Audit Journaling with Navigator for i

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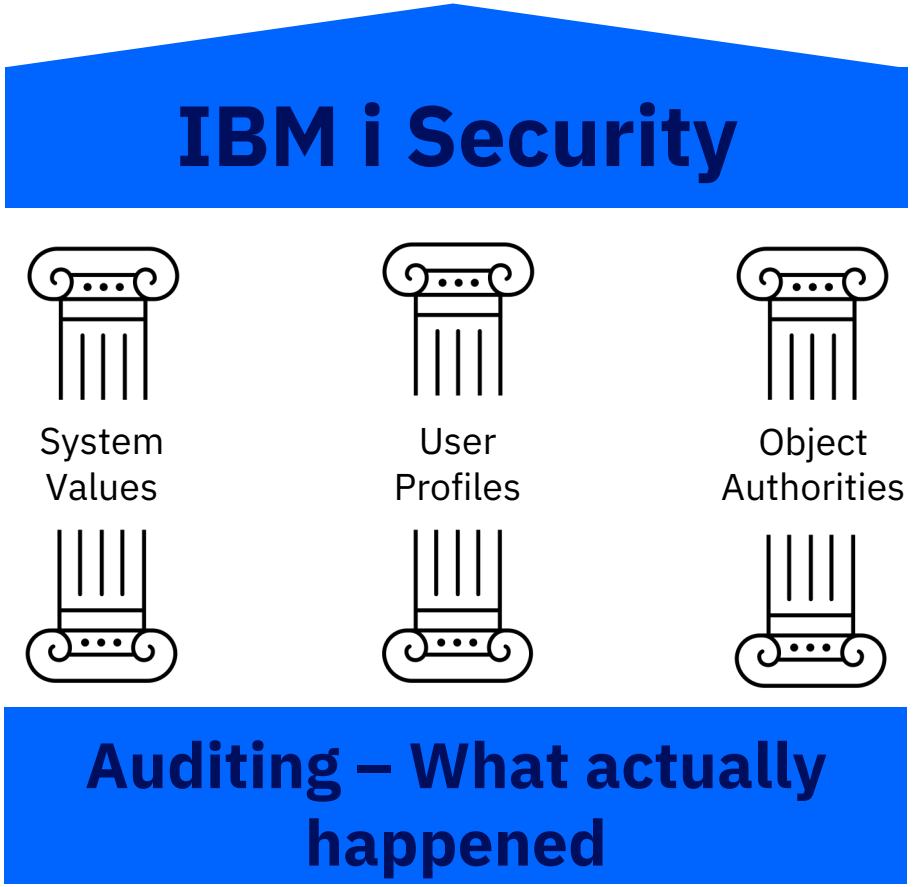
The Pillars of IBM i Security

The IBM i Security model is based on three pillars:

- System Values
- User Profiles
- Object Authorities

All three parts are key to understanding a system's true security posture

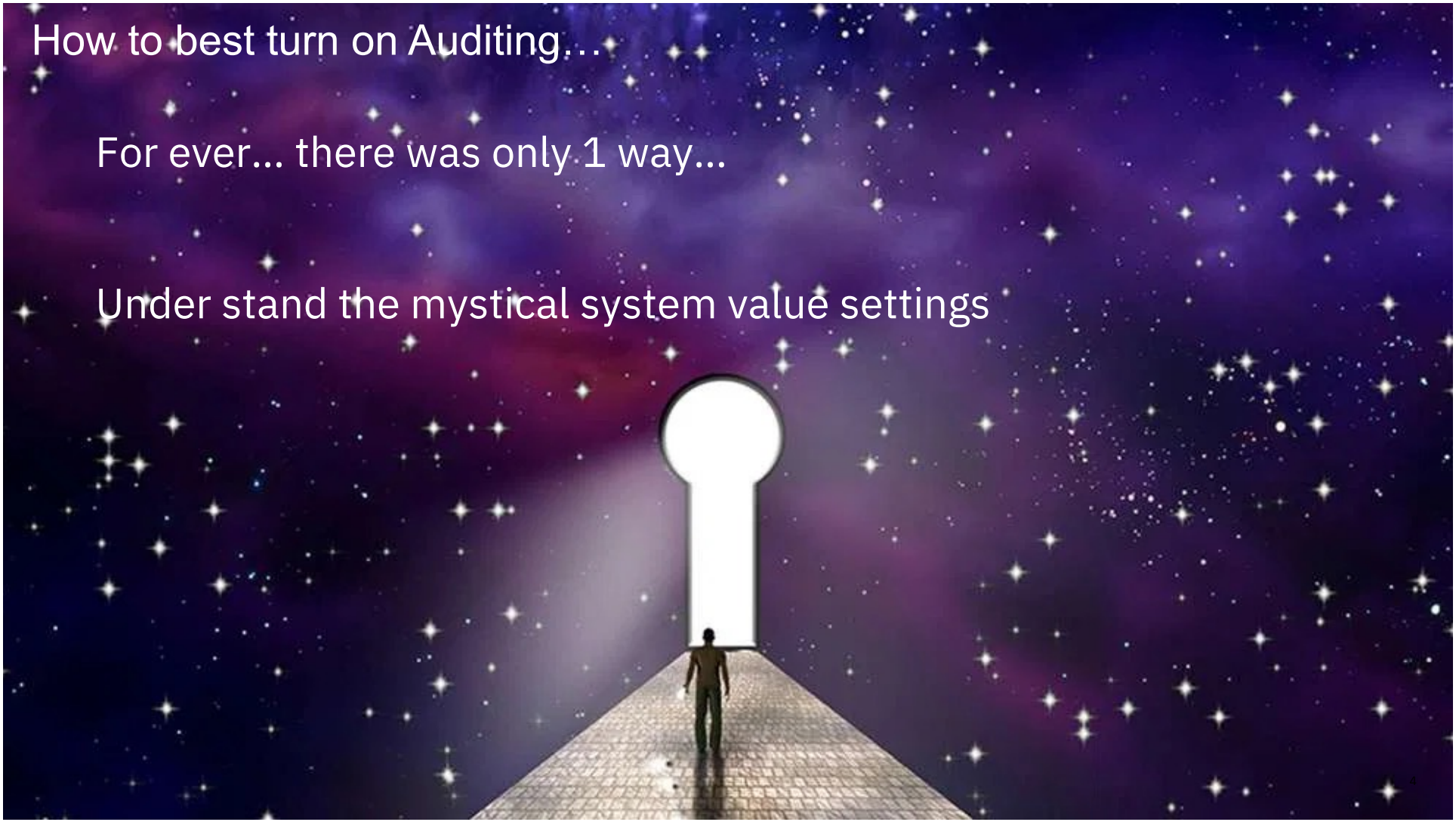


System Auditing

The IBM i has robust auditing capabilities built-in – Turn them ON!
Use Change Security Auditing (CHGSECAUD) command to set them up
IBM Recommends:

- QAUDCTL at: *AUDLVL, *OBJAUD, and *NOQTEMP
- QAUDLVL at: *AUTFAIL, *OBJMGT, *PGMFAIL, *SAVRST, *SERVICE, *SECURITY, and *SYSMGT
- Be careful with “noisy” options (*CREATE, *DELETE, *JOBDTA, *PRTDTA, *SPLFDTA)
  - Don’t want to hide the important messages in a huge pile of hay!

Do not put your Audit Journal Receivers in QSYS or QGPL – use their own secured library
Use command auditing to record the actions of privileged users – CHGUSRAUD AUDLVL(*CMD)
Integrate with a central SIEM (Splunk, QRadar, ArcSight) using the Syslog Reporting Manager


How to best turn on Auditing…
For ever… there was only 1 way…
Under stand the mystical system value settings

Audit Journaling Before

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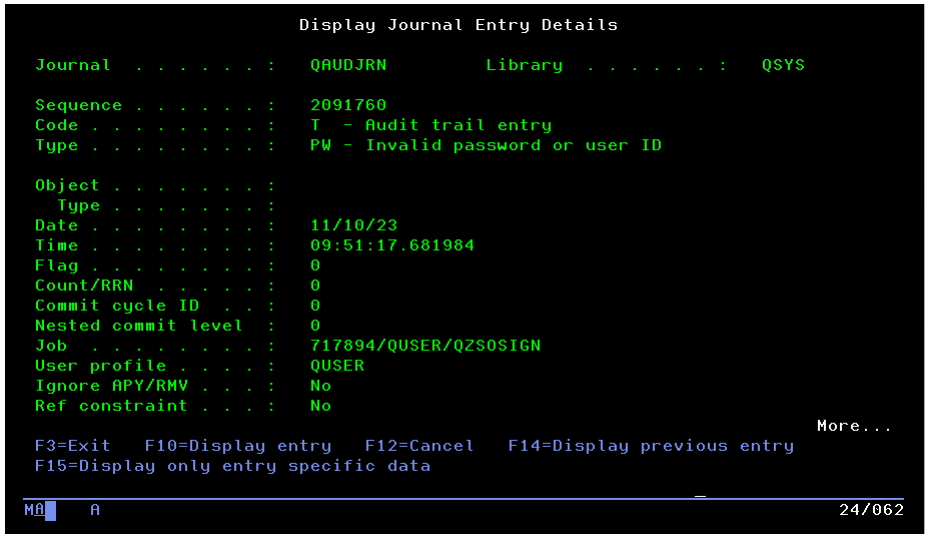
Configuration

- Multiple system values with multiple values
  - QAUDCTL
  - QAUDLVL
  - QAUDLVL2
  - …
- Set up journal and journal receivers

