

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

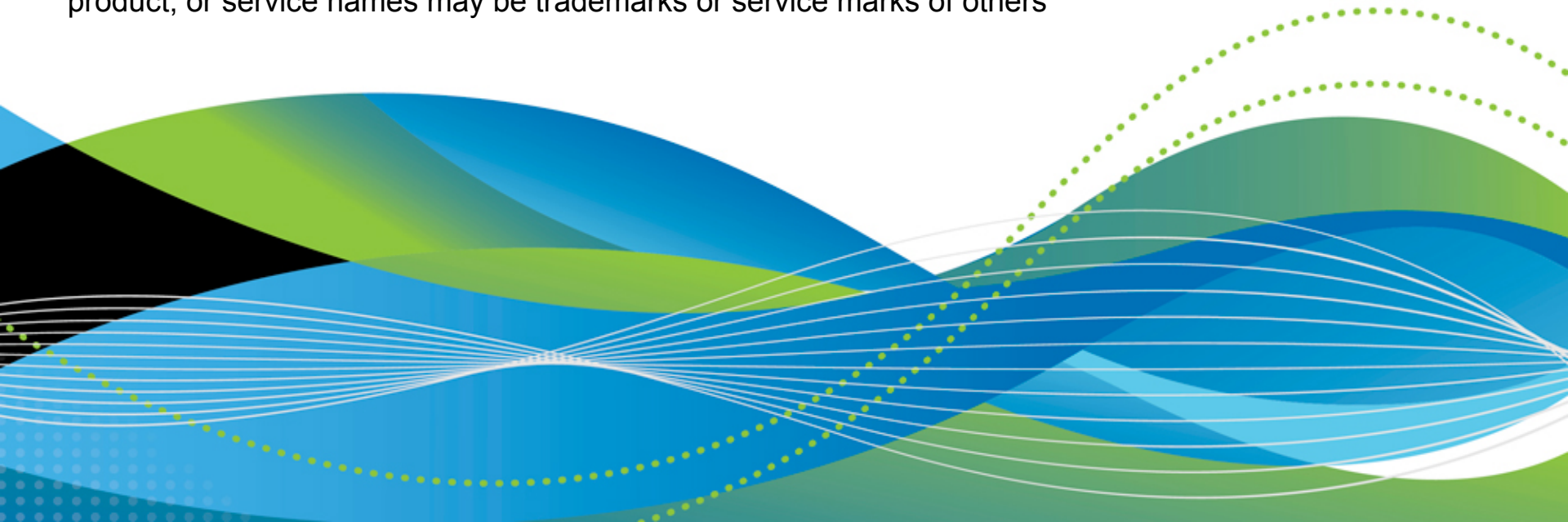
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IBM

