ACS Run SQL Scripts & Other Db2 for i Tools Reinvented

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Business Architect Db2 for i

Who can use ACS

User Accessing the IBM i

Managing IBM i System

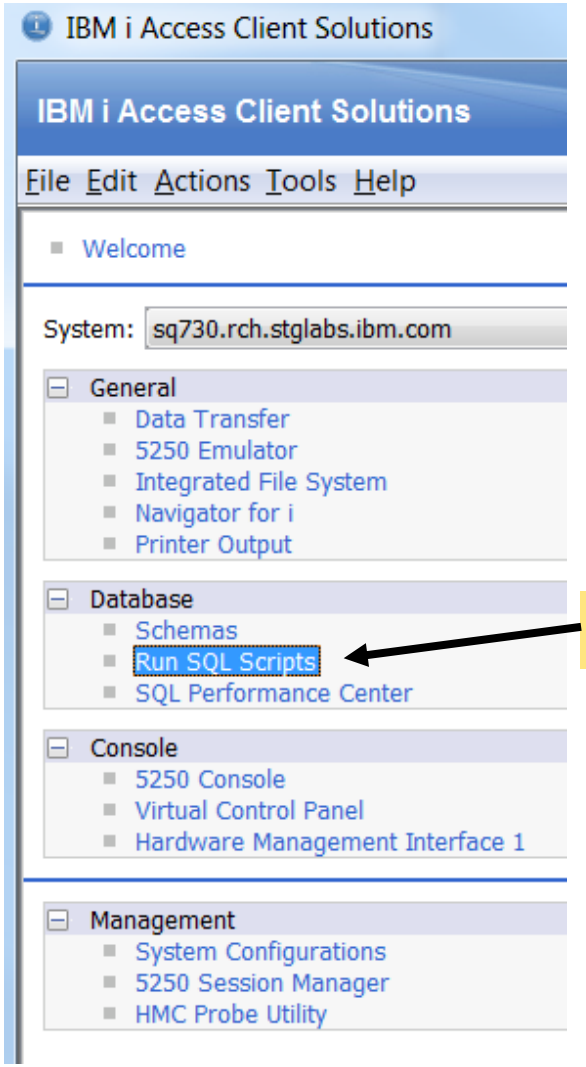
Db2 for i Engineer ★★

Celebrating collaboration

IBM i Access Client Solutions (ACS)

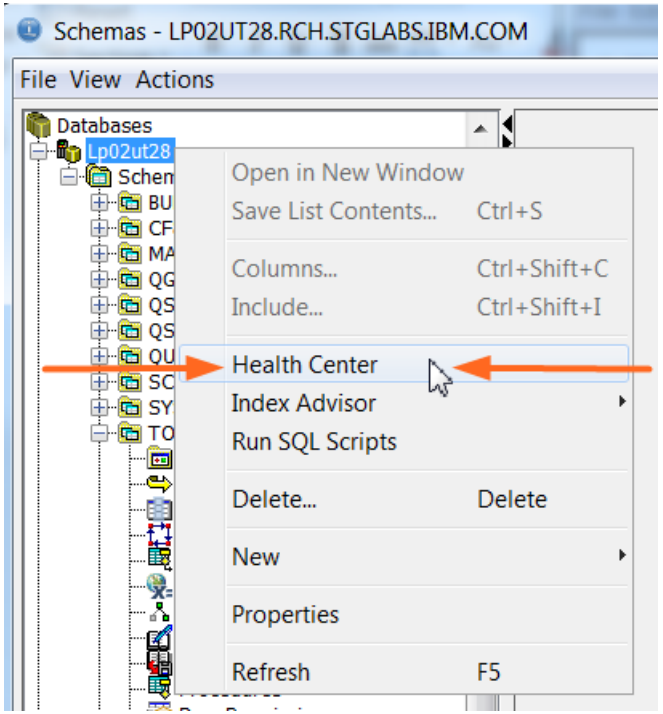
- More powerful and feature rich

IBM i Access Client Solutions (ACS)
IBM i Access Windows Service Pack Version 1.1.7.1 ➔ Run SQL Scripts and SQL Performance Center, Visual Explain, Show Statements, and much more…
Product Download Site: http://www-03.ibm.com/systems/power/software/i/access/solutions.html
Next Planned Update… October, 2017



ACS Version 1.1.7.1 (July, 2017)

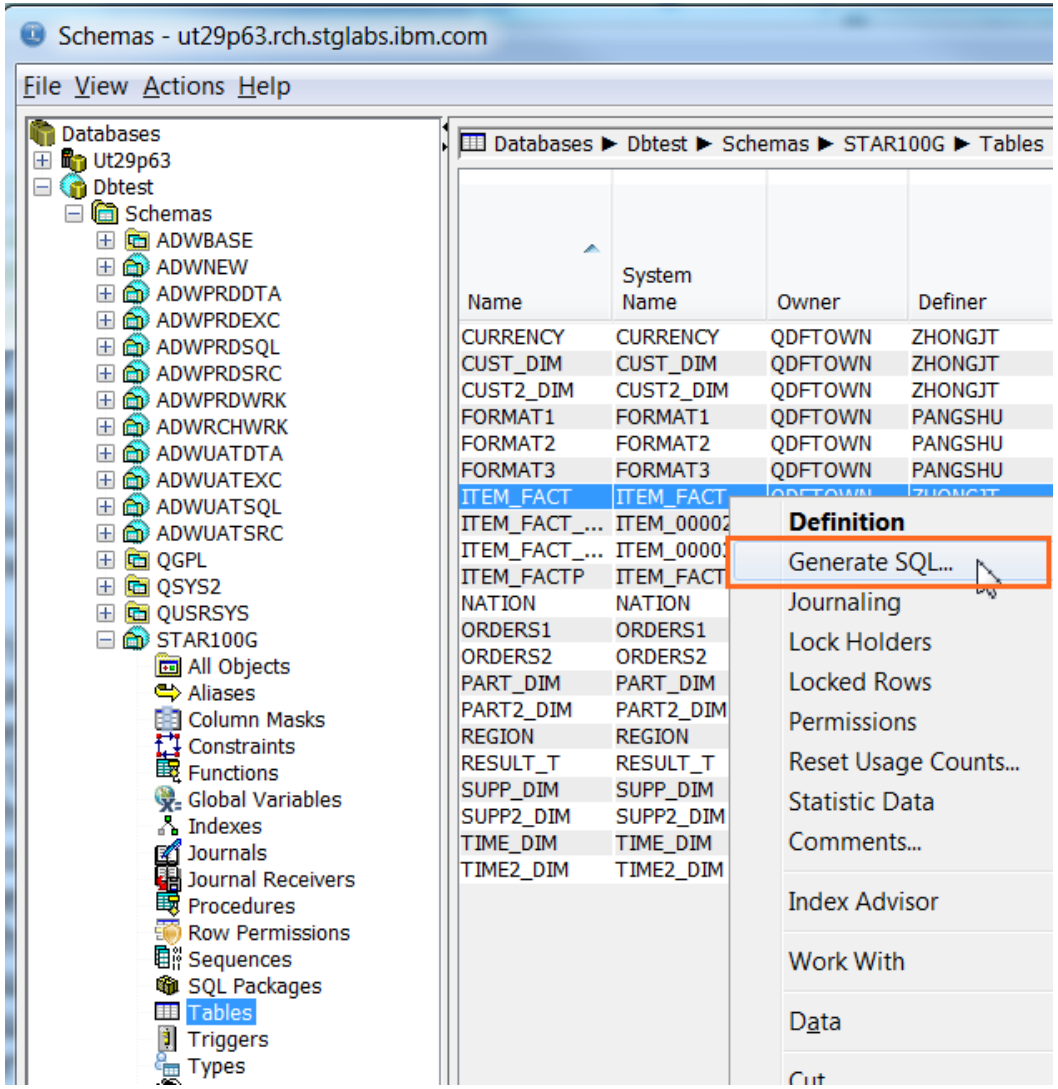
- **General**
  - Add Database Health Center
  - Add help text to dialogs
- **Run SQL Scripts**
  - Add Performance Monitor pulldown
  - Direct launch buttons
  - More Insert from Examples
- **SQL Performance Center**
  - Import SQL Performance Monitor
  - Import SQL Plan Cache Snapshot
  - Import SQL Plan Cache Event Monitor
  - New SQL Performance Monitor
  - New SQL Plan Cache Snapshot
  - New SQL Plan Cache Event Monitor
- **Schemas**
  - Journal - View Entries
  - Add Include... filtering support for Tables and Indexes
  - All Objects - Permissions action



Schemas in ACS

ACS-based Actions:

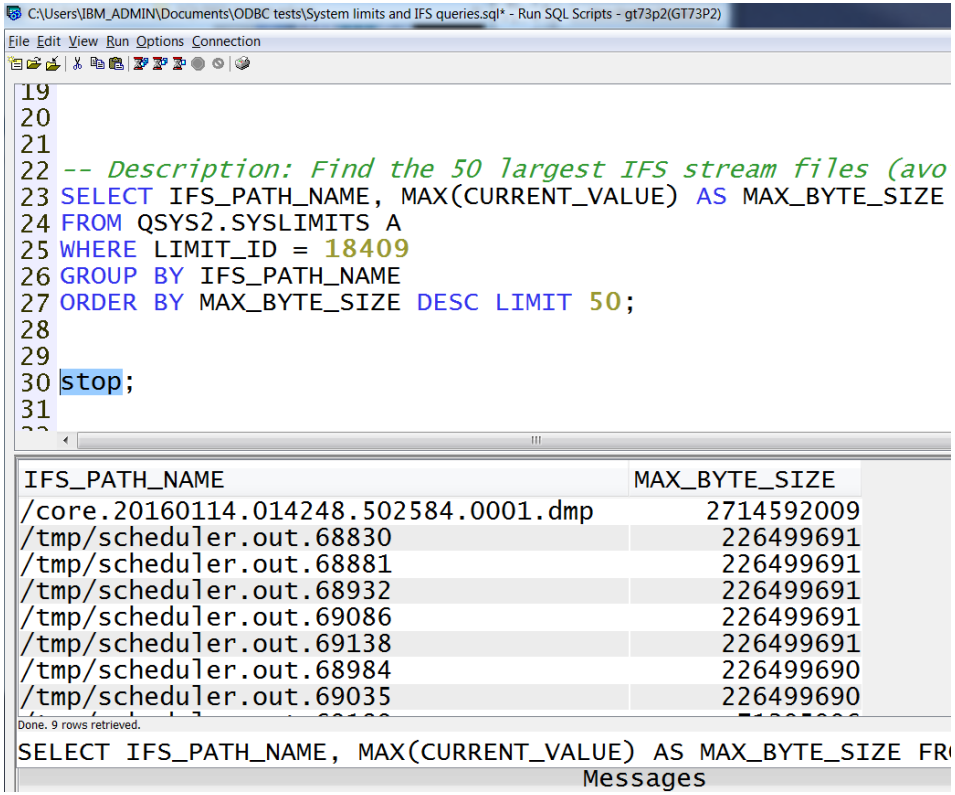
- Definition
- Description
- Generate SQL
- Properties
- Rename
- New Database Object
- Explain
- Data
  - View, Clear, ...
- Actions in Visual Explain
- …