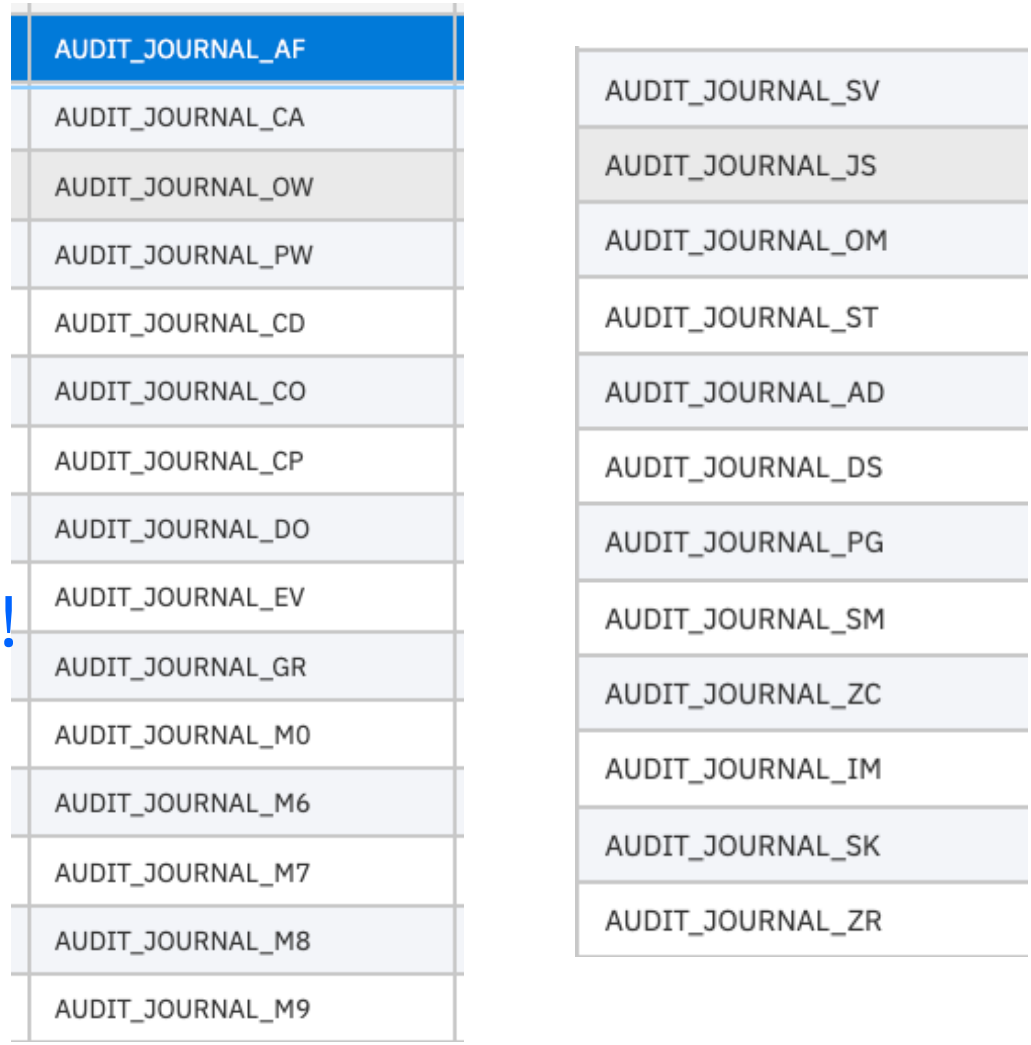
Viewing data

- Difficult to understand
- Hard to analyze all data at once
- Green screen (CPYAUDJRN, DSPJRN)

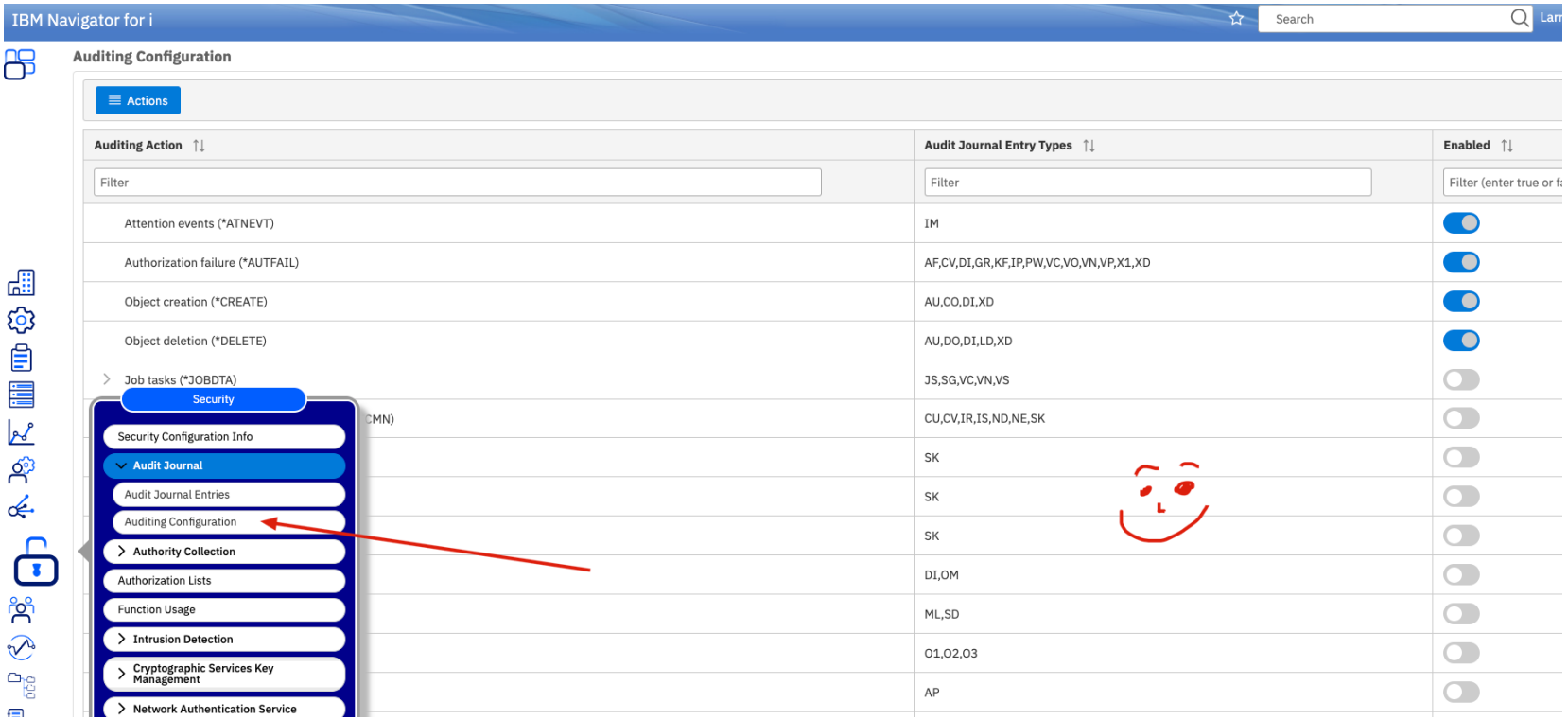


So many helper functions

And More coming!



