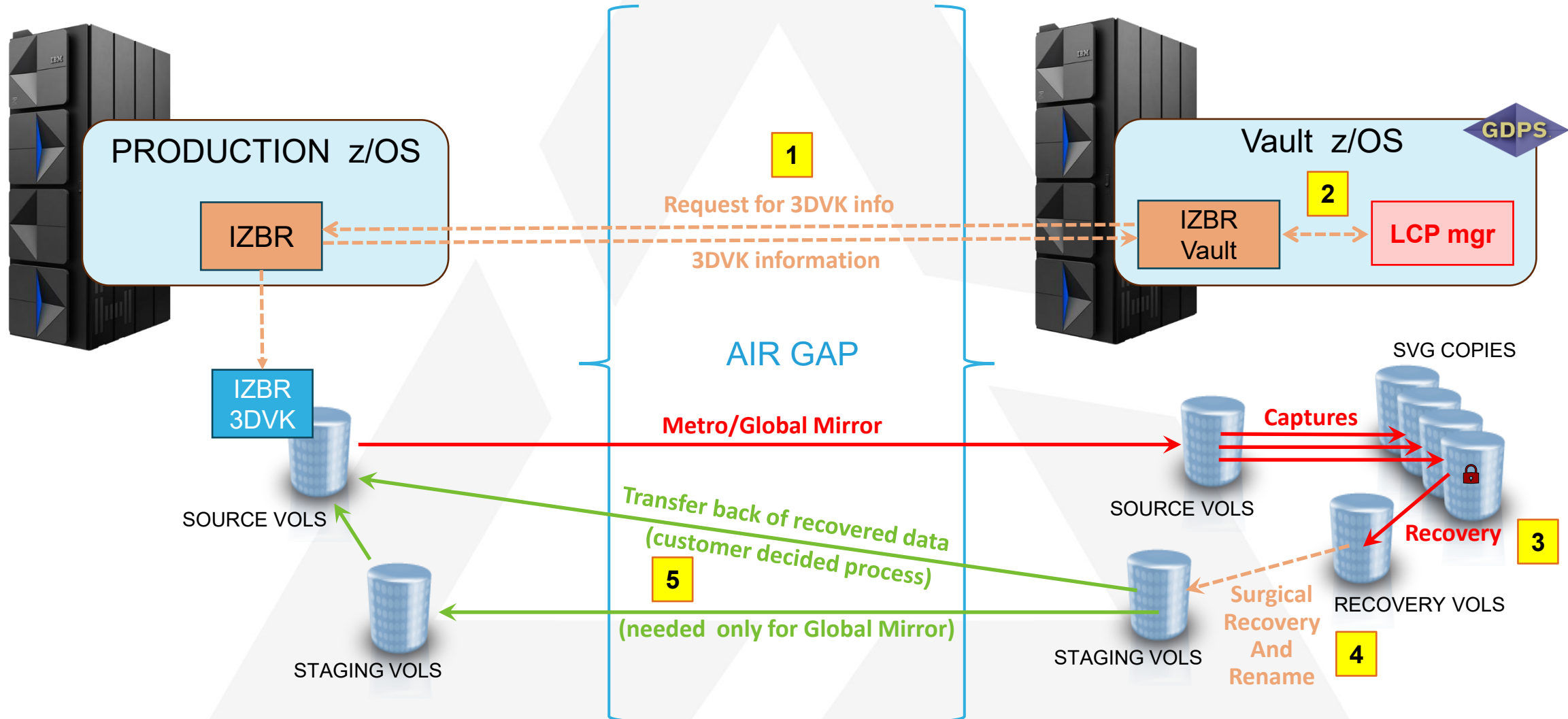
File Edit Settings View Communication Actions Window Help
-----
PrtScr Copy Paste Send Recv Display Color Map Record Stop Play Quit Support Index

File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
COE1 CTAYLOR.TASCFORC.IZBR.V1R2.RESTDSS(TEST1) - 01.00 JCL stored
Command ==>
***** Top of Data *****
000001 //CTAYLOR JOB ( ),CLASS=A,MSGCLASS=X,NOTIFY=&SYSUID
000002 //*
000003 //* IZBR RESTORE JOB
000004 //* GENERATED TO RESTORE FILES BACKED UP WITH DSS
000005 //* GENERATED: DATE: 250910 TIME: 223205
000006 //* APPLID=INSAPP
000007 //*
000008 //* CHANGE JCLLIB STATEMENT BELOW AS NEEDED
000009 //*
000010 //VFIPROC JCLLIB ORDER=(TASCFORC.IZBR.V1R2.CNTL)
000011 //*
000012 //*
000013 //JOB001 EXEC UDSSREST,
000014 // APPLID=INSAPP
000015 //*
000016 //PS10.TAPE DD DISP=SHR,
000017 // LABEL=(0001,SI),UNIT=3490,
000018 // VOL=SER=(V15131),
000019 // DSN=IZBRTAPE.DR.INSAPP.G0903V00
000020 //*
000021 //PS10.VFIFILT DD *
000022 INCLUDE(IZBRDEMO.TESTING.INS.BR14001.PS)
000023 //*
000024 //PS10.SYSIN DD *
000025 RESTORE INDD(TAPE) DATASET(FILTRDD(VFIFILT)) -
000026 TGTDSD(ACTIVE) SPHERE TOL(ENOP) CRT -
000027 REPLACD =
000028 RENAMEU((IZBRDEMO.TESTING.INS.BR14001.PS, -
000029 CTAYLOR.TEST2))
000030 //*
***** Bottom of Data *****
    
```

# Surgical Recovery with IZBR (single system)



# Surgical Recovery with IZBR from LCP Captures





# CUSTOMER USE CASE

# Italian Bank

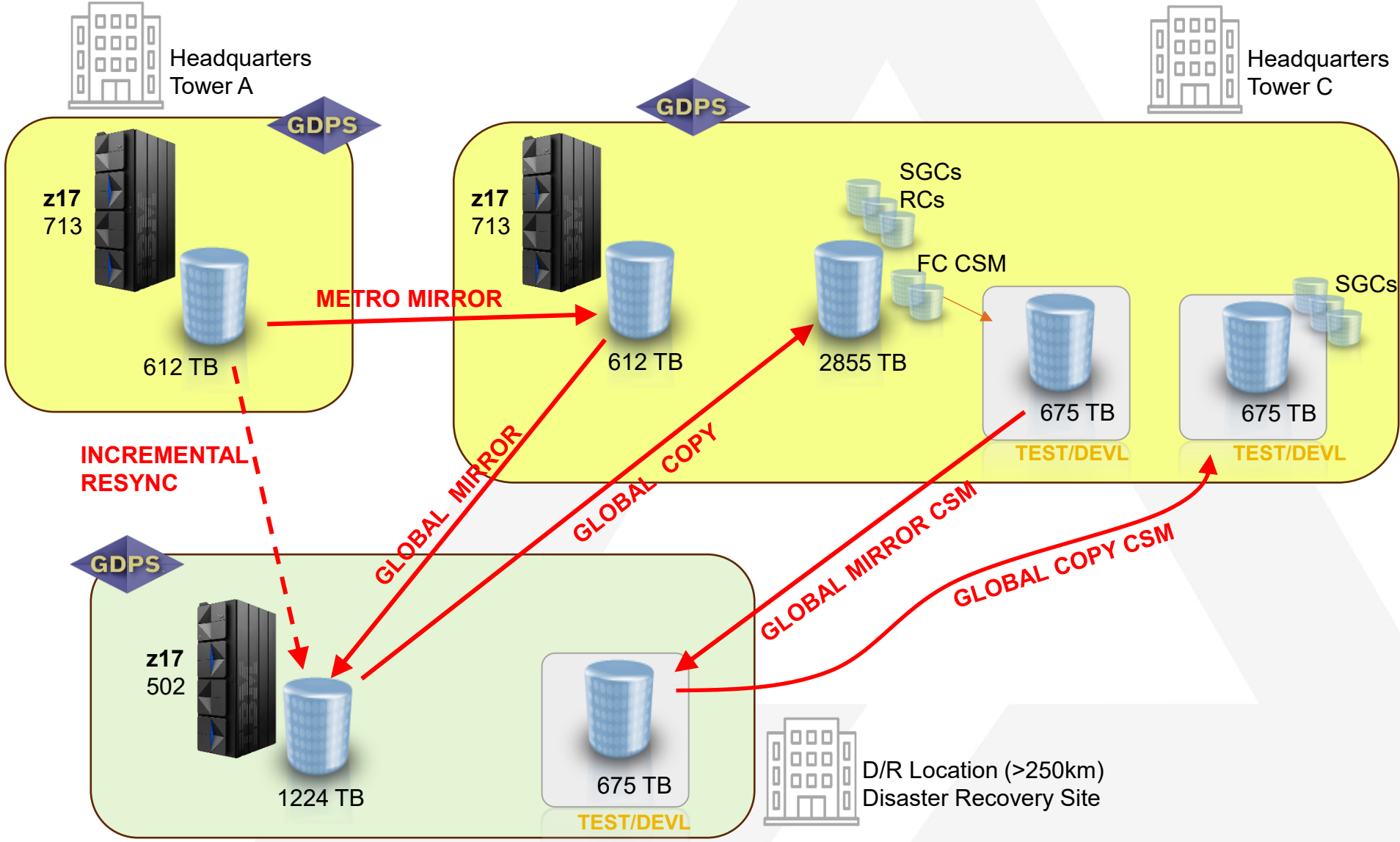
The Customer is one of the most important banking institutions in Italy, having a long history of supporting the territory and local communities.

Today, Customer is a joint stock company listed on the Italian Stock Exchange and represents one of the largest banking groups in terms of size and capital strength.

Customer has **3 mainframe** machines with **52,000 MIPS** total. In 2025 they upgraded all the z/Systems to **z17** machines, reducing power consumption by 18% for processors and 25% for I/O.



