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iSecurity Audit Case Study at DnBNOR Bank, Luxembourg

General

iSecurity Audit is being used by the Luxembourg subsidiary of DnBNOR Bank (formerly Union Bank of Norway), which is part of Norway's largest financial services group with total combined assets of nearly \$300B.

This document will discuss various aspects of configuring and implementing iSecurity Audit at DnBNOR Bank and can serve as a valuable reference for all iSecurity Audit customers worldwide.

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This document is divided into the following sections:

1. System Audit Options
2. Audit Values
3. Audit Reports. Report details appear in Appendix A.
4. Printer Files
5. Audit Scheduler
6. Displaying System Values
7. Checking User Audit Settings
8. Using Object Auditing
9. Log & Journal Retention Maintenance
10. Real Time Detection



1. System Audit Options (individual options listed below can be accessed by choosing Option 1 and then Option 1 again, from the Audit main menu)

- **APPN filter violation**

Audit violations detected by the APPN firewall. Directory search filter and endpoint filter violations are audited. Also known as the ***NETCMN** option for the QAUDLVL system value.

- **Authorization failure**

Audit unsuccessful attempts to sign on the system and to access objects. Use authorization failures to regularly monitor users trying to perform unauthorized functions on the system. You can also use authorization failures to assist with migration to a higher security level and to test resource security for a new application. Also known as the ***AUTFAIL** option for the QAUDLVL system value.

- **Job tasks**

Audit actions that affect a job, such as starting, stopping, holding, releasing, canceling, or changing the job. Use job tasks to monitor who is running batch jobs. Also known as the ***JOBDTA** option for the QAUDLVL system value.

- **Object creation**

Audit the creation or replacement of an object. Use object creation to monitor when programs are created or recompiled. Also known as the ***CREATE** option for the QAUDLVL system value.

- **Object deletion**

Audit the deletion of an object. Also known as the ***DELETE** option for the QAUDLVL system value.

- **Object management**

Audit an object rename or move operation. Use object management to detect copying confidential information by moving the object to a different library. Also known as the ***OBJMGT** option for the QAUDLVL system value.

- **Object restore**

Audit the restore of an object. Use object restore to detect attempts to restore unauthorized objects. Also known as the ***SAVRST** option for the QAUDLVL system value.

- **Office tasks**

Audit changes to the system distribution directory and opening of a mail log. Actions performed on specific items in the mail log are not recorded. Use office tasks to detect attempts to change how mail is routed or to monitor opening another user's mail log. Also known as the ***OFCSRVR** option for the QAUDLVL system value.

- **Optical tasks**

Audit optical functions, such as adding or removing an optical cartridge, or changing the authorization list used to secure an optical volume. Other functions include copying, moving, or renaming an optical file, saving or releasing a held optical file, and so on. Also known as the ***OPTICAL** value for the QAUDLVL system value.

- **Printing functions**

Audit the printing of a spooled file, printing directly from a program, or sending a spooled file to a remote printer. Use printing functions to detect printing confidential information. Also known as the ***PRTDTA** option for the QAUDLVL system value.

- **Program adoptions**

Audit the use of adopted authority to gain access to an object. Use program adoption to test where and how a new application uses adopted authority. Also known as the ***PGMADP** option for the QAUDLVL system value.

- **Security tasks**

Audit events related to security, such as changing a user profile or system value. Use security tasks to detect attempts to circumvent security by using service tools or collecting traces in which security sensitive data is retrieved. Also known as the ***SECURITY** option for the QAUDLVL system value.

- **Service tasks**

Audit the use of service tools, such as the Dump Object and Start Copy Screen commands. Use service tasks to detect attempts to circumvent security by using service tools. Also known as the ***SERVICE** option for the QAUDLVL system value.

- **Spool management**

Audit actions performed on spooled files, including creating, copying, and sending. Use spool management to detect attempts to print or send confidential data. Also known as the ***SPLFDTA** option for the QAUDLVL system value.