Use Navigator



Audit Journaling Now

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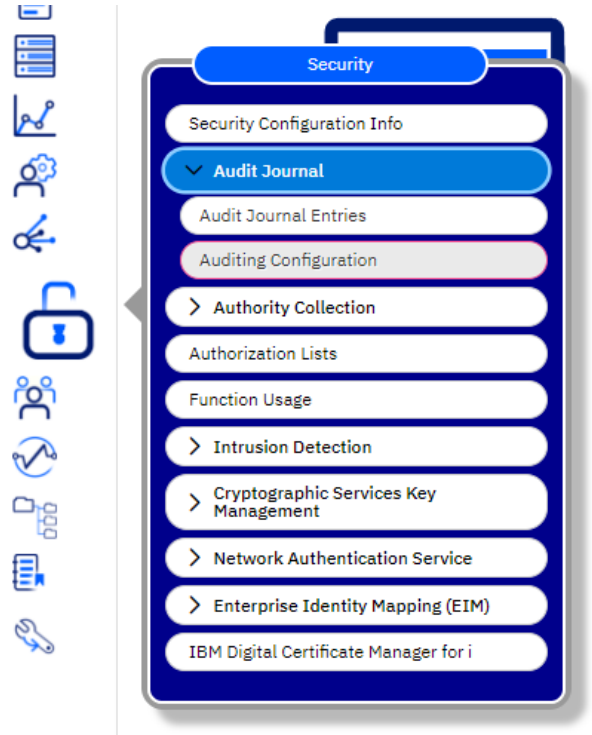
Configuring and viewing data is conveniently in one place

Based on the SYSTOOLS.AUDIT_JOURNAL_XX support



Audit Journaling Configuration

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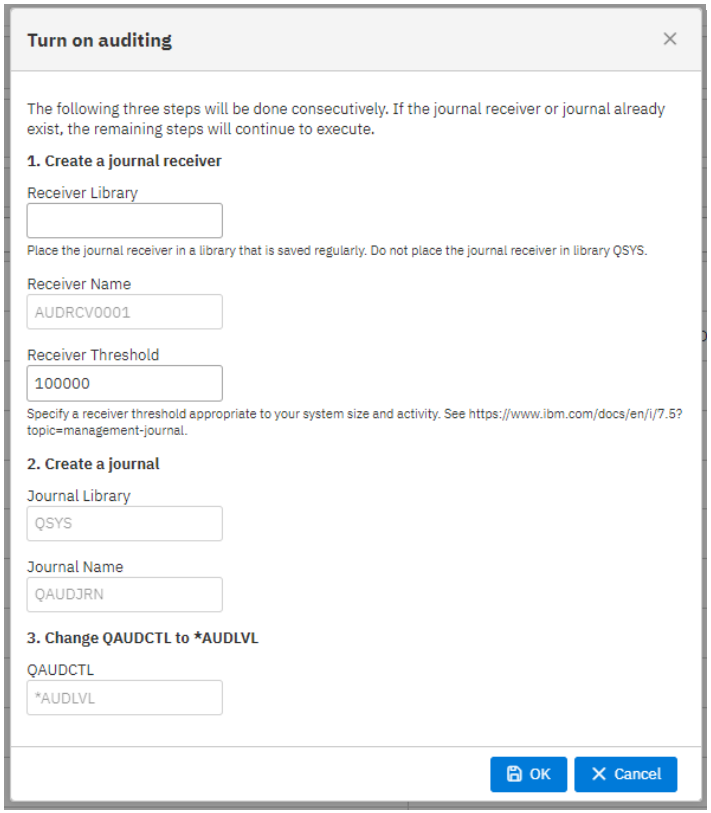
What if I've never set up auditing on my system before?

Navigator will handle the configuration for you

- Creates a journal receiver in the specified library
- Creates the QSYS/QAUDJRN journal
- Changes the QAUDCTL system value to *AUDLVL



Audit Journaling Configuration

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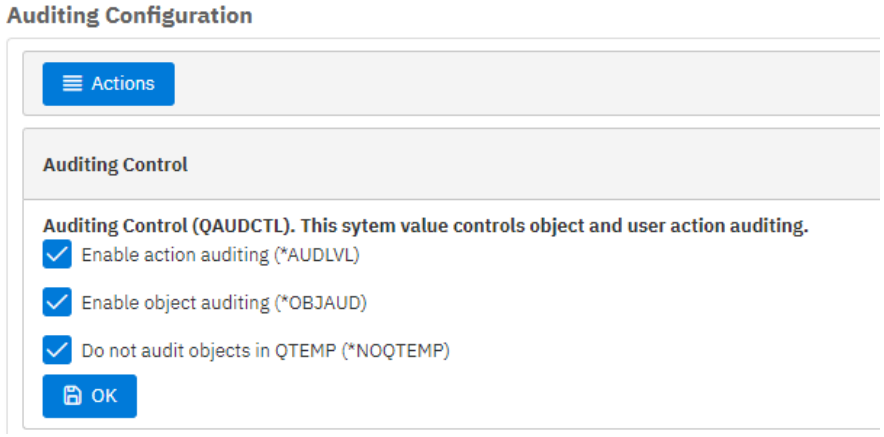
How do I control what is audited?

Navigator allows you to set the QAUDCTL system value

- Check *AUDLVL to enable action auditing (password failures, objects created, etc)
- Check *OBJAUD to enable auditing on specified objects
- Check *NOQTEMP to disable auditing objects in QTEMP