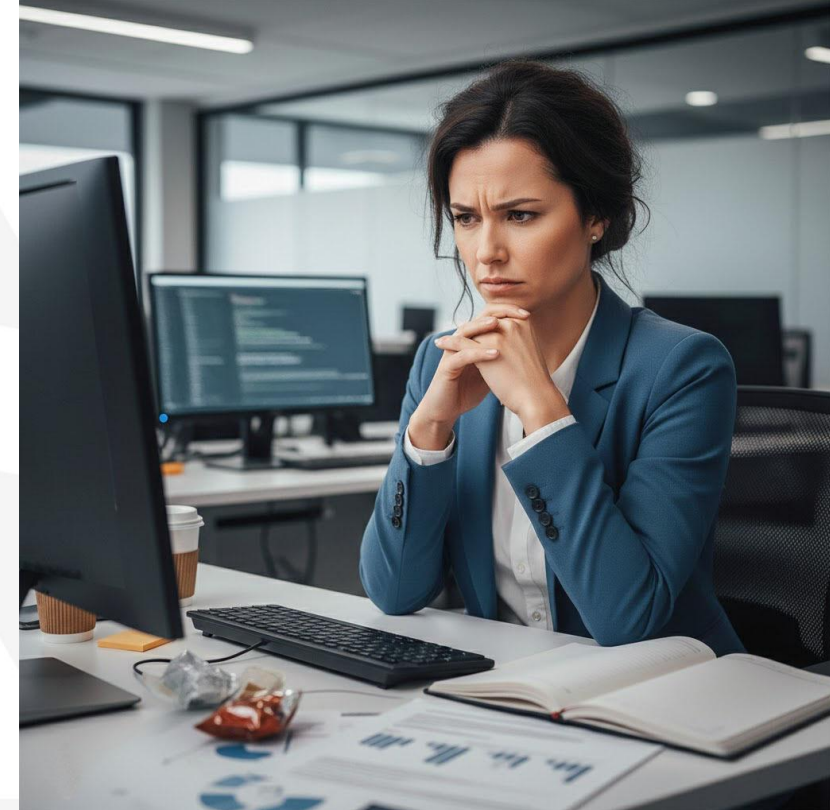
# Customer configuration



# The initial problem

In the past, the Customer used DFSMS/dss as a backup method for application datasets. This solution, although technically OK since it was based on established IBM technology also used by other customers, had some disadvantages:

- First, the **problem of identifying in which backup file a specific dataset was to be recovered**. In fact, the customer was using successive levels of GDG for successive levels of RMM saving and reporting to identify the tapes on which the backups were present. So, the procedure of recovering one or more datasets from such backups became laborious, having to identify which was the correct GDG level and which tapes to use, before doing restore.
- The restore activity mandatorily required the intervention of an experienced technician (sometimes even a systems engineer). This led to delays and use of valuable system resources, as it was not directly managed by the application owner. This led to **taking critical skills away from the systems maintenance activity**, having to spend time on unexpected operational requests.
- The restore activity required manual activity for some steps of the procedure, **increasing the possibilities that human error could occur**.

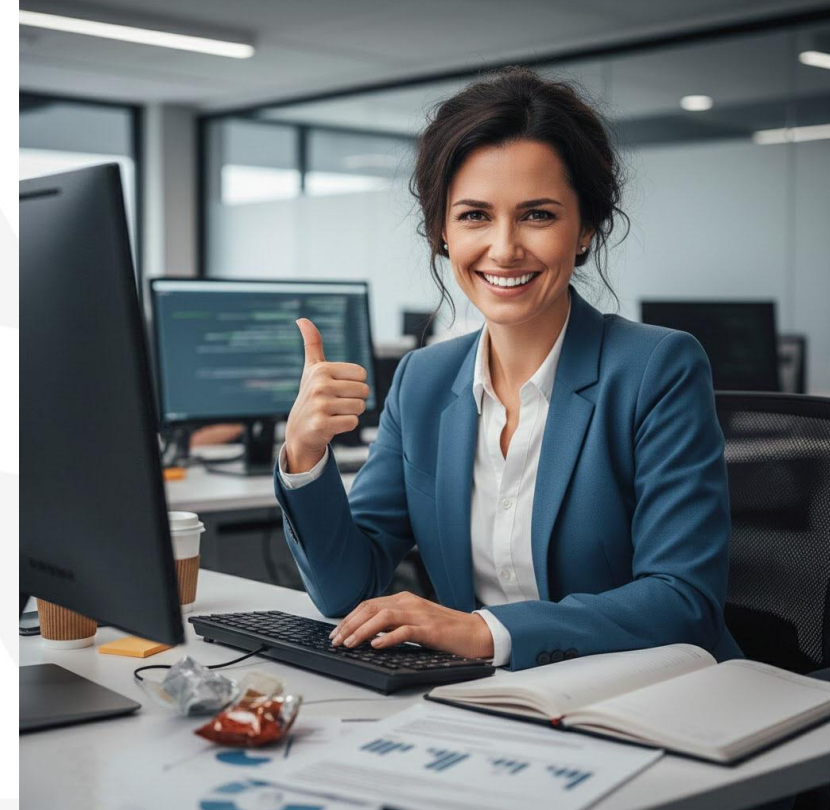


# The initial use of IZBR

The use of IZBR allowed the client to **automatically keep track of where the backup of datasets were saved**, regardless of the medium used (disk, tape, etc.) and the method used for taking backup.

This facility greatly helped **reduce the time to identify** the correct media or level of backup to be used. In addition, the **automatic restore JCL generation** function present in IZBR made it possible to **eliminate the possibility of human error in recovery**.

Another added value is **the reduction of the need to have expert sysprogs** dedicated to restoring application data: by having a product that provides this level of help, the **function of recovering corrupted datasets can be managed directly by the application owner**. In fact, all steps of the procedure are executable from ISPF panels that the product completes with the specific info related to the requested restore.



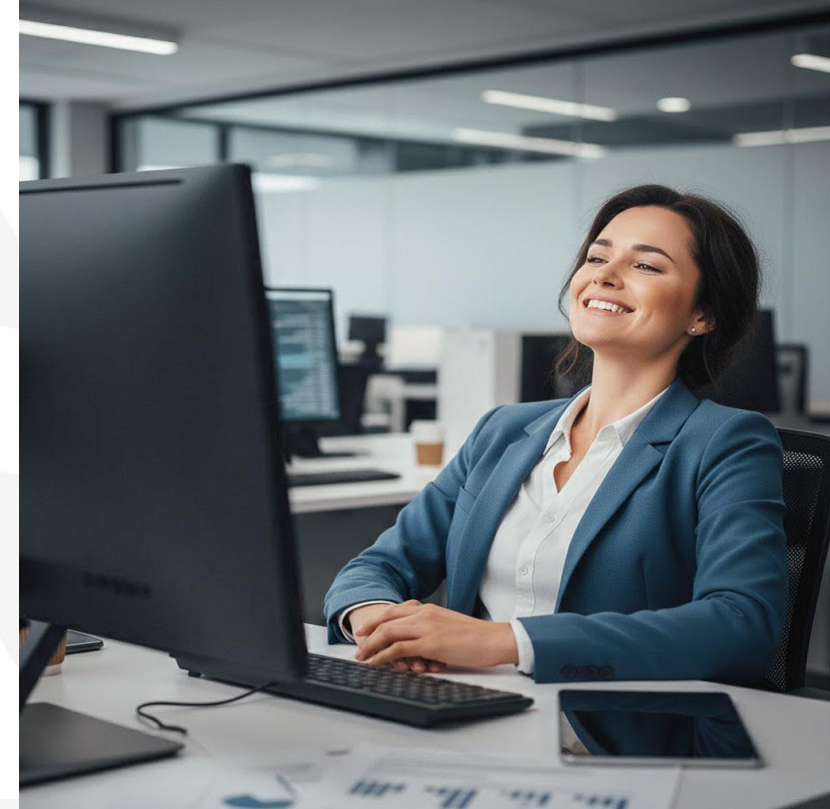
# Extending the use of IZBR

The customer then made a further improvement in the backup/restore management activity by starting to use the DFSMS/hsm product for automatic management of backup, instead of depending on JCL DFSMS/dss managed by application owners.

IZBR has helped in this activity, as it is **able to have a single view of backups with a single interface, regardless of the type of backup used**: IZBR tracks both saves made with DFSMS/dss and with DFSMS/hsm.

This facility made it easier to migrate backup management to DFSMS/hsm, as it was possible to do the migration by managing both methods in parallel, **always using IZBR for restores** (in case of restore for backups made with dss, IZBR will create JCL that invokes dss, in case you used hsm it will create JCL that calls hsm).

With this solution there is also an advantage that many times is not considered: the fact that **no product-specific skill is required to do these restore tasks**. It will be IZBR that will choose what parameters to use and what statements to include in the restore JCL, without requiring specific skills on the product used.