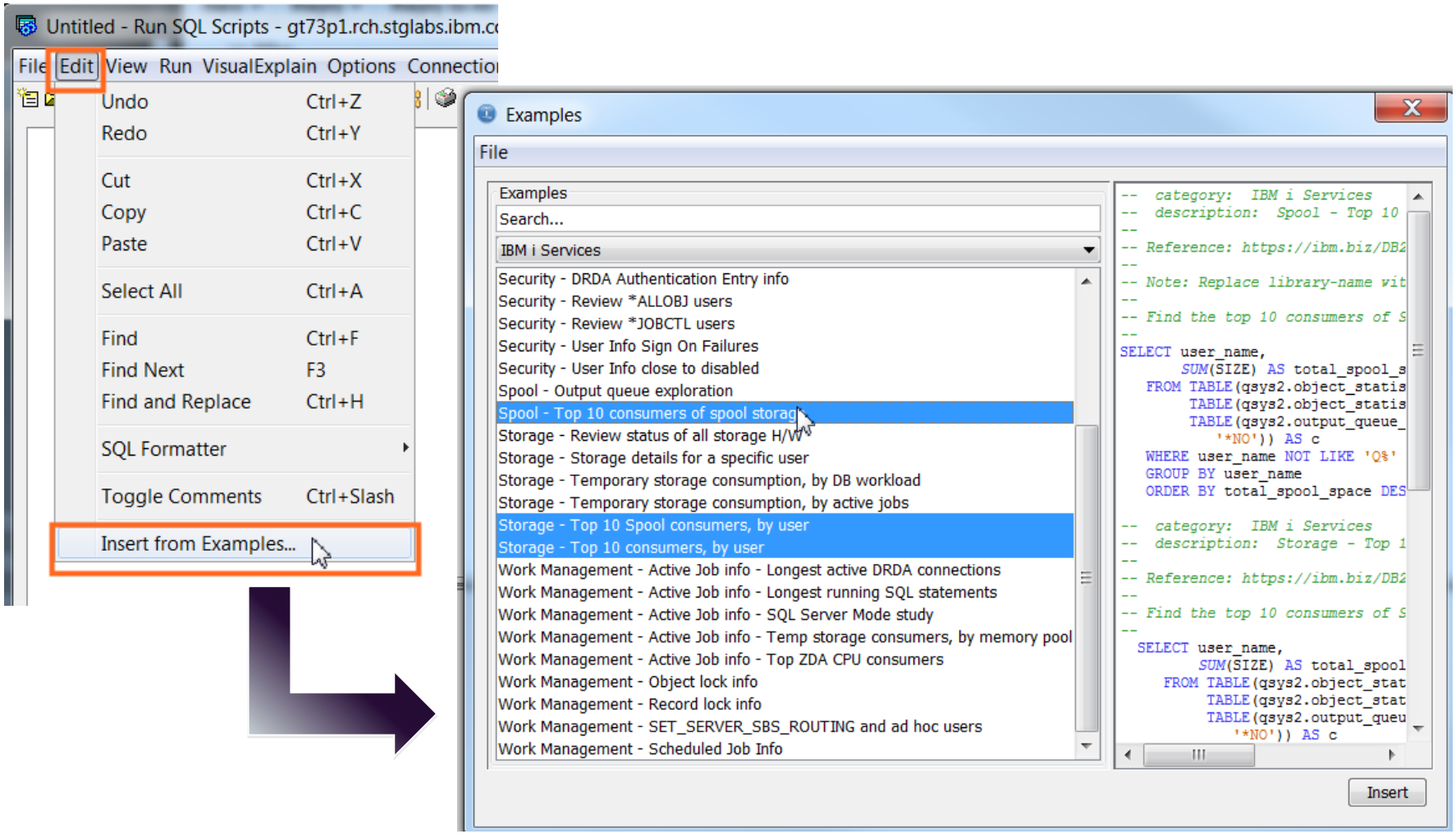
Run SQL Scripts

Highlights:

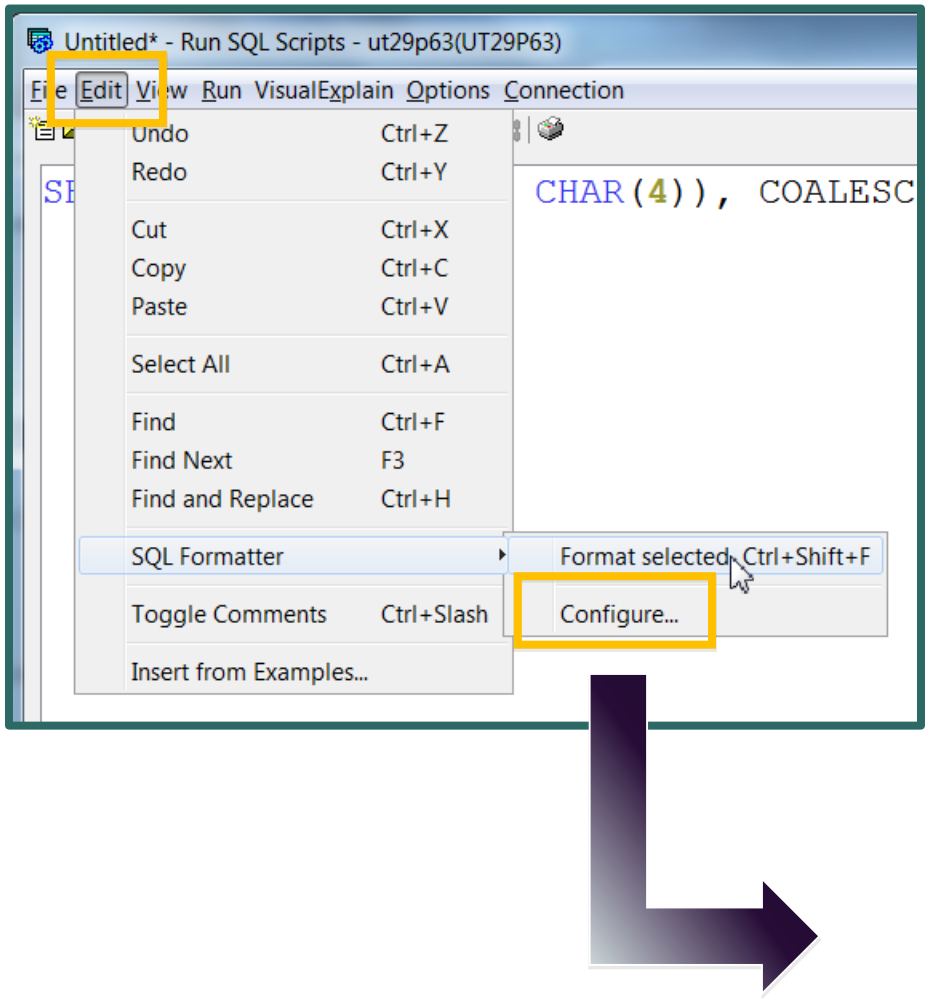
- Faster Startup Time
- Line Numbers
- Highlighting
- Color Coding
- Improved Usability
- Status Bar
- Reconnect
- Editor features
- Save Results
- Graphical Debugger
- Built-in examples

