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IBM Rational Developer for System z V.8.0 (+)

Dana Boudreau
IBM

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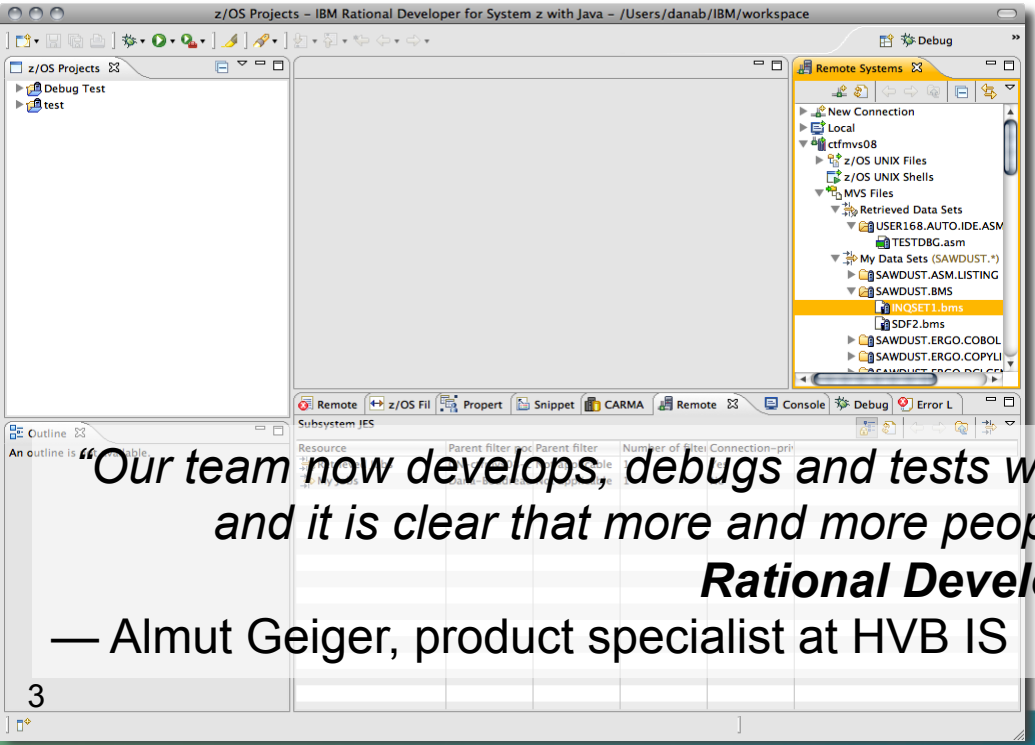
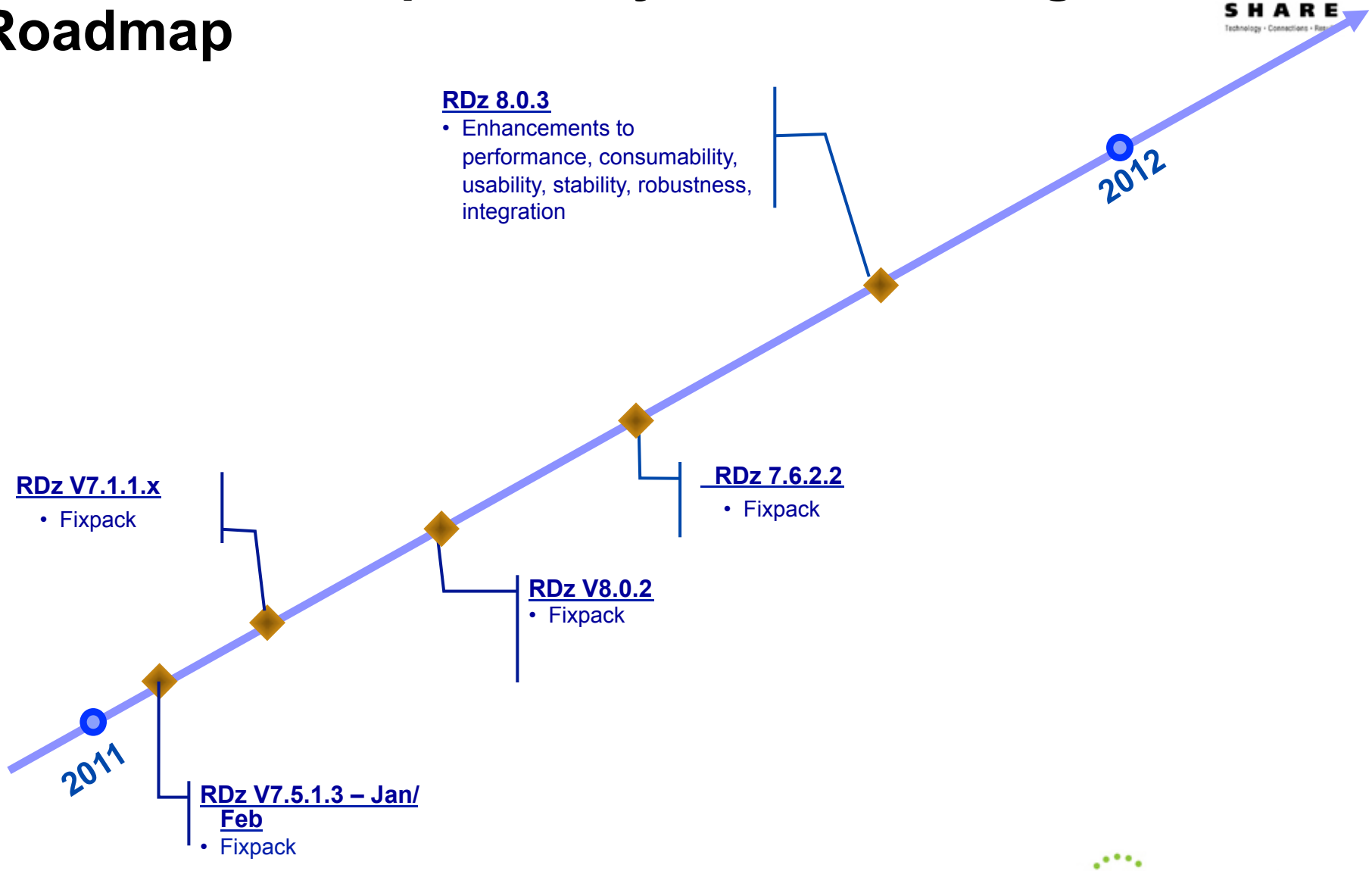
RDz 8.0.3 ….



"Our team now develops, debugs and tests with more confidence, and it is clear that more and more people here will be using ***Rational Developer for System z."***

— Almut Geiger, product specialist at HVB IS

Rational Developer for System z Offerings Roadmap



Rational Developer for System z Roadmap Themes

- Performance and Scalability
- Productivity
- Languages
- Integration
- Advancing technologies

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Rational Developer for System z Roadmap Themes

Performance and Scalability

- Install/config of host
- Push to client
- Support for large files/containers
- Search

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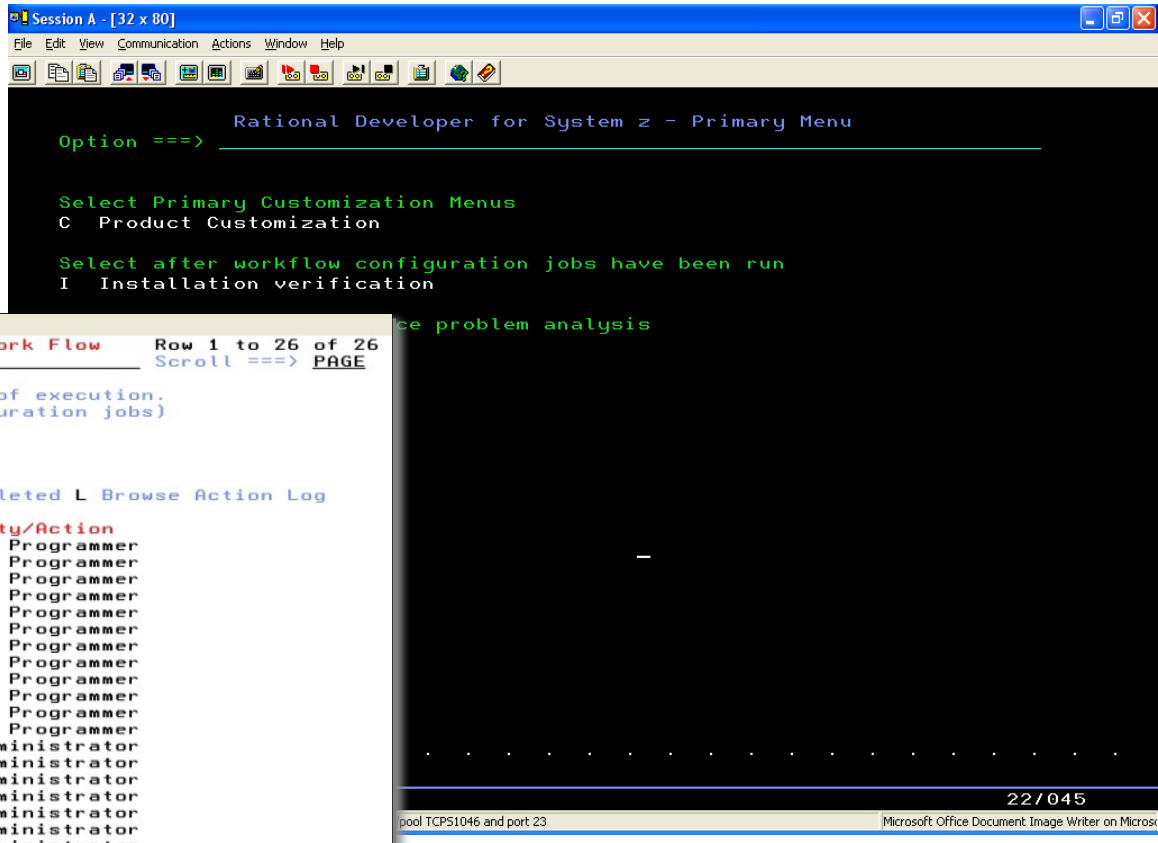
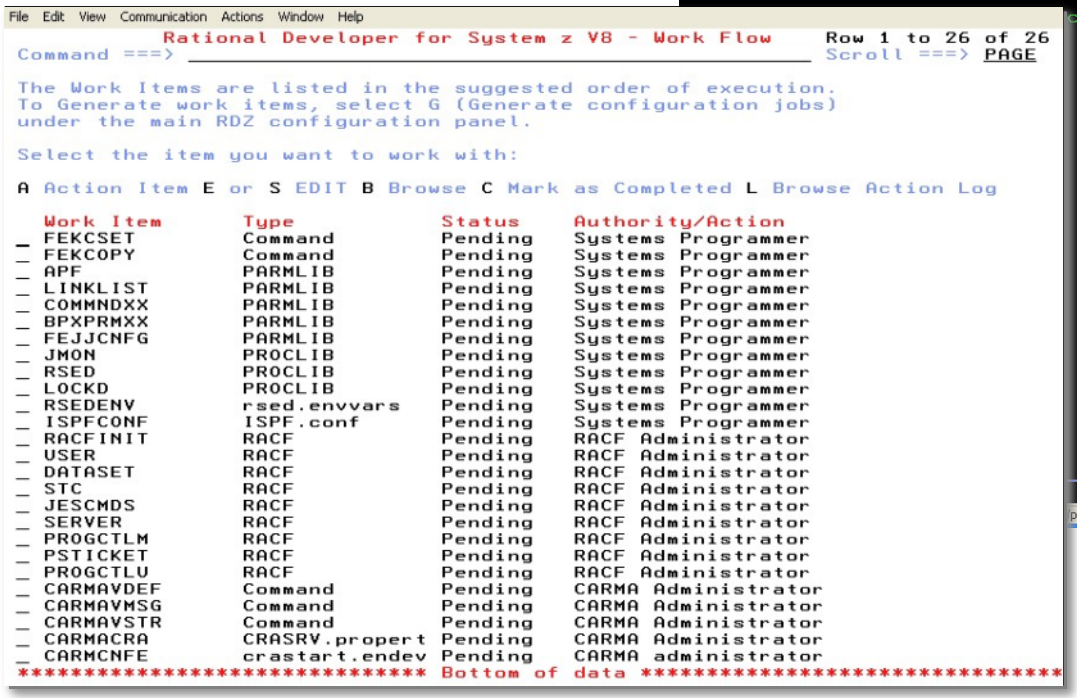
Host Install and Customization panels

- Set of ISPF Panels that simplify Host customization, IVP and debug data gathering

- Setup Work Flow





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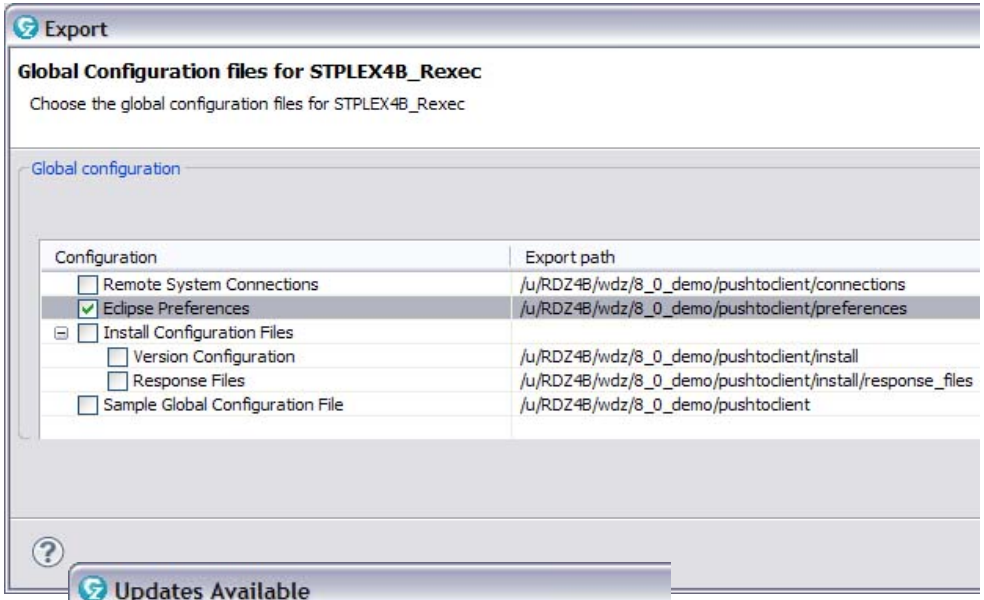
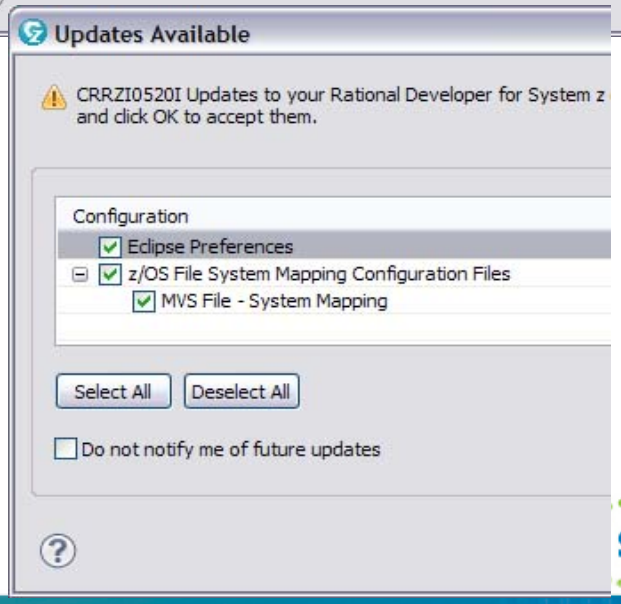
RDz 8.0.1 Push to Client - Configuration Files

- An Export Wizard – to help one person – preferably an Admin to configure various settings on RDz client and upload it to a central location.
  - Settings are grouped by function into configuration files such as remote connections or system mappings.
  - The export wizard allows the administrator to specify a host location
- Upon connecting to the host, a user is notified if they have incoming changes to their configuration files.
  - A host setting is available for a shop to allow end-users to reject incoming changes
  - Default will be a “push” from host to the client.





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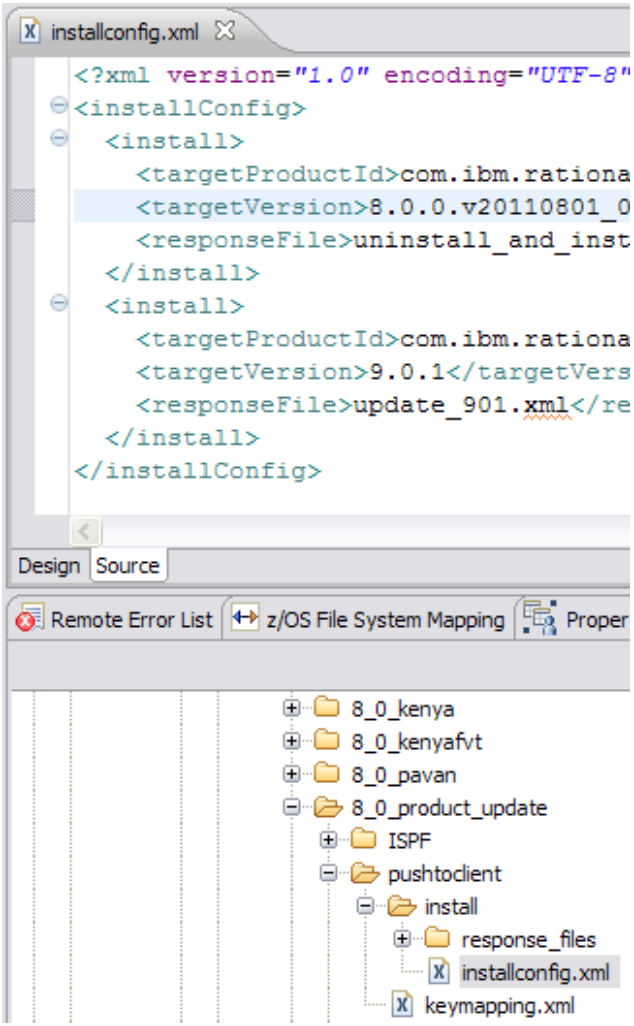
RDz 8.0.1 Push to Client - Product Updates

- If the product version on the client is less than a specified target version, the client will be updated to the target version.
- An installation configuration file on the host is read top to bottom until a target version greater than the client version is found.
- The target version is associated with an Installation Manager response file on the host.
- First, the workbench is shut down then Installation Manager is started and passed the downloaded response file.
- The response file points to an install repository on a server
- Once Installation Manager has completed updating the product, the user can restart the workbench.