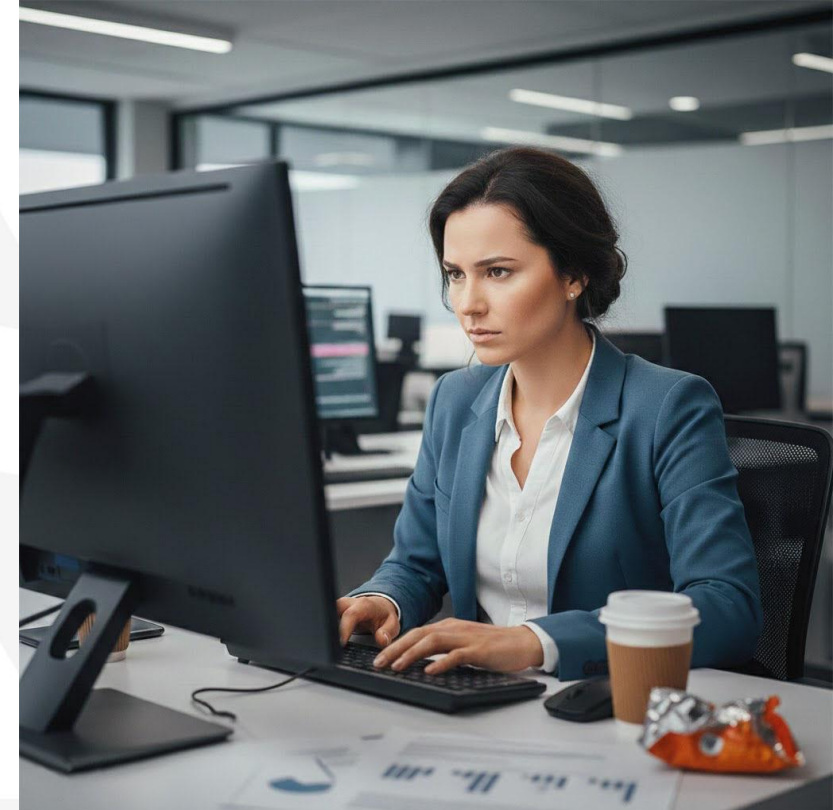


# What we're working on now

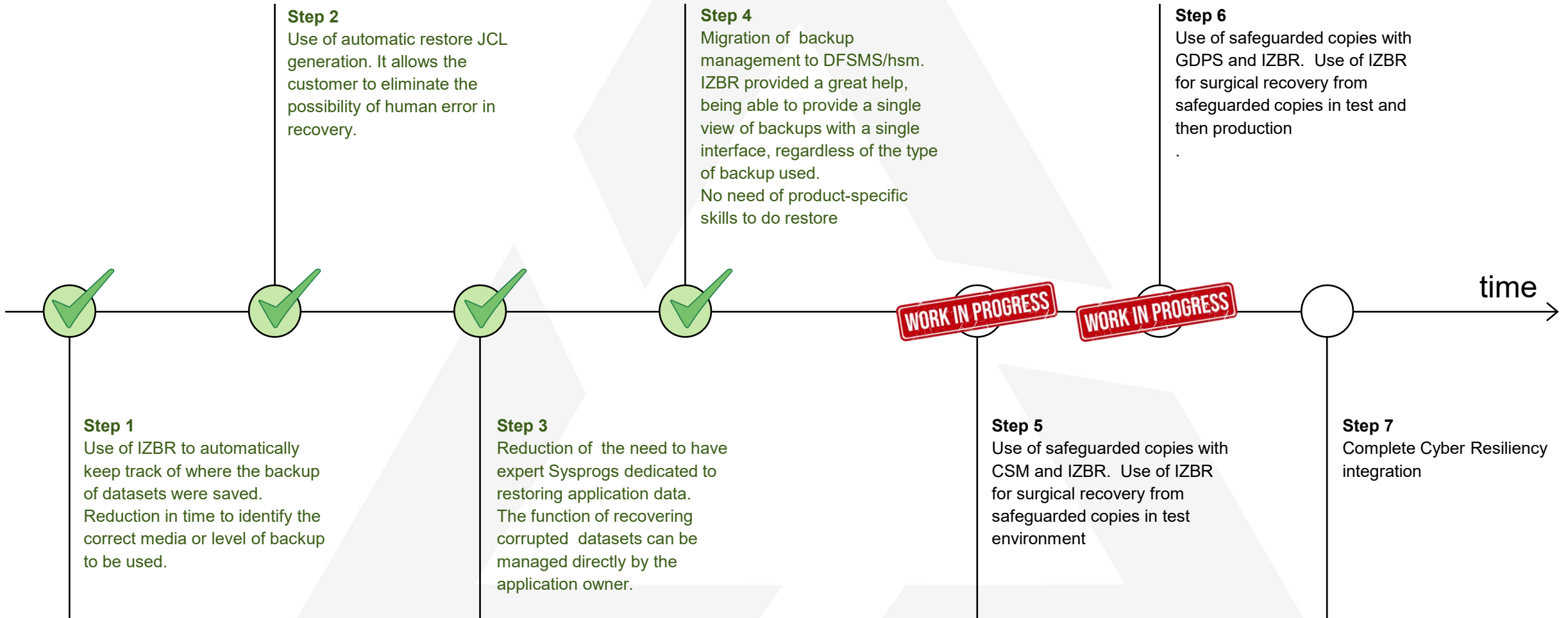
The next step in the journey toward greater data resilience was then taken with the **adoption of the use of safeguarded copies**. The customer now takes a safeguarded copy every hour, and with the dedicated resources currently in place is able to have 4 days of backups available. This provides a high level of reliability, as the client is able to retrieve datasets (in addition, clearly, to the saves in the DB2 environment) with the granularity of one hour.

Initially, the IBM CSM solution was used to manage safeguarded copies but, to move toward a more resiliency solution towards a CyberVault solution, customer decided to fully adopt IBM GDPS solution.

**IZBR will be of great help in this.** Through the information provided by IZBR, it will be possible to do a **surgical recovery of datasets from SGC**, knowing which save contains backups of unopened datasets. All of this also using the automatic creation of recovery JCLs and the other facilities described earlier.



# The journey from Operational to Cyber Resiliency



# Current Status and Next Steps

- IBM–Customer collaboration in activating IZBR surgical recovery functions from safeguarded copies (both with IBM CSM and IBM GDPS)
- It's a Win-Win situation:
  - Customer: possibility to have direct connection with labs for support and help in installation/setup, also influencing future directions
  - IBM: Possibility to test new functions/development directly in customer test environment, validating the solution 'on the field' against large complex installation:
    - 4200 volumes for each Safeguarded copy in Test/Devl
    - 7400 volumes for each Safeguarded copy in Production
- Next step will be the test of the use of the new WatsonX Assistant for Z



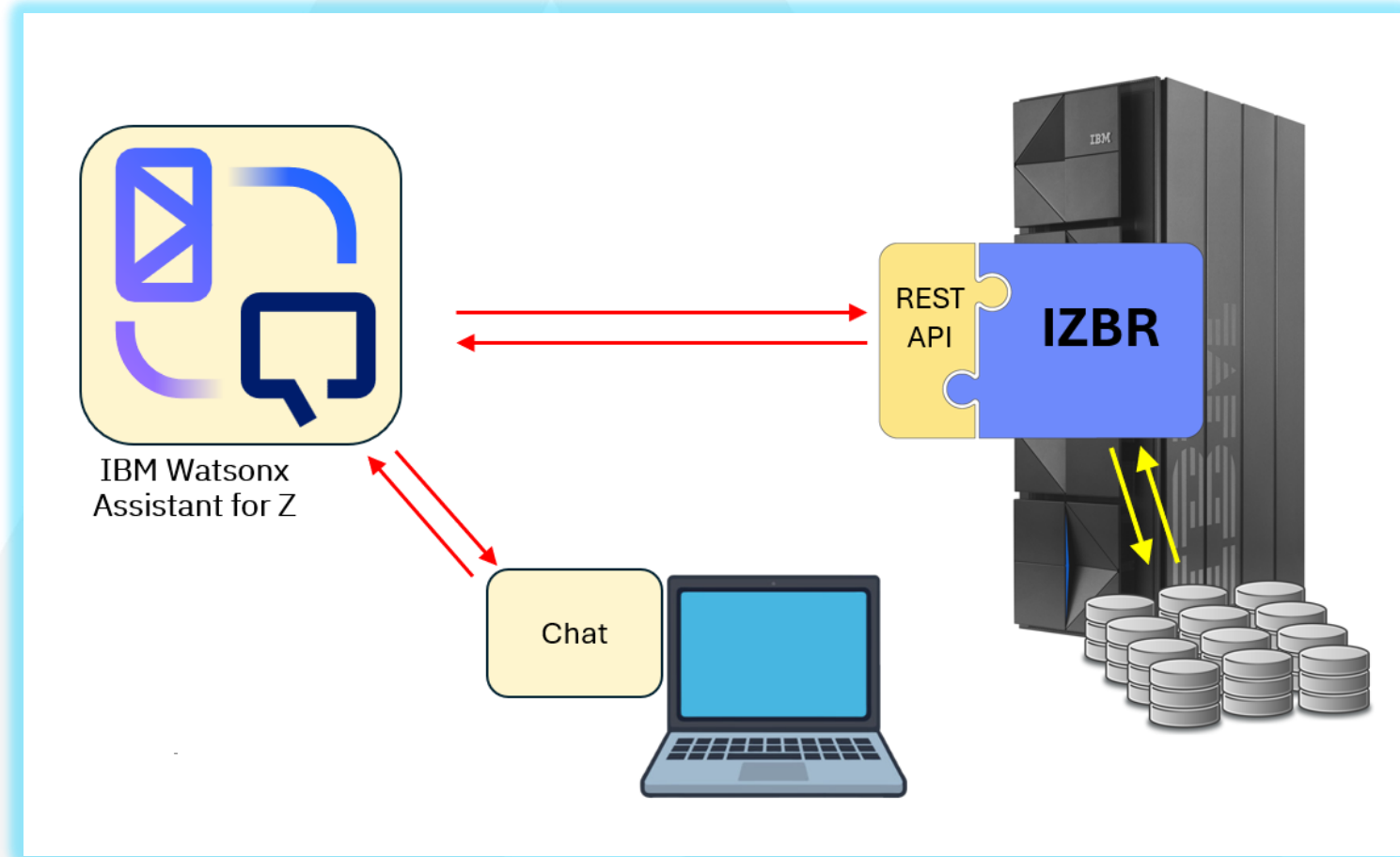


# SOME EXAMPLES OF IZBR USAGE: #1

## USING WATSONX ASSISTANT FOR Z

# IBM Watsonx Assistant for Z

Leveraging  
IBM Watsonx  
Assistant for Z



# Example 1: interaction with WatsonX Assistant 4 Z

Obtain  
the list of  
**critical**  
datasets

The image shows three overlapping screenshots of the 'Assistz' chat interface. The top-left screenshot shows a text input field with a blue box around it and a 'Powered by IBM watsonx' footer. The middle screenshot shows a chat message at 1:48 PM with a JSON query object: 

```
{  "data.appId.filter": "1 Critical",  "data.appId.method": "1",  "data.status.filter": "1 Critical",  "data.status.method": "1",  "searchLimit": "100"}
```

 and a loading spinner. The bottom-right screenshot shows the response with a table of results.

Assistz

Assistz

Assistz

1:48 PM

IZBR Critical Dataset Endpoint

data.appId.filter

1 Critical

data.appId.method

1

data.status.filter

1 Critical

data.status.method

1

searchLimit

100

Powered by IBM watsonx ⓘ

Powered by IBM watsonx ⓘ

IZBR Critical Dataset Endpoint

resultRecords

Application ID	Dataset Name
DANIELS	CENTER.CLIST
DANIELS	CENTER.ISPMLIB
DANIELS	CENTER.ISPPLIB
DANIELS	CENTER.ISPSLIB
DANIELS	CENTER.LOASLIB
DANIELS	DANIELL.AIBCO3.XMIT
DANIELS	DANIELL.AIBFIX.XMIT
DANIELS	DANIELL.BQG.TEXT
DANIELS	DANIELL.CDC.OUT.D
DANIELS	DANIELL.CDC.PAL
DANIELS	DANIELL.CDC.RDEF

Type something...