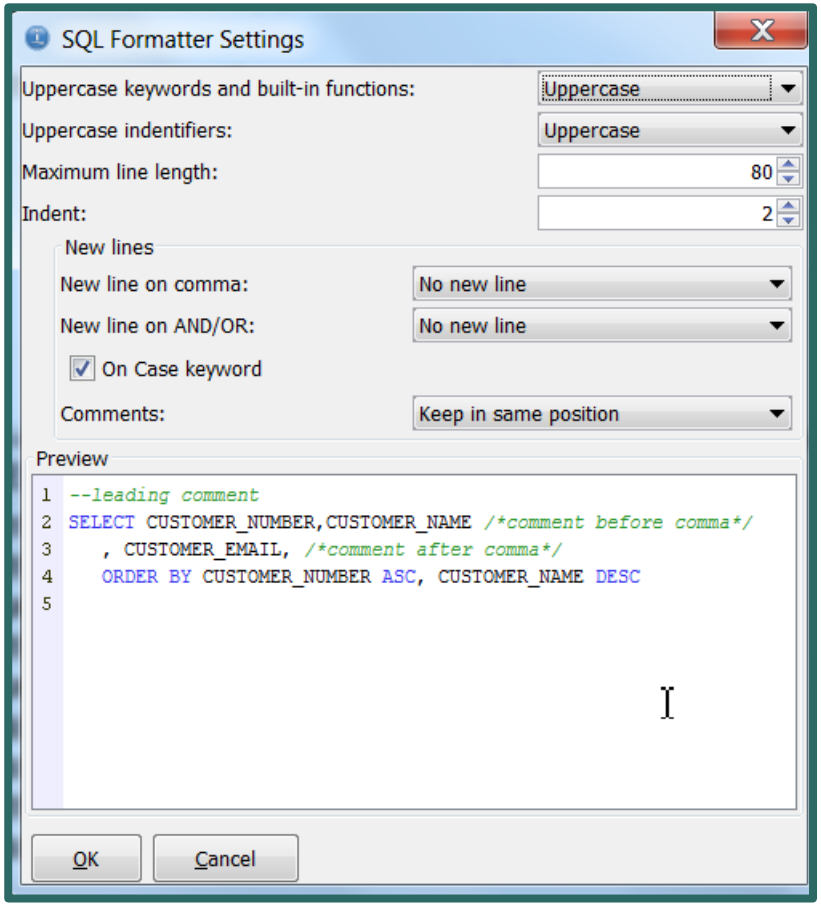


Insert From Examples



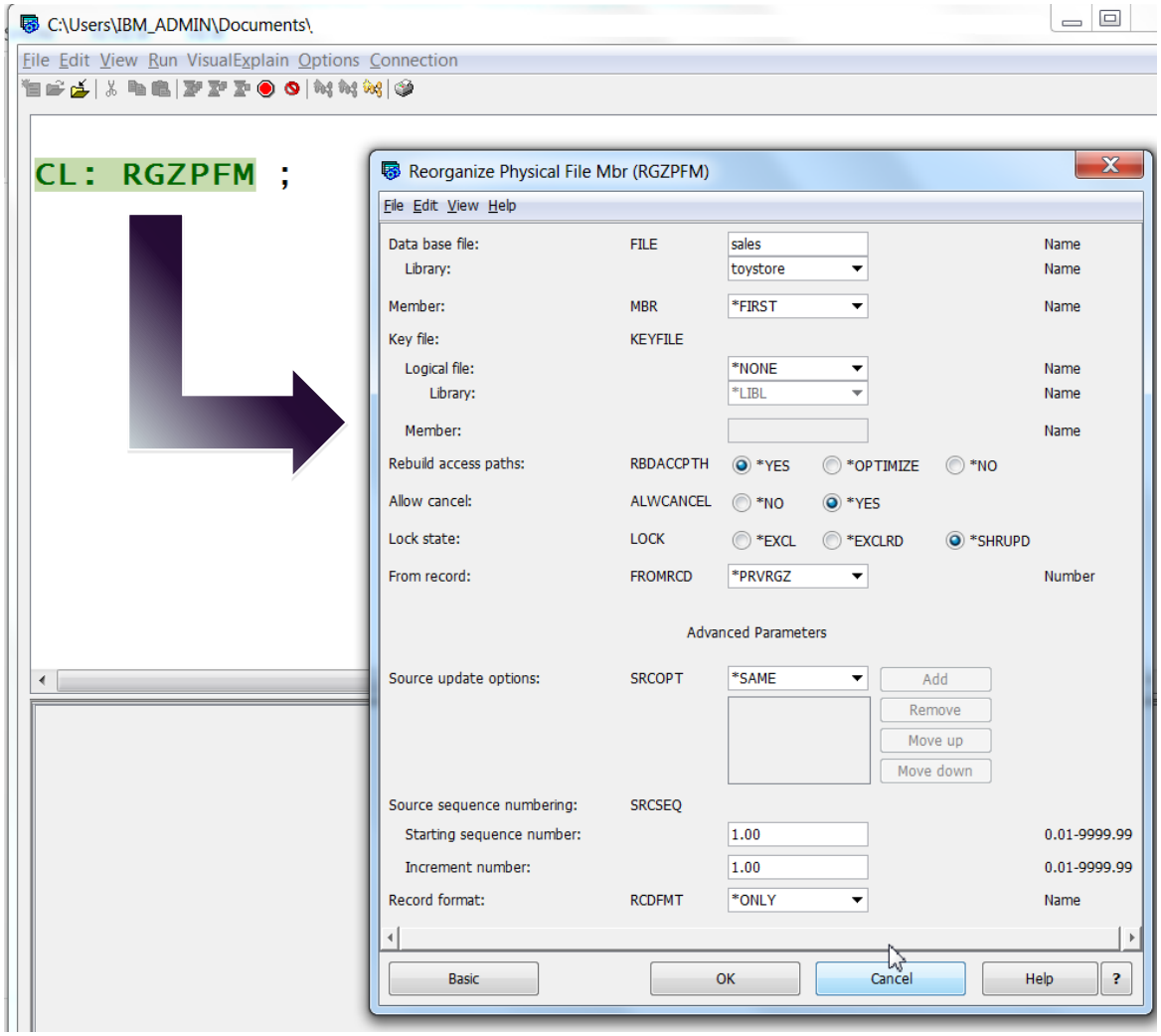
SQL Formatter



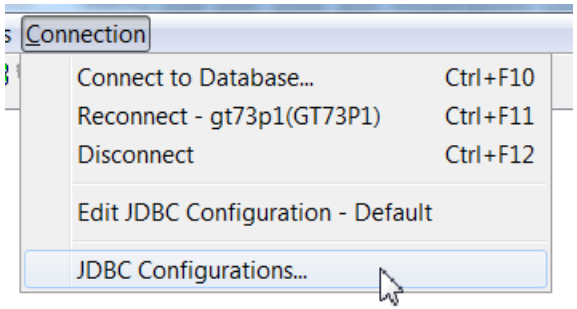


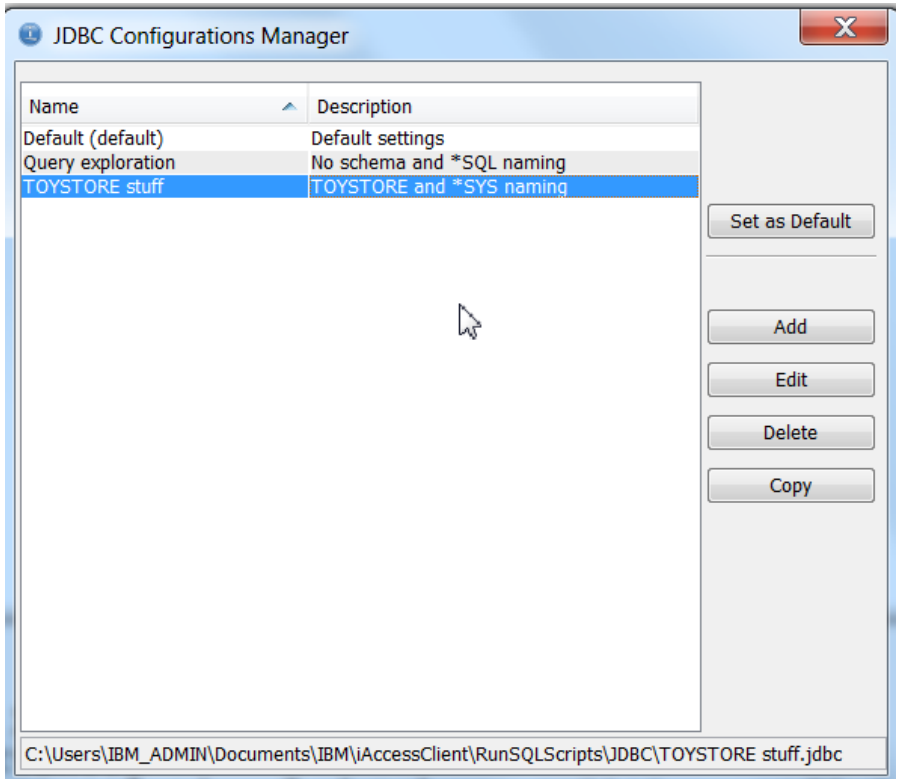
CL command prompting

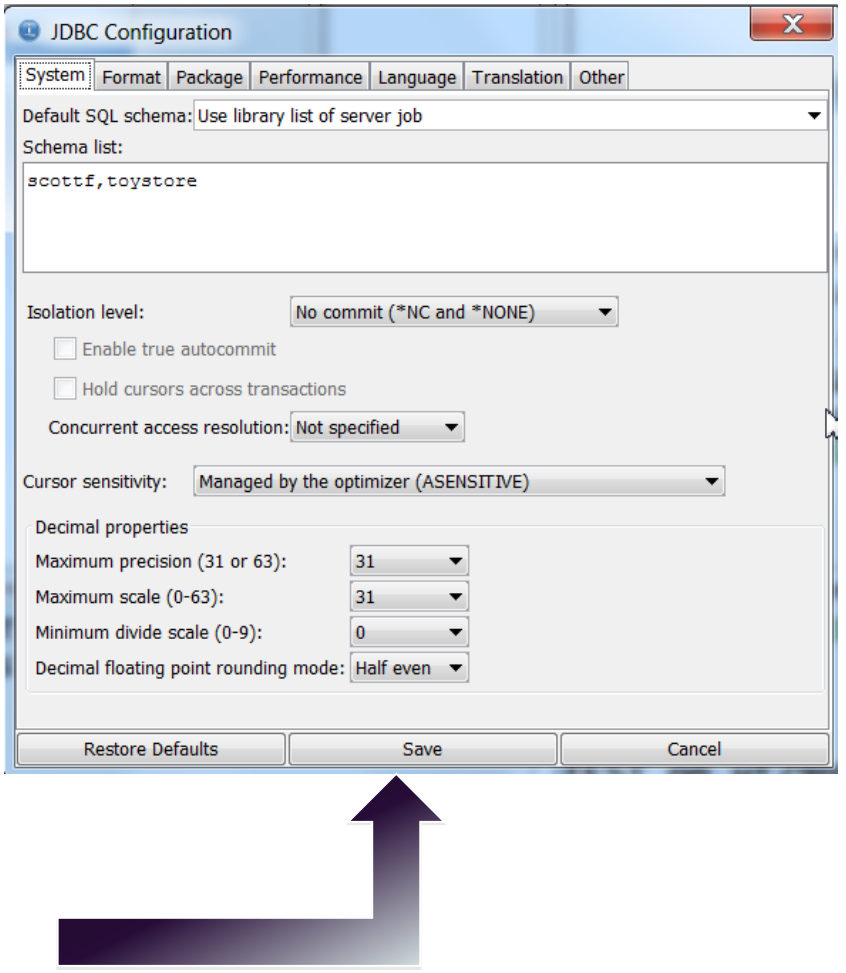
- Press PF4 to prompt and build your command string