13 March 2012  
Session #: 10438

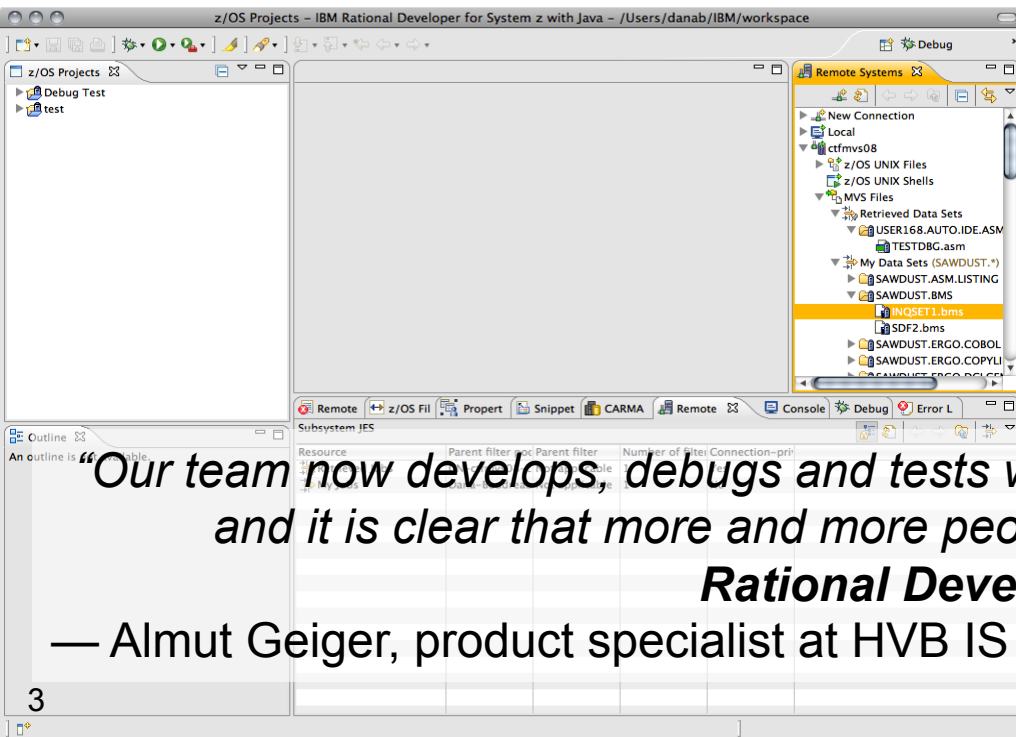


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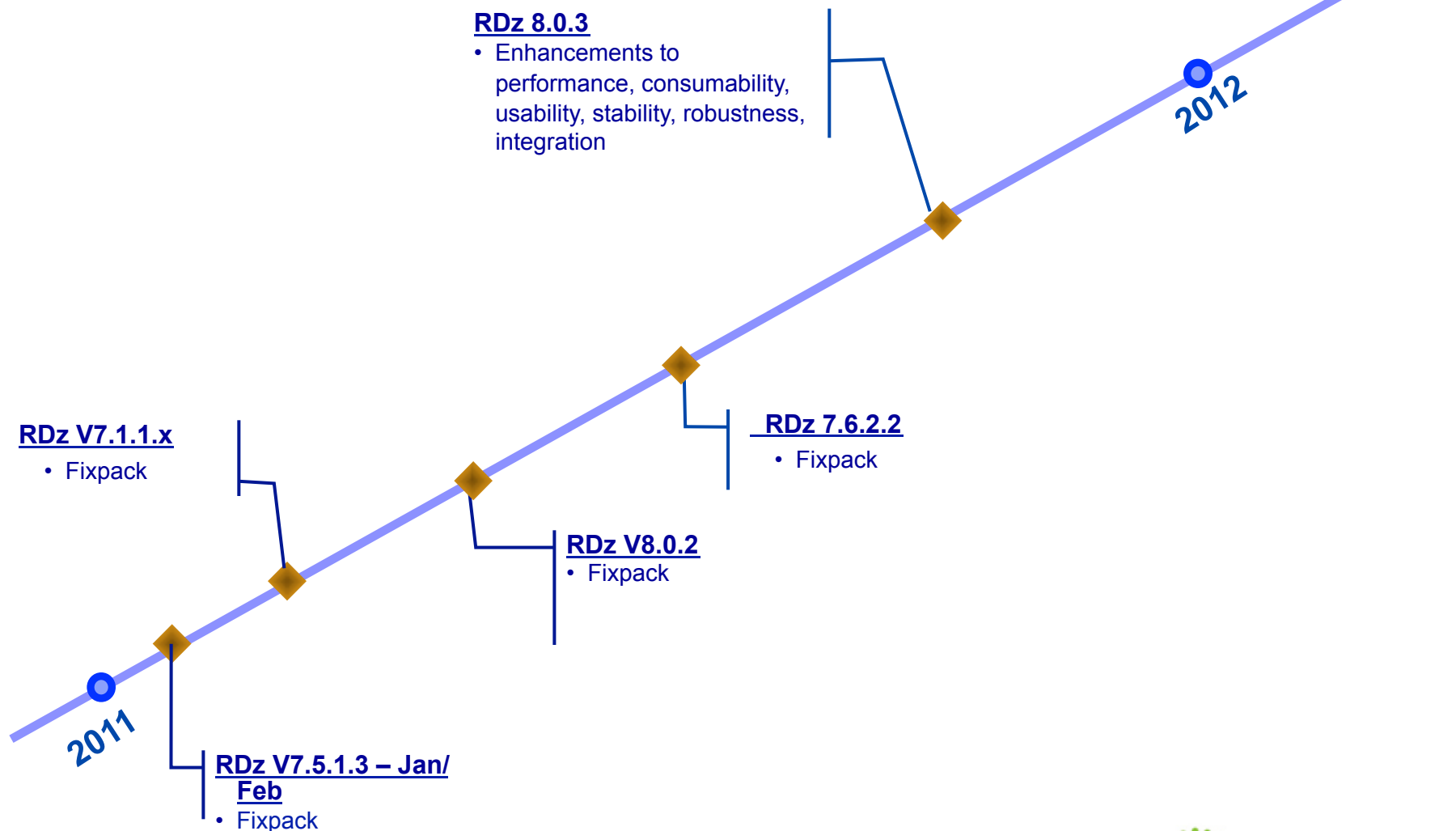
# RDz 8.0.3 ....