Push to client (aka Large Roll out) enhancements in RDz 8.0.3

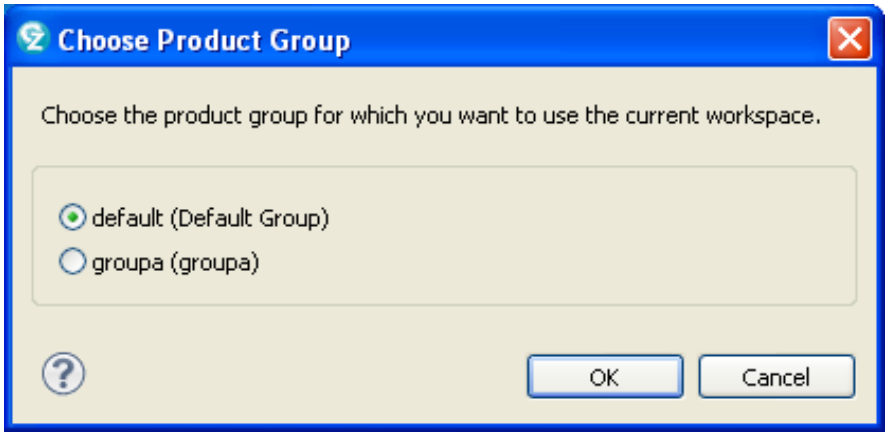
- Allow Menu Manager preferences and Data Connections to be part of the configurations that can be “pushed” to the client.
- Allow “Group” based configurations
  - RDz 801 configuration management is one size fits all
  - Shops have various users working on specific projects with each project having a “group” of users – hence requiring separate set of configurations
  - “Group” is created and managed on z/OS using RACF, ACF2, Top Secret security / access control
  - Group based configurations are “concatenated” - i.e the common configurations need not be replicated for each group
  - If the user-id belongs to multiple groups – after the logon – the user will be prompted to select which 'group' configurations to import

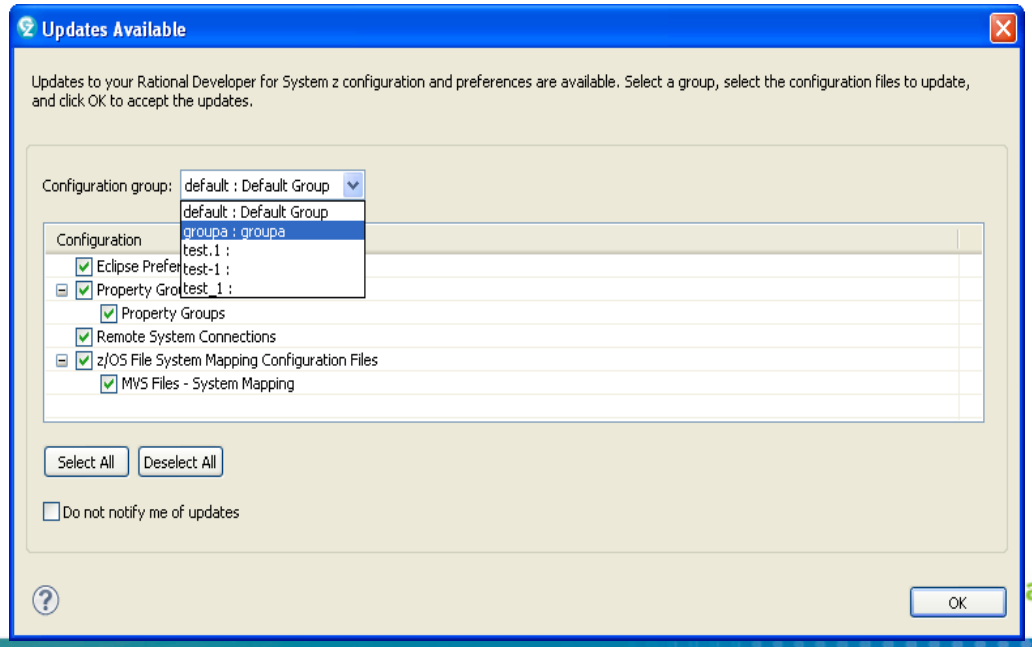
Push to client – Group based Configurations

When a User logs on and if he belongs to multiple Groups, a dialog would be presented to the user to choose the Group for product updates, Default is the Group that *everyone* belongs to

Updates to Configurations dialog is presented to show what configuration the user would get when part of different groups

The set up allows the product update group to be different from the configuration update group.

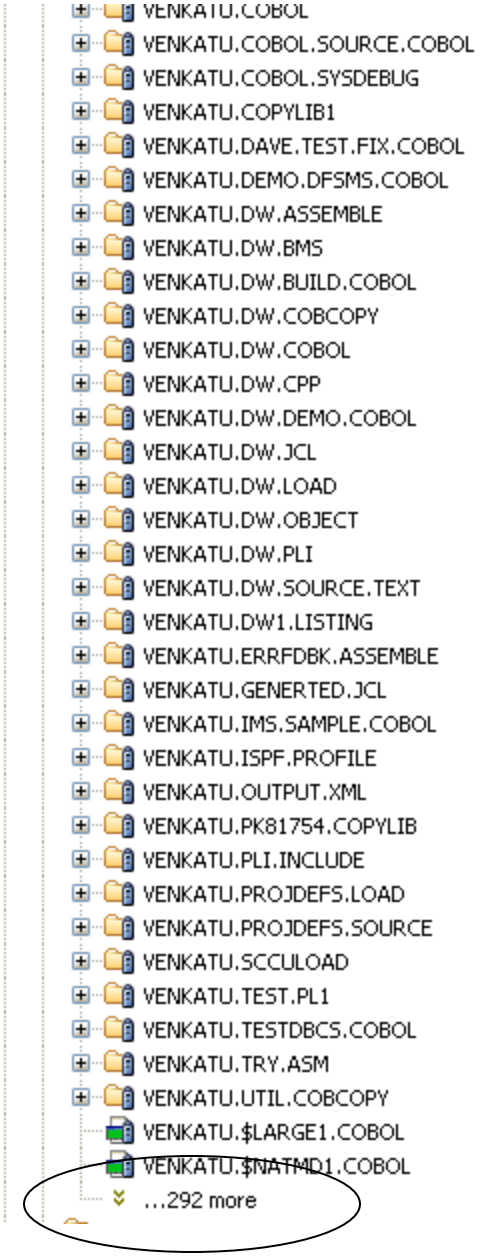




Large filter handling

- Expanding a filter with more than 50 data sets would appear with a place holder as shown

- The same navigation rules and short cut as large PDS handling apply



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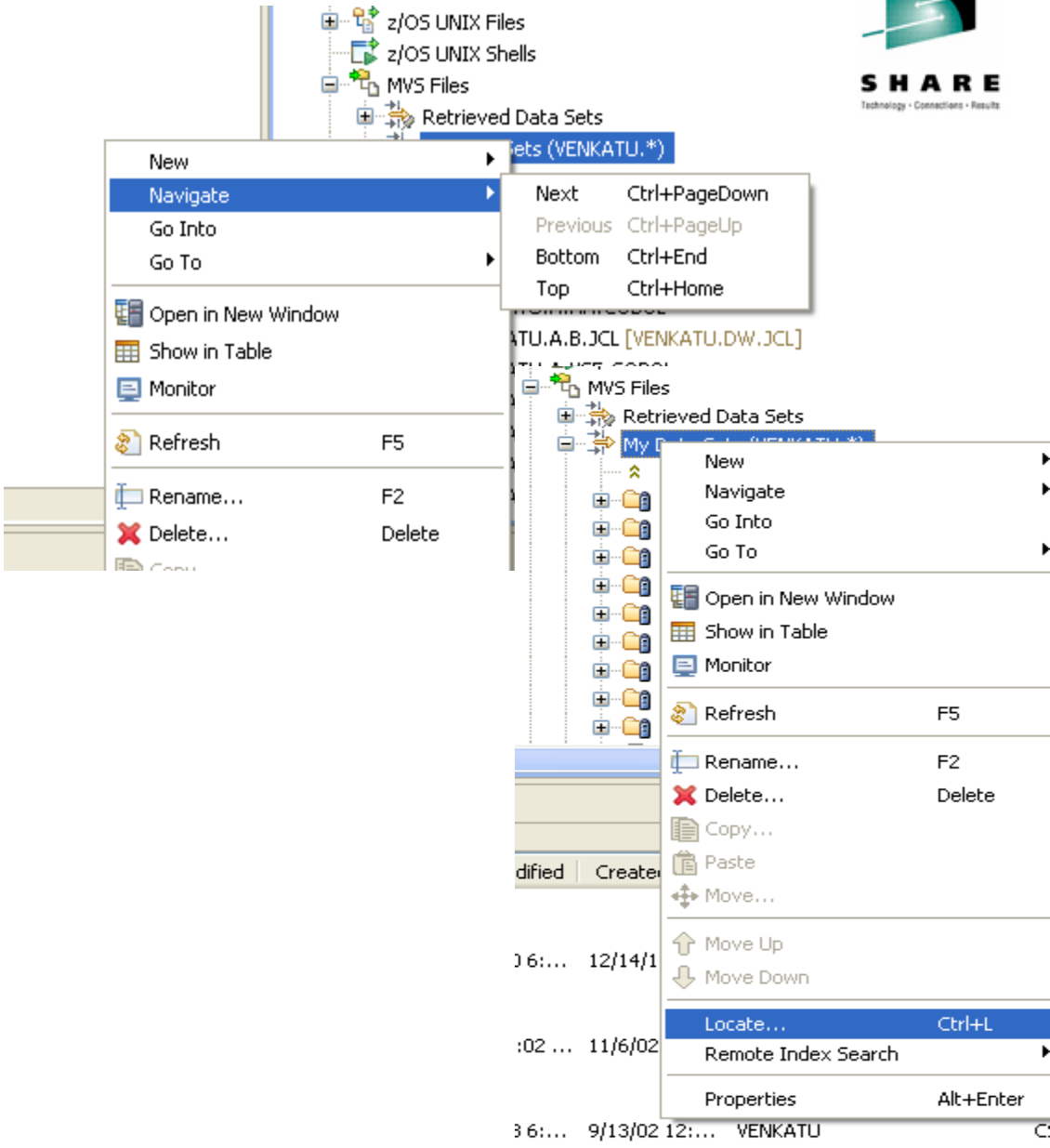
Large filter handling

- The same navigation rules and short cuts as large PDS handling apply for navigating thru data sets under a filter

- Locate (CTRL + L) on a filter can be used to get to a data set without expanding the “placeholders”



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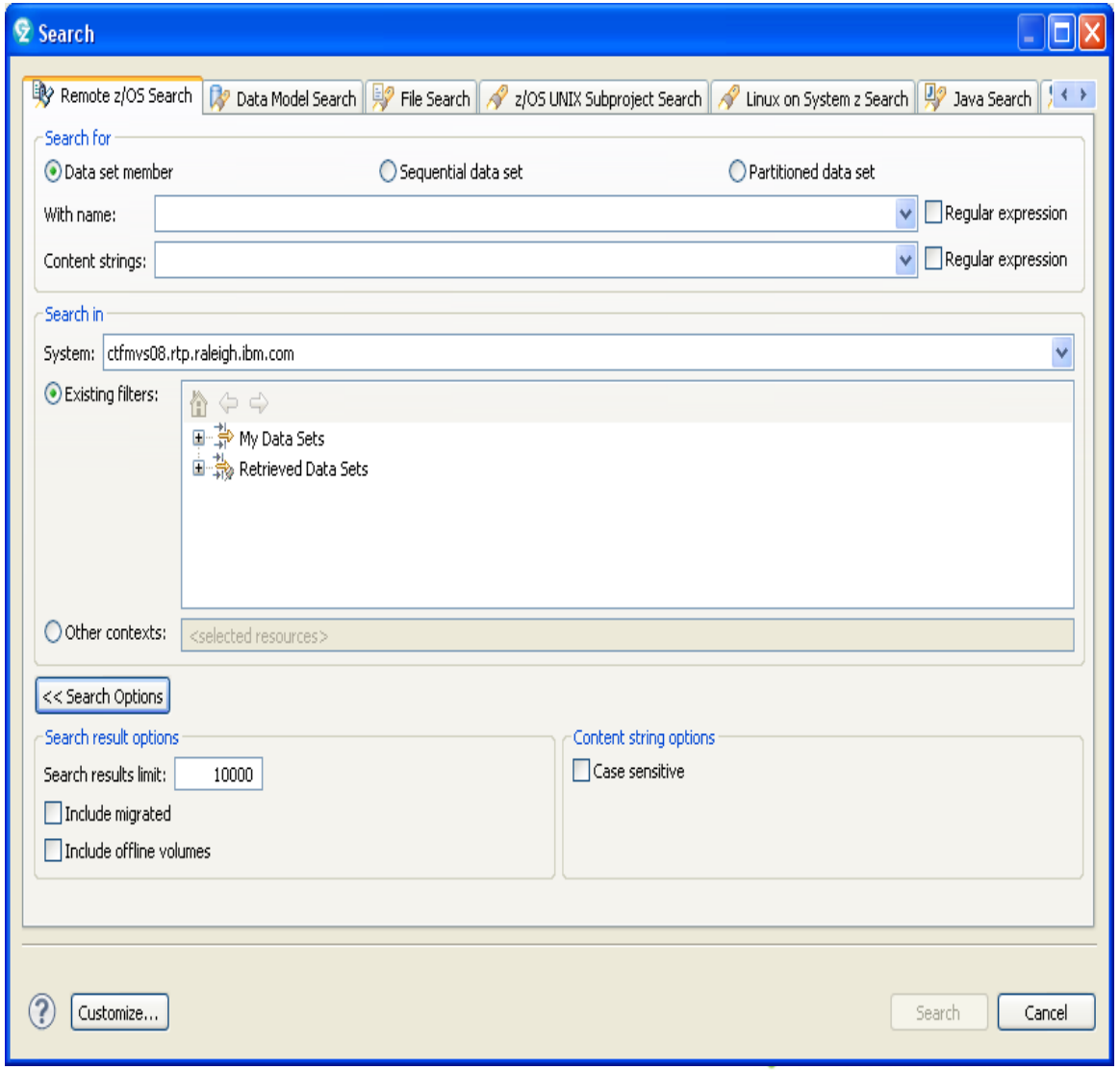
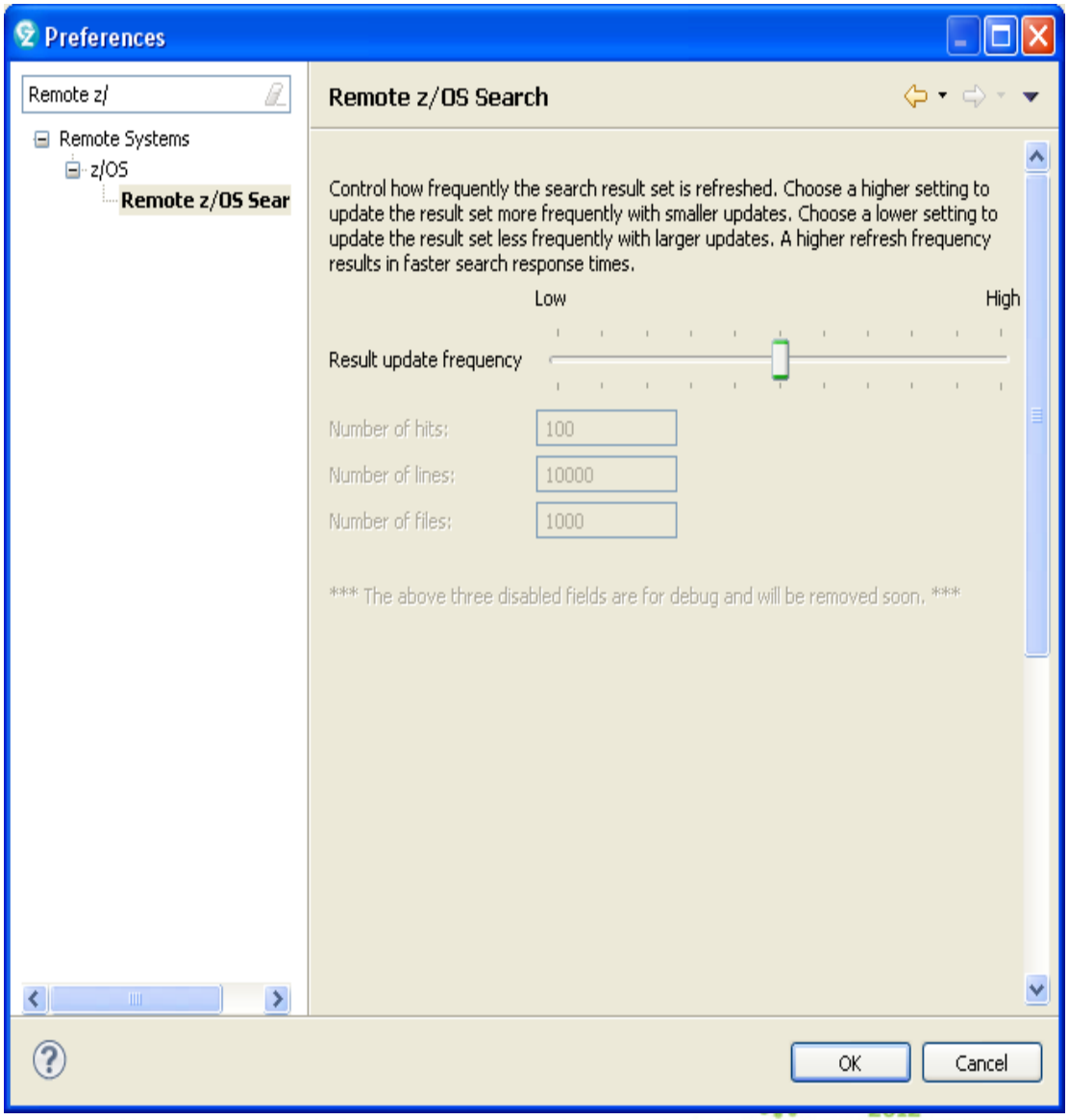
z/OS Remote Search enhancements