- **System integrity violations**

Audit program domain violations when a program causes an integrity error. Use system integrity violation to assist with migration to a higher security level or to test a new application. Also known as the ***PGMFAIL** option for the QAUDLVL system value.

- **System management**

Audit system management activities, such as changing a reply list or the power-on and -off schedule. Use system management to detect attempts to use system management functions to circumvent security controls. Also known as the ***SYSMGT** option for the QAUDLVL system value.



2. Audit Values

System Audit Values assure that actions occurring in your system can be traced to their original users. This auditing system is delivered with a full range of auditing capabilities to assure compliance with industry and government standards.

Audit control features should be turned **ON** at the system level.

Each of the sixteen possible system wide auditing values has been enabled. The status of these audit values are as follows:

Audit Value Description System

***AUTFAIL** Log Authority failures
Journal Entry Type: **AF, AU, CV, DI, GR, KF, IP, PW, VO, VC, VN, VP**
Available on **QAUDLVL** System Value = **yes**
Available on **CHGUSRAUD** Command = **no**

***DELETE** Log deletion of objects
Journal Entry Type: **DO, DI**
Available on **QAUDLVL** System Value = **yes**
Available on **CHGUSRAUD** Command = **yes**

***OBJMGT** Log object management changes
Journal Entry Type: **DI, OM**
Available on **QAUDLVL** System Value = **yes**
Available on **CHGUSRAUD** Command = **yes**

***SYSMGT** Log changes to certain system management areas
Journal Entry Type: **DI, SM, VL**
Available on **QAUDLVL** System Value = **yes**
Available on **CHGUSRAUD** Command = **yes**

***SAVRST** Log restore actions to security sensitive objects
Journal Entry Type: **OR, RA, RJ, RO, RP, RQ, RU, RZ**
Available on **QAUDLVL** System Value = **yes**
Available on **CHGUSRAUD** Command = **yes**



- *SECURITY** Log security related changes
Journal Entry Type: **AD, CA, CP, CQ, CV, CY, DI, DS, EV, GR, GS, IP, JD, KF, NA, OW, PA, PG, PS, SE, SO, SV, VA, VU, X0**
Available on **QAUDLVL** System Value = **yes**
Available on **CHGUSRAUD** Command = **yes**
- *SERVICE** Log usage of the system and hardware service tools
Journal Entry Type: **ST, VV**
Available on **QAUDLVL** System Value = **yes**
Available on **CHGUSRAUD** Command = **yes**
- *PGMFAIL** Log Program failures caused by security violations
Journal Entry Type: **AF**
Available on **QAUDLVL** System Value = **yes**
Available on **CHGUSRAUD** Command = **no**
- *CREATE** Log creation of new objects
Journal Entry Type: **CO, DI**
Available on **QAUDLVL** System Value = **yes**
Available on **CHGUSRAUD** Command = **yes**
- *JOBDTA** Log job events such as start and stop.
Journal Entry Type: **JS, SG, VC, VN, VS**
Available on **QAUDLVL** System Value = **yes**
Available on **CHGUSRAUD** Command = **yes**
- *PGMADP** Log usage of programs that adopt authority
Journal Entry Type: **AP**
Available on **QAUDLVL** System Value = **yes**
Available on **CHGUSRAUD** Command = **yes**
- *NETCMN** Log APPN firewall events
Journal Entry Type: **CU, CV, IR, IS, ND, NE, SK**
Available on **QAUDLVL** System Value = **yes**
Available on **CHGUSRAUD** Command = **no**
- *OFCSRV** Log Office Vision/400 security changes
Journal Entry Type: **ML, SD**
Available on **QAUDLVL** System Value = **yes**
Available on **CHGUSRAUD** Command = **yes**
- *OPTICAL** Log usage of optical storage devices
Journal Entry Type: **O1, O2, O3**
Available on **QAUDLVL** System Value = **yes**
Available on **CHGUSRAUD** Command = **yes**



***PRTDTA** Log printing functions
Journal Entry Type: **PO**
Available on **QAUDLVL** System Value = **yes**
Available on **CHGUSRAUD** Command = **no**

***SPLFDTA** Log usage of spooled files (reports)
Journal Entry Type: **SF**
Available on **QAUDLVL** System Value = **yes**
Available on **CHGUSRAUD** Command = **yes**



3. Audit Reports

iSecurity Audit is provided with ready-to-be-used predefined reports for all the Journal Entry Types listed above.