Powered by IBM watsonx ⓘ

#1 of 4

# Example 1: interaction with WatsonX Assistant 4 Z

Obtain the list of **critical datasets** for a specific application

#2 of 4

The image shows three overlapping screenshots of the Assistz chat interface, illustrating a search process. The top-left screenshot shows a list of 'ATMAPP' items. The middle screenshot shows a search filter for 'DANIELS' and a 'searchLimit' of 100. The bottom-right screenshot shows the search results for 'DANIELS' critical datasets.

Application ID	Dataset Name
DANIELS	CENTER.CLIST
DANIELS	CENTER.ISPMLIB
DANIELS	CENTER.ISPPLIB
DANIELS	CENTER.ISPSLIB
DANIELS	CENTER.LOADLIB
DANIELS	DANIELL.AIBCOMP3.XMIT
DANIELS	DANIELL.AIBFIX.XMIT
DANIELS	DANIELL.BQG.TEXT
DANIELS	DANIELL.CDC.OUT.D
DANIELS	DANIELL.CDC.RDEF
DANIELS	DANIELL.CDC.RDEF

# Example 1: interaction with WatsonX Assistant 4 Z

Obtain the list of backed-up datasets

#3 of 4

The screenshot displays a WatsonX Assistant chat window overlaid on an Excel spreadsheet. The chat window shows a user prompt "Would you like to" and a response "Yes". The Excel spreadsheet is titled "table-4.csv" and contains a table with 38 rows and 20 columns. The columns are: Application ID, flags, jobId, level, Dataset Name, method, Size (MB), fileSeq, Job Name, Set Date, Set Time, Date Time, Sub App ID, User Info, Change Job, Backup Date, Backup Time, Change Date, Change Time, Device Type, and Volume Count. The data includes various job names like DANIELS, INSAPP, and ATMAPP, and backup information.

# Example 1: interaction with WatsonX Assistant 4 Z



Obtain the list of critical datasets **NOT BACKED-UP**

#4 of 4

The left screenshot shows a chat window titled 'Assistz' with a message: 'being backed up Critical data sets that are shared between...'. Below it is a 'View source' link. A blue box highlights the question: 'Would you like me to see if you have...'. Below the question are 'Yes!' and 'No thanks!' buttons. A timestamp '1:53 PM' is visible. Below the chat is a form with a radio button, a label 'IZBR Endpoint for Critical Dataset with Miss...', a text field 'dsName' containing 'all', and 'Cancel' and 'Apply' buttons. At the bottom, it says 'Powered by IBM watsonx'.

The right screenshot shows the JSON response in a chat window. The response is: 

```
{  "resultList": [    {      "Dataset Name": "CENTER.CLIST",    },    {      "Dataset Name": "CENTER.ISPMLIB",    },    {      "Dataset Name": "CENTER.ISPPLIB",    },    {      "Dataset Name": "CENTER.ISPSLIB",    },    {      "Dataset Name": "CENTER.LODLIB",    },    {      "Dataset Name": "DANIELL.AIBCOMP3.XMIT",    },    {      "Dataset Name": "DANIELL.AIBFIX.XMIT",    },    {      "Dataset Name": "DANIELL.BQG.TEXT",    },    {      "Dataset Name": "DANIELL.CDC.OUT.D",    },    {      "Dataset Name": "DANIELL.CDC.PAL",    },    {      "Dataset Name": "DANIELL.CDC.RDEF",    }  ]}
```

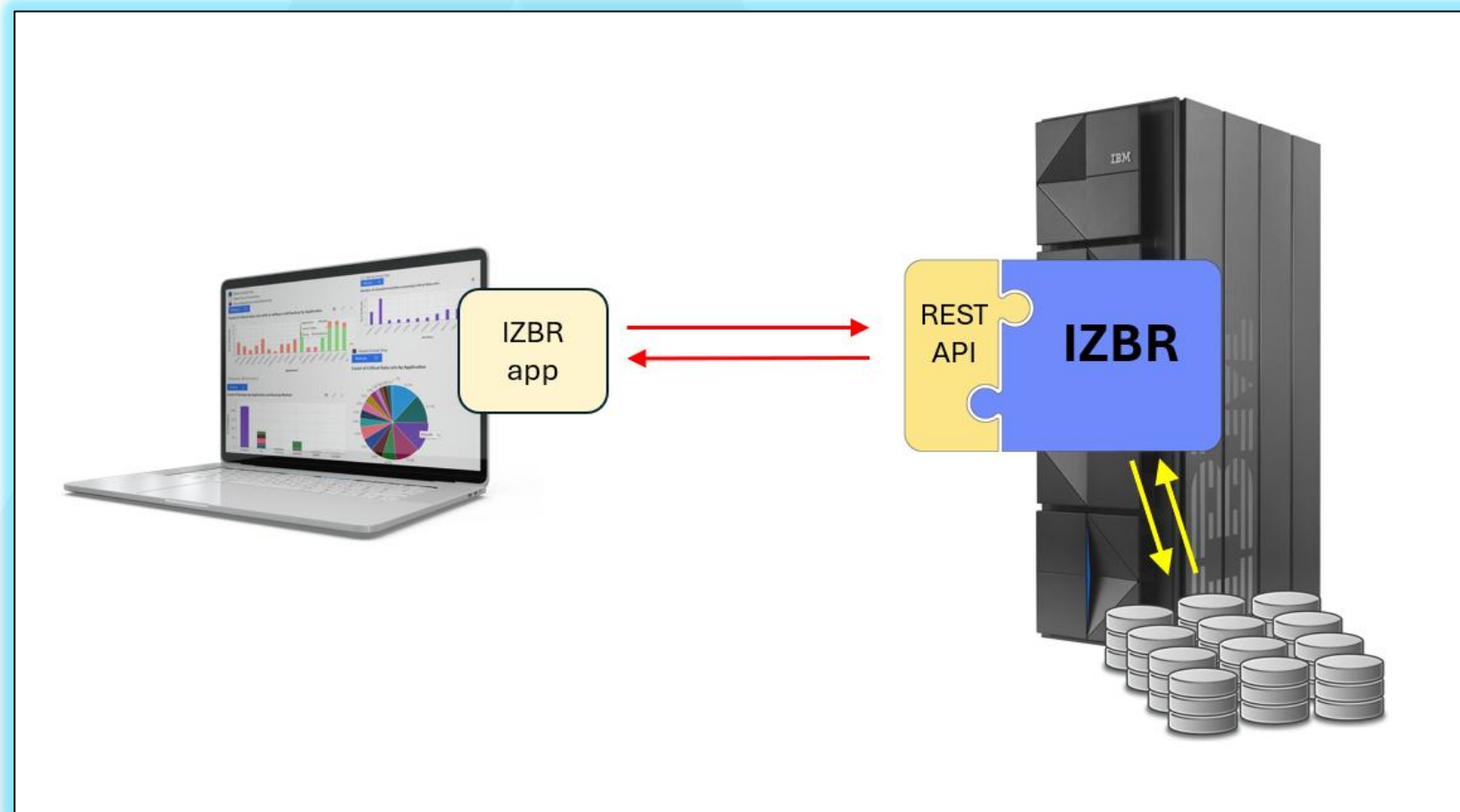


# SOME EXAMPLES OF IZBR USAGE: #2

## USING IZBR DATA VIA REST API

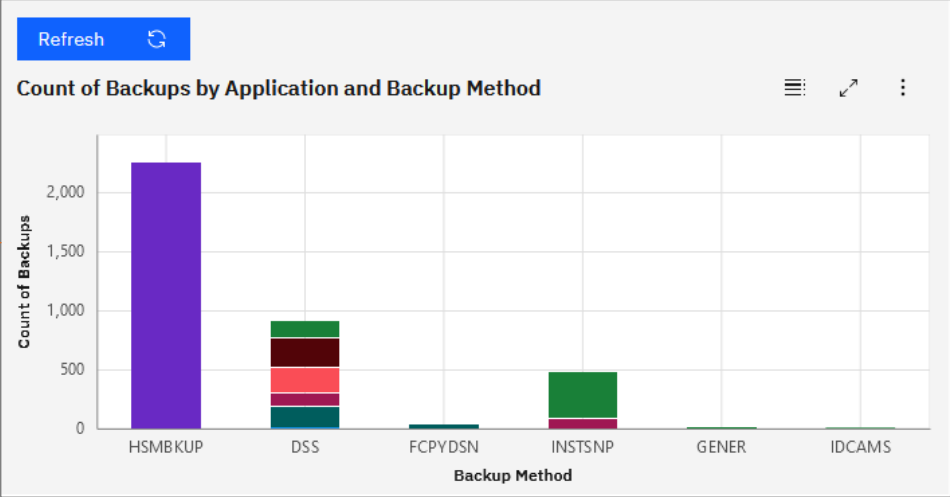
## Example #2: IZBR provided application

Using the IZBR provided app to access data via REST API

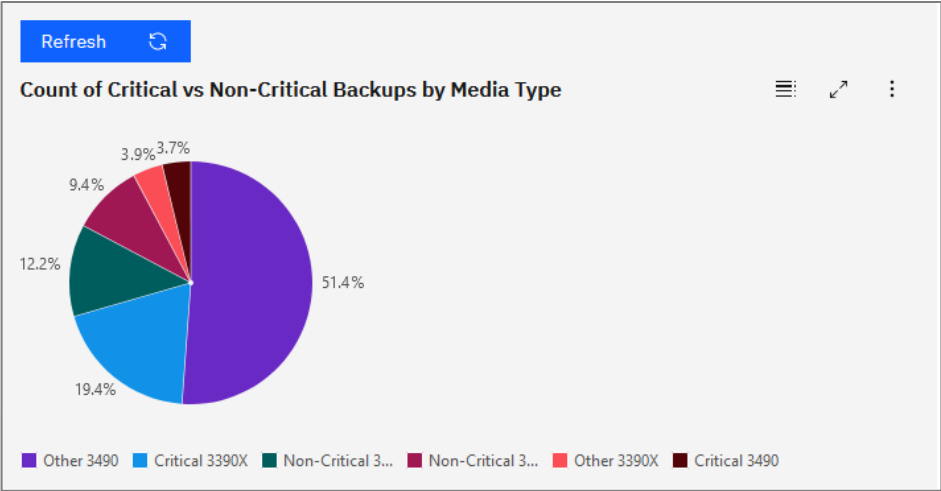