- Simplified and enhanced Search dialog
  - Allows searching in other contexts – i.e beyond the scope of the filters defined
- Defaults set to assist “content search” - as this is the main use case for search



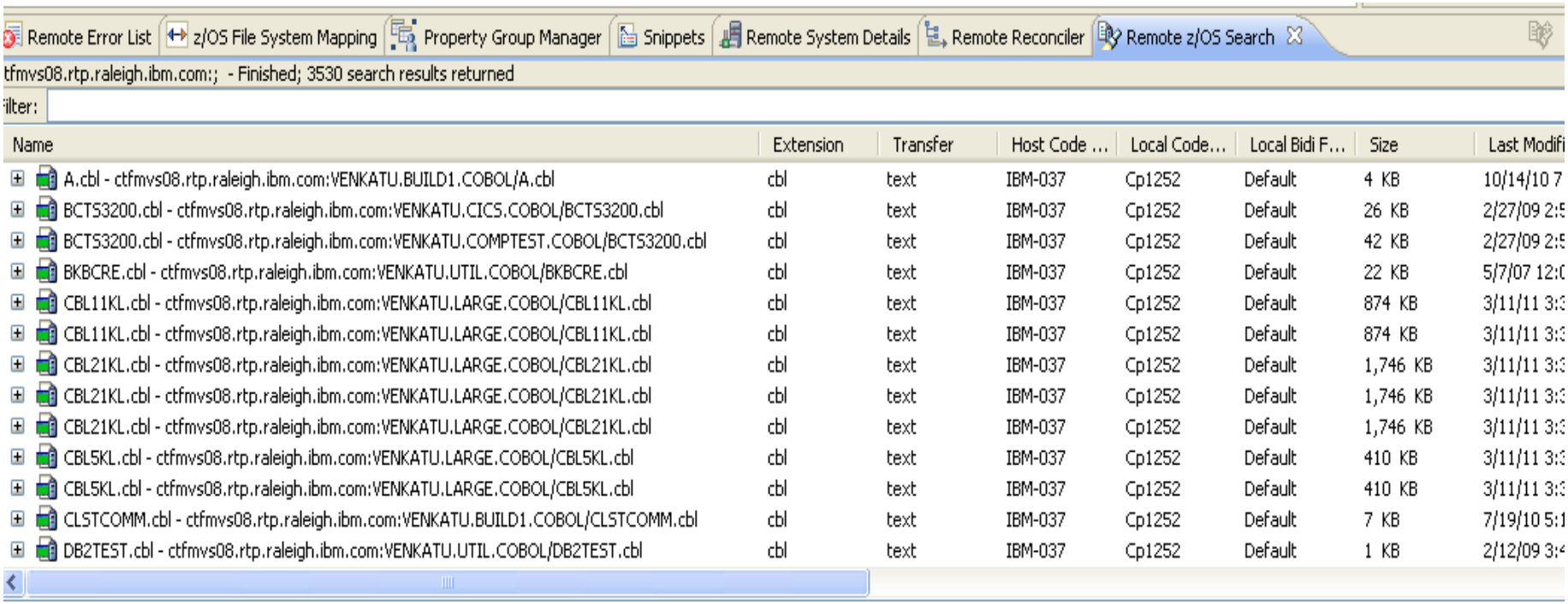
z/OS Remote Search enhancements

- A preference to control the update frequency of the search results
  - Very helpful when there are many search results.
  - Results view will be populated in a background thread



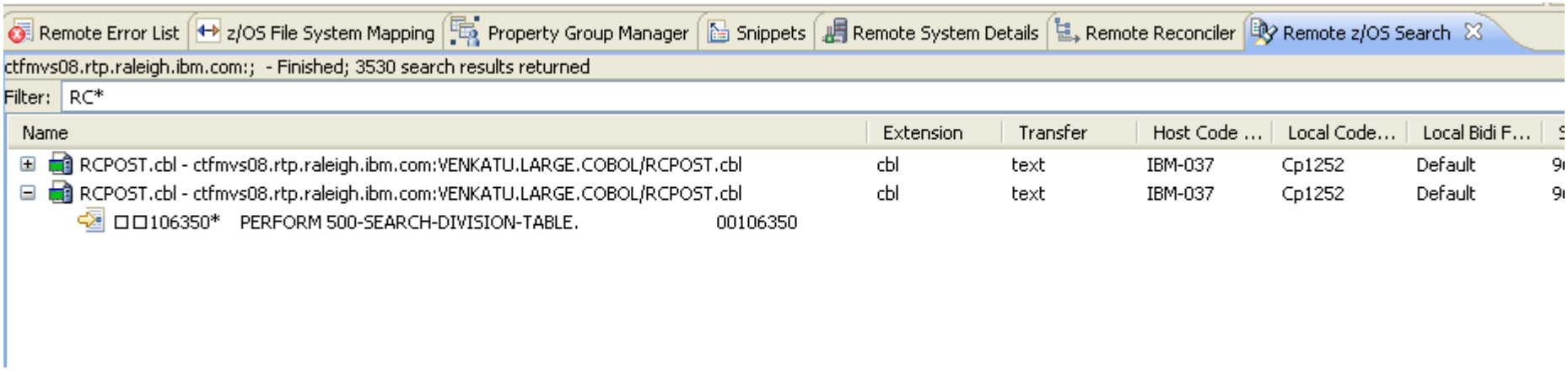
z/OS Remote Search enhancements

- Results view displays the search results and the number of search results



z/OS Remote Search enhancements

- Filtering capability in the Search results view to filter within the result set..



Rational Developer for System z Roadmap Themes

Productivity

- Editor startup time
- Editor enhancements
- Easy and quicker access to what you need

System z LPEX Editor load performance

- The very first loading of the System z Lpex editor in a workbench session has been improved as shown:

	RDz 8.0.1 and older (in seconds)	RDz Next (in seconds)
CBL5KL	11.25	5.0
CBL11KL	14.3	7.7
CBL21KL	18.6	9.2

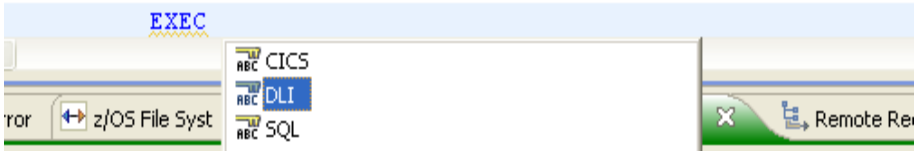
New features for System z LPEX, COBOL, and PL/I Editors

- Support for EXEC DLI code
- Support for Real-Time Syntax Checking
  - Support for Content Assist
  - Support for editing COBOL and PL/I files using any file extension
- Tooling Synchronization Performance Improvements

New features for System z LPEX, COBOL, and PL/I Editors

- Support for EXEC DLI in COBOL and PLI
  - Real time syntax check for EXEC DLI
  - Content assist for EXEC DLI statements
  - Data areas within EXEC DLI are checked for unresolved references

```
*
      MOVE 'A300' TO SEGKEYA.
      EXEC DLI GU USING PCB(1) SEGMENT(SEGA) INTO(AREAA)
           SEGLENGTH(80) WHERE(KEYA=SEGKEYA)
           FIELDLENGTH(4)
      END-EXEC.
```




```
55          MOVE 'A300' TO SEGKEYA.
56          SING PCB(1) SEGMENT(SEGA) ITO(AREAA)
57          H(80) WHERE(KEYA=SEGKEYA)
58          FIELDLENGTH(4)
```

Multiple markers at this line
- "INTO" expected instead of this input
- 1 changed line

```
EXEC DLI GU USING PCB(1) SEGMENT(SEGA) INTO(AREAA)
     SEGLENGTH(80) WHERE(KEYA=SEGKEYA)
     FIELDLENGTH(4)
END-EXEC.
```

77 SEGKEYA PIC X(4).
Press 'F2' for focus

```
55          MOVE 'A300' TO SEGKEYA.
56          SING PCB(1) SEGMENT(SEGA) INTO(AREA)
57          H(80) WHERE(KEYA=SEGKEYA)
58          FIELDLENGTH(4)
59          END-EXEC.
```

Multiple markers at this line
- Unable to resolve reference to AREA
- 1 changed line

Bringing PL/I Capabilities up to par with COBOL in System z LPEX Editor and PL/I Editor

Adding support for

- Open Declaration
- Hyperlinking
- Hover Info
- Tooling Status Icon
- Folding
- Improved Real-Time Syntax Checking
- Improved Content Assist

```
Do Forever;

  if theAnswer then
    d theAnswer char(16) varying
        Press 'F2' for focus name or Q to quit')
      Reply( theAnswer );
```

```
*process prefix(nofofl);

/* MODULE NAME    HELLOAPP.PLI    */
helloapp: proc() options(main);

Dcl theAnswer char(16) varying;

Do Forever;

  Display('Enter a name or Q to quit')
```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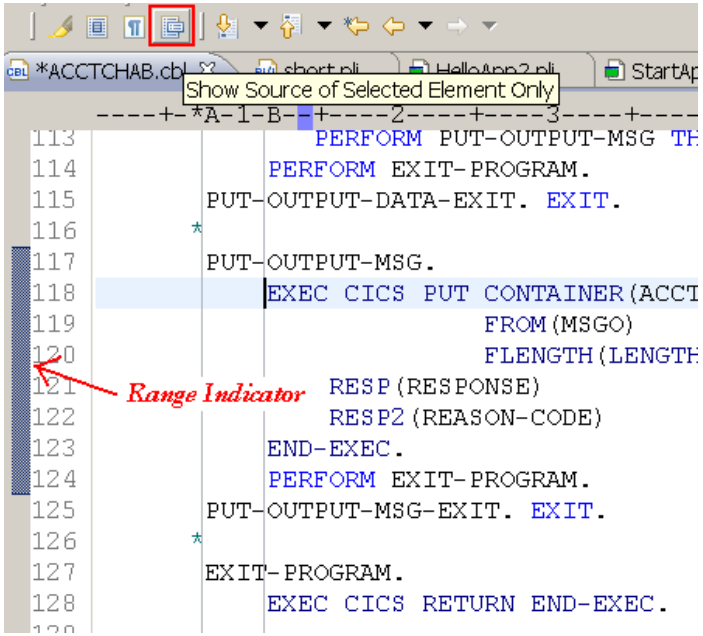
Closing feature gap between COBOL and PL/I Editors and Java Editor

- Range indicator / Show selected method
- Task tags
- Quick fixes
- Surround with
- Tabbing to margins
- Marking of occurrences
- Syntax coloring preferences

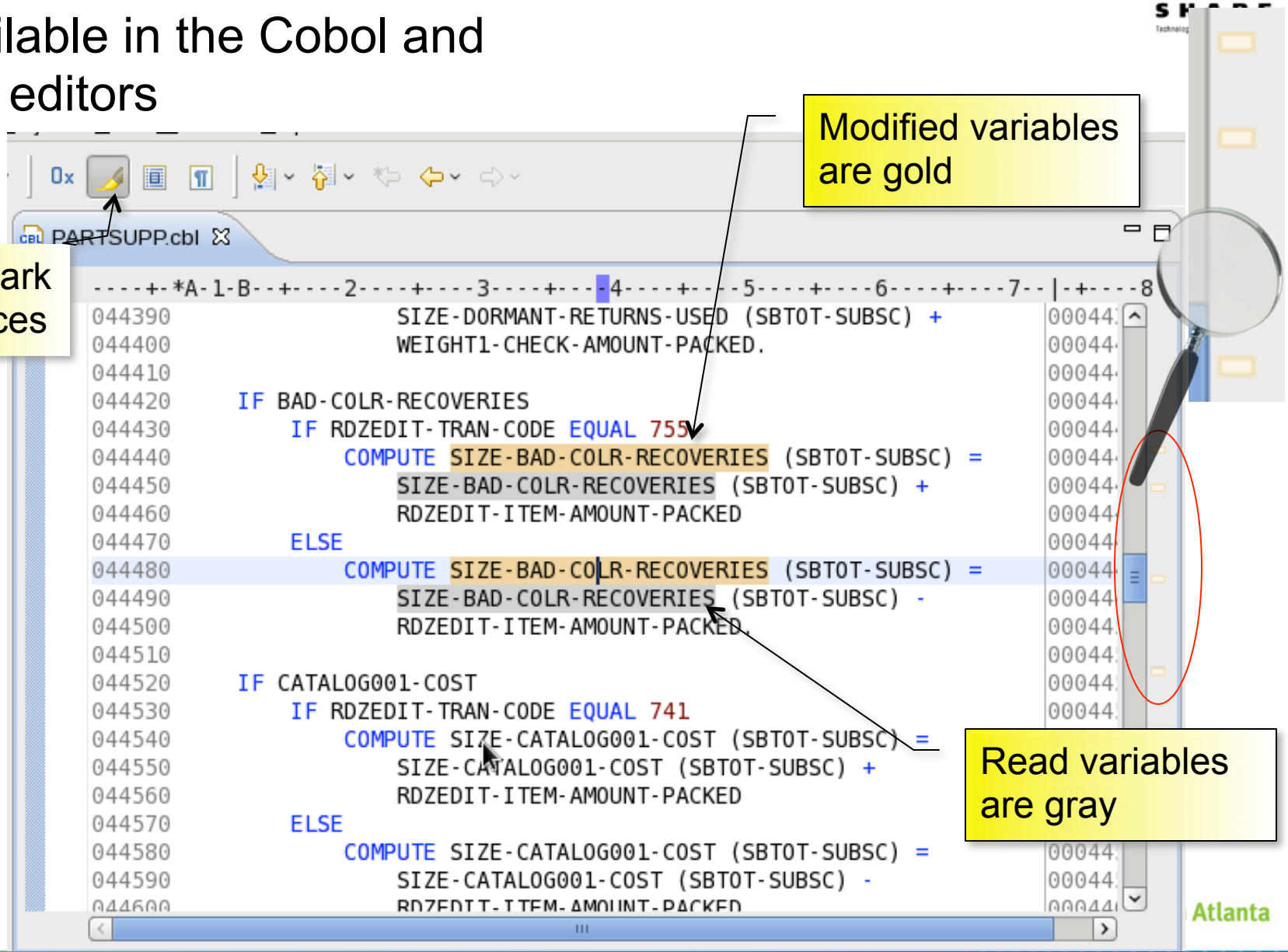
Range indicator / Show selected method

- Highlight the range of the currently selected method, paragraph, or section in the left vertical ruler.
- Support the Show Selected Element Only toolbar button, which will hide all text outside the current range from view.



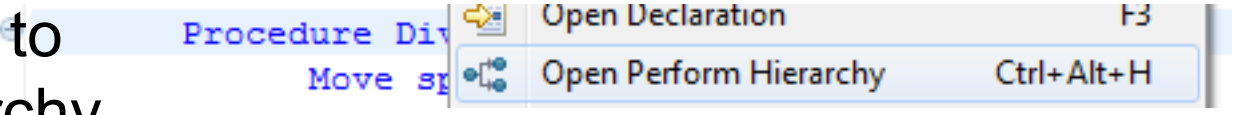
Mark Occurrences

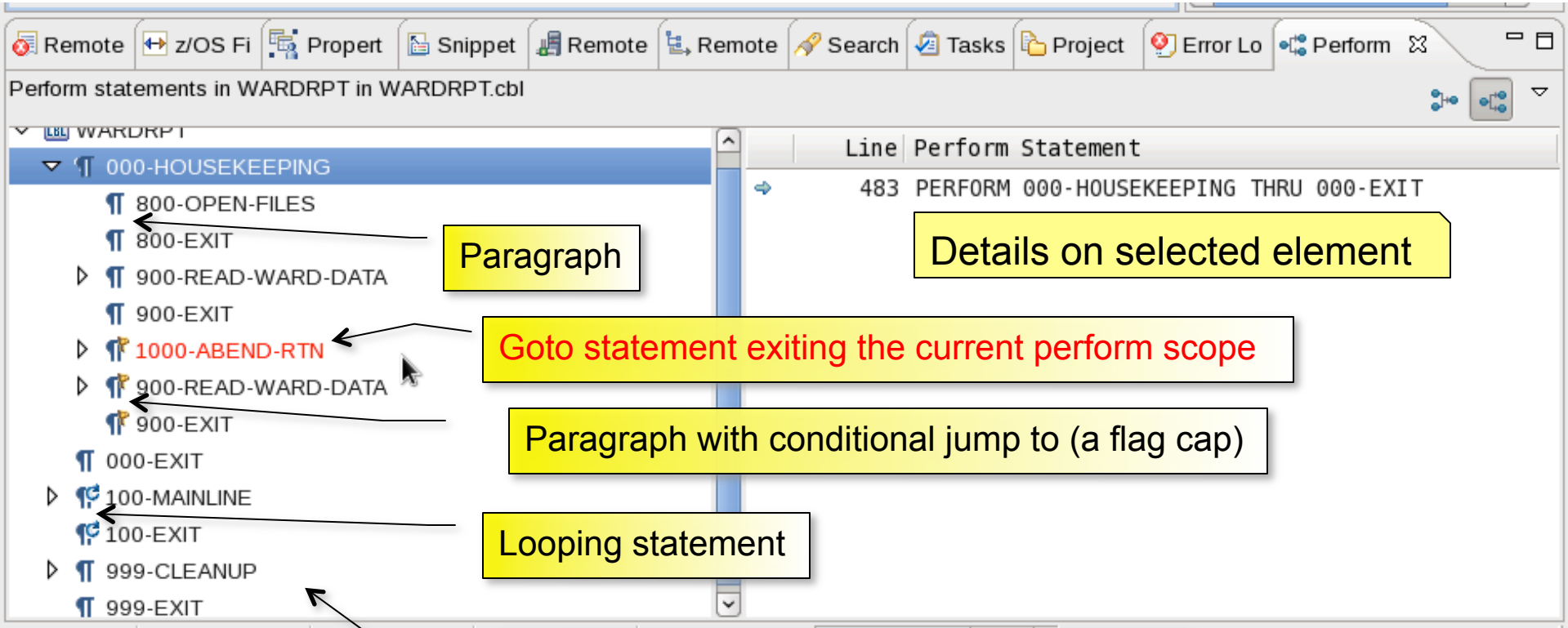
- Available in the Cobol and PL/I editors