JDBC Configuration

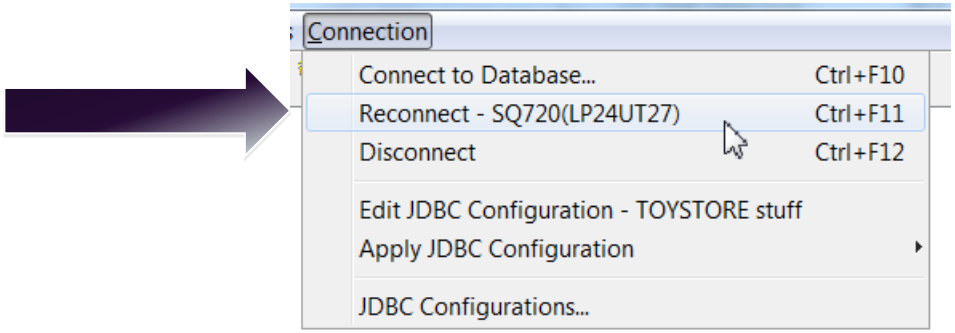




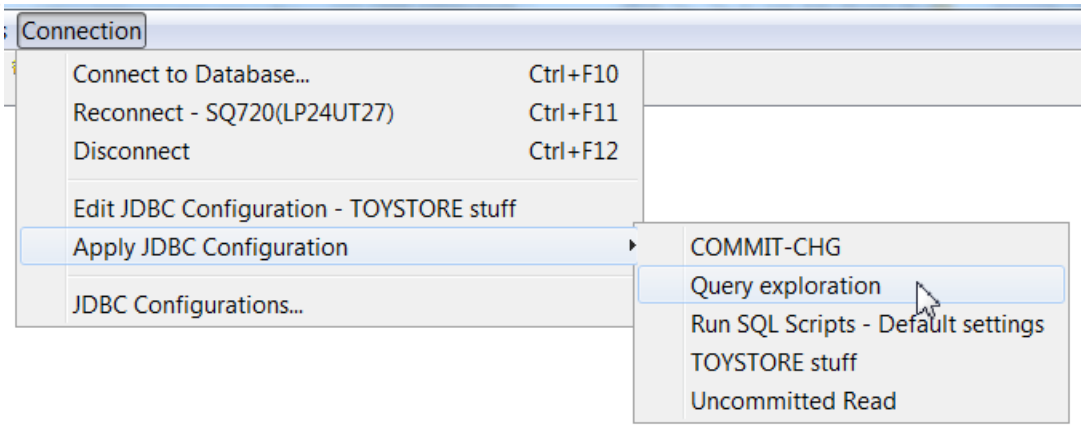


JDBC Configuration

- New connection using the same JDBC configuration

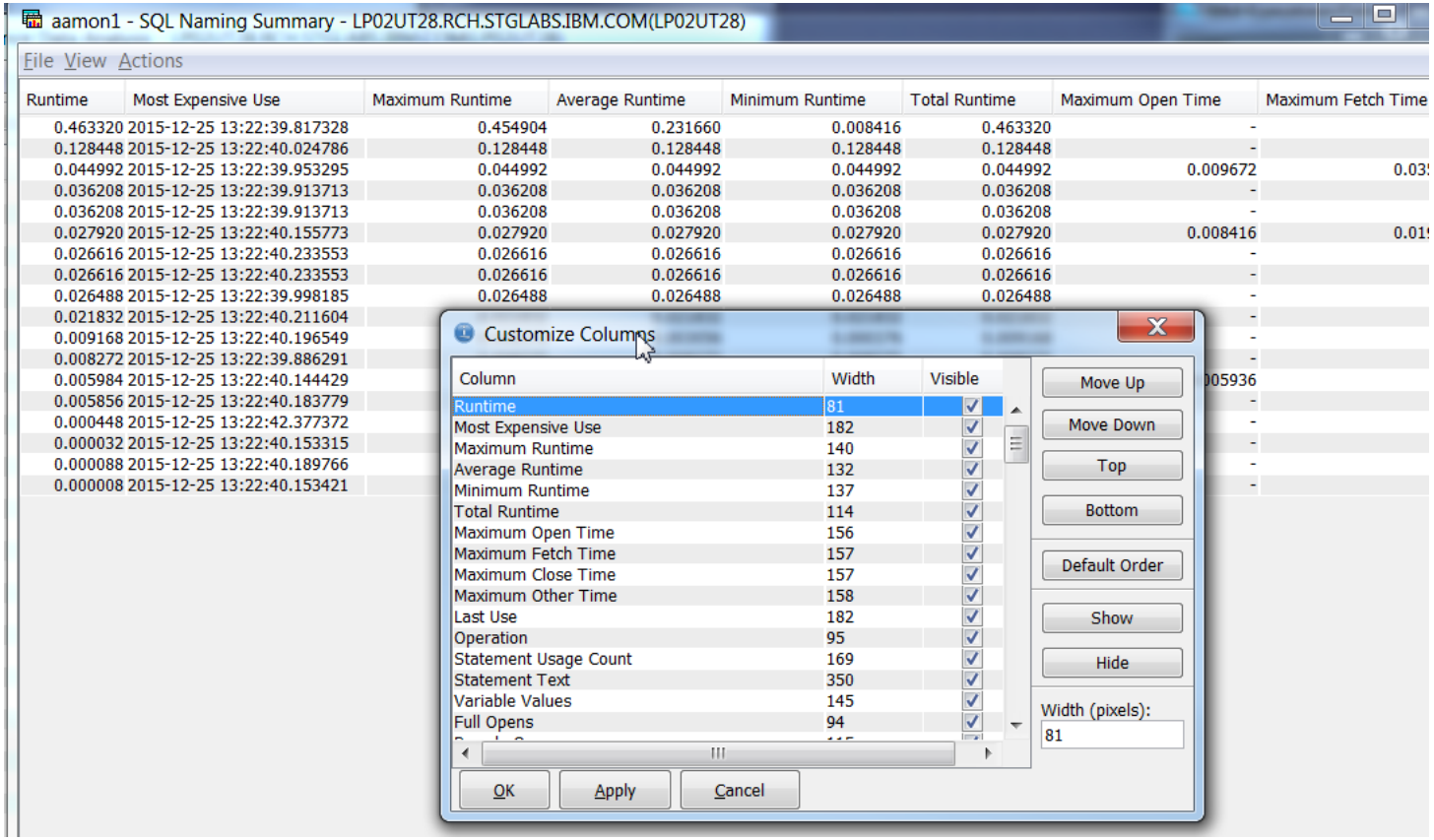


- New connection using a different JDBC configuration



SQL Performance Center

- Improved performance
- Tighter rendering of column widths



SQL Plan Cache

- SQL Plan Cache Properties are on the front page
- Some are configurable

SQL Performance Center - gt73p1

File View Actions

Database: GT73P1

Performance Monitors | Plan Cache Snapshots | Plan Cache Event Monitors | Plan Cache

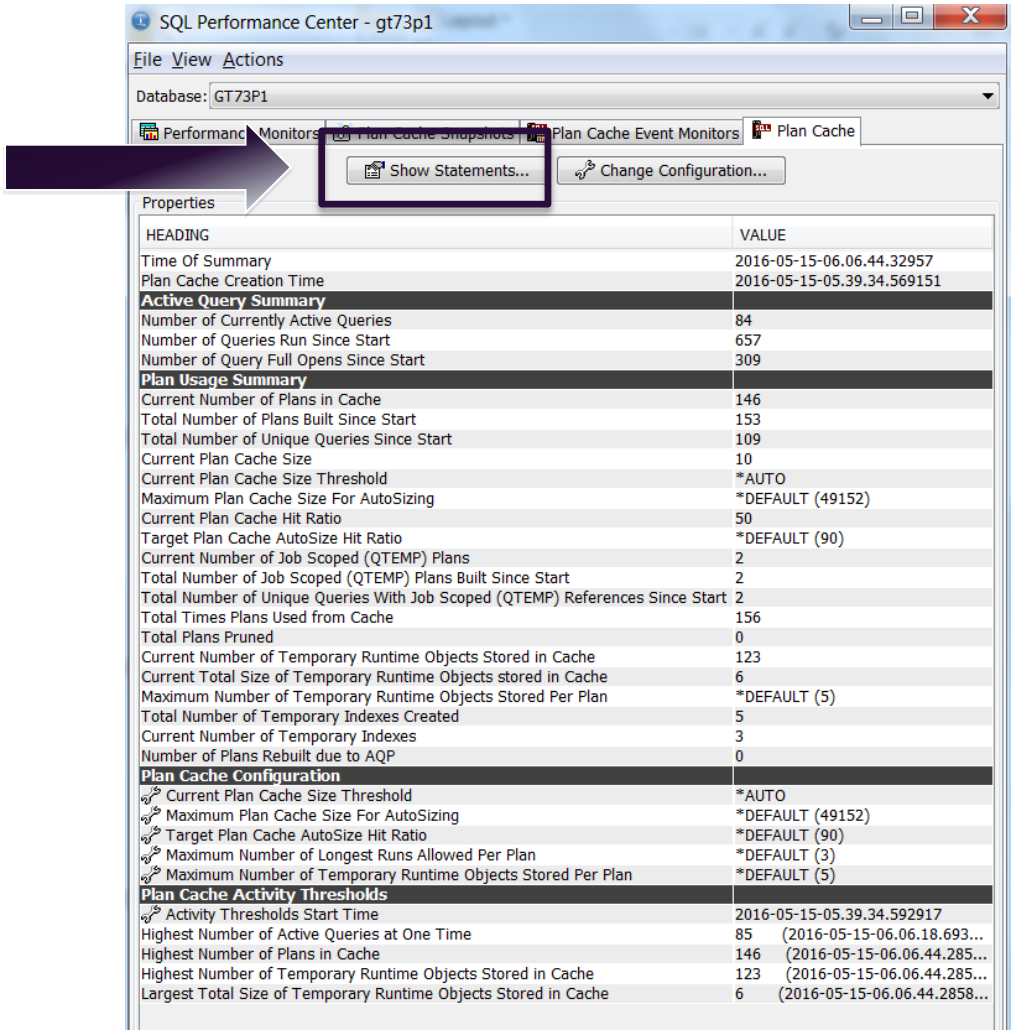
Show Statements... | Change Configuration...

Properties

HEADING	VALUE
Time Of Summary	2016-05-15-06.06.44.32957
Plan Cache Creation Time	2016-05-15-05.39.34.569151
Active Query Summary	
Number of Currently Active Queries	84
Number of Queries Run Since Start	657
Number of Query Full Opens Since Start	309
Plan Usage Summary	
Current Number of Plans in Cache	146
Total Number of Plans Built Since Start	153
Total Number of Unique Queries Since Start	109
Current Plan Cache Size	10
Current Plan Cache Size Threshold	*AUTO
Maximum Plan Cache Size For AutoSizing	*DEFAULT (49152)
Current Plan Cache Hit Ratio	50
Target Plan Cache AutoSize Hit Ratio	*DEFAULT (90)
Current Number of Job Scoped (QTEMP) Plans	2
Total Number of Job Scoped (QTEMP) Plans Built Since Start	2
Total Number of Unique Queries With Job Scoped (QTEMP) References Since Start	2
Total Times Plans Used from Cache	156
Total Plans Pruned	0
Current Number of Temporary Runtime Objects Stored in Cache	123
Current Total Size of Temporary Runtime Objects stored in Cache	6
Maximum Number of Temporary Runtime Objects Stored Per Plan	*DEFAULT (5)
Total Number of Temporary Indexes Created	5
Current Number of Temporary Indexes	3
Number of Plans Rebuilt due to AQP	0
Plan Cache Configuration	
Current Plan Cache Size Threshold	*AUTO
Maximum Plan Cache Size For AutoSizing	*DEFAULT (49152)
Target Plan Cache AutoSize Hit Ratio	*DEFAULT (90)
Maximum Number of Longest Runs Allowed Per Plan	*DEFAULT (3)
Maximum Number of Temporary Runtime Objects Stored Per Plan	*DEFAULT (5)
Plan Cache Activity Thresholds	
Activity Thresholds Start Time	2016-05-15-05.39.34.592917
Highest Number of Active Queries at One Time	85 (2016-05-15-06.06.18.693...
Highest Number of Plans in Cache	146 (2016-05-15-06.06.44.285...
Highest Number of Temporary Runtime Objects Stored in Cache	123 (2016-05-15-06.06.44.285...
Largest Total Size of Temporary Runtime Objects Stored in Cache	6 (2016-05-15-06.06.44.2858...