Each such report can be restricted to a time group (for example: after working hours, weekends, etc.). The reports may be filtered and output fields can be defined in accordance with your particular needs. Each such report can be run automatically, for example daily, weekly, etc.

The bank uses a weekly report scheduled to run each Sunday at 01:00 AM, which reports on all of the following events for the past week.

Note the suffix BK (i.e. bank) which has been added to the names of all the iSecurity-provided audit reports.

Each report's specific parameters appear in Appendix A.

C@ shows the changes on User Profiles. Note that this is a unique entry which exists only in iSecurity!

AF shows all authority failures.

CA shows all authority changes within libraries L1DMLIB and L9DMLIB.

CD shows all commands executed by selected users.

CO displays which users have created new objects, except for a specific list of users: SLOWNER etc.

CP shows who has changed, created or restored user profiles and how.

DS shows who has reset the DST password.

DO shows who has deleted objects excluding users LIOWNER, TLOWNER etc.

JS is only switched "on" during non-working-hours and weekends, and shows who has signed on to the system.

OR show who restored any objects on the system.

OM shows who moved or restored objects on the system.

OW shows who changed the ownership of an object except SLOWNER etc.



PW shows all users who tried to sign on with a wrong password.

RA is written during a restore of objects/libraries etc. if any authority changes are made.

RJ shows restoration of objects with changes to user profile specifications.

RP shows who restored programs that adopt authorities.

SM shows who made system management changes.

ST shows who used the service tool (SST).

SV shows who changed system values.

ZC shows who opened an object with the Change option.

CM shows the executed commands by selected users (all users except users within the IT department and special programs).



4. Printer Files

The following printer files within library SMZ4 should be changed in order to direct the audit reports defined above to a specific output queue (the Bank uses outq **PRTAUDIT**):

<i>AUACTNPF</i>	<i>*FILE</i>	<i>PRTF</i>	<i>AU-mail/message Print</i>
<i>AUAUDPRT</i>	<i>*FILE</i>	<i>PRTF</i>	<i>Audit Print Entries</i>
<i>AUAUDSRT</i>	<i>*FILE</i>	<i>PRTF</i>	<i>AU print audit options</i>
<i>AUQRYPRT</i>	<i>*FILE</i>	<i>PRTF</i>	<i>Audit Print Entries</i>
<i>AURPTSP</i>	<i>*FILE</i>	<i>PRTF</i>	<i>AU Report summary pages</i>
<i>AUTIMPP</i>	<i>*FILE</i>	<i>PRTF</i>	<i>AU-Print Time Groups</i>
<i>GSIPWDP</i>	<i>*FILE</i>	<i>PRTF</i>	<i>GS Work with Operators - PRINT</i>
<i>GSSYSPRT</i>	<i>*FILE</i>	<i>PRTF</i>	<i>System non-described printer file</i>

In order to print all audit reports to outq **PRTAUDIT**, change the printer file **AUQRYPRT** with the following native command:

CHGPRTF FILE(SMZ4/AUQRYPRT) OUTQ(*LIBL/PRTAUDIT)