Perform Hierarchy enhancements

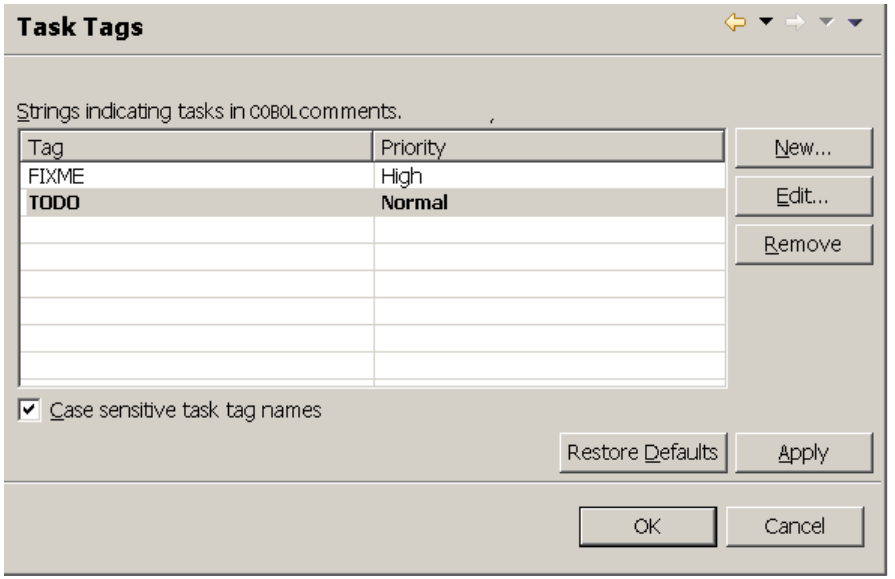
- Select in the procedure division, right mouse to Open Perform Hierarchy

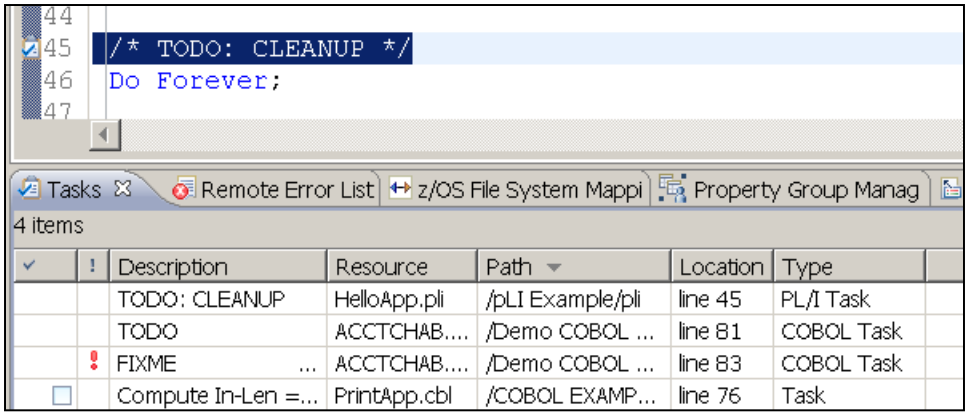




Task tags

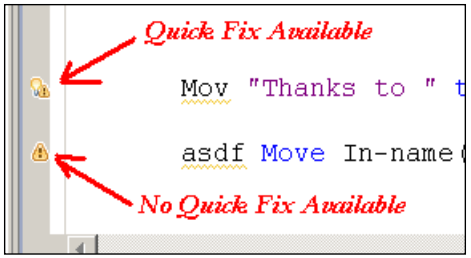
- Files opened in the COBOL & PL/I editors will be scanned for tags in comments.
- Tasks will be created for matching patterns in the Tasks View.
- Preference pages will allow customization of tag patterns.
- Generated Tasks will persist after closing the editor.

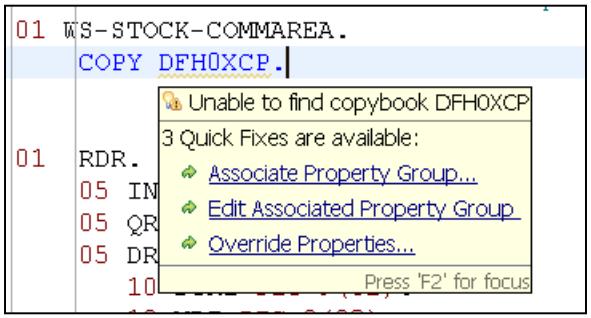




Quick fixes

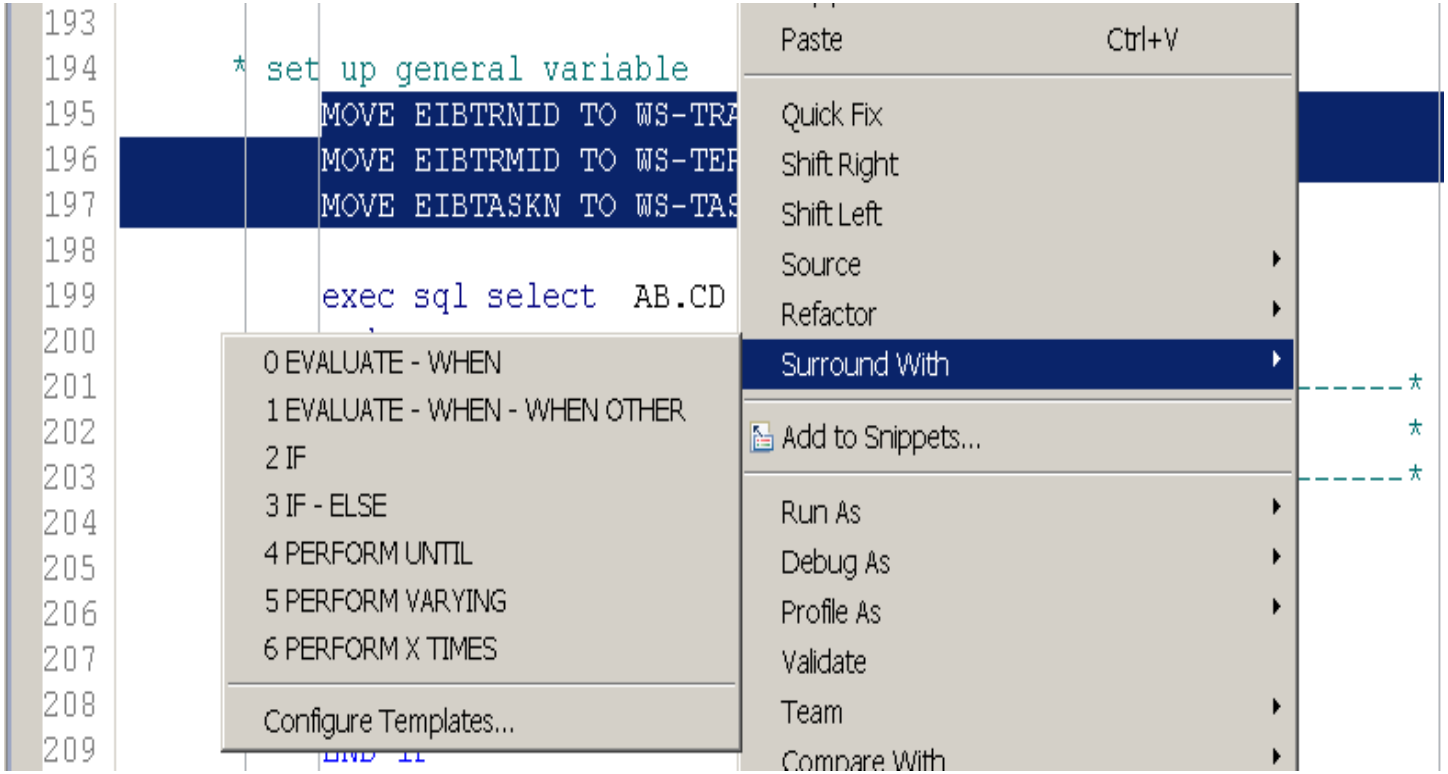
- Support for quick fixes for common programming mistakes
  - Misspelled Keywords
  - Misspelled Variable Names
  - Ambiguous Variable References
  - Copybook/Include File not Found warnings
  - Misspelled Intrinsic Function names





Surround with

- A quick way to surround selected text with Template code.
- Accessed from the Source menu or the context menu.
- Exposes any valid template containing the “line_selection” and “word_selection” variables.



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Handling of Non-Roundtrippable characters

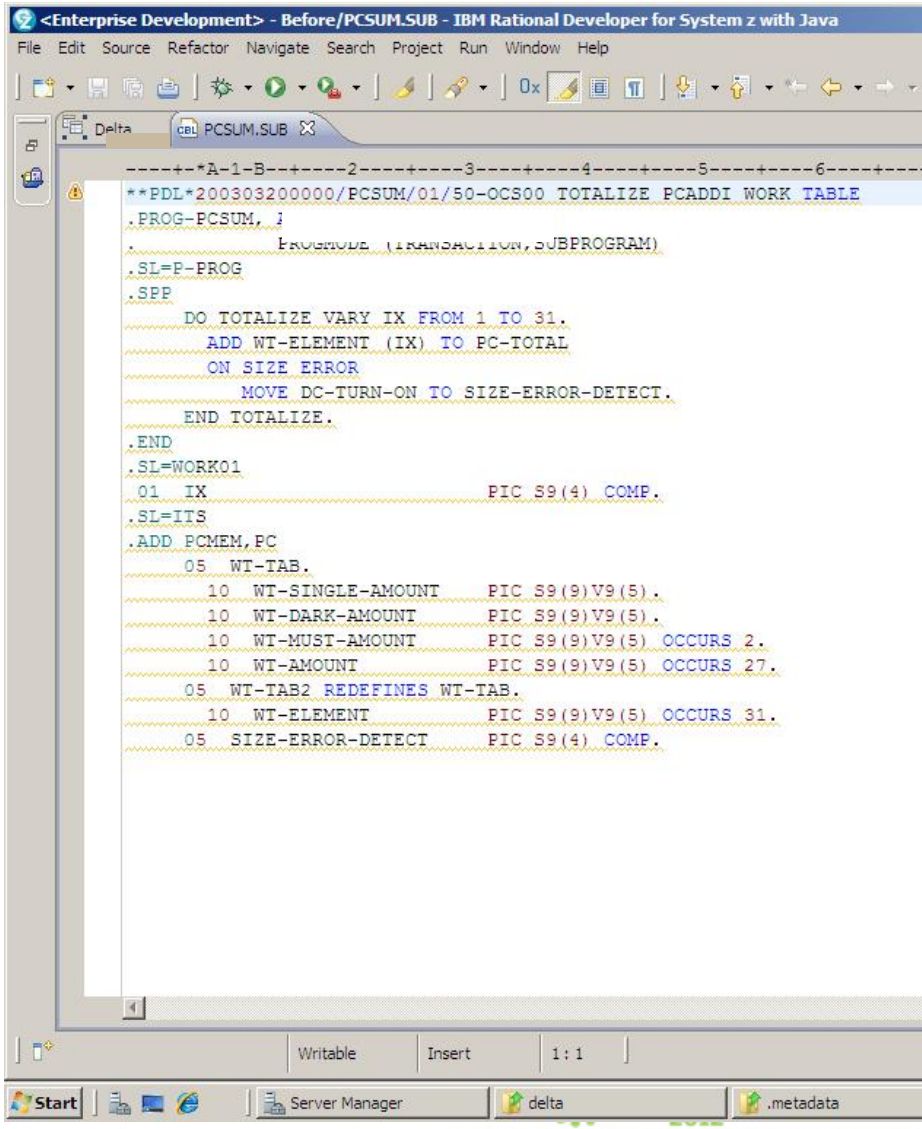
- Handling of non-roundtrippable characters
  - Today, when editing a remote file using RDz, the file contents are converted from an EBCDIC code page (e.g IBM-037) to the local code page (e.g Cp-1252) – causing some code points to not round-trip and thus file is opened in read only mode.
  - In RDz 803, we implemented the approach to set the local encoding to UTF-8 thus allowing the files to be opened for edit
    - Use of an unicode based encoding as opposed to an ASCII based encoding reduces the number of code points that do not round trip to: **CR LF NL (hex 0D 15 25)**
    - Allows the use of Unicode Private Use Area (PUA) to map these control characters locally
    - On Upload these characters are mapped back to the original EBCDIC code points
  - This approach requires us to have a wrapper to convert from UTF-8 to ASCII before invoking local tools like the compiler front end for doing local syntax check

Preprocessor integration with editors – pre 8.0.3

The System z LPEX, COBOL, and PL/I Editors use a syntax parser to support real-time error detection and other language-specific features such as refactoring support.

The presence of custom preprocessor syntax in a program has traditionally prevented the editor's syntax parser from successfully parsing the program.

This often resulted in the display of false-negative syntax warnings, and often prevented many of the editor's language-specific features from being available.



Preprocessor integration with editors – in 8.0.3

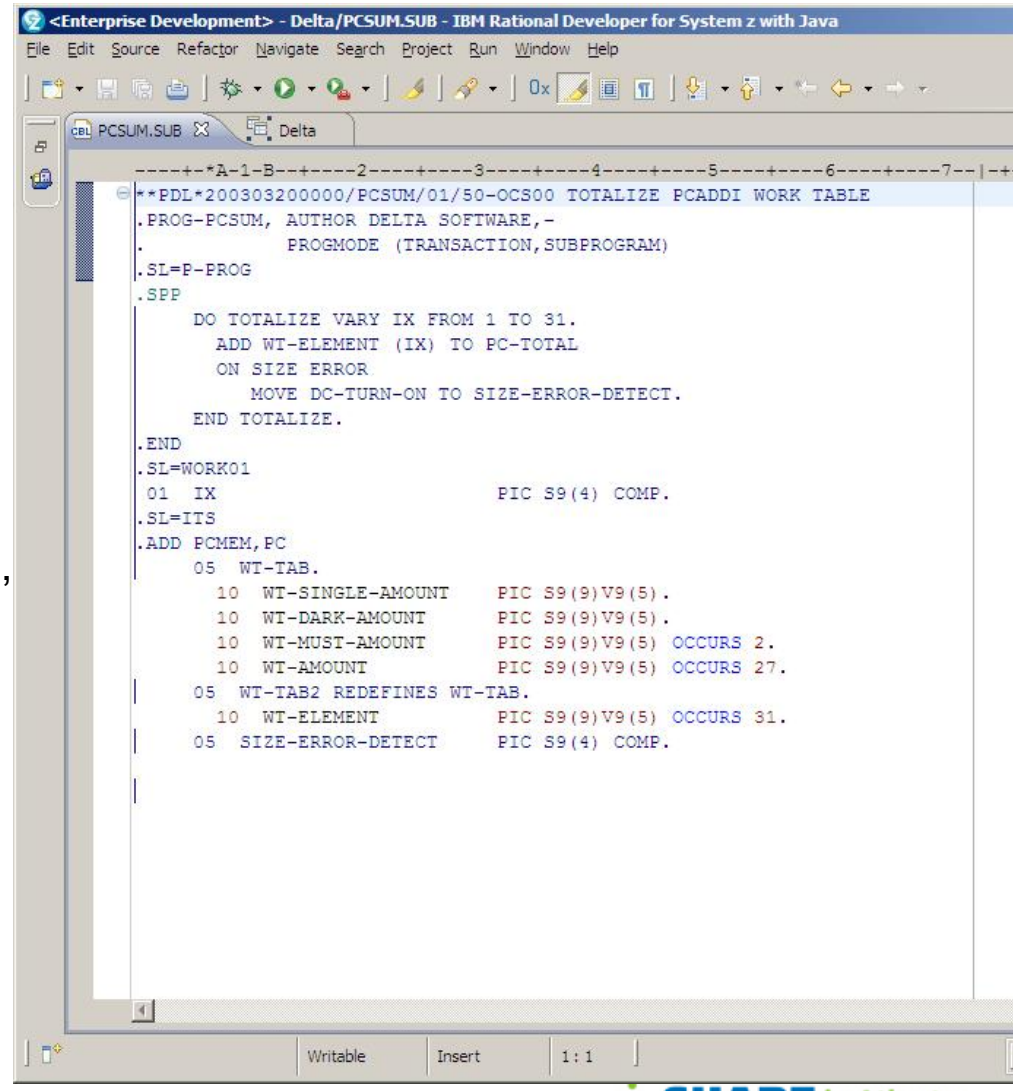
The syntax parsers of the COBOL, PL/I, and System z LPEX Editors now support integration with preprocessor config.

The Preprocessor Integration feature gives our syntax parsers a mechanism for identifying the location and translation of preprocessor statements in your program,

This in turn allows the editor's syntax parser to correctly understand the program, resulting in accurate real-time syntax warnings and a greater availability of language-specific features.

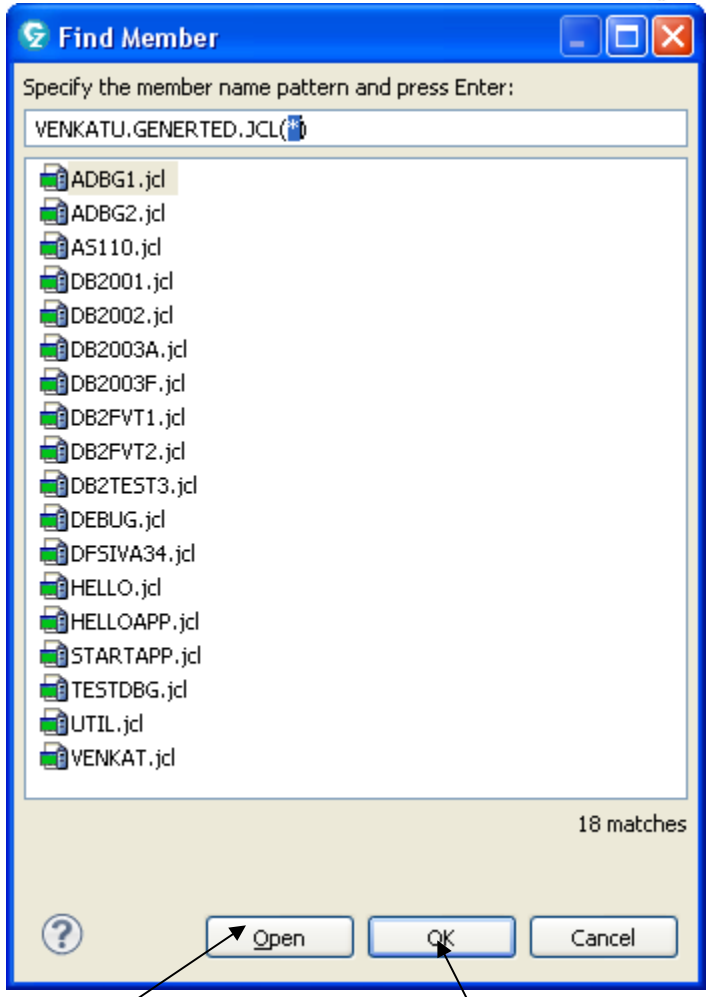
Features:

- Supports integration with the existing Local Preprocessor property page settings.
- Supports execution of remote preprocessors using REXX or CLIST.