Show Statements

- Launch into a live interrogation of SQL activity



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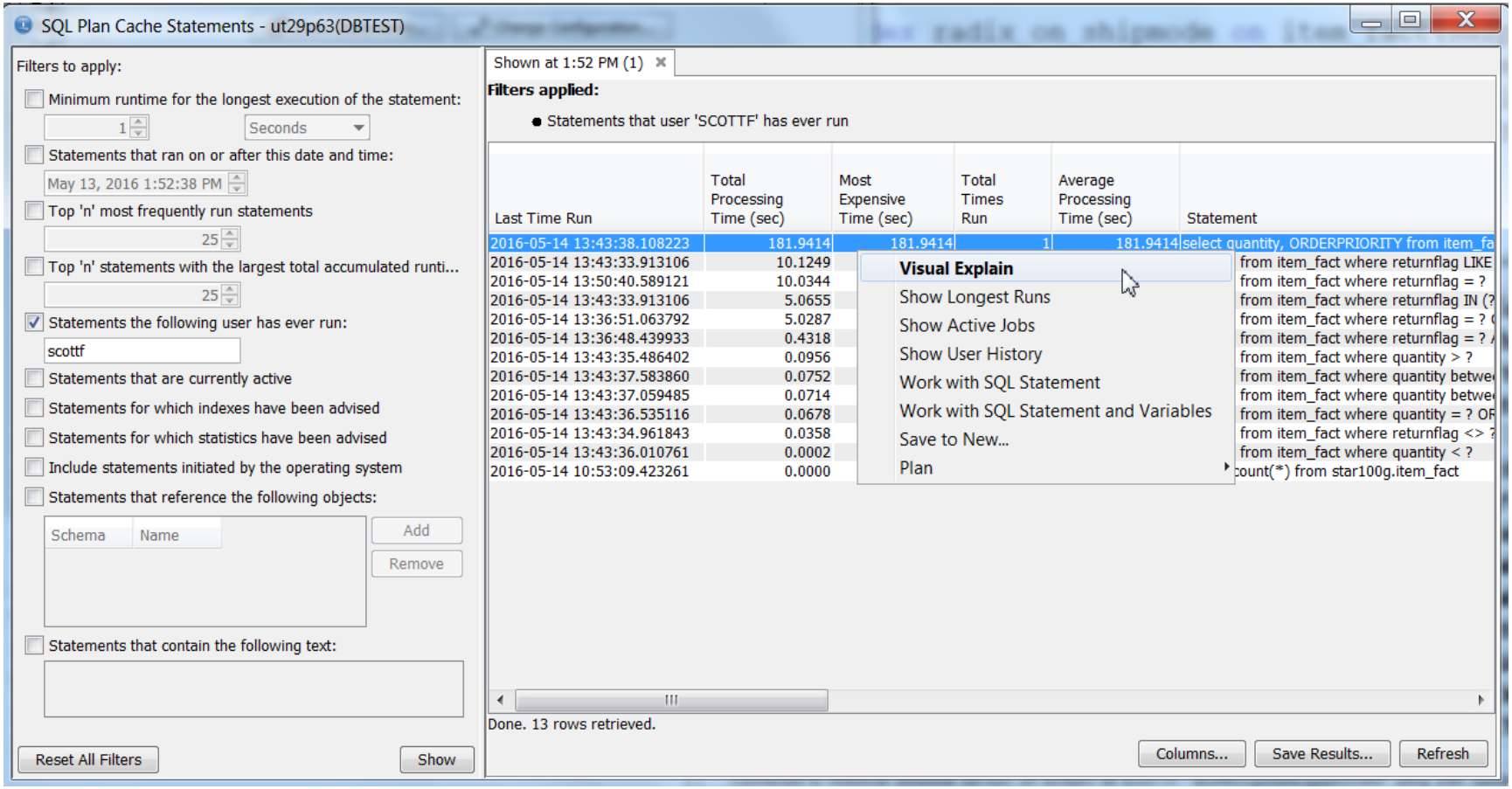
Show Statements

- Explore → Understand → Tune (repeat)

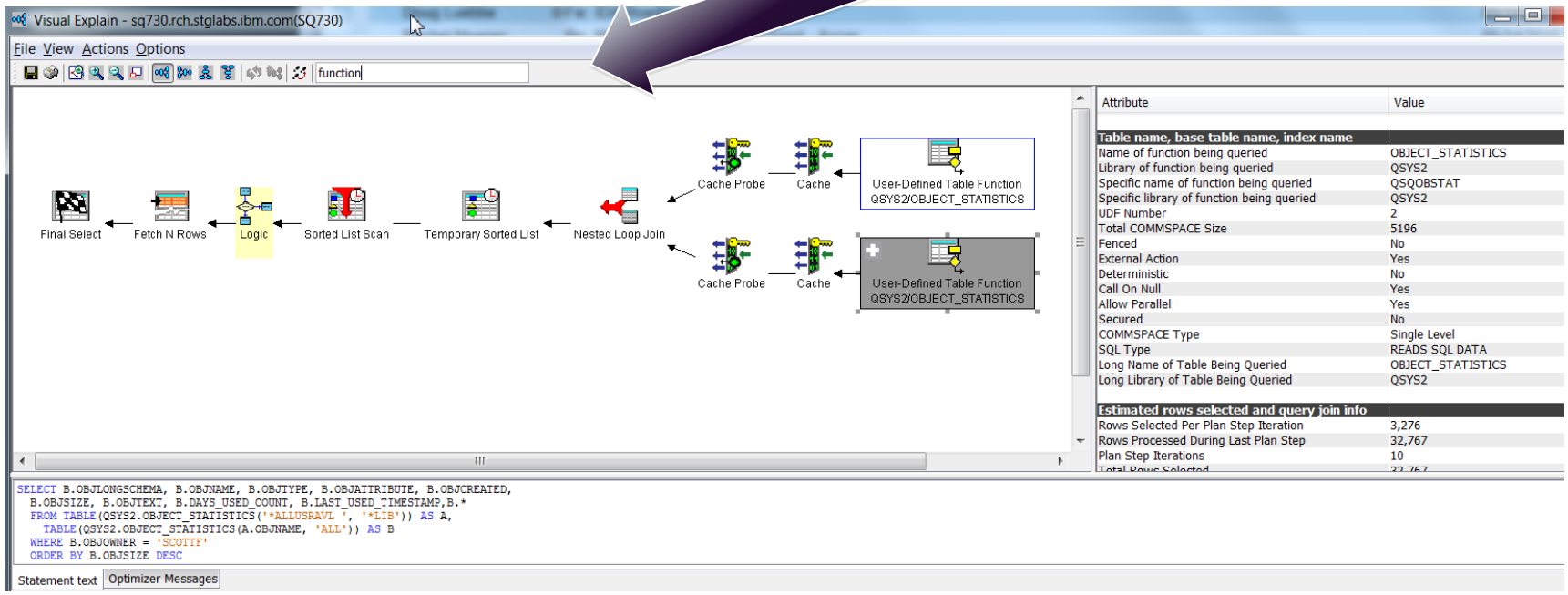


Visual Explain

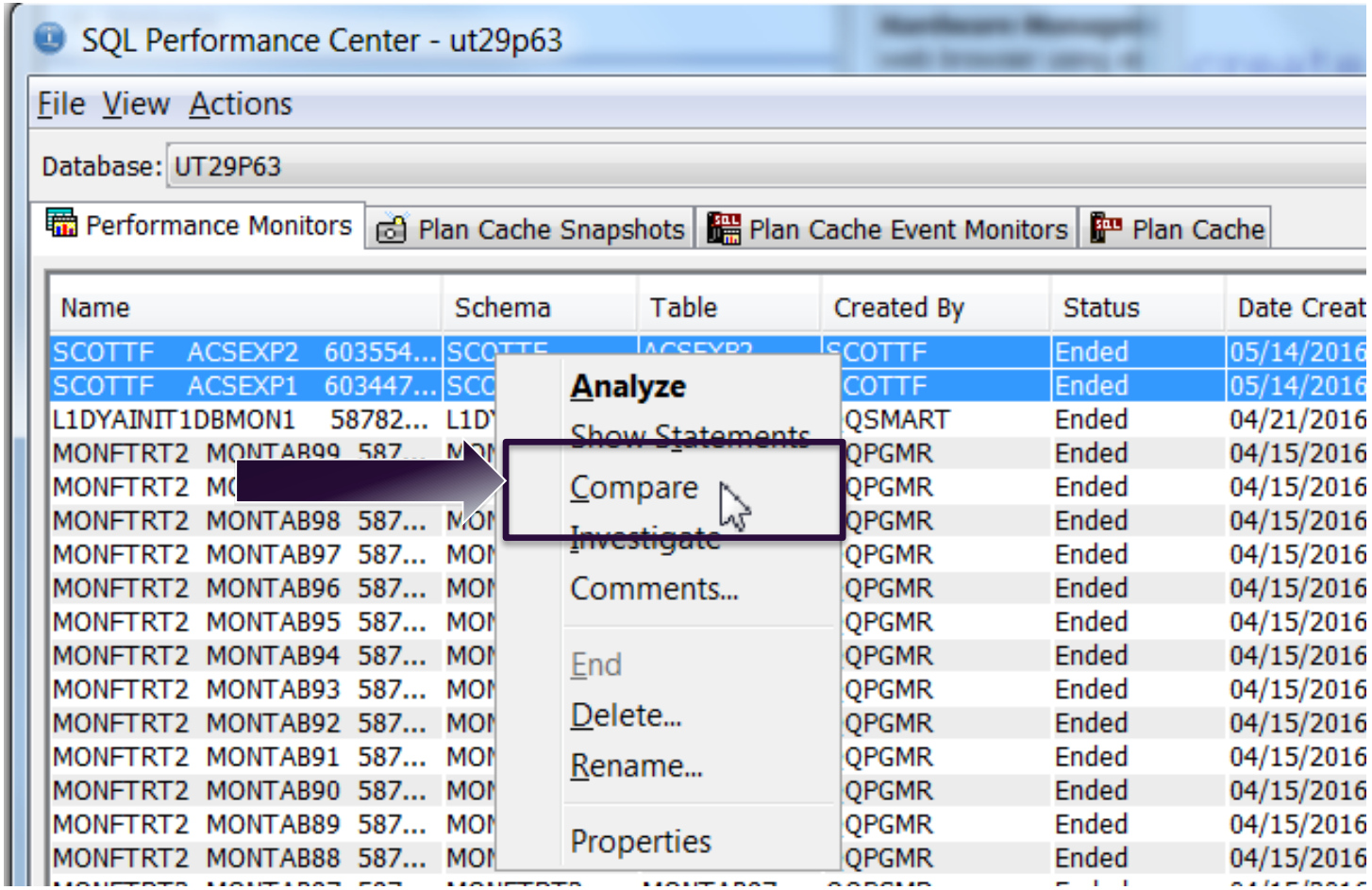
Launch from:

- Run SQL Scripts
- Analyze
- Show Statements

- **Better than before**
  - Search



Contrast matching SQL, run at different times



Scott's Faves

Adding examples to Run SQL Scripts

1) Add the following comments to your Run SQL Script.