5. Audit Scheduler (the window below can be accessed by choosing Option 1 and then Option 11 from the Audit main menu)

The bank uses the Audit Scheduler with 3 Shifts:

```

Work with Audit Scheduler

Type choices, press Enter.

Activate Audit Scheduler . . . Y (Y/N)

Change pre-defined settings at:
Time . . . . 7:00 19:00 _____ :00 _____ :00

Pre-defined settings to be activated at the above times:
Monday . . . SHIFT1 SHIFT2 _____ _____
Tuesday . . . SHIFT1 SHIFT2 _____ _____
Wednesday . . . SHIFT1 SHIFT2 _____ _____
Thursday . . . SHIFT1 SHIFT2 _____ _____
Friday . . . SHIFT1 SHIFT2 _____ _____
Saturday . . . SHIFT3 _____ _____
Sunday . . . SHIFT3 _____ _____
  
```

The parameters above mean that system values **QAUDCTL** and **QAUDLVL** will be changed in accordance with the defined SHIFT values. For example, SHIFT2 will take effect at 7PM Monday-Friday until 7AM the next day with the following settings:

```

Modify Audit Settings

Set . . . : SHIFT2 Outside of working hours, between 19:00-07:00

Type choices, press Enter.
Y=Yes
Current Modified Parameter Description
Main Audit Control Parameters (QAUDCTL)
Y Y *AUDLVL Activity auditing (as selected below)
Y Y *OBJAUD Object access auditing
Y Y *NOQTEMP Do not audit QTEMP objects
Action Auditing Values (in effect only if *AUDLVL = "Y")
Y Y *AUTFAIL Authority failure events
Y Y *CREATE Create objects
Y Y *DELETE Delete objects
Y Y *JOBDBTA Start, End, Hold, Release, Change job
Y Y *NETCMN APPN filter violation
Y Y *OBJMGT Move, Rename objects
Y Y *OFCSRV Sys distribution directory, Office mail
Y Y *OPTICAL Optical volume tasks

F3=Exit F4=Prompt F8=Print F12=Cancel
  
```

6. Displaying System Values

The native OS/400 command **WRKSYSVAL** (work with system values) will show the changed values:

```

Work with System Values
System: S720
Position to . . . . . Starting characters of system value
Subset by Type . . . . . *ALL F4 for list

Type options, press Enter.
2=Change 5=Display

System
Option Value Type Description
█ QASTLVL *SYSCTL User assistance level
- QATNPGM *SYSCTL Attention program
- QAUDCTL *SEC Auditing control
- QAUBENDACN *SEC Auditing end action
- QAUDERCLVL *SEC Force auditing data
- QAUDLVL *SEC Security auditing level
- QAUTOCFG *SYSCTL Autoconfigure devices
- QAUTORMT *SYSCTL Autoconfigure of remote controllers
  
```

Following are the Auditing Options for System Value **QAUDCTL**:

```

System value . . . . . : QAUDCTL
Description . . . . . : Auditing control

Auditing
control
*AUDLVL
*OBJAUD
*NOQTEMP
  
```

Following are the Auditing Options for System Value **QAUDLVL**:



```
System value . . . . . : QAUDLVL
Description . . . . . : Security auditing level

Auditing options
*DELETE
*JOBDTA
*NETCMN
*OBJMGT
*OFCSRV
*OPTICAL
*PGMADP
*PGMFAIL
*PRDTA
*SAVRST
*SECURITY

Auditing options
*SERVICE
*SPLFDTA
*SYSMGT
```

7. Checking User Audit Settings

Using option **OS/400 Audit Features** (Option 1) and then Option 31, **User Audit Settings**, the bank obtains the following information (which uses system command **CHGUSRAUD** (Change User Auditing)):

```

1=Select      3=Copy      4=Delete
5=Display

                !! !!! !O! ! !S!S!S!
                !C!D!J!O!O!P!P!S!E!E!P!S
                !R!E!O!B!F!T!G!A!C!R!L!Y
                !E!L!B!J!C!I!M!V!U!V!F!S
                C!A!E!D!M!S!C!A!R!R!I!D!M
                M!T!T!T!G!R!A!D!S!I!C!T!G
                D!E!E!A!T!V!L!P!T!T!E!A!T
Opt  User/Group  Object      Action      D!E!E!A!T!V!L!P!T!T!E!A!T  Previous  Change
      USER1      *ALL        *LIST      Y Y Y Y Y Y Y Y Y Y      19/10/05  7:30
      USER2      *CHANGE     *LIST      Y Y Y Y Y Y Y Y Y Y      23/02/06  14:57
  