Find Member – Data set member access w/o filter

- RDz 801 introduced the ability to Retrieve data sets without creating filters, RDz vNext takes it a step further to get to data set members without creating filters
  - Allows the user to quickly get to a member
  - Allows the user to “open” the member for edit easily
- Multiple ways to invoke the “Find member” dialog – described in the following charts...



Opens the member in editor

Highlights in Tree view

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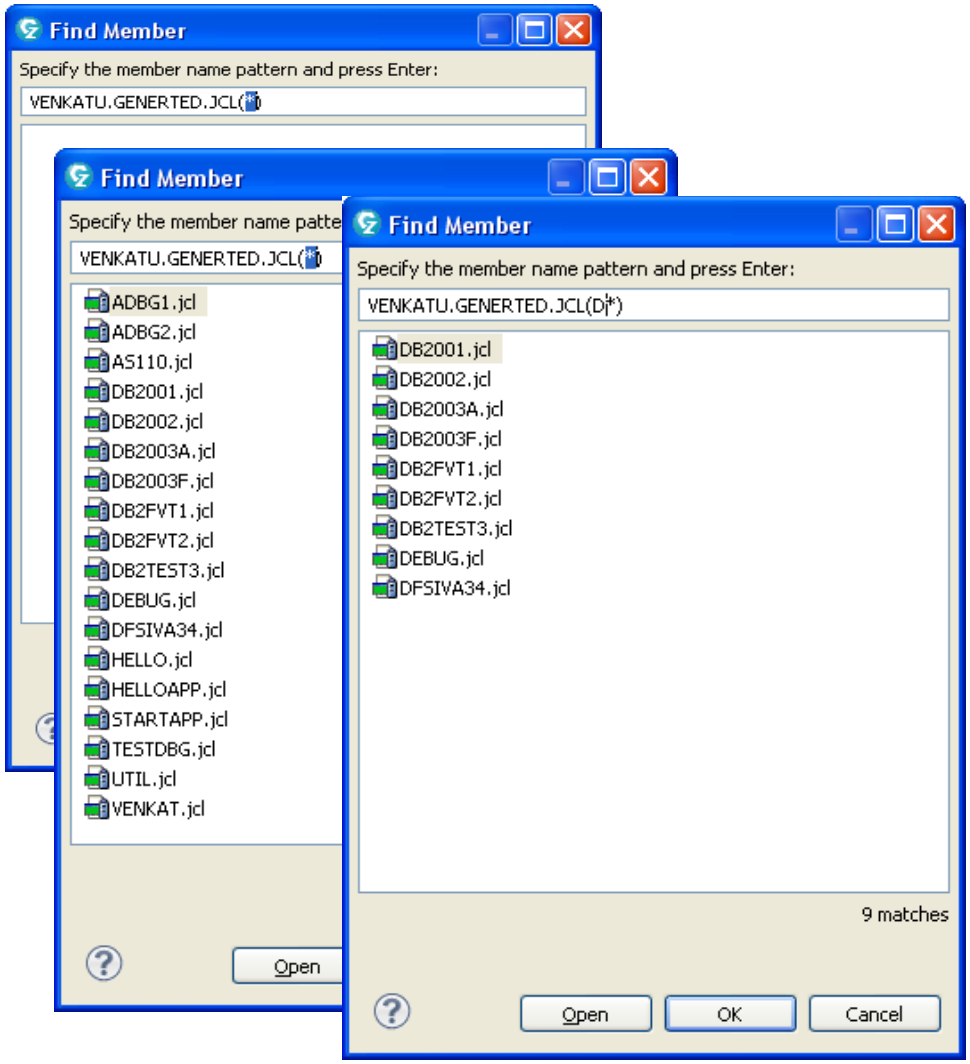
Find Member – Data set member access w/o filter

- Right click on a data set in Remote systems view
- CTRL + F on a data set in Remote systems view
- By default, the UI would have the selected data set name and a * for members, the result set can be dynamically filtered
- The lower right hand corner displays the number of matches



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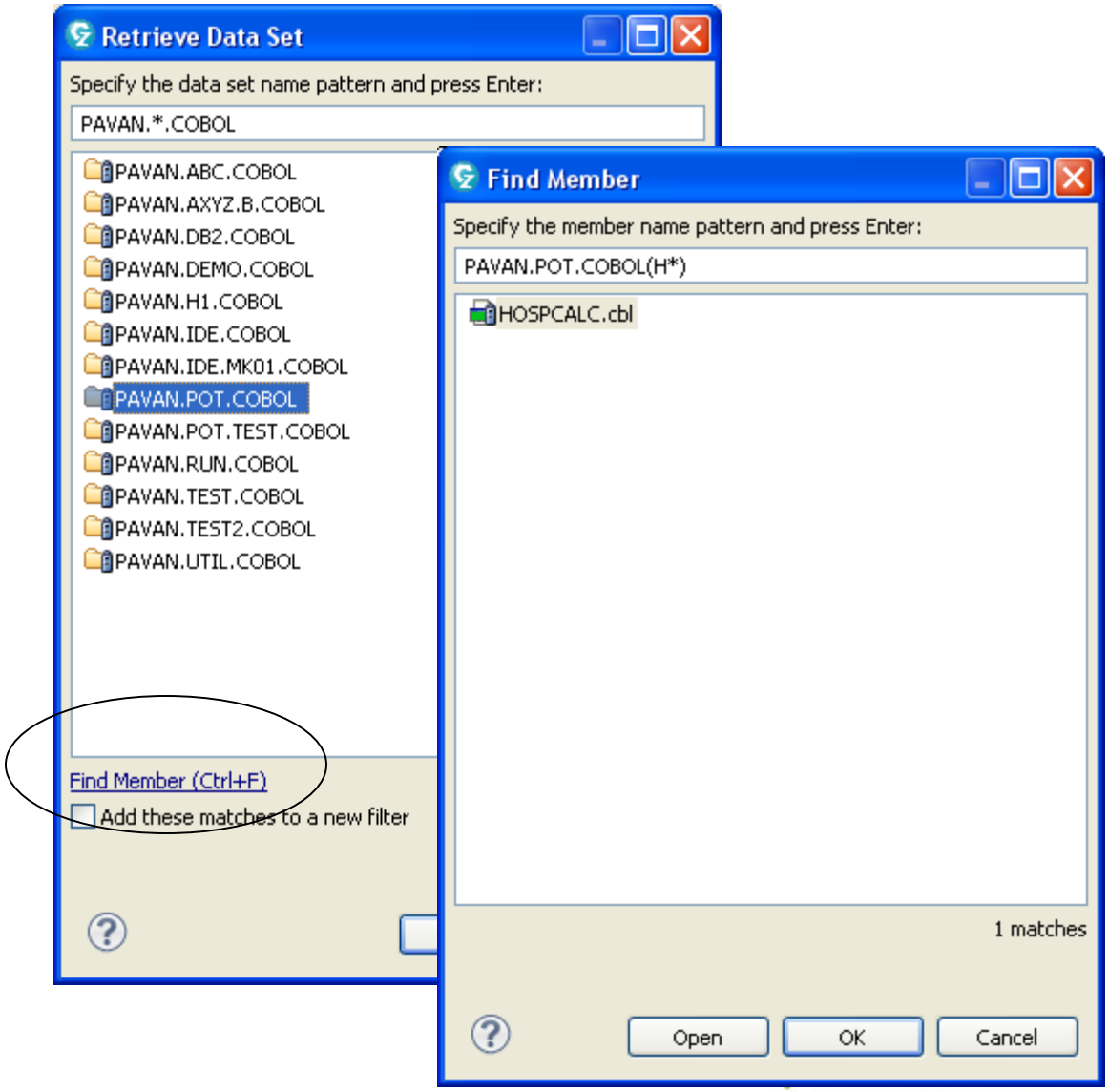
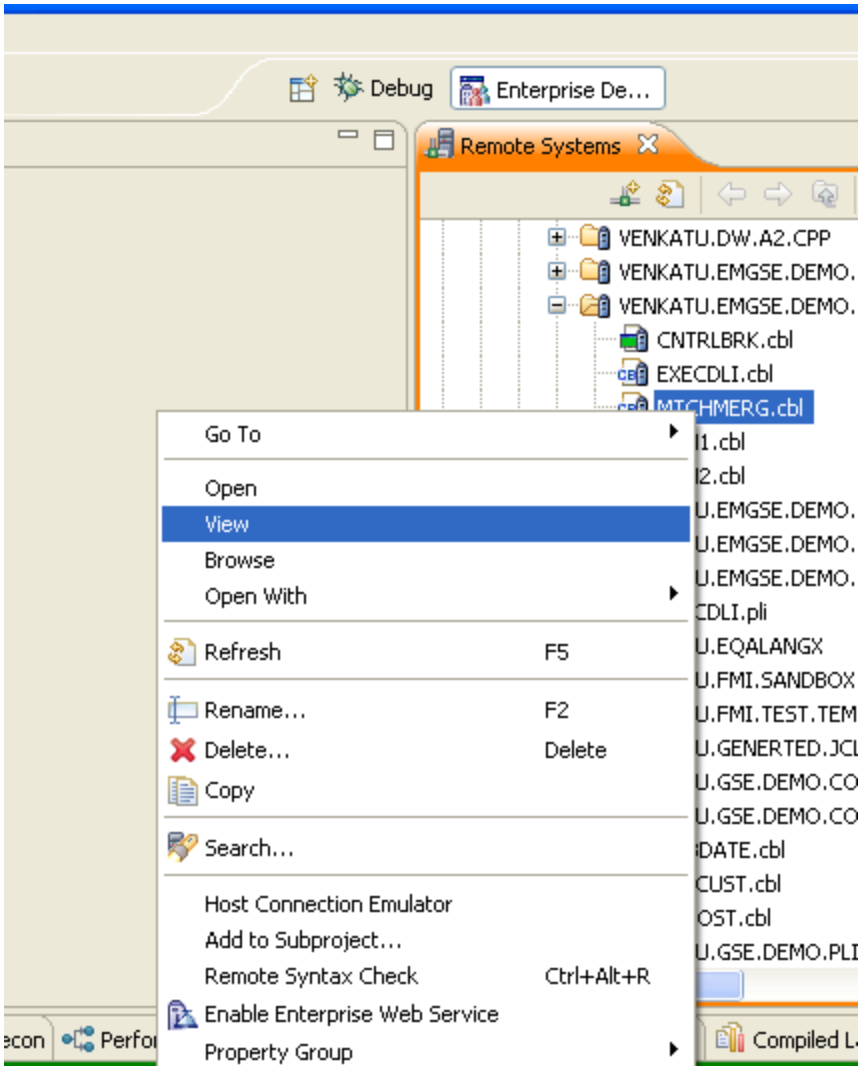
Find Member – Data set member access w/o filter

- As a “link” from the Retrieve Data set dialog
- Scenario – Use the Retrieve data set to get to a data set & use that data set to get to the member



View Capability

- RDz now allows a z/OS Resource to be opened in the “View” mode..
- The View can be chosen from the Context Menu
- View would open the member or sequential file in edit mode but without an ISPF Enqueue.
- If the user changes the file and tries to Save – Save As… dialog is popped up ..



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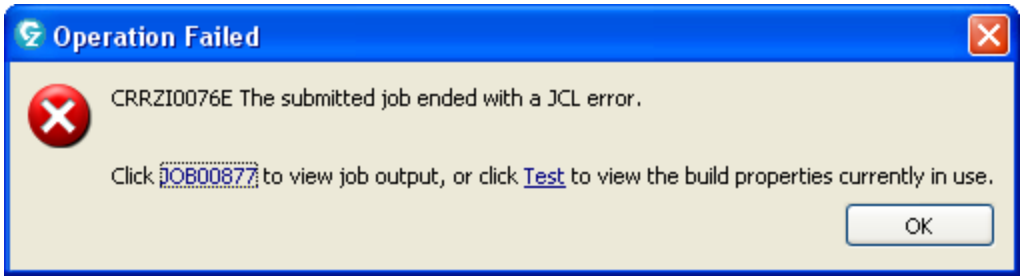
Misc Usability Enhancements

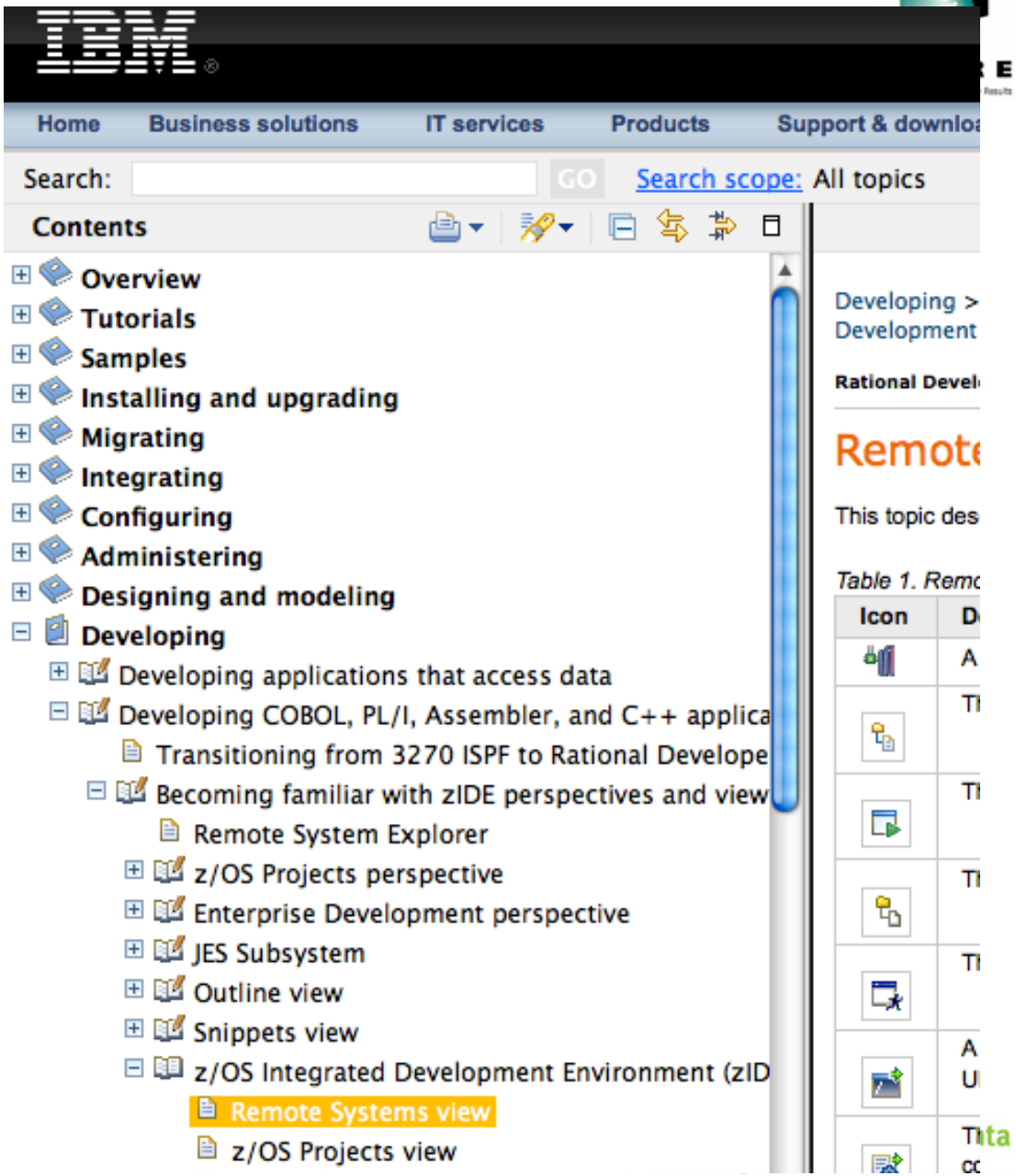
- Enhanced message and error dialogs to allow the user to get to next step easily
  - Access to Job output or the Property group from the dialog that reports that the job has ended with a JCL error or Abend – the job ID and the name of the Property group are “links” in the dialog for the user to get to next step:



Icon descriptions

Available in the RDz Infocenter

Categorized by component



Icon descriptions – Remote Systems

Remote Systems view

This topic describes icons commonly seen under the z/OS® connection tree of the Remote Systems view.

Table 1. Remote systems, subsystems, and filters

Icon	Description	Icon	Description
	A z/OS system		A z/OS system to which you have connected
	The z/OS UNIX files subsystem		The z/OS UNIX Files subsystem in a z/OS system to which you are connected
	The z/OS UNIX Shells subsystem		The z/OS UNIX Shells subsystem in a z/OS system to which you are connected
	The MVS™ Files subsystem		The MVS Files subsystem in a z/OS system to which you are connected
	The TSO Commands subsystem		The TSO commands subsystem in a z/OS system to which you are connected
	A remote command shell, such as a TSO shell or a z/OS UNIX shell		The JES subsystem
	The JES subsystem in a z/OS system to which you are connected		A filter defined for the z/OS UNIX files, MVS files, or JES subsystem
	A filter defined by using the **Retrieve Data Set** or **Retrieve Job** action		The **My Search Queries** folder in the MVS Files subsystem

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Icon descriptions - projects

z/OS Projects or Enterprise Projects view

This topic describes icons commonly seen in thez/OS Projects or Enterprise Projects view.