Audit Journaling Configuration

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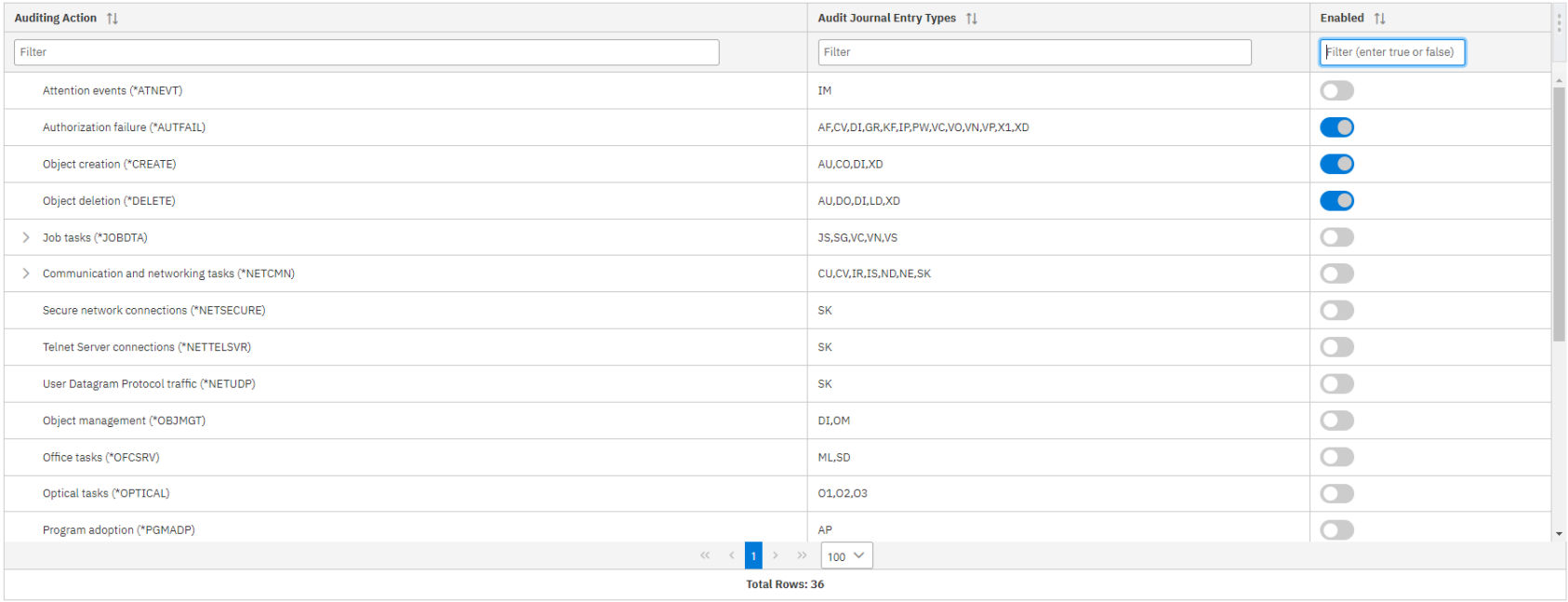
How do I control what is audited?

Navigator allows you to set the QAUDLVL/QAUDLVL2 system values



Auditing Action	Audit Journal Entry Types	Enabled
Filter	Filter	Filter (enter true or false)
Attention events (*ATNEVT)	IM	
Authorization failure (*AUTFAIL)	AF,CV,DI,GR,KF,IP,PW,VC,VO,VN,VP,X1,XD	
Object creation (*CREATE)	AU,CO,DI,XD	
Object deletion (*DELETE)	AU,DO,DI,LD,XD	
Job tasks (*JOBDTA)	JS,SG,VC,VN,VS	
Communication and networking tasks (*NETCMN)	CU,CV,IR,IS,ND,NE,SK	
Secure network connections (*NETSECURE)	SK	
Telnet Server connections (*NETTELSVR)	SK	
User Datagram Protocol traffic (*NETUDP)	SK	
Object management (*OBJMGT)	DI,OM	
Office tasks (*OFCSRV)	ML,SD	
Optical tasks (*OPTICAL)	O1,O2,O3	
Program adoption (*PGMADP)	AP	

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Total Rows: 36

View Audit Journal Data

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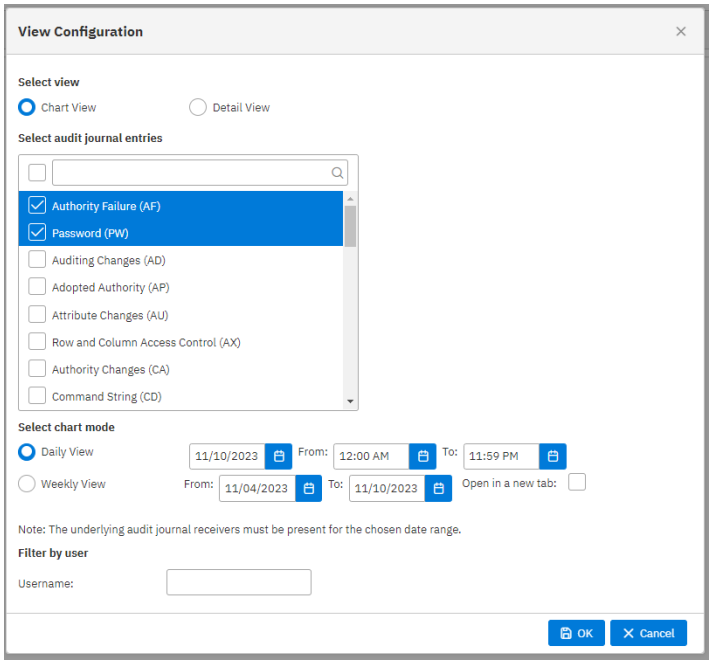
How do I view the audit journal data?

Navigator provides flexibility for how you want to view and analyze audit journal data

- Chart view – graphical representation
  - Daily view – bar graph of audit entries for the day
  - Weekly view – line graph for audit entries of a week
- Detail view – table view for one audit entry