```

These defined audit changes will be written into the appropriate user profile e.g. USER2. The OS/400 native command **WRKUSRPRF** shows the changes made to this user profile:

Display User Profile - Basic

```

User profile .....: USER2

Object auditing value .....: *CHANGE
Action auditing values .....: *CMD
                                *OBJMGT
                                *OPTICAL
                                *SAVRST
                                *SECURITY
                                *SERVICE
                                *SYSMGT

User ID number .....: 317
Group ID number .....: *NONE
  
```



8. Using Object Auditing

Using option **OS/400 Audit Features** (Option 1) and then either Option 41, **Native Object Auditing** or Option 42, **IFS Object Auditing**, the bank audits objects as follows:

```

QGPL    QSTRUP150  *PGM    *ALL      13/06/05 13:49
QSYS    CHGUSRAUD *CMD    *CHANGE  30/04/05 10:13
QSYS    CHGUSRPRF *CMD    *ALL      22/03/05 17:32
  
```

In the example above, PGM QSTRUP150 will be audited. Any changes to this program will be audited/reported. This object can be checked using OS/400 native command **WRKOBJ**. Then select Option 8=Display description, in order to determine whether this object is being audited:

```

Type options, press Enter.
  2=Edit authority    3=Copy    4=Delete    5=Display authority    7=Rename
  8=Display description 13=Change description

Opt  Object          Type          Library      Attribute    Text
  8   QSTRUP150      *PGM          QGPL         CLP          Startprogramm modif.

Object . . . . . : QSTRUP150      Attribute . . . . . : CLP
Library . . . . . : QGPL          Owner . . . . . : USER2
Type . . . . . : *PGM          Primary group . . . . . : *NONE

User-defined information:
Attribute . . . . . :
Text . . . . . : Startprogramm modif. 13.06.05 GG

Creation information:
Creation date/time . . . . . : 13.06.05 13:43:27
Created by user . . . . . : USER2
System created on . . . . . : S4441890
Object domain . . . . . : *USER

Change/Usage information:
Change date/time . . . . . : 23.02.06 15:25:12
Usage data collected . . . . . : YES
Last used date . . . . . : 23.02.06
Days used count . . . . . : 142
Reset date . . . . . :
Allow change by program . . . . . : YES

Auditing information:
Object auditing value . . . . . : *ALL    ←===== Object Audit
  
```

9. Log & Journal Retention Maintenance

From the main Audit menu select Option 81, **System Configuration** and then Option 9, **Log and Journal Retention**. You will see the following screen:

```

Log & Journal Retention                                29/10/07 13:41:27

Type options, press Enter.
Log retention period (days) . . . . 32                Days, 99=*NOMAX
Backup program for logs . . . . . AULOGBP             Name, *STD, *NONE
  Backup program library. . . . . USER2
A specified backup program may run before deleting old logs. It will backup
all data deleted after the retention period expires. The *STD (default)
backup program is SMZ4/AUSOURCE AULOGBKP.

The following parameters apply to the audit journal receivers. This is
the primary data source for Audit. You should always backup the journal
receiver because it may contain data not logged in Audit.

Journal retention period (days) . 08                Days, 99=*NOMAX
Backup program for journal . . . . *NONE             Name, *STD, *NONE
  Backup program library . . . . .
A specified backup program may run before deleting old journal receivers.
It will backup data deleted after the retention period expires. The *STD
program is SMZ4/AUSOURCE AUJRNBP
  
```

The Audit logs will be kept for 32 days. Each log will be written into the file AUXX within library SMZ4DTA as a daily member (e.g L060111). The maintenance job **AU#MNT** within the scheduler looks for this parameter = 32 and will delete all members older then 32 days.