# Example #2: IZBR provided application

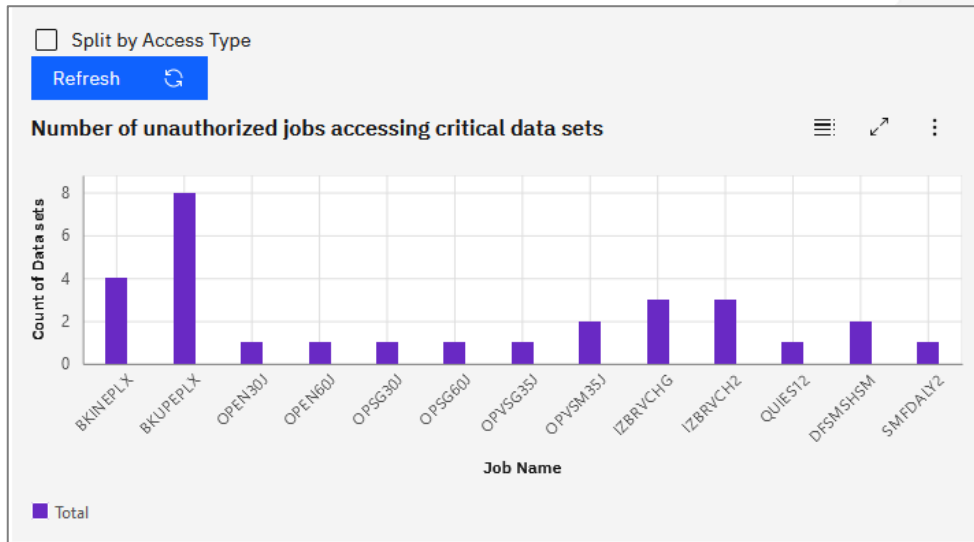
Number of backups, shown by application and backup method



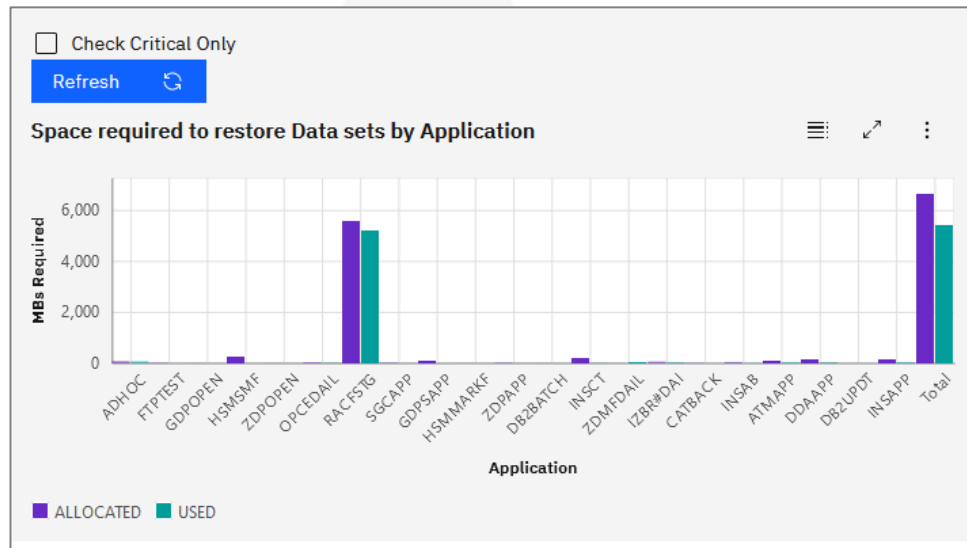
Backups of critical and non-critical data, shown by media type



# Example #2: IZBR provided application



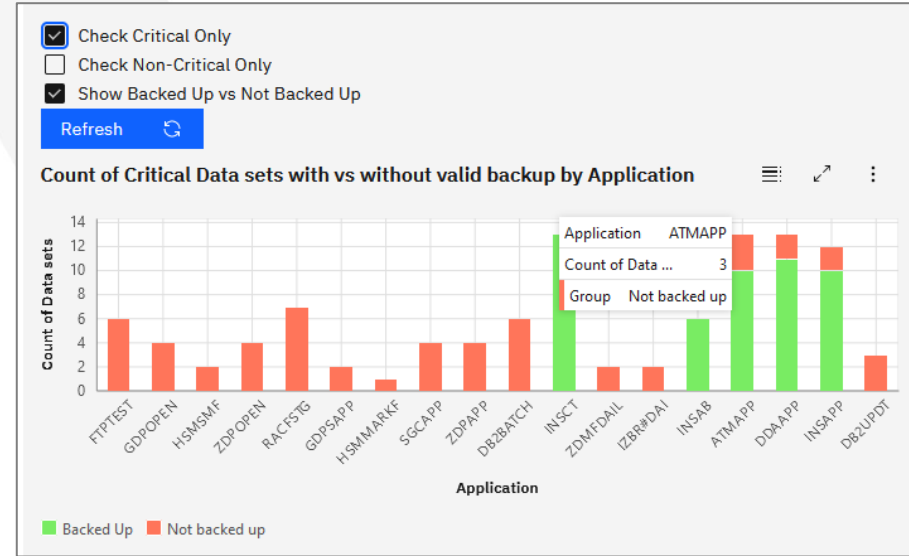
Jobs accessing critical data sets that are not defined in the scheduling system



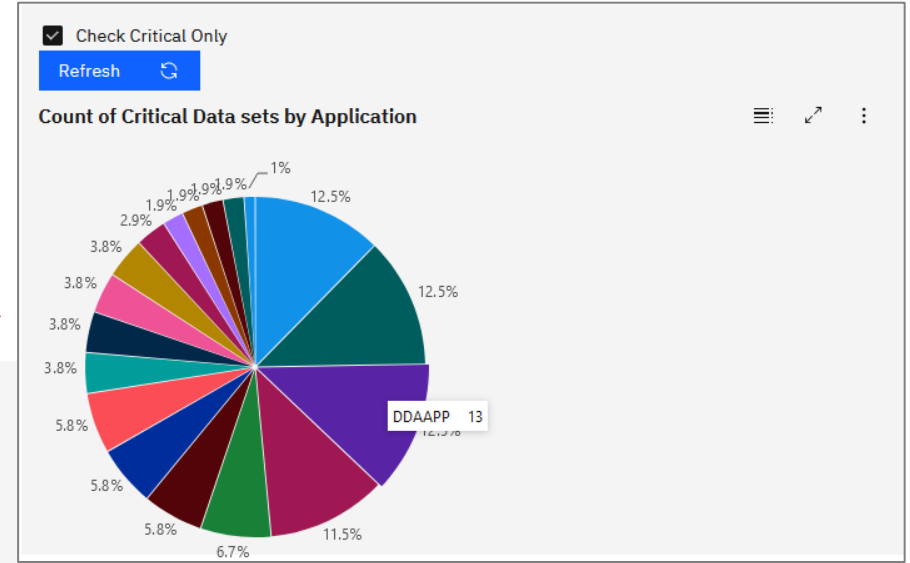
Space needed to restore an application, shown in MBs

# Example #2: IZBR provided application

Backup status of critical data sets, showing whether or not current backups are available



Number of critical data sets, shown by application





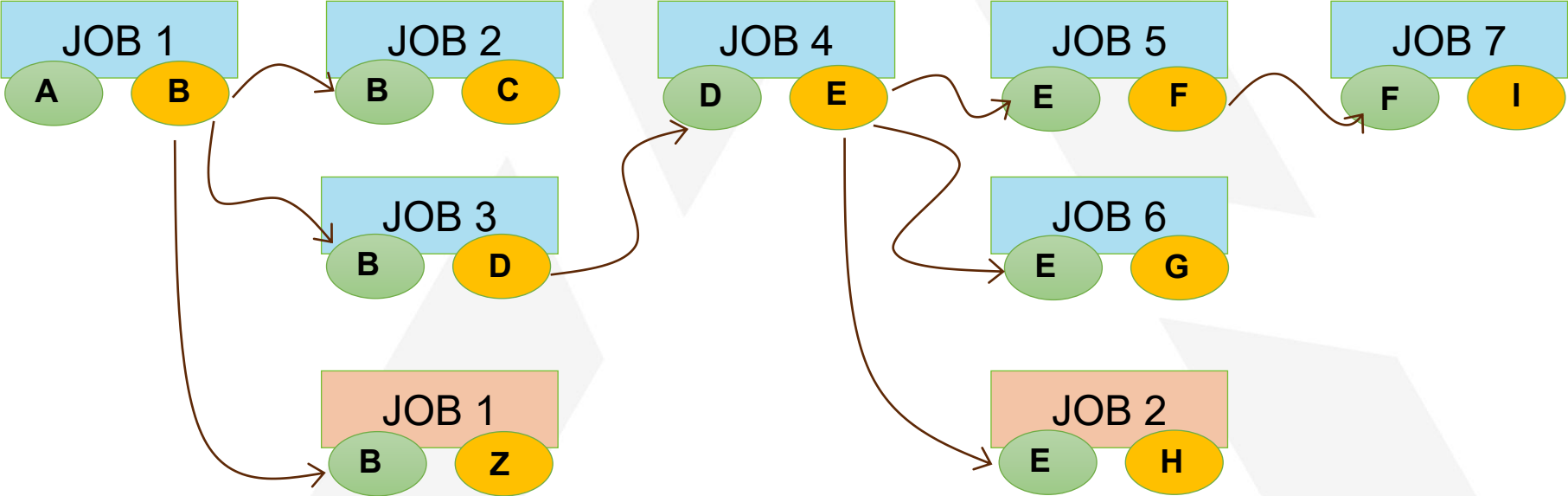
# SOME EXAMPLES OF IZBR USAGE: # 3

## FORENSIC ANALYSIS + QUICK REACTION TO THREATS

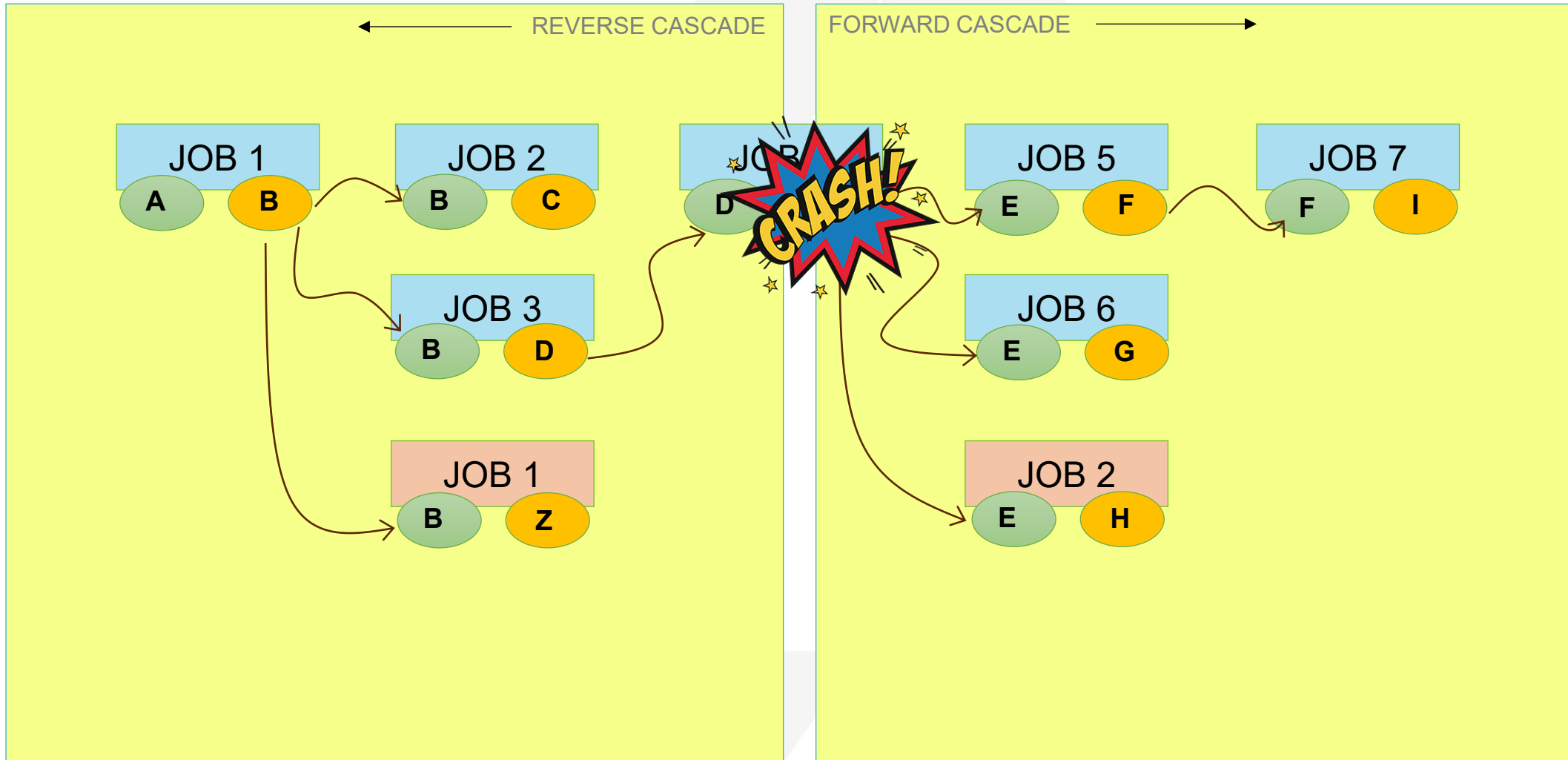
# Forensic analysis with IZBR



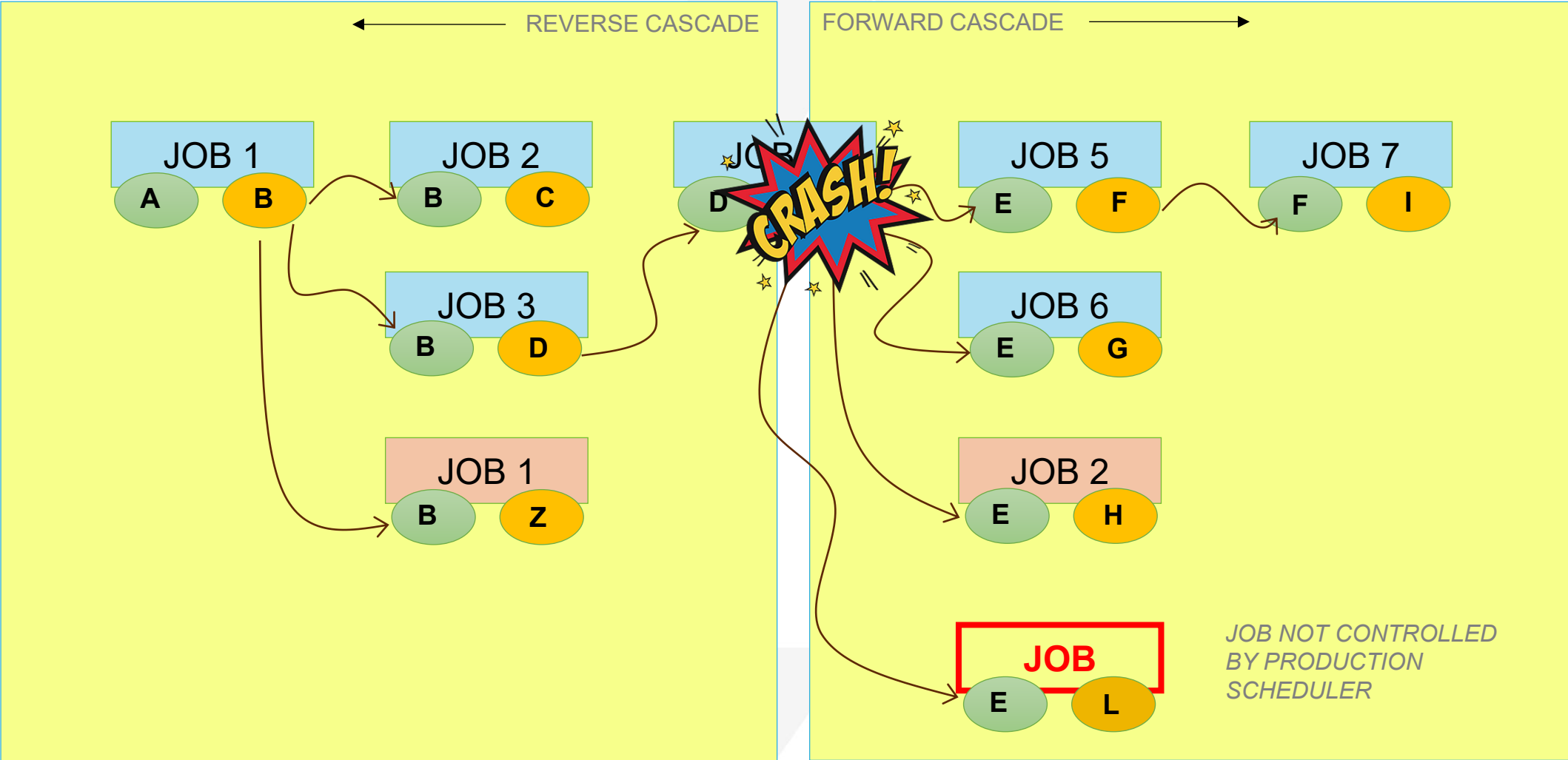
# Forensic analysis with IZBR



# Forensic analysis with IZBR



# Forensic analysis with IZBR



# Forensic analysis with IZBR – Forward Cascade

Forward Cascade report shows who read my outputs looking forward in time

**Red:** Shows jobs who used the data sets created in the job

Use "R" command to generate restore JCL

TimeLiner Forward Cascade Report

Command > Scroll ==> CSR

Cols 1 to 6 of 6 Rows 1 to 34 of 34

Step	Name	Active State	Start/Open DateTime	End/Close DateTime	Details
- Job	DDAJD06A(JOB13806)	No	2021/09/22 11:25:45.81	2021/09/22 11:25:45.89	CC=0
- Step	DDAJD06A(1)	No	2021/09/22 11:25:45.81	2021/09/22 11:25:45.88	CC=0
+ Input DS	IZBRDEMO.TESTING.DDA.PS3	No	2021/09/22 11:25:45.82	2021/09/22 11:25:45.88	DDName=SYSUT1, VOLSER=E\$TA01
+ Output DS	IZBRDEMO.TESTING.DDA.PS5	No	2021/09/22 11:25:45.83	2021/09/22 11:25:45.88	DDName=SYSUT2, VOLSER=E\$TA02
- Job	FTBSEND (JOB13822)	No	2021/09/22 13:00:02.17	2021/09/22 13:00:03.48	CC=0
- Step	GEN1(1)	No	2021/09/22 13:00:02.17	2021/09/22 13:00:02.61	CC=0
+ Input DS	IZBRDEMO.TESTING.DDA.PS5	No	2021/09/22 13:00:02.38	2021/09/22 13:00:02.60	DDName=SYSUT1, VOLSER=E\$TA02
+ Output DS	TASCFORC.FTP.TEST.SEND	No	2021/09/22 13:00:02.40	2021/09/22 13:00:02.60	DDName=SYSUT2, VOLSER=E\$TA02
- Step	RECEIVE(2)	No	2021/09/22 13:00:02.62	2021/09/22 13:00:03.48	CC=0
+ Output DS	TASCFORC.FTP.XMIT	No	2021/09/22 13:00:03.23	2021/09/22 13:00:03.46	DDName=SYS00004, VOLSER=E\$TA01
+ Input DS	TASCFORC.FTP.TEST.SEND	No	2021/09/22 13:00:03.24	2021/09/22 13:00:03.46	DDName=SYS00003, VOLSER=E\$TA02
- Job	FTPPUT (JOB13823)	No	2021/09/22 13:00:04.27	2021/09/22 13:00:04.65	CC=0
- Step	FTP(1)	No	2021/09/22 13:00:04.27	2021/09/22 13:00:04.65	CC=0
Input DS	CHRIST.FTP.SERVER	No	2021/09/22 13:00:04.32	2021/09/22 13:00:04.64	DDName=INPUT, VOLSER=E\$US01
Input DS	CHRIST.FTP.PUT	No	2021/09/22 13:00:04.32	2021/09/22 13:00:04.64	DDName=INPUT, VOLSER=E\$US01
Input DS	CHRIST.FTP.LOGOFF	No	2021/09/22 13:00:04.32	2021/09/22 13:00:04.64	DDName=INPUT, VOLSER=E\$US02
Input DS	SYSB.TCPIP.PARMLIB	No	2021/09/22 13:00:04.34	2021/09/22 13:00:04.36	DDName=SYS00001, VOLSER=\$\$SY01
Input DS	SYSB.TCPIP.PARMLIB	No	2021/09/22 13:00:04.37	2021/09/22 13:00:04.38	DDName=SYS00005, VOLSER=\$\$SY01