View Audit Journal Data

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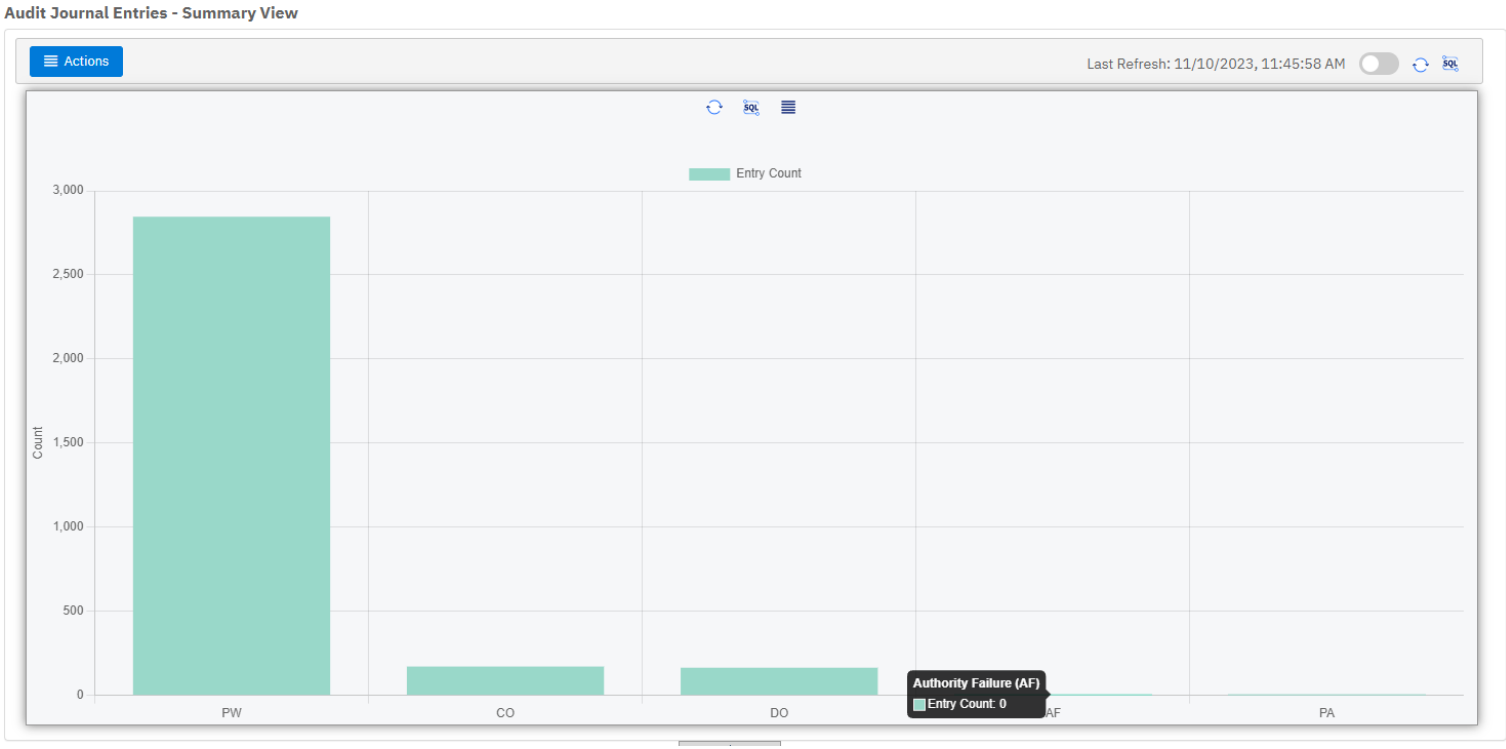
Daily View

- Helpful for monitoring your system's activity



View Audit Journal Data

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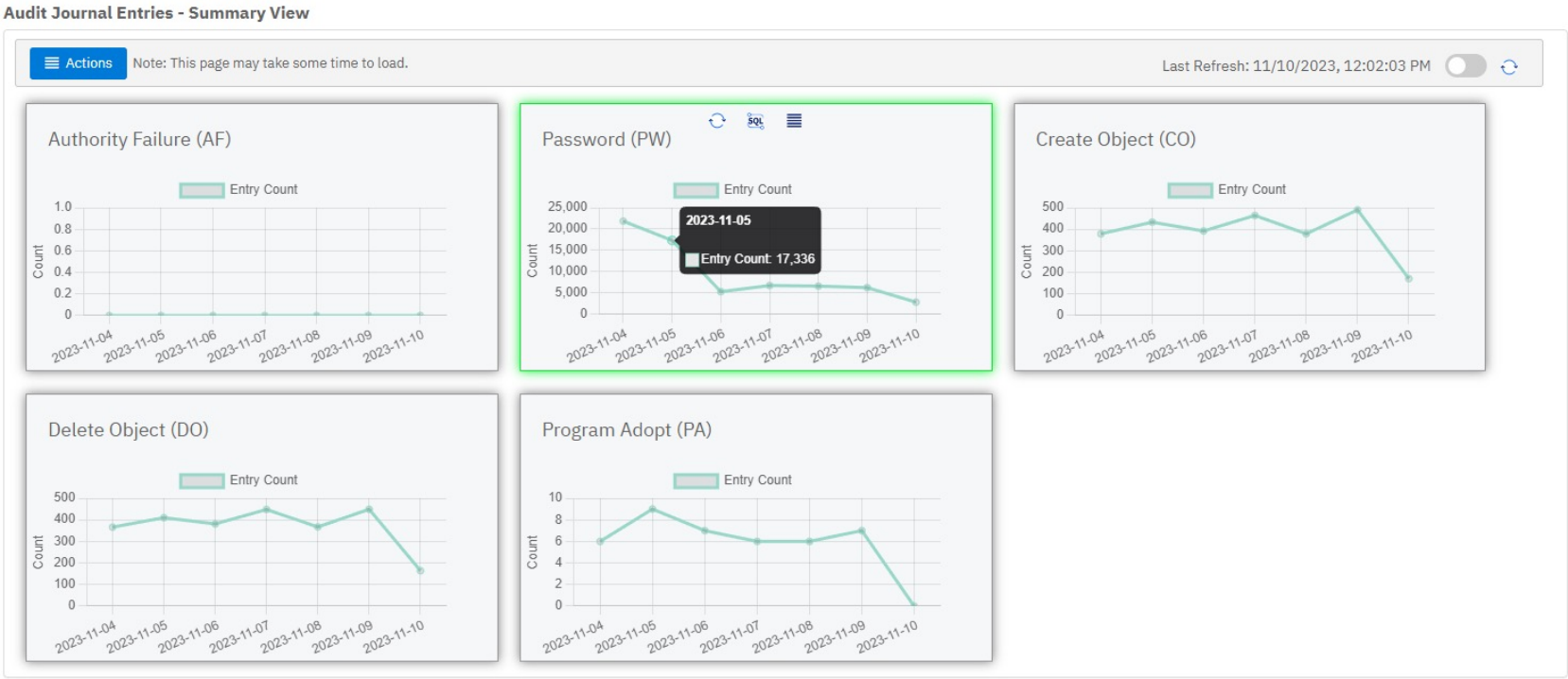
Weekly View