The Audit Journal receiver is kept for 8 days; as long as this receiver is available you may create any audit report using the receiver. If the journal receivers are saved on tape before they are deleted, you will be able to access data not being logged in Audit.



10. Real-Time Detection

In order for all of the above auditing features to be available, Real-Time Detection **must** be activated and running!

- Activation**
1. **Activate** Real-Time Detection
 2. De-activate Real-Time Detection
 5. **Work with Active Jobs**

The bank starts Real-Time Detection at IPL within SBS QSYSWRK as an Autostart Job Entry:

Display Autostart Job Entries

Subsystem description: QSYSWRK Status: ACTIVE

<i>Job</i>	<i>Job Description</i>	<i>Library</i>	
<i>AU#STRRTAU</i>	<i>AU#STRRTAU</i>	<i>SMZ4DTA</i>	<i>←==== Job entry</i>
<i>QDB2MULTI</i>	<i>QQQTEMPS</i>	<i>QSYS</i>	
<i>QFSIOPJOB</i>	<i>QFSIOPWK</i>	<i>QSYS</i>	

Appendix A

Following are the detailed report parameters in use by the bank. Filter Conditions appear in bold because of their importance in generating the specific report.

1. Entry **C@** shows the changes on User Profiles. Note that this is a unique entry which exists only in iSecurity!

Z8C@BK – Changes to user profiles.

Filter Condition = Name of program NE QMNCGPWD

Output Fields = Name of program
Current user profile
Type of entry
User profile
Status
User class
*ALLOBJ authority
*JOBCTL authority
*SAVSYS authority
*SECADM authority
*SPLCTL authority
*SERVICE authority
*IOSYSCFG authority
Group profile
Owner
Group authority
Initial menu
Initial program
Limited capability
Storage
Attention program
*CMD audit value
*CREATE audit value
*DELETE audit value
*JOBDTA audit value
*OBJMT audit value
*OFCSRV audit value
*OPTICAL audit value
*PGMADP audit value
*SAVRST audit value
*SECURITY audit value
*SERVICE audit value
*SPLFDTA audit value
Group authority
Supplemental groups
Timestamp of entry
Command name

Sort fields = NONE



2. Entry AF shows all authority failures:

Z8AFBK – Authority failure Journal entry type=AF
Filter condition = NONE
Output fields = Name of program
 User profile name
 Name of object
 Library name
 Object type
 Name of job
 Name of user
 User profile name
 Date & time yyyy-mm-dd-hh.mm
Sort fields = NONE

3. Entry CA shows all authority changes within libraries L1DMLIB and L9DMLIB:

Z8CABK – Authority changes Journal entry type = CA
Filter condition = Library name EQ L1DMLIB & L9DMLIB
Output fields = Name of program
 User profile name
 Type of entry
 Name of object
 Library name
 Object type
 User profile name
 Authorization list name
 Y – Object Existence
 Y – Object Management
 Y – Object Operational
 Y – Authorization List Management
 Y - *AUTL authority
 Y – Read
 Y – Add
 Y – Update
 Y – Exclude
 Y – Execute
 Y – Object Alter
 Y – Object Reference
 GRT–Grant RVK–Revoke USR-GRTUSRAUT
 Field name
 Office user name
 Folder or document name
 Office on behalf of user
 Y – Personal status changed
 A – Add access code R-Remove access code



Access code
Object name country ID
Object name language ID
Parent directory file ID
Object file ID
Object name
Object file ID
ASP name
ASP number
Path name country ID
Path name language ID
Absolute path name indicator
Relative file ID of path name
Date & Time yyyy-mm-dd-hh.mm
Sort fields = NONE

4. Entry CD shows all commands executed by selected users:

Z8CDBK - Command string audit Journal entry type = **CD**
 Filter condition = Y-Command run from CL pgm NE Y
 Name of program EQ QCMD
 User of job = USER1, USER2...USERn