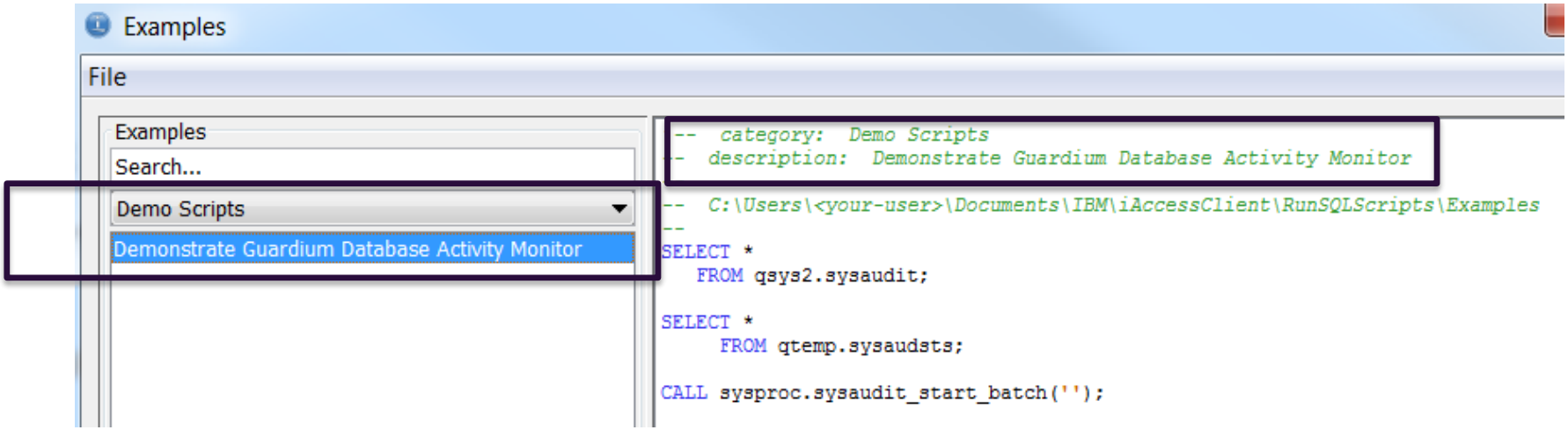
-- **category:** Demo Scripts

-- **description:** Demonstrate Guardium Database Activity Monitor

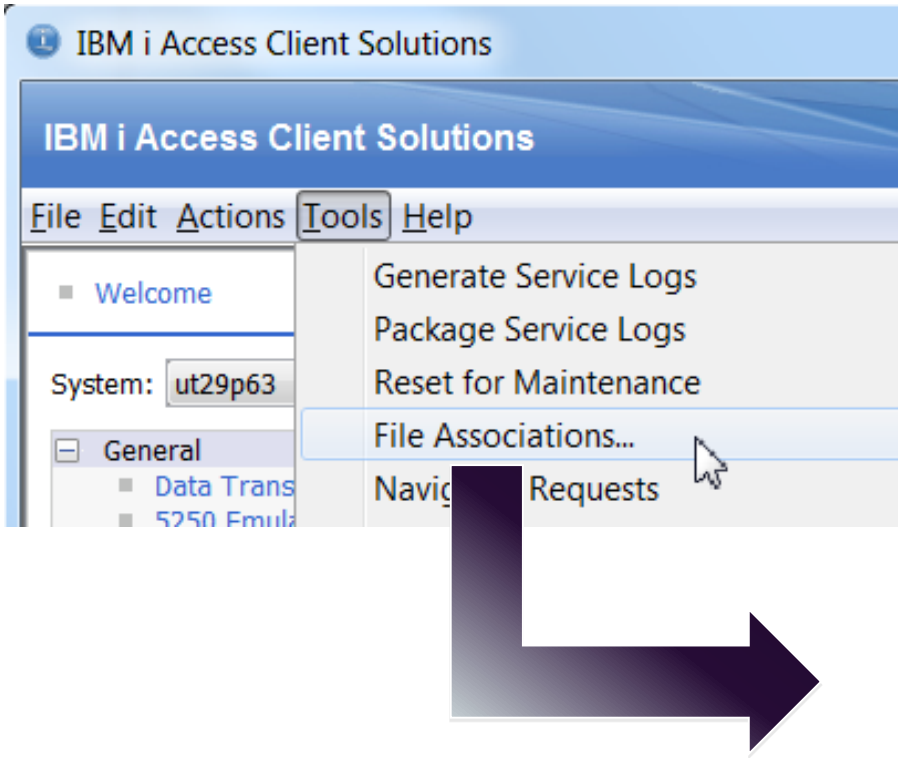
2) Save the script to the following path.

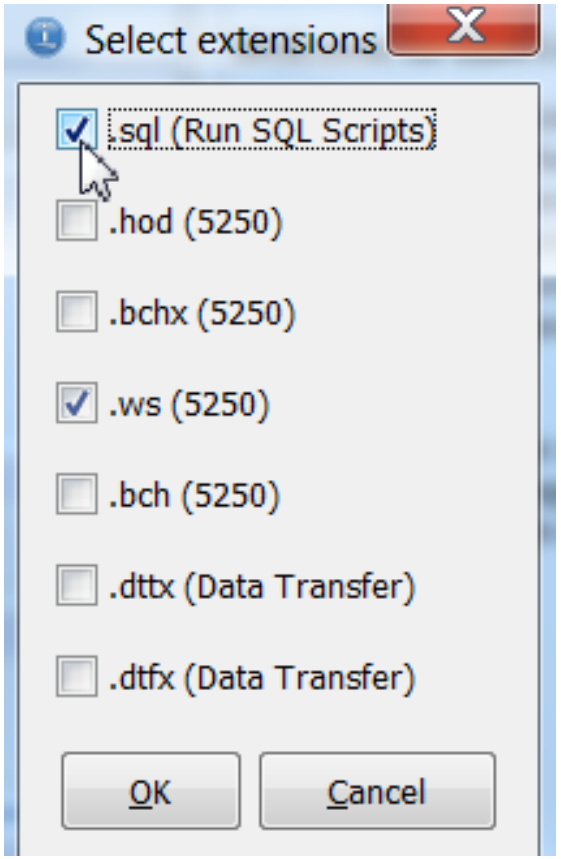
C:\Users\<your-user>\Documents\IBM\iAccessClient\RunSQLScripts\Examples

3) Find your script with Search or via the Examples pane.



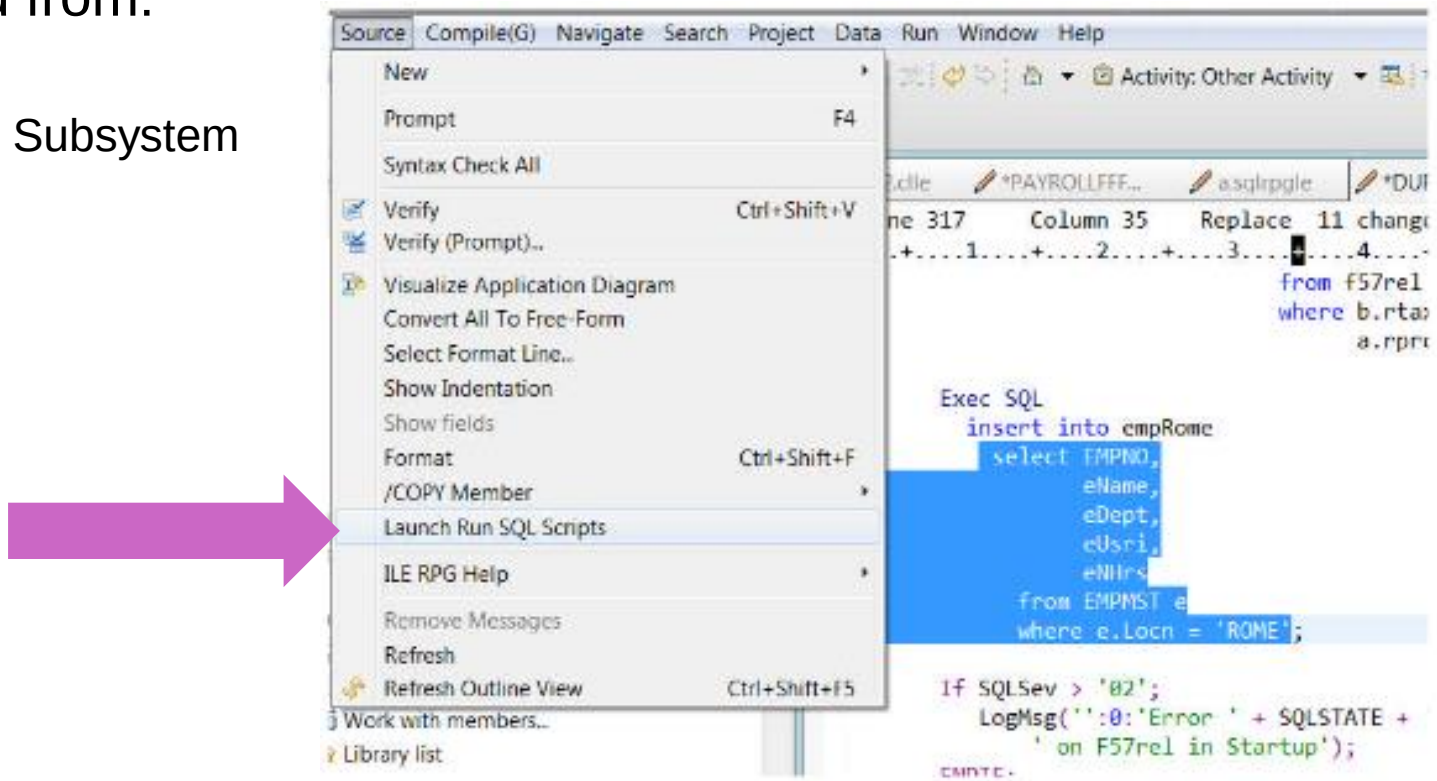
(Re) Directing .sql launch to ACS





Rational Developer for IBM i (RDi)