- Helpful for seeing trends over time



View Audit Journal Data

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Detail View

- Filter and sort through data to understand what happened when an audit entry was created

Password (PW) Detail View

Actions | Weekly Summary View > Detail View | Filters

Timestamp	Qualified Job Name	Program Library	Program Name	Violation Type	Violation Type Detail	User Name
Filter	Filter	Filter	Filter	A, C, D, E, P, Q, R, S, U, X, Y, Z	Filter	Filter
2023-11-04 11:46:06.862896	198060/QUSER/QP0ZSPWT	QSYS	QP0ZPCP2	U	User name not valid	ROOT
2023-11-04 11:46:09.069328	198064/QUSER/QP0ZSPWT	QSYS	QP0ZPCP2	U	User name not valid	ROOT
2023-11-04 11:46:11.123232	198066/QUSER/QP0ZSPWT	QSYS	QP0ZPCP2	U	User name not valid	ROOT
2023-11-04 11:46:17.048880	198068/QUSER/QP0ZSPWT	QSYS	QP0ZPCP2	U	User name not valid	ROOT
2023-11-04 11:46:26.245840	198070/QUSER/QP0ZSPWT	QSYS	QP0ZPCP2	U	User name not valid	ROOT
2023-11-04 11:46:31.499296	198074/QUSER/QP0ZSPWT	QSYS	QP0ZPCP2	U	User name not valid	ROOT
2023-11-04 11:46:33.458416	198076/QUSER/QP0ZSPWT	QSYS	QP0ZPCP2	U	User name not valid	ROOT

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Total Rows: 61454

Performance Enhancements with Data Mart

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- Large systems generate tons of audit journal entries which can be hard to manage
- Data mart will allow you to preload audit journal data so it can be quickly managed in the GUI
- Allows you to create a historical record of audit journal data
- Available in 7.4 TR 10 and 7.5 TR 4

Data Mart – Under the Covers

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- MANAGE_AUDIT_JOURNAL_DATA_MART procedure
- Requires *AUDIT and object authority to the data mart library and tables

```
CALL QSYS2.MANAGE_AUDIT_JOURNAL_DATA_MART(
   JOURNAL_ENTRY_TYPE => 'PW',
   DATA_MART_LIBRARY => 'AECIESLA',
   STARTING_TIMESTAMP => CURRENT TIMESTAMP - 1 MONTH,
   ENDING_TIMESTAMP => CURRENT TIMESTAMP,
   DATA_MART_ACTION => 'CREATE'
);
```

Data Mart – Under the Covers

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- AUDIT_JOURNAL_DATA_MART_INFO view
  - Metadata table for the most recent call to the manage procedure
  - Contains one row for each unique library and journal entry type pair

```
SELECT DATA_MART_LIBRARY, JOURNAL_ENTRY_TYPE,
    BUILD_START, BUILD_END, BUILD_JOB
  FROM QSYS2.AUDIT_JOURNAL_DATA_MART_INFO;
```

Data Mart Library DATA_MART_LIBRARY	Journal Entry Type JOURNAL_ENTRY_TYPE	Build Start BUILD_START	Build End BUILD_END	Build Job BUILD_JOB
AECIESLA	PW	2024-01-30 15:07:48.171775	2024-01-30 15:08:46.290754	937634/QUSER/QZDASOINIT
SCOTTF	CO	2024-01-30 15:09:52.163365	2024-01-30 15:09:54.084227	937634/QUSER/QZDASOINIT
SCOTTF	DO	2024-01-30 15:09:57.015882	2024-01-30 15:09:58.424444	937634/QUSER/QZDASOINIT
TIMMR	AF	2024-01-30 15:06:41.279314	2024-01-30 15:06:53.040439	937634/QUSER/QZDASOINIT
TIMMR	PW	2024-01-30 15:06:34.119496	2024-01-30 15:06:34.366154	937634/QUSER/QZDASOINIT

Data Mart - Navigator

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- Security -> Audit Journaling -> Manage Data Mart

Manage Audit Journal Data Mart

Actions

Data Mart Library	Journal Entry Type	Status	Audit Journal Starting Timestamp	Audit Journal Ending Timestamp
Filter	Filter	Filter	Filter	Filter
AECIESLA	Password (PW)	Built	2024-01-23 15:07:48.150079	2024-01-30 15:07:48.150079
SCOTTF	Create Object (CO)	Built	2024-01-25 15:09:52.139004	2024-01-30 15:09:52.139004
SCOTTF	Delete Object (DO)	Built	2024-01-25 15:09:57.009925	2024-01-30 15:09:57.009925
TIMMR	Authority Failure (AF)	Built	2024-01-28 15:06:41.273382	2024-01-29 15:06:41.273382
TIMMR	Password (PW)	Built	2024-01-28 15:06:34.111383	2024-01-29 15:06:34.111383