Output fields = Name of program
User profile name
Type of entry
Name of object
Library name
Object type
Y-Command run from CL pgm or REXX proc
Date & Time yyyy-mm-dd-hh.mm
Time hh.mm.ss
User profile description
Sort fields = NONE

5. Entry CO displays which users have created new objects, except for a specific list of users: SOWNER etc.:

Z8COBK – Create Object Journal entry type = **CO**
 Filter condition = User profile name NLIST SOWNER
 SOWNER1
 SOWNERn
 Name of program NLIST OUTQ99
 ABC0019



Output fields = Name of program
User profile name
Type of entry
Name of object
Object type
Date & Time yyyy-mm-dd-hh.mm
Sort fields = NONE

6. Entry CP shows who has changed, created or restored userprofiles and how:

Z8CPBK – User profile changed, created or restored Journal entry type=**CP**

Filter condition = NONE

Output fields = Name of program
User profile name
System name
Type of entry
User profile name
Library name
Object type
CHG, CRT, DST, RST
Y - Password changed
Y - Password *NONE
Y - Password expired
Y - *ALLOBJ special authority
Y - *JOBCTL special authority
Y - *SAVSYS special authority
Y - *SECADM special authority
Y - *SPLCTL special authority
Y - *SERVICE special authority
Y - *AUDIT special authority
Y - *IOSYSCFG special authority
Group profile name
Owner of objects
Group authority
Initial program name
Initial program library
Initial menu name
Initial menu library
Current library name
Limit capabilities
User class
Priority limit
Status
Group authority type
Supplemental groups
User ID number

Group ID number
Date & Time yyyy-mm-dd-hh.mm
Time hh.mm.ss
Name of Job
User of Job
Number of Job
User description
User profile description
Sort fields = NONE

7. Entry DS shows who has reset the DST password:

Z8DSBK – DST security password reset Journal entry type=**DS**
Filter condition = NONE
Output fields = Name of program
User profile name
Type of entry
Y – Request to reset to DST password
DST Profile type: *SECURITY *FULL *BASIC
New DST user profile
Y – Password changed
New DST user profile
Requesting DST user profile
Date & Time yyyy-mm-dd-hh.mm
Sort fields = NONE

8. Entry DO shows who has deleted objects excluding users LIOWNER, TIOOWNER etc.:

Z8DOBK – Delete object Journal type=**DO**
**Filter condition = User of job NLIST SIOOWNER
SIOOWNER1
SIONWERN**
**Name of program NLIST OUTQ99
ABC019**
Name of object NLIKE QHST%
Output fields = Name of program
User profile name
Type of entry
Name of object
Object type
Date & Time yyyy-mm-dd-hh.mm
Sort fields = NONE



9. Entry JS is only switched “on” during non-working-hours and weekends, and shows who has signed on to the system:

Z8JSBK – LogOns outside work Journal entry type=**JS**
Filter condition = User profile name NLIST USER1, USER2,...USERn

Name of job NLIKE SAV%
Type of Entry NE M
Type of job NLIST B W
Output fields = User profile name
 Job name
 Job queue
 Real user
 Date & Time yyyy-mm-dd-hh.mm
Sort fields = NONE

10. Entry OR show who restored any objects on the system:

Z8ORBK – Object restore Journal entry type=**OR**
Filter condition = NONE
Output fields = Name of program
 User profile name
 Type of entry
 Restore object name
 Object type
 Save object name
 Date & Time yyyy-mm-dd-hh.m
Sort fields = NONE

11. Entry OM shows who moved or restored objects on the system:

Z8OMBK – Object move or rename Journal entry type=**OM**
Filter condition = User of job NLIST S1OWNER
S1OWNER1
S1OWNERn
Output fields = **Name of program NE OUTQ99**
 = Name of program
 User profile name
 Type of entry
 Old object name
 Object type
 New object name



14. Entry RA is written during a restore of objects/libraries etc. if any authority changes are made:

Z8RABK – Authority change during restore Journal entry type=**RA**

Filter condition = NONE

Output fields = Name of program
User profile name
Type of entry
Name of object
Library name
Object type
Authorization list name removed
Y – Public authority set to *EXCLUDE
Y – Privat authority removed
Y – Authorization list removed
Date & Time yyyy-mm-dd-hh.mm
Sort fields = NONE