Table 1. Projects, subprojects, and files.

Tip:** You can see additional file icons by opening **Window > Preferences > General > Editors > File Associations.

Icon	Description	Icon	Description
	A local z/OS® project or a z/OS UNIX subproject		A remote z/OS project
	An MVS™ subproject		A file folder
	A file		A partitioned data set
	A partitioned data set that has been expanded		A sequential data set or partitioned data set member on a z/OS system
	A file that is associated with the LPEX editor by default		A remote file (typically a partitioned data set member) that is associated with the LPEX editor by default
	A file that is associated with the COBOL Editor by default		A that is associated with the PL/I editor by default
	A zComponent (Rational Team Concert™ integration resource type)		A zComponent project (Rational Team Concert integration resource type)
	A zFolder (Rational Team Concert integration resource type)		A zFile (Rational Team Concert integration resource type)

Icon descriptions – Carma

CARMA Repositories View

The following are icons commonly seen in the CARMA Repositories view.

Table 1. CARMA Repositories View

Icon	Description	Icon	Description
	CARMA Repository view or an unconnected CARMA connection		Launch a wizard to create a new CARMA connection
	A connected CARMA connection		A repository instance
	A connected RAM (Repository Access Manager)		An unconnected RAM (Repository Access Manager)
	Create a new folder, available in the context menu.		Create a new file, available in the context menu.
	Refresh the currently selected items in the **CARMA Repositories** view		Refresh has been disabled
	Create a new view or filter, available in the context menu.		Create a new view or filter has been disabled

CARMA Fields Table View

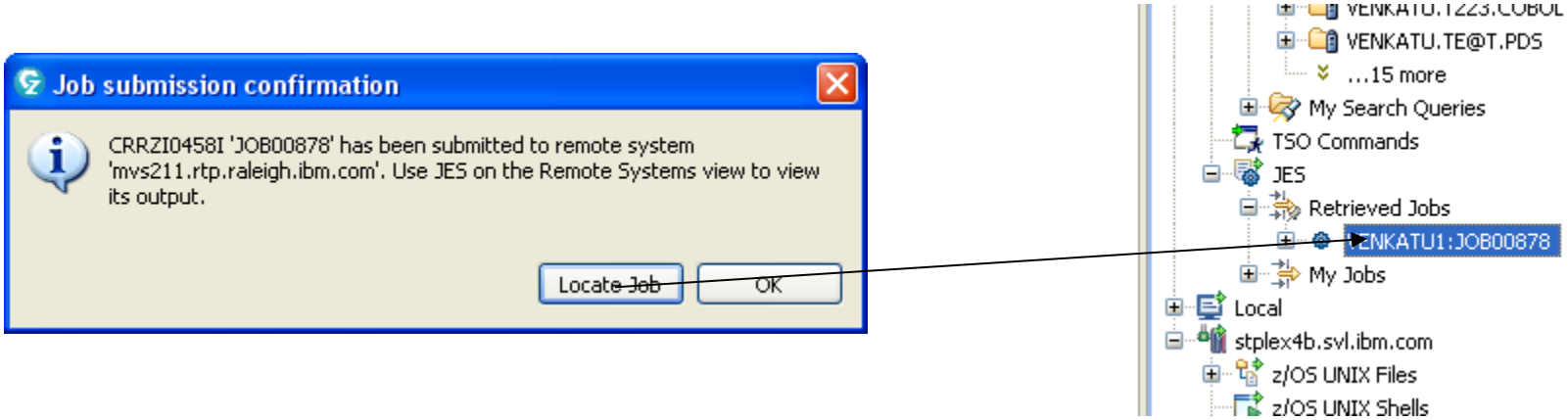
The following are icons commonly seen in the CARMA Fields Table view.

Table 2. CARMA Fields Table view

Icon	Description	Icon	Description
	CARMA Fields Table view		Launch a wizard to create a new CARMA connection
	A CARMA connection		A connected CARMA connection
	A RAM (Repository Access Manager)		A connected RAM (Repository Access Manager)
	Create a new folder, available in the context menu.		Create a new file, available in the context menu.
	Refresh the table		Refresh table has been disabled
	Refresh children, available in the context menu		Refresh children has been disabled
	Refresh fields, available in the context menu		Refresh fields has been disabled
	Create a new view or filter, available in the context menu.		Create a new view or filter has been disabled

Misc Usability Enhancements

- Enhanced message and error dialogs to allow the user to get to next step easily
  - Linking the “Locate Job” capability from the Submit action:



Rational Developer for System z Roadmap Themes

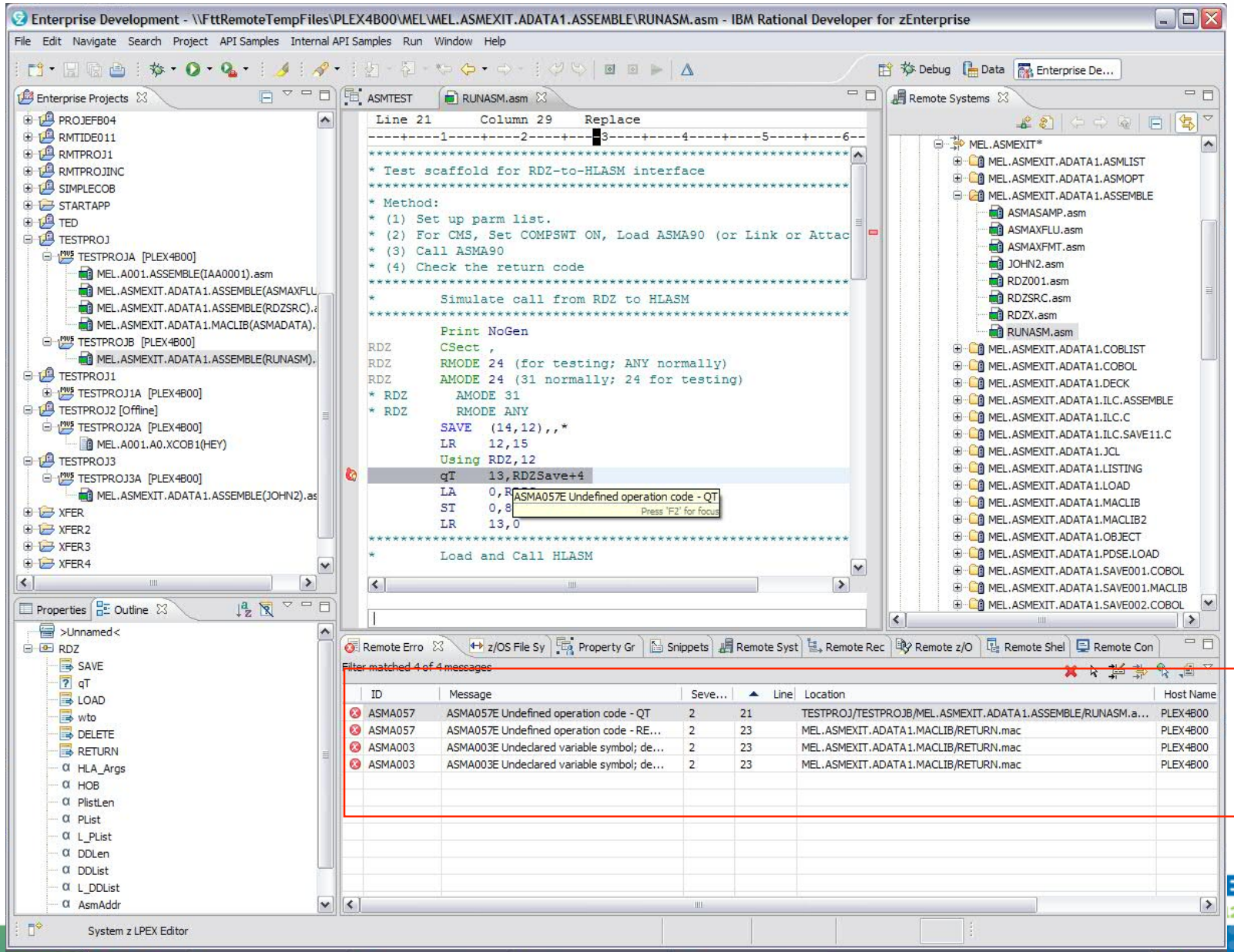
Languages

- Cobol and PL/I
- C/C++
- Assembler
- BMS/MFS
- QSAM

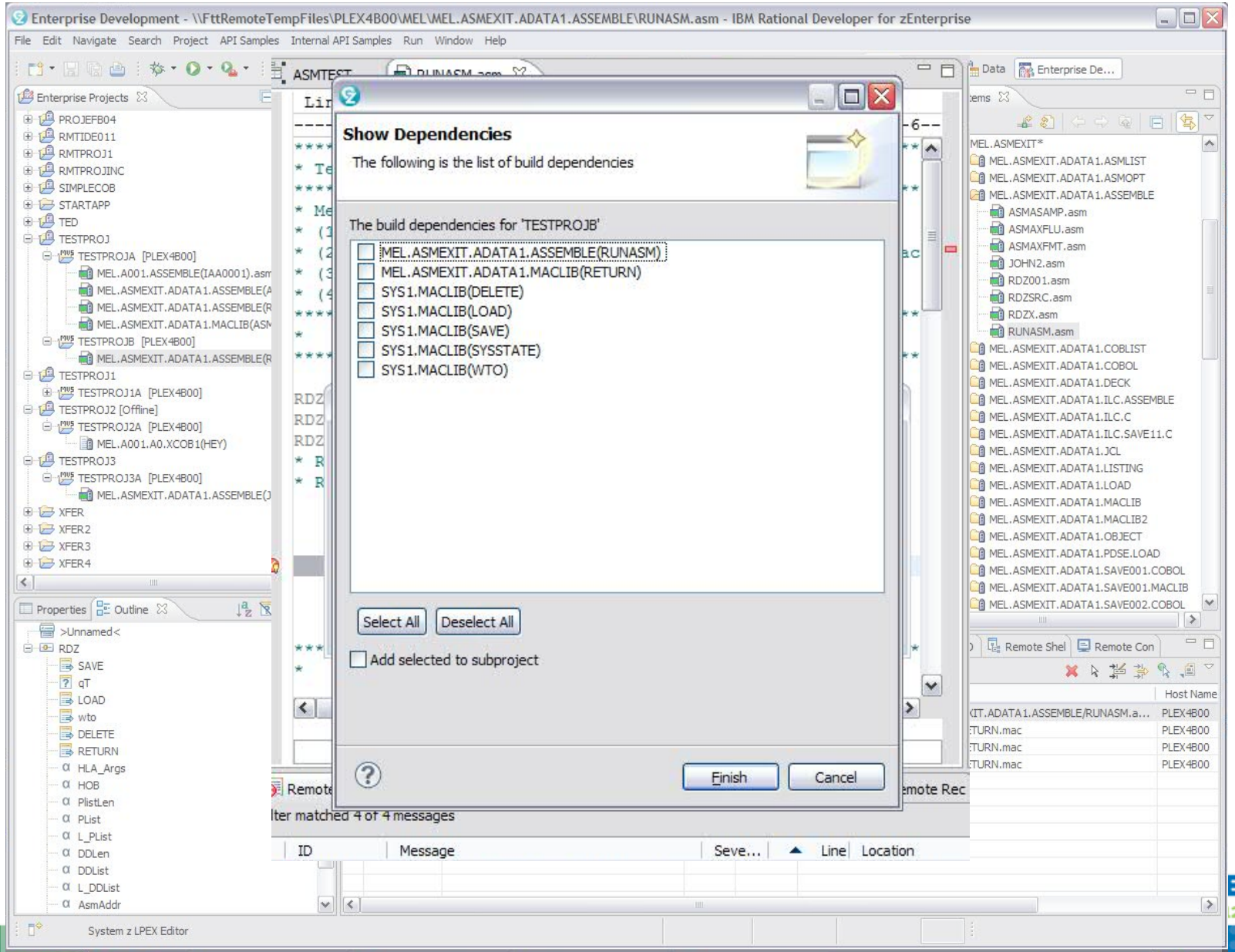
HLASM enhancements

- **Error feedback** for Assembler
  - Reports errors in Source and macros
  - Does not support error feedback with EXEC CICS or EXEC SQL
  - Easily link to the source from the errors shown in Remote Error List
- **Show Dependencies** provide a tool to help programmers understand dependencies
  - Tell which macros are used during the course of an assembly (i.e. show dependencies)
- **Content Assist** has been enhanced
  - Provides improved instruction proposals with the minimum required parameters along with proposals for keyword parameter names, and proposals for keyword and positional parameter values.
- **Open Declaration** (F3) action has been added for HLAsm source files. This action can be invoked on a variable or a label and will result in the appropriate macro or copy file being opened in the editor and the cursor being repositioned to the declaration of the selected item.
- **CICS & SQL tokenizing**, content assist and templates are now available when editing assembler files.

HLASM Error Feedback



HLASM Show Dependencies



C/C++ improvements

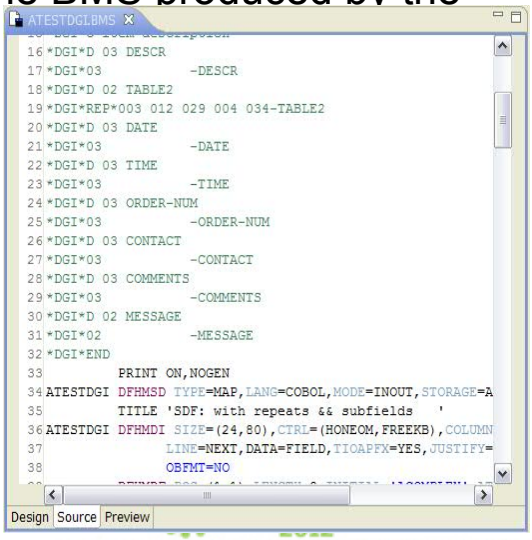
- The Remote C/C++ Editor has been renamed to System z C/C++ Editor
- CICS tokenizing, content assist and templates are now available when editing C/C++ files in System z LPEX and System z C/C++ editors.
- SQL tokenizing, content assist and templates are now available when editing C/C++ files in System z LPEX and System z C/C++ editors.
- A Scalability preference page is added to the System z LPEX and System C/C++ editors to configure behavior for very large files.

RDz BMS editor -vs- SDF II

- RDz BMS Editor is a WYSIWYG editor for BMS files
  - Not originally designed as an SDF II migration tool
  - Operates on contents of BMS files only
    - No metadata or side files
    - Allows portability of tools, compilers, SCMs
  - Original intent was developer would assemble map to produce data structures
    - Past enhancement added support for generating Symbolic Maps
      - Currently only supports COBOL data structures
- SDF II is a screen definition facility for multiple runtimes
  - Supports BMS, MFS, GDDM, ISPF Panels, etc
  - Stores information in a proprietary format
    - Provides support for non-traditional language constructs
      - Repeat blocks, non-contiguous arrays, minor structures, etc
        - Cannot be described using only BMS syntax
  - Generates output files (i.e. - BMS, Data Structure, SDF II printout)

SDF II PTF PQ86243

- In 2004, a REXX exec (DGIDSBMS) was released by SDF II as part of PTF PQ86423
  - Input - SDF II generated BMS file and SDF II generated data structure
  - Output - BMS file with DGI comments added to it
- SDF II utility for Importing BMS was also enhanced to understand the DGI comments
  - Now a new BMS file with DGI comments could be imported into another SDF II environment in order to recreate the proprietary metadata needed for the definition of the non-traditional language constructs (i.e. - repeat blocks)
  - Once imported into another SDF II environment the DGI statements are no longer necessary and would not be generated into the BMS produced by the second SDF II environment



SDF II Repeat Block

Name, Number of Occurrences and other metadata are stored within SDF II

- DGIDSBMS recreates Name, Occurrences, etc as DGI metadata

RDz Structure

Similar concept to SDF II repeat blocks

- Requires special comments in BMS source that contain the Structure Name so that RDz recognizes all the fields that are part of the Structure

SDF II Field level comments

Comments are for generated Data Structure

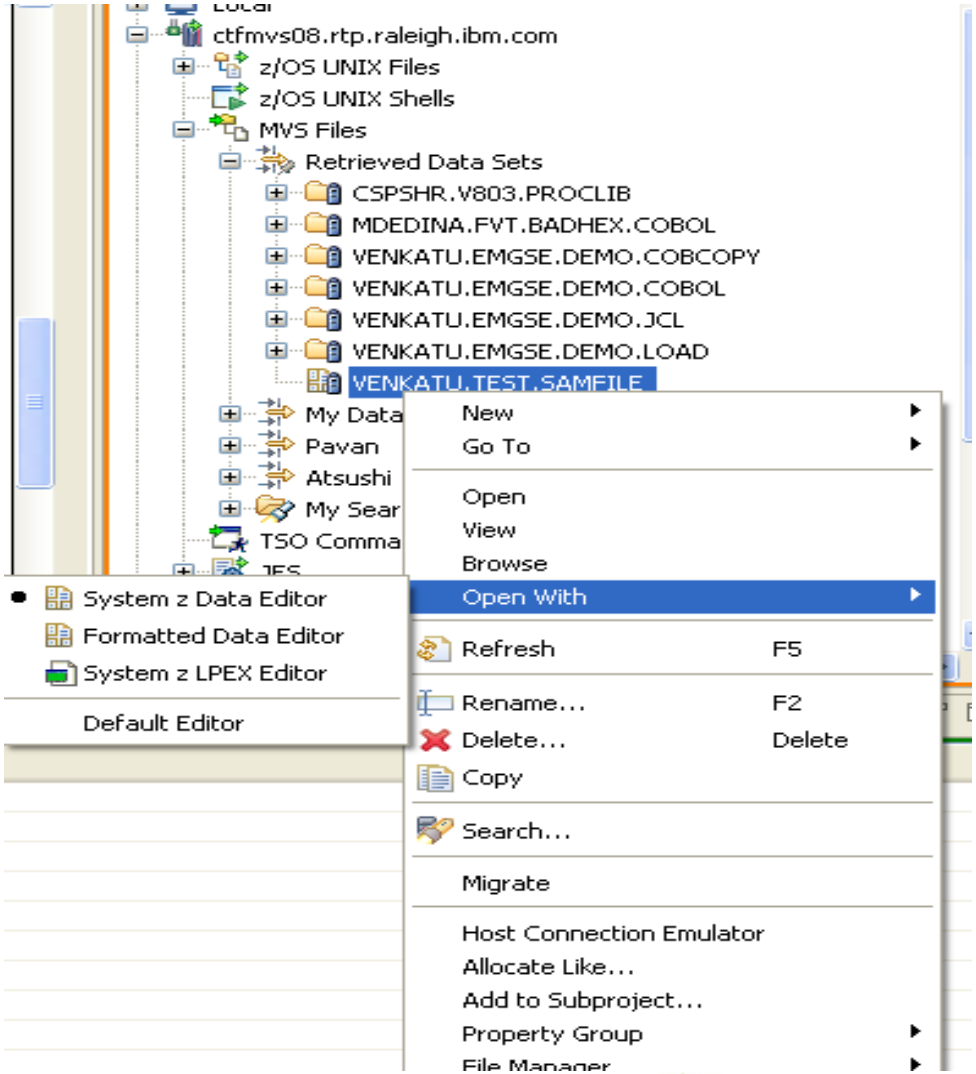
- DGIDSBMS recreates field level comments as DGI metadata