- Rdi Minimum level 9.5.1
- Preferred level 9.5.1.2
- SQL statement is populated into an ACS Run SQL Scripts dialog
- Launched from:
  - Editor
  - Objects Subsystem



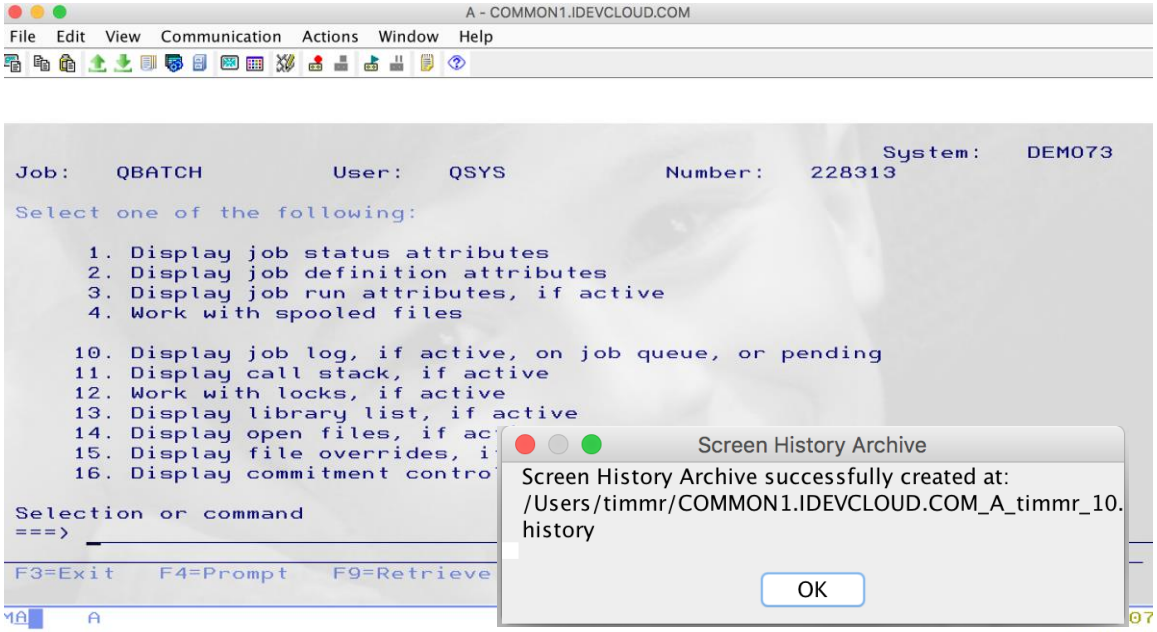
Tim's Faves

Screen History - Archive

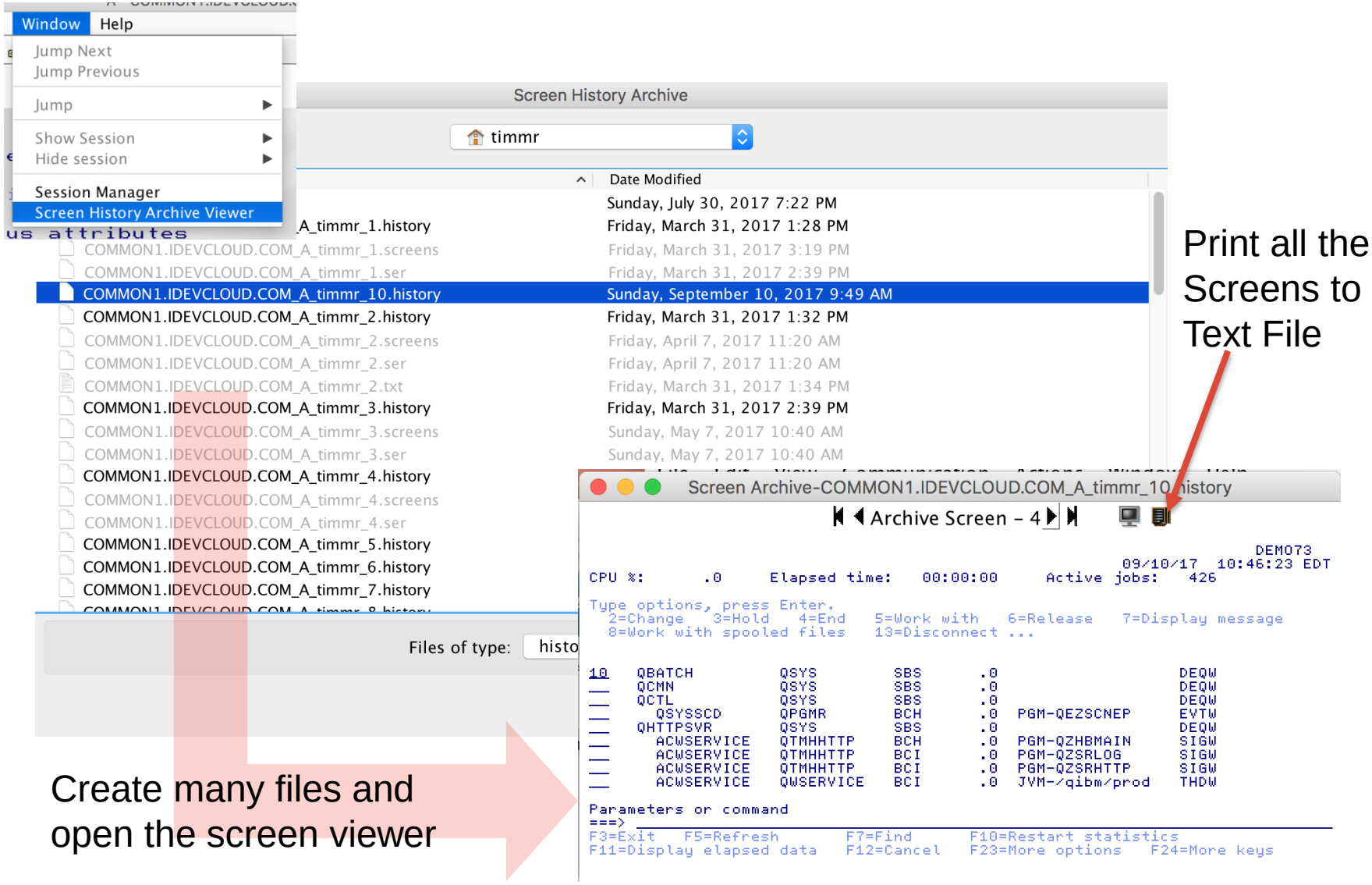
Screen History

- Expanded from 15 screens to unlimited
- Easy to use controls
- Save the screens you want
- Click Stop to create a Archive file

- View list of Files



Screen History - Archive



Print all the Screens to Text File

Create many files and open the screen viewer

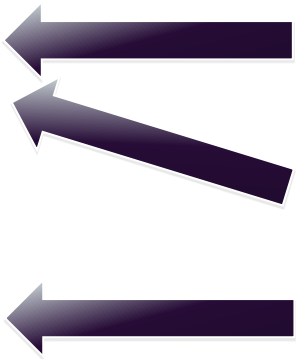
DEMO

For the administrator

Systems Management of ACS

- **All the Navigators utilize server jobs**
- **These server jobs can be:**
  1. **Managed** – Position certain users or groups to run in alternate subsystems, where system resources are configured accordingly
  2. **Locked down** – Denying access to certain users, groups, etc
  3. **Controlled** – Establish query governor controls to protect over-consumption of resources

Server Description	Server Name
Central server	QZSCSRVS
Database server	QZDASOINIT
Data queue server	QZHQSSRV
DDM	QRWTSRVR
DRDA	QRWTSRVR
File server	QPWFSERVSO
Network print server	QNPSERVS
Remote command server	QZRCSRVS



Admin stuff

Run SQL Scripts & other database features

Admin stuff

SET_SERVER_SBS_ROUTING

Manage ACS users

- Avoid having all users run in QUSRWRK, with the same priority
- Configurable by user or group…by server name or all servers
- Choice of whether the connection fails if the target subsystem is not available

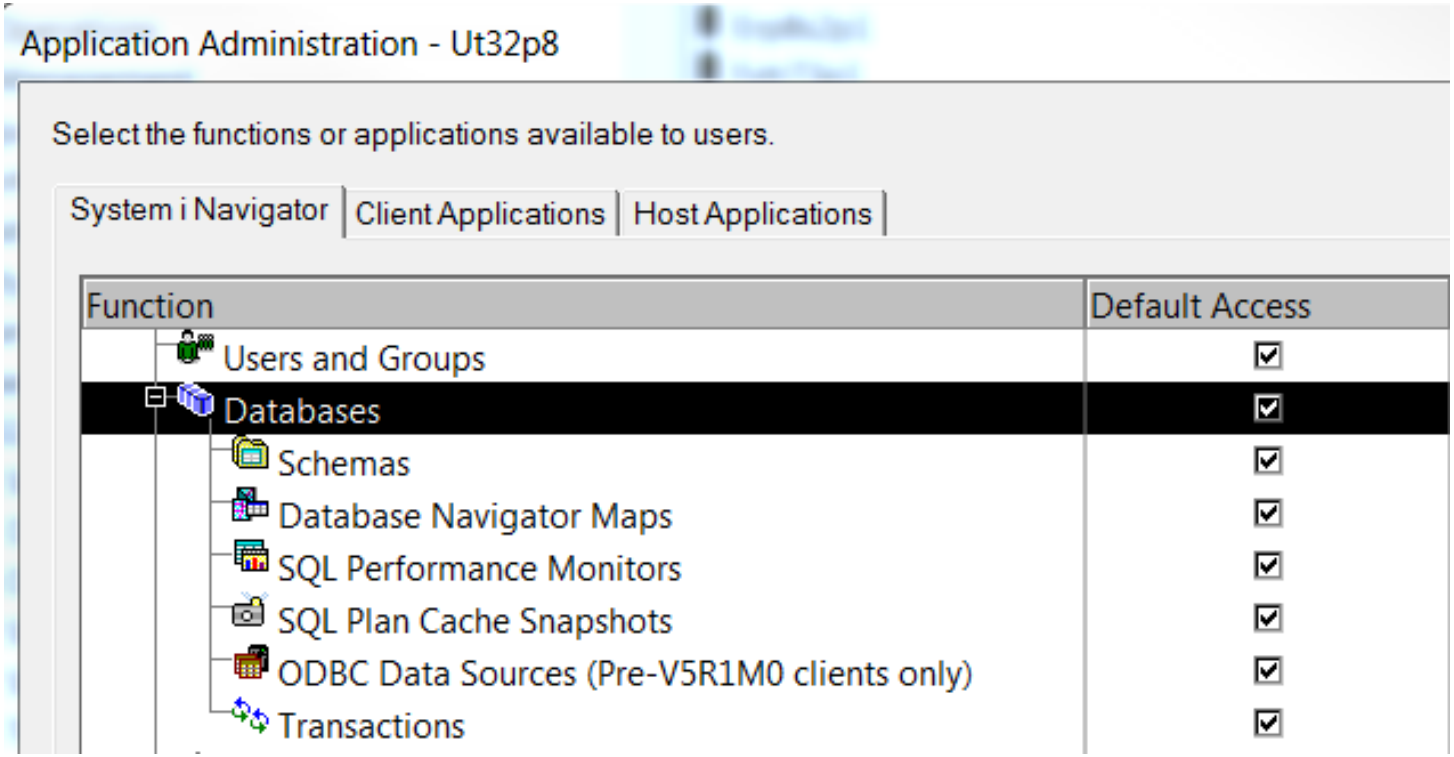
```
-- Description: Reposition all Navigator users into a
--              controlled subsystem and do not allow
--              connections to fall-over into the default
--              subsystem (QUSRWRK or QSERVER) if the
--              INAVGRP subsystem cannot be used

CALL QSYS2.SET_SERVER_SBS_ROUTING(
             AUTHORIZATION_NAME => 'INAVGRP',
             SERVER_NAME        => '*ALL',
             SUBSYSTEM_NAME     => 'INAVSBS',
             ALLOW_ROLLOVER     => 'NO');
```