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Total Rows: 5

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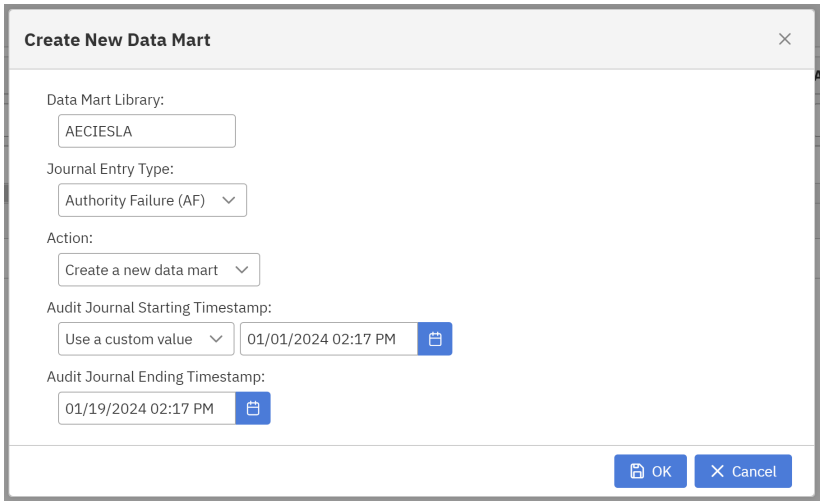
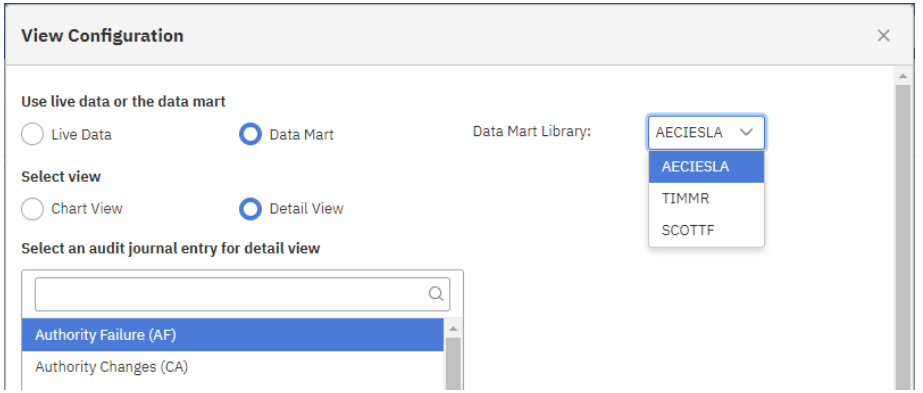
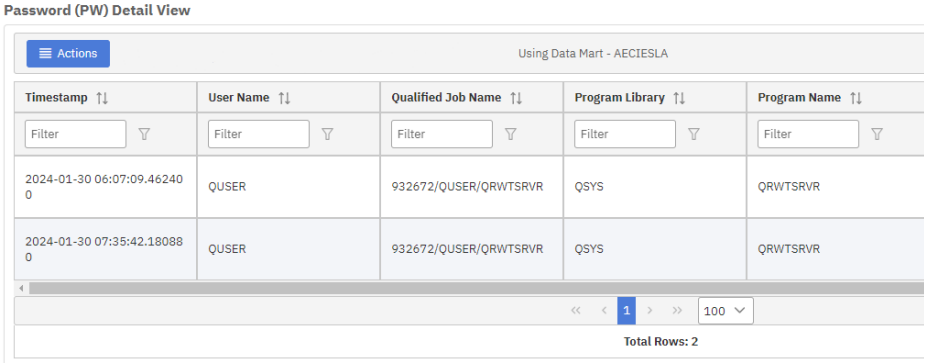
- Can be used for chart view and detail view
- Build occurs in the background







What's coming next to Data Mart

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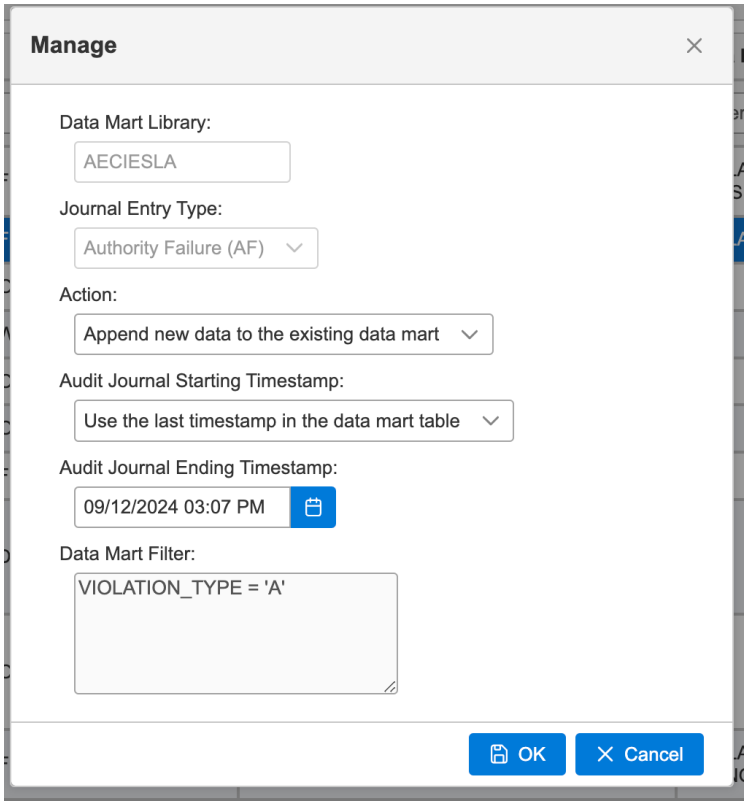
Filtering

- New parameter on the MANAGE_AUDIT_JOURNAL_DATA_MART procedure
- Provide filter criteria when creating a data mart table to limit the type of entries
  - Violation type
  - User profile
  - IP address
  - etc



Audit Journaling in Navigator for i

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- Available in 7.4 and 7.5
- SQL Services available: https://www.ibm.com/support/pages/node/6442047
- For more information on Navigator: https://www.ibm.com/support/pages/node/6483299

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