QSAM Support – System z Data Editor

Ability to edit QSAM files

Uses the new System z Data Editor to open the sequential file

Requires the file to be mapped to tdat file

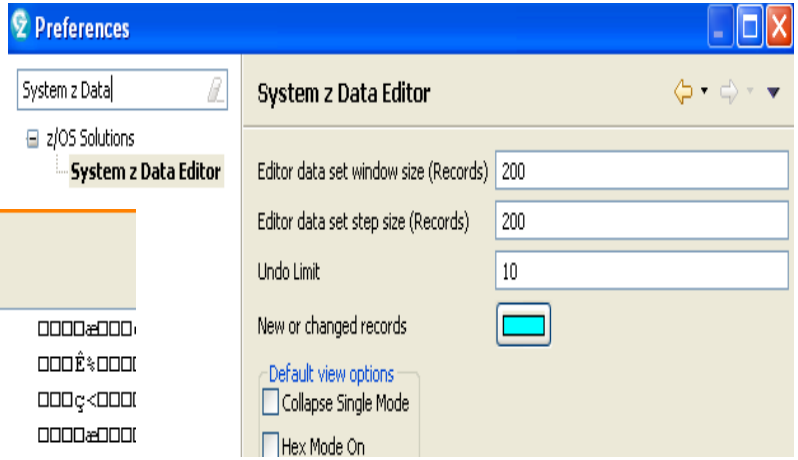


QSAM Support – System z Data Editor

Supports the HEX ON view for the entire file

Allows single mode edit

Paged download of the records – default value controlled in Preferences



Jump To:

1	03115AGraham, Holly	3100 Oaktree Ct	Raleigh	NCUSA	
2	05580AMoore, Adeline	4700 S. Syracuse	Denver	COUSA	
3	06075ADubree, Dustin	9229 Delegate's Row	Indianapolis	INUSA	
4	06927ABuchs, Jillian	41 Avendale Drive	Carlisle	PAUSA	
5	07008AHouston, Roger	4111 Northside PkWay	Atlanta	GAUSA	
6	07025AMarx, Audrey	90 South Cascade	Boulder	COUSA	
7	11204ANess, Luke	5166 Sprinkle Road	Portage	MIUSA	
8	11544AGraf, Polly	1551 S. Washington	Dowagiac	MIUSA	
9	12689ABoyd, Luke A.	221 Yale Rd	South Perth	Australia	
10	13062ATurner, Paige	3039 Cornwallis Road	Boone	NCUSA	
11	13295AWell, Alice	125 Nicholson Rd	North Perth	Australia	
12	13943ASawyer, Dinah	498 Oak Grove Rd	Springfield	Australia	
13	14207AAuerbach, Hans	Hahnstrasse 46	Frankfurt	Germany	
14	21508ADante, Al	89140 Rosten 77	Trondheim	Norway	
15	23084AFurst, Hugo	155 Bailey Avenue	Eagan	MNUSA	
16	23307ALapp, Victor E.	Rua Tutoia 2258	Sao Paulo	Brazil	
17	24390ALeavitt, Kent B.	12 Bannerghatta Road	Bangalore	India	
18	25301ACooke, Amelia	5305 Valley Park	Roanoke	VAUSA	
19	26130AKleiner, Rick	Av. Hidalgo 3500	Tampico	Mexico	
20	26620APerris, April Lynn	Calzada Legaria #853	Mexico City	Mexico	

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Resource API enhancements

Obtain the dependencies for a resource

- Given a logical or physical resource, return an array of names of files upon which the resource depends

Does a source file have non round-trippable characters

- A simple boolean test to see if the resource contains bad hex characters

Do Error Feedback processing & Remote Error list population

- Validate the XML file coming in - throw exception if it does not match the schema of the RDz "required" XML
- Parse the XML - find the resources referred to by the XML and populate the Remote Error list. .

Notification when MVS RSE Initialization is done

- New notification will make use of the existing ResourceSubscription/ResourcePublisher mechanism.
- ZOSSystemImage will publish ISystemSubscriptionEvent.CONNECT and DISCONNECT events

Execute a TSO command and return a string for results

Rational Developer for System z Roadmap Themes

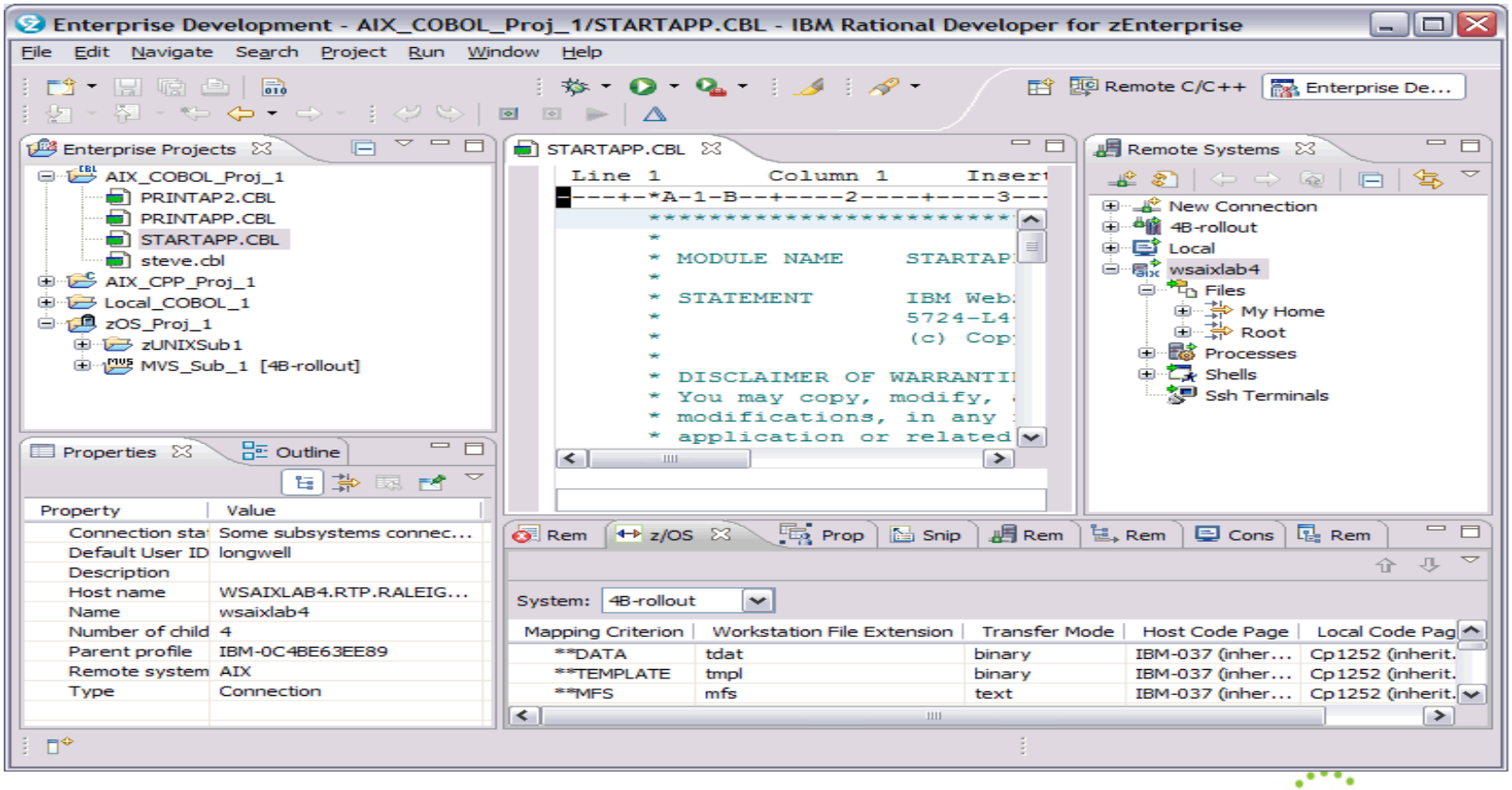
Integration

- RDz zEnterprise
- RTC EE
- Endevor
- CICS
- IMS
- Data Power

RD zEnterprise

Starting RDz Next, RD zEnterprise will be an “integrated” IDE

- A single perspective “Enterprise Development” allows connectivity and projects support to z and p platforms



Endevor Integration (avail)

Filter and search through environments, systems, subsystems, members, and stages based on queries (equivalent to DISPLAY)

- Filters saved across zOS sessions
- Easy access to common searches and members
- Drill down into subsystems

RETRIEVE members to zOS projects

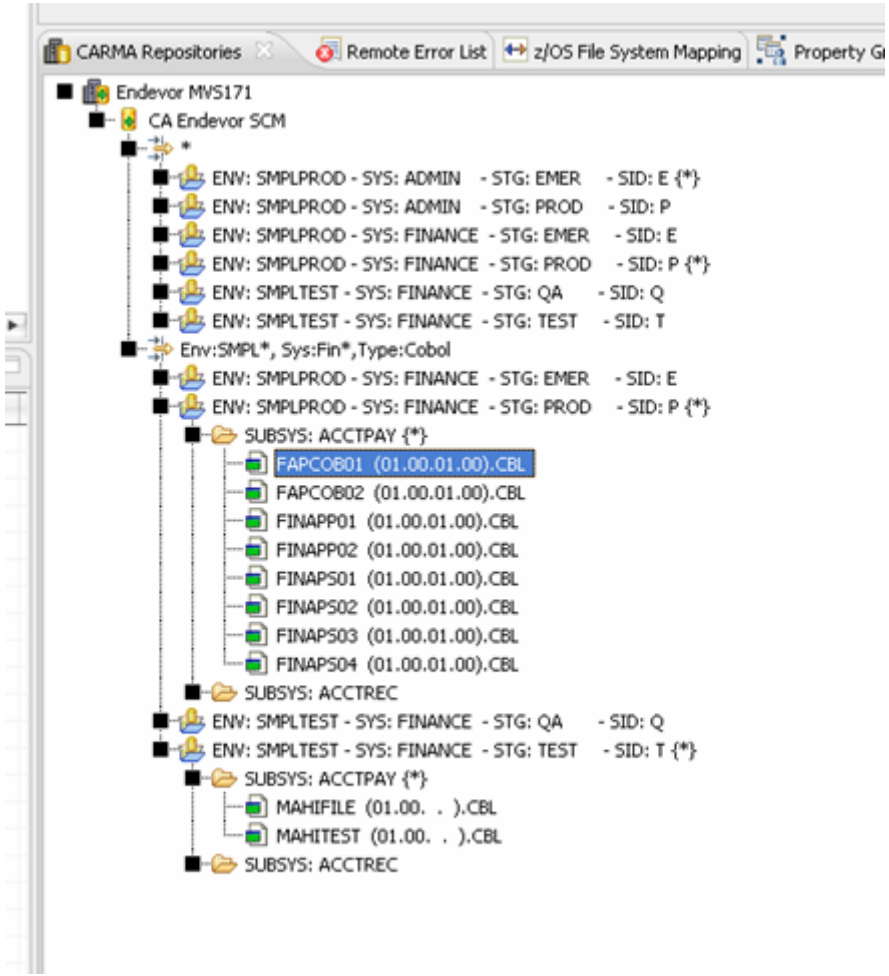
- Access to typical RDz functionality like syntax check, content assist, debug, etc

ADD/UPDATE members with single click

- RDz remembers Endevor location for retrieve and adds back

QuickEdit (browse) members from CARMA interface

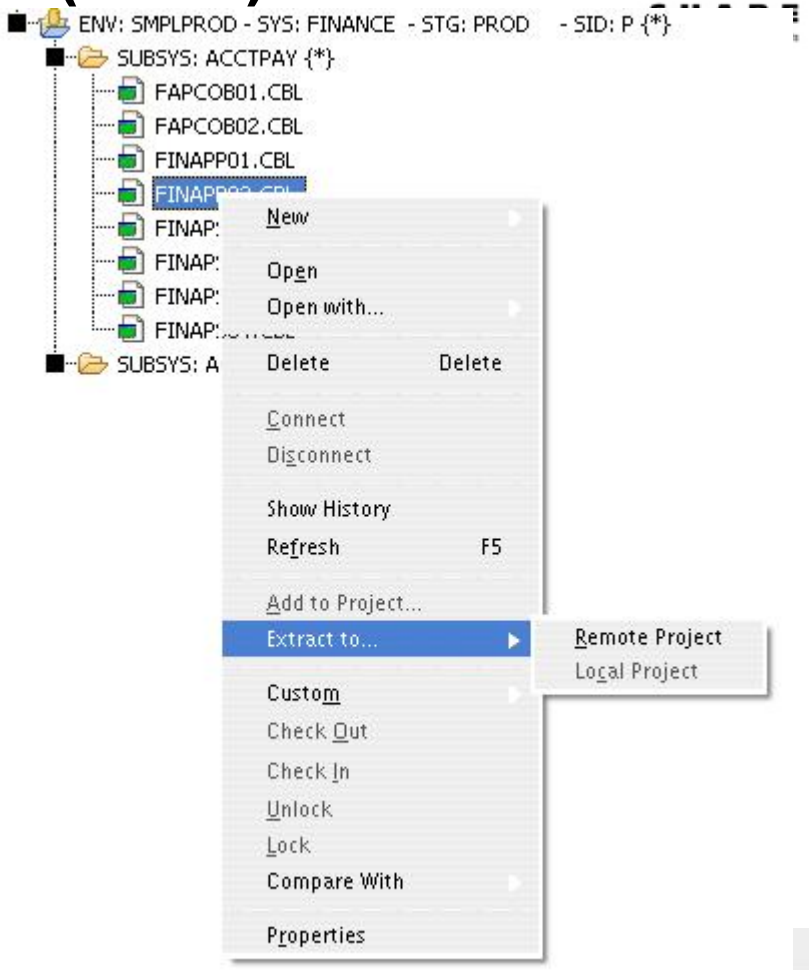
Integration with existing GENERATE configuration



Integration with RDz projects (avail)

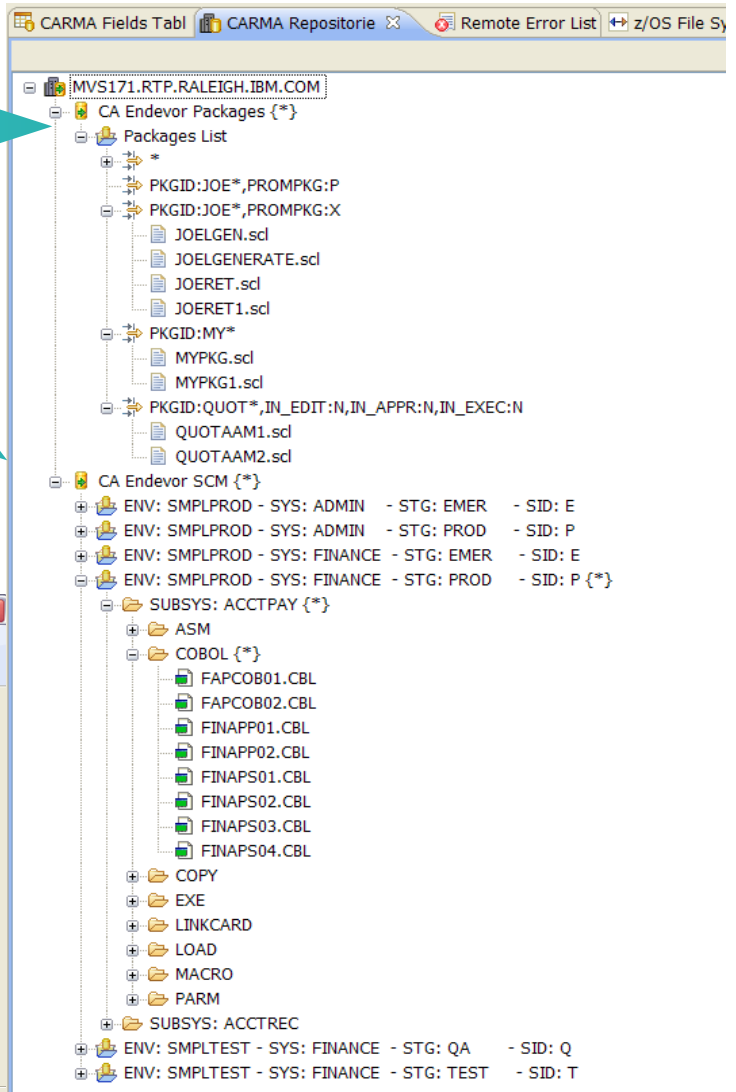
To retrieve files in zOS Projects

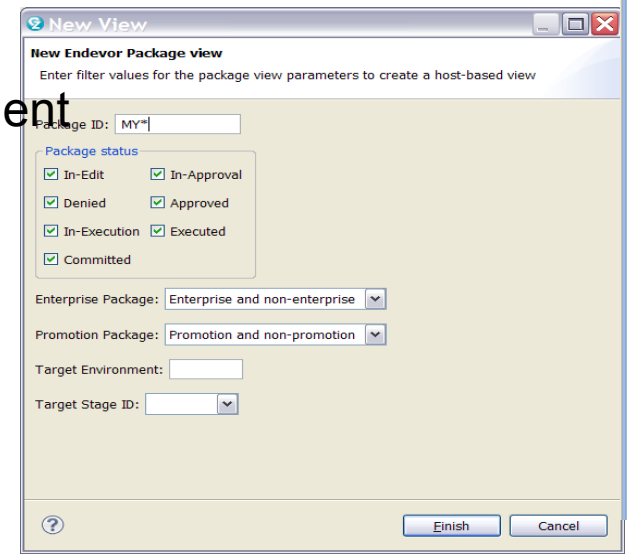
- Extract to remote project
- Enter Endevor sign out parameters
  - Change Control ID
  - Comment
  - Signout override
  - Expand includes (Y|N)
  - Others
- From zOS projects all RDz functions are available
  - Content assist
  - smart edit capability
  - Links to copy members