http://www.ibm.com/support/knowledgecenter/ssw_ibm_i_72/rzajq/rzajqprocsetrouting.htm?lang=en

Application Administration of ACS

Configure ACS database feature availability via:

- WRKFCNUSG or CHGFCNUSG function usage commands
- Navigator for i – Application Administration
- System i Navigator – Application Administration



Application Administration of ACS

```
--  description:  Review ACS function usage configuration
--
SELECT function_id, default_usage, f.*
  FROM qsys2.function_info f
    WHERE function_id LIKE 'QIBM_DB_%' OR
          function_id LIKE 'QIBM_XE1_OPNAV_DB_%';
```

FUNCTION_ID	DEFAULT_USAGE	FUNCTION_ID	FUNCTION_CATEGORY
QIBM_DB_SQLADM	DENIED	QIBM_DB_SQLADM	3 - HOST
QIBM_DB_SYSMON	DENIED	QIBM_DB_SYSMON	3 - HOST
QIBM_DB_SECADM	DENIED	QIBM_DB_SECADM	3 - HOST
QIBM_DB_DDMDRDA	ALLOWED	QIBM_DB_DDMDRDA	3 - HOST
QIBM_DB_ZDA	ALLOWED	QIBM_DB_ZDA	3 - HOST
QIBM_XE1_OPNAV_DBNAV	ALLOWED	QIBM_XE1_OPNAV_DBNAV	1 - CLIENT
QIBM_XE1_OPNAV_DBSQLPM	ALLOWED	QIBM_XE1_OPNAV_DBSQLPM	1 - CLIENT
QIBM_XE1_OPNAV_DBSQLPCS	ALLOWED	QIBM_XE1_OPNAV_DBSQLPCS	1 - CLIENT
QIBM_XE1_OPNAV_DBXACT	ALLOWED	QIBM_XE1_OPNAV_DBXACT	1 - CLIENT

Application Administration of ACS

```
--  description:  Review ACS function usage
--                user and group configuration
SELECT *
   FROM qsys2.function_usage f
   WHERE function_id LIKE 'QIBM_DB_%' OR
         function_id LIKE 'QIBM_XE1_OPNAV_DB_%';
```

FUNCTION_ID	USER_NAME	USAGE	USER_TYPE
QIBM_DB_SQLADM	DBATEAM	ALLOWED	GROUP
QIBM_DB_SQLADM	SCOTTF	ALLOWED	USER
QIBM_XE1_OPNAV_DBSQLPM	DBATEAM	ALLOWED	GROUP
QIBM_XE1_OPNAV_DBSQLPM	HRTEAM	DENIED	USER
QIBM_XE1_OPNAV_DBSQLPCS	DBATEAM	ALLOWED	GROUP
QIBM_XE1_OPNAV_DBSQLPCS	HRTEAM	DENIED	USER

Host Server Exit Programs

Locked down – Denying access to certain users, groups, etc

- Establish exit programs to deploy business rules

Use server exit programs

Write and register exit programs when using IBM® i host servers.

Exit programs allow system administrators to control which activities a client user is allowed for each of the specific servers. All of the servers support user-written exit programs. This topic describes how the exit programs can be used, and how to configure them. It also provides sample programs that can help control access to server functions.

Note: By using the code examples, you agree to the terms of the Code license and disclaimer information.

Register exit programs
Identify IBM i exit programs to call.

Write exit programs
This topic identifies considerations when specifying IBM i exit programs.

Exit program parameters
Identify IBM i exit points.

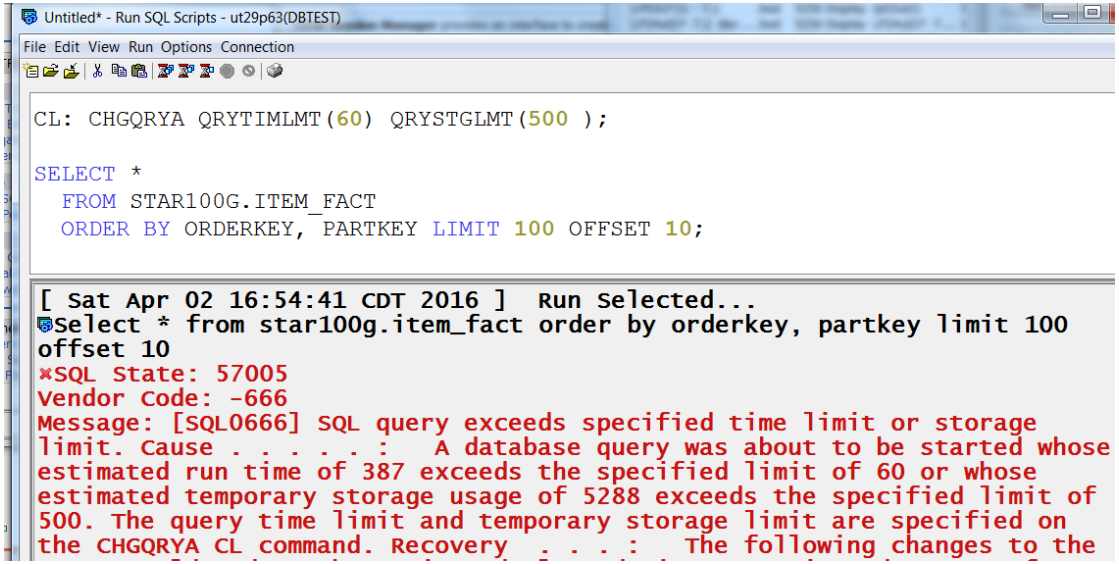
Examples: Exit programs
These sample IBM i exit programs do not show all possible programming considerations or techniques, but you can review the examples before you begin your own design and coding.

http://www.ibm.com/support/knowledgecenter/ssw_ibm_i_72/rzajr/rzajrmst31.htm?lang=en

Query Governor

Controlled – Establish query governor controls to protect over-consumption of resources

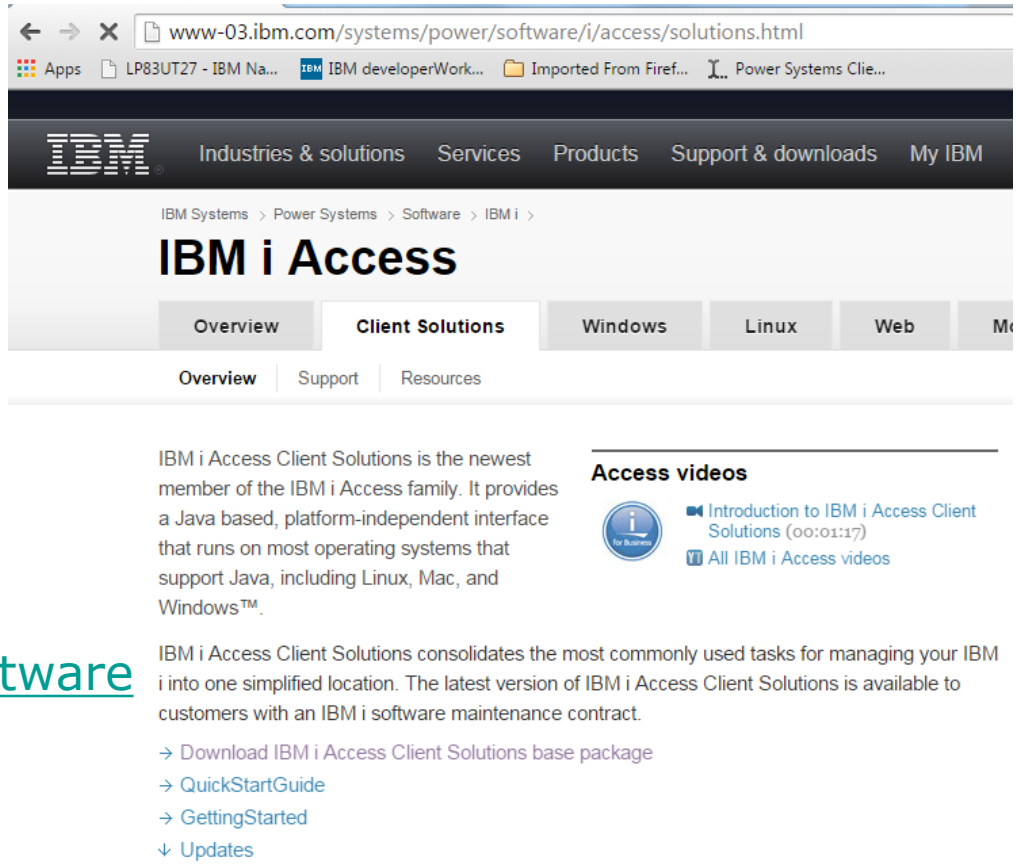
- Use the Change Query Attributes (CHGQRYA) command to guard against over-consumption of resources related to SQL query execution
- The governor has two controls:
  1. The estimated runtime for a query.
  2. The estimated temporary storage consumption for a query.



http://www.ibm.com/support/knowledgecenter/ssw_ibm_i_72/rzajq/govrle.htm?lang=en

How do you get it ???

NO ESS!



http://www-03.ibm.com/systems/power/software/i/access/solutions.html

GO GET IT TODAY!!!

www.ibm.com/developerworks/ibmi/techupdates/db2