+ Input DS	TASCFORC.FTP.XMIT	No	2021/09/22 13:00:04.57	2021/09/22 13:00:04.62	DDName=SYS00008, VOLSER=E\$TA01
- Job	FTPSEND (JOB14047)	No	2021/09/23 13:00:03.57	2021/09/23 13:00:03.82	CC=0
- Step	GEN1(1)	No	2021/09/23 13:00:03.57	2021/09/23 13:00:03.69	CC=0
+ Input DS	IZBRDEMO.TESTING.DDA.PS5	No	2021/09/23 13:00:03.61	2021/09/23 13:00:03.68	DDName=SYSUT1, VOLSER=E\$TA02
+ Output DS	TASCFORC.FTP.TEST.SEND	No	2021/09/23 13:00:03.62	2021/09/23 13:00:03.68	DDName=SYSUT2, VOLSER=E\$TA02
- Step	RECEIVE(2)	No	2021/09/23 13:00:03.69	2021/09/23 13:00:03.82	CC=0
+ Output DS	TASCFORC.FTP.XMIT	No	2021/09/23 13:00:03.72	2021/09/23 13:00:03.80	DDName=SYS00004, VOLSER=E\$TA01
+ Input DS	TASCFORC.FTP.TEST.SEND	No	2021/09/23 13:00:03.73	2021/09/23 13:00:03.80	DDName=SYS00003, VOLSER=E\$TA02
- Job	FTPPUT (JOB14048)	No	2021/09/23 13:00:03.91	2021/09/23 13:00:04.29	CC=0
- Step	FTP(1)	No	2021/09/23 13:00:03.91	2021/09/23 13:00:04.29	CC=0
Input DS	CHRIST.FTP.SERVER	No	2021/09/23 13:00:03.96	2021/09/23 13:00:04.28	DDName=INPUT, VOLSER=E\$US01
Input DS	CHRIST.FTP.PUT	No	2021/09/23 13:00:03.96	2021/09/23 13:00:04.28	DDName=INPUT, VOLSER=E\$US01
Input DS	CHRIST.FTP.LOGOFF	No	2021/09/23 13:00:03.96	2021/09/23 13:00:04.28	DDName=INPUT, VOLSER=E\$US02
Input DS	SYSB.TCPIP.PARMLIB	No	2021/09/23 13:00:03.97	2021/09/23 13:00:03.98	DDName=SYS00001, VOLSER=\$\$SY01
Input DS	SYSB.TCPIP.PARMLIB	No	2021/09/23 13:00:03.99	2021/09/23 13:00:04.00	DDName=SYS00005, VOLSER=\$\$SY01
+ Input DS	TASCFORC.FTP.XMIT	No	2021/09/23 13:00:04.21	2021/09/23 13:00:04.27	DDName=SYS00008, VOLSER=E\$TA01

# Forensic analysis with IZBR – Forward Cascade

- Select valid backup from list
- Version in white is most current from when selected job ran

```
Command ==> _____ TimeLiner Backup Record Viewer _____ Scroll ==> CSR
```

System ID: COE1  
Job Name : DDAJD06A Job Active : No  
Job Id : JOB13806 Job Start : 2021/09/22 11:25:45.81  
Job CC : 0 Job End : 2021/09/22 11:25:45.89

Step Name: DDAJD06A Step Active: No  
Step Num : 1 Step Start : 2021/09/22 11:25:45.81  
Step CC : 0 Step End : 2021/09/22 11:25:45.88

DS Name : IZBRDEMO.TESTING.DDA.PS5  
DS DD : SYSUT2 DS Active : No  
DS Volser: E\$TA02 DS Open : 2021/09/22 11:25:45.83  
Open Type: OUTPUT DS Closed : 2021/09/22 11:25:45.88

Cols 1 to 7 of 7 Rows 1 to 5 of 5

S	Valid	App Id	Backup DateTime	Backup DS Name	Backup Method	Change Job	Change Date/Time
-	No	DDAAPP	2021/09/23 15:05:18.00	IZBRDEMO.DR.DDAAPP.G0054V00	DSS	DDAJD06A(JOB13806)	2021/09/22 11:25:45.81
-	No	DDAAPP	2021/09/22 15:05:22.00	IZBRDEMO.DR.DDAAPP.G0052V00	DSS	DDAJD06A(JOB13806)	2021/09/22 11:25:45.81
-	Yes	DDAAPP	2021/09/21 15:05:22.00	IZBRDEMO.DR.DDAAPP.G0052V00	DSS		
-	Yes	DDAAPP	2021/09/20 15:05:20.00	IZBRDEMO.DR.DDAAPP.G0051V00	DSS		
-	Yes	DDAAPP	2021/09/19 15:05:18.00	IZBRDEMO.DR.DDAAPP.G0050V00	DSS		

# Forensic analysis with IZBR – Restore DS

- Select options for restore – i.e. RENAME or REPLACE data set
- Restore JCL is automatically generated