Displaying packages in the CARMA Repositories view

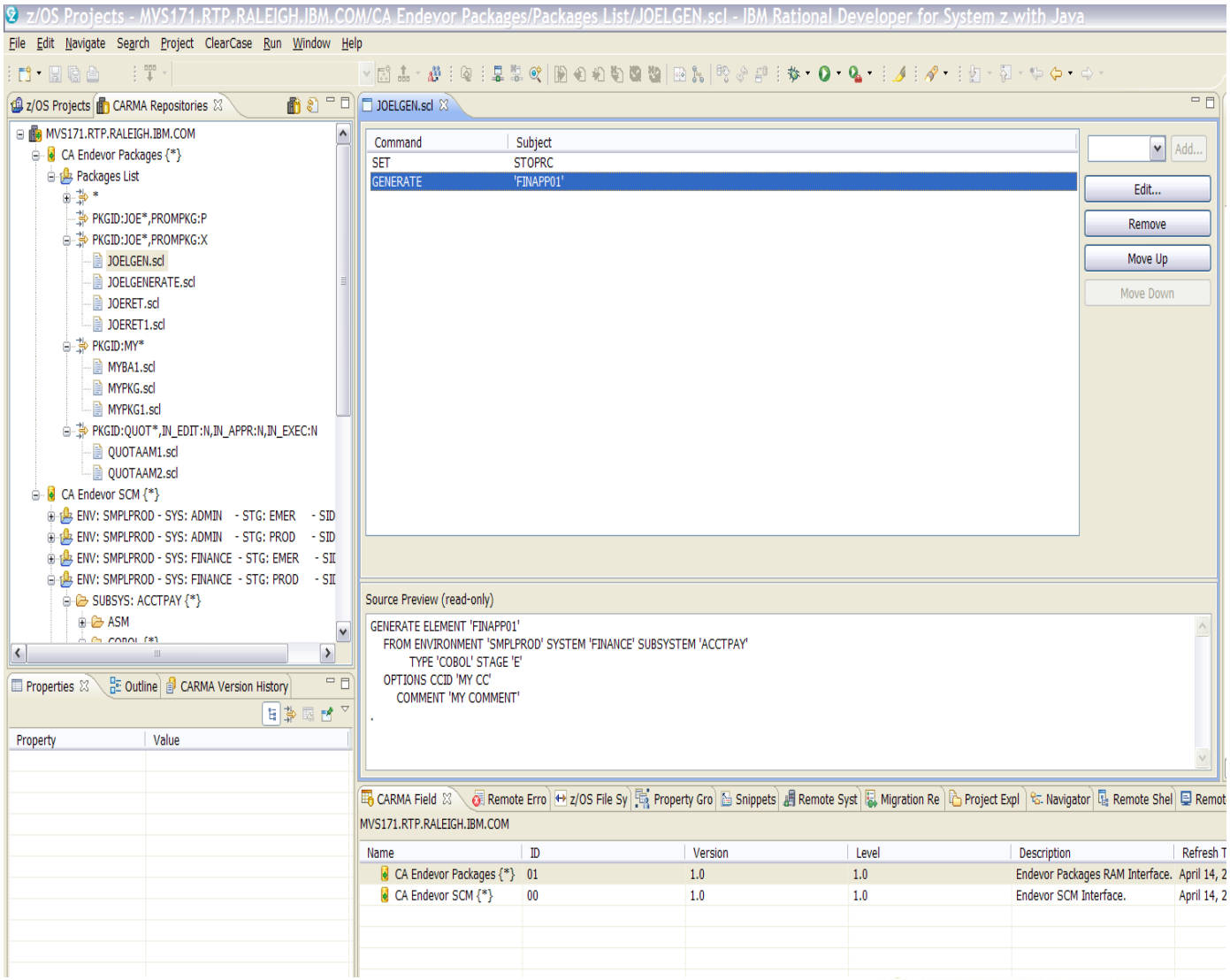
- (New) CA Endevor Packages RAM only for Packages
- CA Endevor SCM is a RAM only for Elements
- Filter values for new Package Views
  - Package ID
  - Status
  - Type
  - Environment
  - Stage





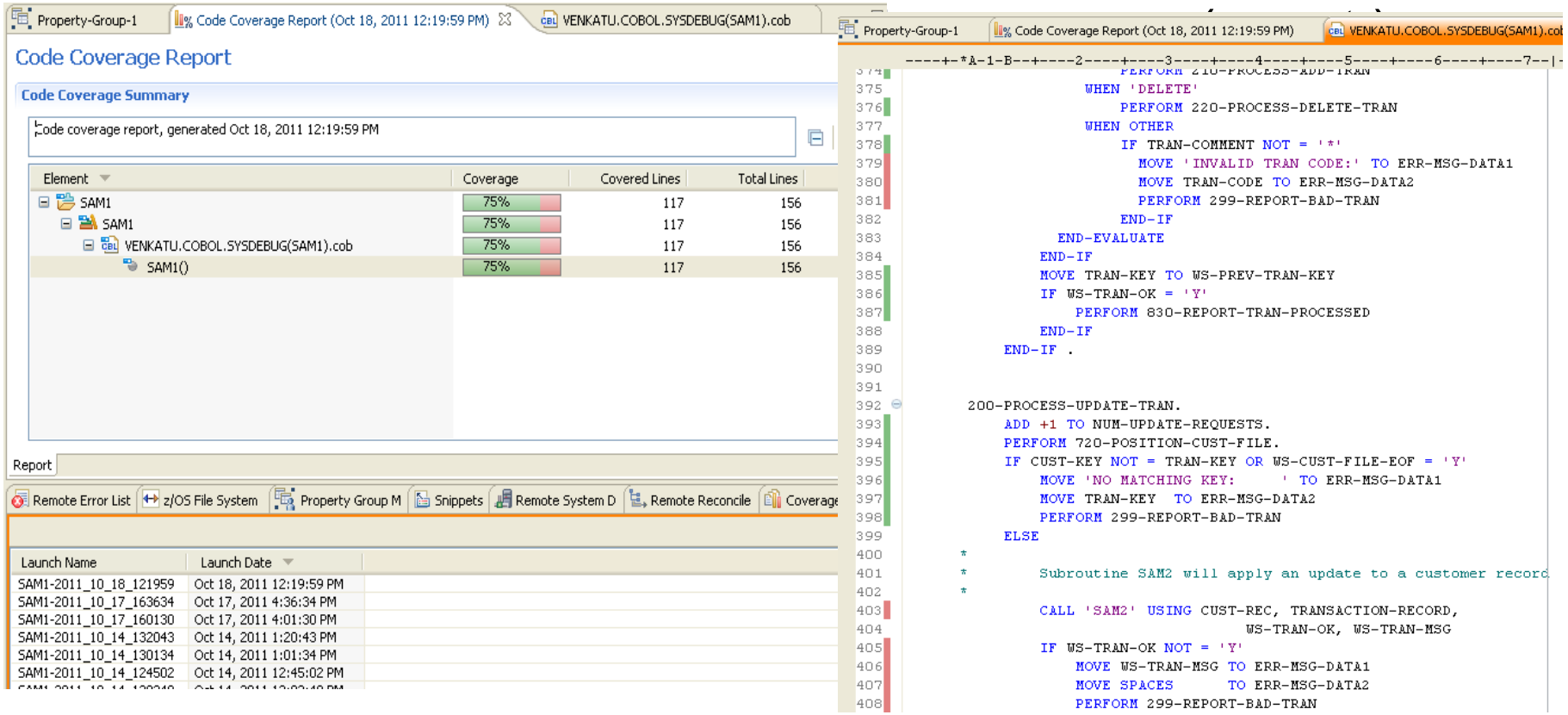
Editing: Opening a package in the (new) Package editor

- Double click to Open in editor
- Command table
- Source Preview for each Command
- Modification controls



Code Coverage

- RDz 803 introduces the ability to generate Code Coverage reports
- From the report, the source view can be launched to see the

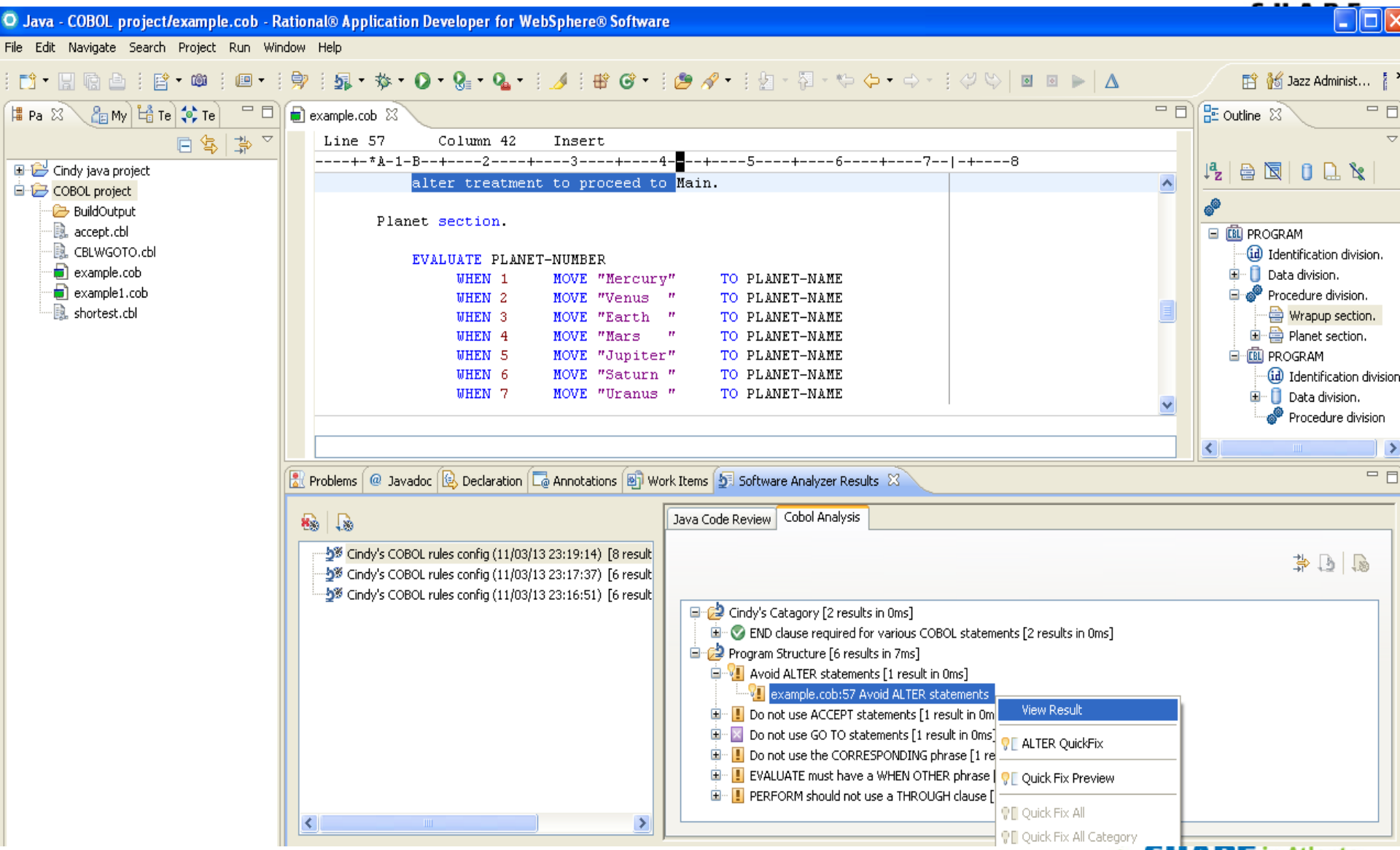


Code Rules use cases

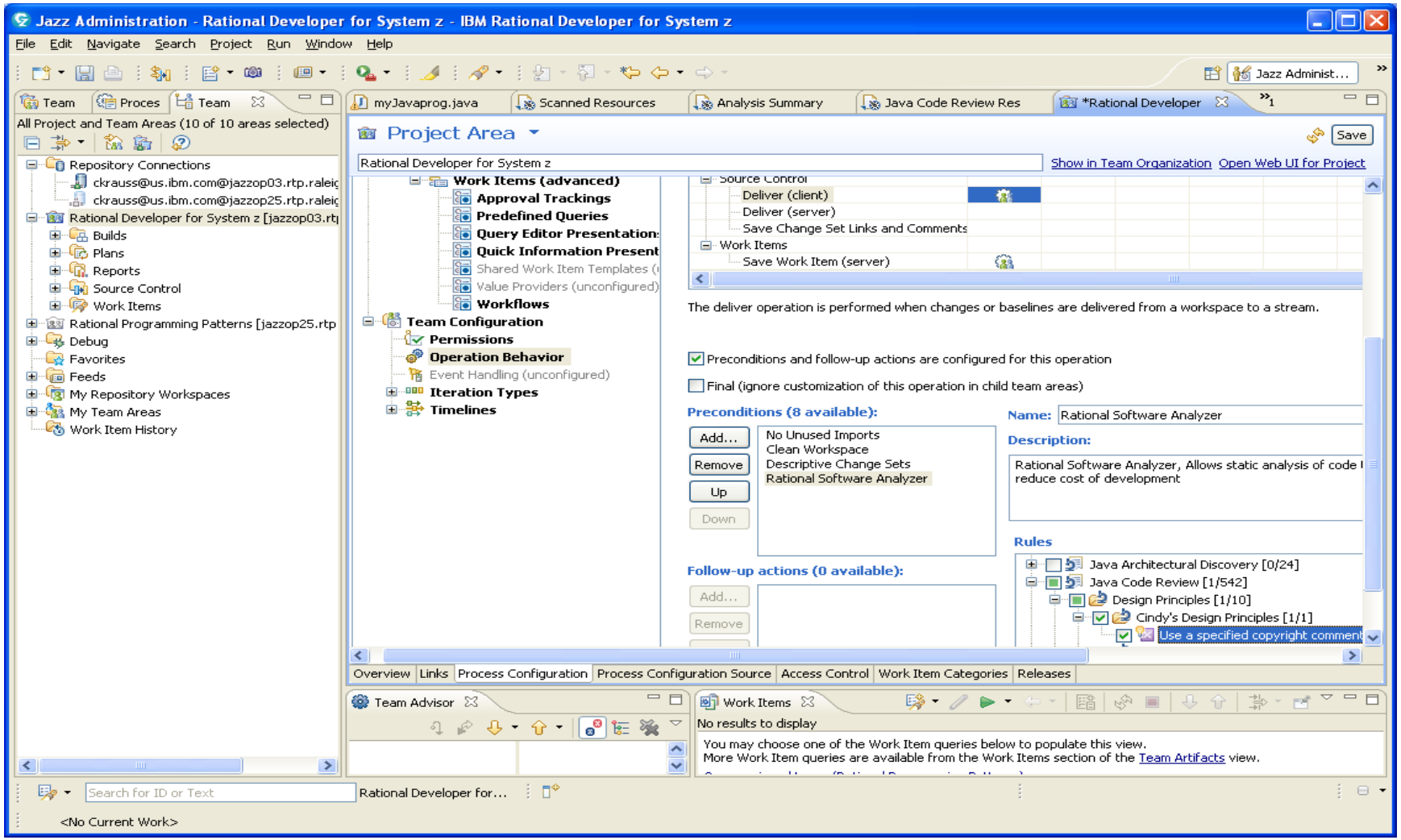
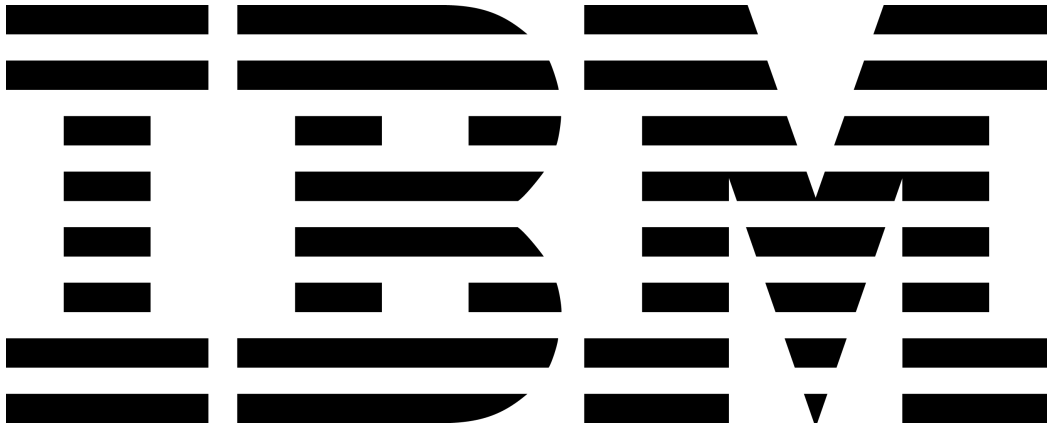
1. RDz IDE support (online/local)
2. Batch support - Run COBOL/PLI rules analysis from batch environment including from RTC build
3. SCM Process support - Run COBOL/PLI rules analysis as pre-condition to RTC source code delivery
4. Analysis Reports - Analysis data collection and reports via graphs, dashboards, build scripts, etc.

Initially targeting COBOL languages, but requirement also for PLI, JCL, C/C++ and maybe HLASM

Run the analysis



SCM (RTC) integration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