15. Entry RJ shows restoration of objects with changes to user profile specifications:

Z8RJBK – Restoring job description with profile spec. Journal entry=**RJ**

Filter condition = NONE

Output fields = Name of program
User profile name
Type of entry
Job description name
Library name
Object type
User name
Date & Time yyyy-mm-dd-hh.mm
Sort fields = NONE

16. Entry RP shows who restored programs that adopt authorities:

Z8RPBK – Restoring adopted authority program Journal entry type=**RP**

Filter condition = NONE

Output fields = Name of program
User profile name
Type of entry
Program name
Library name
Object type
Owner name



Sort fields Date & Time yyyy-mm-dd-hh.mm
= NONE

17. Entry SM shows who made system management changes:

Z8SMBK – System management changes Journal entry type=**SM**

Filter condition = **NONE**
Output fields = Name of program
 User profile name
 System name
 Type of entry
 Type of access
 Sequence number
 Message ID
 Name of relational data base
 Name of HFS file system
 Date & Time yyyy-mm-dd-hh.mm
Sort fields = NONE

18. Entry ST shows who used the service tool (SST):

Z8STBK – Use of service tools Journal entry type=**ST**

Filter condition = **User profile name NE QSVRDRCTR**
Output fields = Name of program
 User profile name
 Type of entry
 Name of service tool
 Name of object
 Name of object library
 Type of object
 Service tools profile
 Date & Time yyyy-mm-dd-hh.mm
Sort fields = NONE

19. Entry SV shows who changed system values:

Z8SVBK – System value changed Journal entry type=**SV**

Filter condition = **User profile name NE SECURITY2P**
Output fields = Name of program
 User profile name
 System value name
 New value
 Date & Time yyyy-mm-dd-hh.mm
Sort fields = NONE

20. Entry ZC shows who opened an object with the Change option:

Z8ZCBK – Object accessed (change) Journal entry type=**ZC**

Filter condition = **NONE**
Output fields = Name of program
 User profile name
 Type of entry
 Name of object
 Library name
 Object type
 Type of access
 Object data
 Type of access (text)
 Object name country ID
 Object name language ID
 Parent directory file ID
 Object file ID
 Object name
 Object file ID
 ASP name
 ASP number
 Path name country ID
 Path name language ID
 Absolute path name indicator
 Relative file ID of path name

Sort fields = **NONE**

21. Entry CM shows the executed commands by selected users (all users except users within the IT department and special programs):

Z9CMBK – Commands run by a user or program. Journal entry=**CD**

Filter condition = **User profile name NLIST USER1, USER2,...,USERn**
Name of object **NE SIGNOFF**
Name of program **NLIKE PGM1%,..., PGMn%**
 NLIST PGMA, ..., PGMZ
 NLIKE ABC%,...,XYZ%

Output fields = **Name of job NE AU#MNT**
 = Name of program
 User profile name
 Type of object
 Name of object
 Library name
 Object type
 Y-CMD run from CL pgm or REXX proc
 Date & Time yyyy-mm-dd-hh.mm



Sort fields Name of job
 Number of job
 = NONE

The comparison parameters of the filter condition and the meaning of these parameters:

- NE** **Not equal**
- GT** **Greater than**
- LT** **Less than**
- GE** **Greater than or equal to**
- LE** **Less than or equal to**
- RANGE** **Range (between Value1 and Value2, or equals a value)**
- IS** **NULL**
- ISNOT** **NULL**
- LIST** **List (field equals Value1, or equals Value2,...)**
- NLIST** **Not list (field does not equal Value1, or....)**
- LIKE** **Like (field starts with, ends with, or matches the pattern in Value)**
- NLIKE** **Not like (field does not start with, does not end with, or does not match the pattern in value)**