The screenshot displays two terminal windows. The left window, titled 'TimeLiner Job Records Filter - Restore JCL Generator', shows the configuration for a restore job. The 'Data set name' is 'IZBRDEMO.TESTING.DDA.PS5', which is highlighted with a yellow box. Other options include 'Replace JCL' (Y), 'Create JCL library' (Y), 'Rename data set' (.), and 'Replace data set' (Y). The right window, titled 'Backup Record Viewer', shows the generated JCL code for the restore operation. The JCL includes a 'VIEW' statement, a warning about the UNDO command, and a 'PS10.VFIFILT DD \*' statement that includes the file 'IZBRDEMO.TESTING.DDA.PS5', also highlighted with a yellow box. The JCL concludes with 'RESTORE INDD(TAPE) TGTGDS(ACTIVE) SPHERE -' and 'REPLACE'.

```
TimeLiner Job Records Filter
Restore JCL Generator

Data set name . . . : IZBRDEMO.TESTING.DDA.PS5
Backup method . . . : DSS          Job Number : JOB13660
Application Id . . . : DDAAPP      SubAppl Id :
JCL data set or Library(Member):
'TASCFORC.IZBR.V1R2.RESTJCL(RESTORE)'
```

```
Replace JCL . . . . . Y
Create JCL library. Y
Rename data set . . .
Replace data set . . . Y

F1=Help      F2=Split      F3=Exit      F4=Window      F6=KeysHelp
F7=Back      F8=Forward     F9=Swap      F12=Cancel

Open Type: OUTPUT          DS Closed : 2021/09/22 11:25:45.88

Cols 1 to 7 of 7
S Valid App Backup v Backup
L Id DateTime DS Name
- No DDAAPP 2021/09/23 15:05:18.00 IZBRDEMO.DR.DDAAPP.G0054V00
- No DDAAPP 2021/09/22 15:05:23.00 IZBRDEMO.DR.DDAAPP.G0053V00
s Yes DDAAPP 2021/09/21 15:05:22.00 IZBRDEMO.DR.DDAAPP.G0052V00
- Yes DDAAPP 2021/09/20 15:05:20.00 IZBRDEMO.DR.DDAAPP.G0051V00
- Yes DDAAPP 2021/09/19 15:05:18.00 IZBRDEMO.DR.DDAAPP.G0050V00

VIEW          TASCFORC.IZBR.V1R2.RESTJCL(RESTORE) - 01.00
Command ==>
***** Top of Data *****
==MSG> -Warning- The UNDO command is not available until you change
==MSG> your edit profile using the command RECOVERY ON.
000001 //BUTCHR JOB (,CLASS=A,MSGCLASS=X,NOTIFY=&SYSUID
000002 //*-----
000003 //* VFI RESTORE JOB
000004 //* GENERATED TO RESTORE FILES BACKED UP WITH DSS
000005 //* GENERATED: DATE: 210924 TIME: 103528
000006 //* APPLID=DDAAPP
000007 //*-----
000008 //* CHANGE JCLLIB STATEMENT BELOW AS NEEDED
000009 //*
000010 //VFIPROC JCLLIB ORDER=(TASCFORC.IZBR.V1R2.CNTL)
000011 //*
000012 //*-----
000013 //JS0001 EXEC UDSSREST,
000014 // APPLID=DDAAPP
000015 //*
000016 //PS10.TAPE DD DISP=SHR,
000017 // LABEL=(0000,SL),UNIT=3390X,
000018 // VOL=SER=(ESTA02),
000019 // DSN=IZBRDEMO.DR.DDAAPP.G0052V00
000020 //*
000021 //PS10.VFIFILT DD *
000022 // INCLUDE(IZBRDEMO.TESTING.DDA.PS5)
000023 //*
000024 //PS10.SYSIN DD *
000025 RESTORE INDD(TAPE) TGTGDS(ACTIVE) SPHERE -
000026 TOL(ENOF) CAT DATASET(FILTERDD(VFIFILT)) -
000027 REPLACE
000028 /*
```

# Forensic analysis – connection with TDz

IBM Threat Detection z/OS Dashboard

IBM Threat Detection for z/OS Home Exclusions

Anomaly Dashboard Start: 2024-07-31 06:25:05 End: 2024-11-04 01:30:00 | File Name: SYSWIC20240927.WEEKLY.COA ... | Systems: @SPK, C00, C05, C06 ...

Next Signature > 7 / 26 Analytics boundary: 20241028.07 Reset

### Sysplex Overview

### Anomaly Signature Mix

### Summary

- 9 Systems
- Baseline AI analysis - occurring over the 12-week interval (purple) - identified 26 historically anomalous Signatures (0.84% of total), within the Recent time-range (pink).

Total Anomaly Signatures: 3086 Recent (7-day) Anomaly Signatures: 26

2024-07-31 06:25:05 - 2024-10-28 07:00:00 2024-11-04 01:30:00

Current Signature

ID #	Activity Name / Anomaly Signature	Events	Alert	Row	Userid	Jobname	Activity Aggregate	Data Set Name	System	Date Time
SR4	Bytes Read ... [BASIC_READ] /T015269 TPNSSVT[...]	1	Alert	*	T015269	T015269	13.1 GB	TPNSSVT.TSOWKLD.IST.SYSLOG	C00	20241031_160000

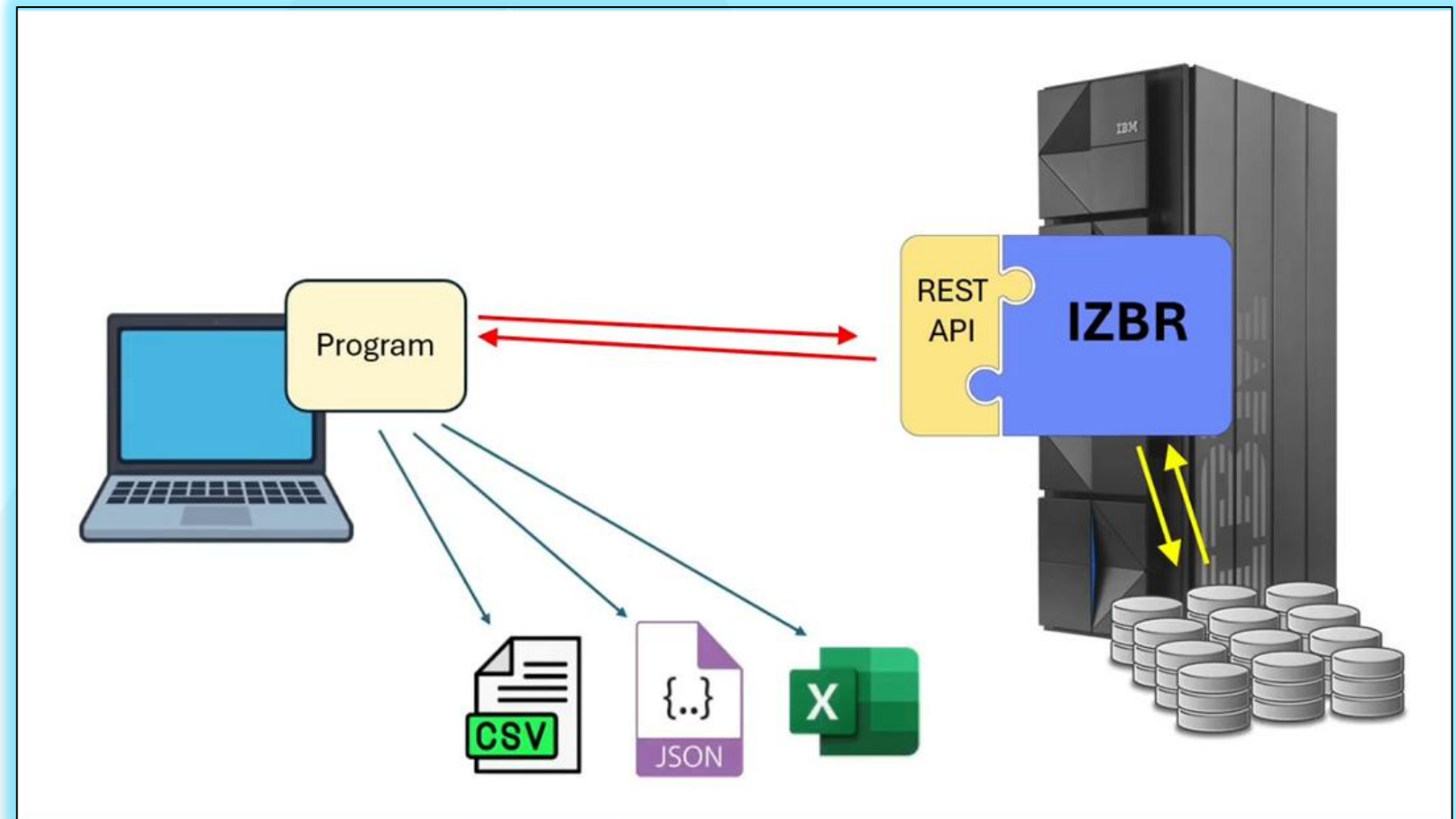


# SOME EXAMPLES OF IZBR USAGE: # 4

## ACCESSING IZBR DATA FROM LOCAL PROGRAM

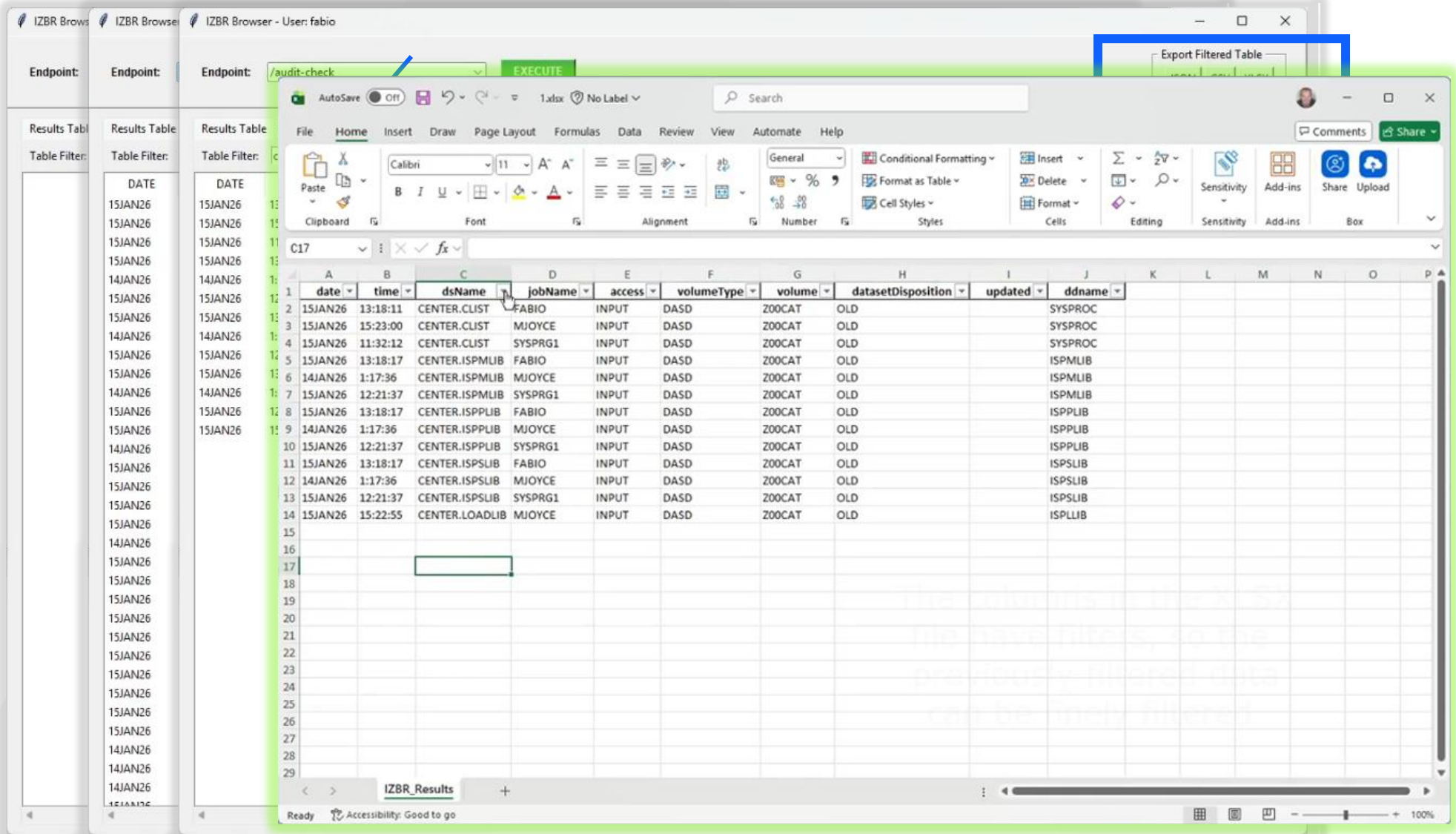
# Example #3: Custom program to access IZBR

Example  
of local  
developed  
program  
to access  
IZBR info



# Example #3: Custom program to access IZBR

Example of local developed program to access IZBR info



date	time	dsName	jobName	access	volumeType	volume	datasetDisposition	updated	ddname
15JAN26	13:18:11	CENTER.CLIST	FABIO	INPUT	DASD	Z00CAT	OLD		SYSPROC
15JAN26	15:23:00	CENTER.CLIST	MJOYCE	INPUT	DASD	Z00CAT	OLD		SYSPROC
14JAN26	11:32:12	CENTER.CLIST	SYSPRG1	INPUT	DASD	Z00CAT	OLD		SYSPROC
15JAN26	13:18:17	CENTER.ISPMLIB	FABIO	INPUT	DASD	Z00CAT	OLD		ISPMLIB
14JAN26	1:17:36	CENTER.ISPMLIB	MJOYCE	INPUT	DASD	Z00CAT	OLD		ISPMLIB
15JAN26	12:21:37	CENTER.ISPMLIB	SYSPRG1	INPUT	DASD	Z00CAT	OLD		ISPMLIB
15JAN26	13:18:17	CENTER.ISPPLIB	FABIO	INPUT	DASD	Z00CAT	OLD		ISPPLIB
14JAN26	1:17:36	CENTER.ISPPLIB	MJOYCE	INPUT	DASD	Z00CAT	OLD		ISPPLIB
15JAN26	12:21:37	CENTER.ISPPLIB	SYSPRG1	INPUT	DASD	Z00CAT	OLD		ISPPLIB
15JAN26	13:18:17	CENTER.ISPSLIB	FABIO	INPUT	DASD	Z00CAT	OLD		ISPSLIB
14JAN26	1:17:36	CENTER.ISPSLIB	MJOYCE	INPUT	DASD	Z00CAT	OLD		ISPSLIB
15JAN26	12:21:37	CENTER.ISPSLIB	SYSPRG1	INPUT	DASD	Z00CAT	OLD		ISPSLIB
15JAN26	15:22:55	CENTER.LOADLIB	MJOYCE	INPUT	DASD	Z00CAT	OLD		ISPLLIB

Thank you!

# Your feedback is important!

## Submit a session evaluation for each session you attend:

[www.share.org/evaluation](http://www.share.org/evaluation)