*“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

# Rational Developer for System z Roadmap Themes



## Performance and Scalability

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

# Host Install and Customization panels

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

## •Setup Work Flow

```

Session A - [32 x 80]
File Edit View Communication Actions Window Help

Rational Developer for System z - Primary Menu

Option ==>

Select Primary Customization Menus
C Product Customization

Select after workflow configuration jobs have been run
I Installation verification
    
```

```

File Edit View Communication Actions Window Help
Rational Developer for System z V8 - Work Flow
Command ==>

The Work Items are listed in the suggested order of execution.
To Generate work items, select G (Generate configuration jobs)
under the main RDZ configuration panel.

Select the item you want to work with:

A Action Item E or S EDIT B Browse C Mark as Completed L Browse Action Log

Work Item      Type      Status      Authority/Action
- FEKCSSET      Command   Pending     Systems Programmer
- FEKCOPY       Command   Pending     Systems Programmer
- APF           PARMLIB   Pending     Systems Programmer
- LINKLIST      PARMLIB   Pending     Systems Programmer
- COMMDXXX      PARMLIB   Pending     Systems Programmer
- BPXPRMXX      PARMLIB   Pending     Systems Programmer
- FEJJCNFG      PARMLIB   Pending     Systems Programmer
- JMON          PROCLIB   Pending     Systems Programmer
- RSED          PROCLIB   Pending     Systems Programmer
- LOCKD         PROCLIB   Pending     Systems Programmer
- RSEDEV        rsed.envvars Pending     Systems Programmer
- ISPFCONF      ISPF.conf Pending     Systems Programmer
- RACFINIT      RACF      Pending     RACF Administrator
- USER         RACF      Pending     RACF Administrator
- DATASET       RACF      Pending     RACF Administrator
- STC           RACF      Pending     RACF Administrator
- JESCMDS       RACF      Pending     RACF Administrator
- SERVER        RACF      Pending     RACF Administrator
- PROGCTLM      RACF      Pending     RACF Administrator
- PSTICKET      RACF      Pending     RACF Administrator
- PROGCTLU      RACF      Pending     RACF Administrator
- CARMAYDEF     Command   Pending     CARMA Administrator
- CARMAYMSG     Command   Pending     CARMA Administrator
- CARMAYSTR     Command   Pending     CARMA Administrator
- CARMACRA      CRASRV.property Pending     CARMA Administrator
- CARMCNFE      crastart.endev Pending     CARMA administrator

***** Bottom of data *****
    
```

```

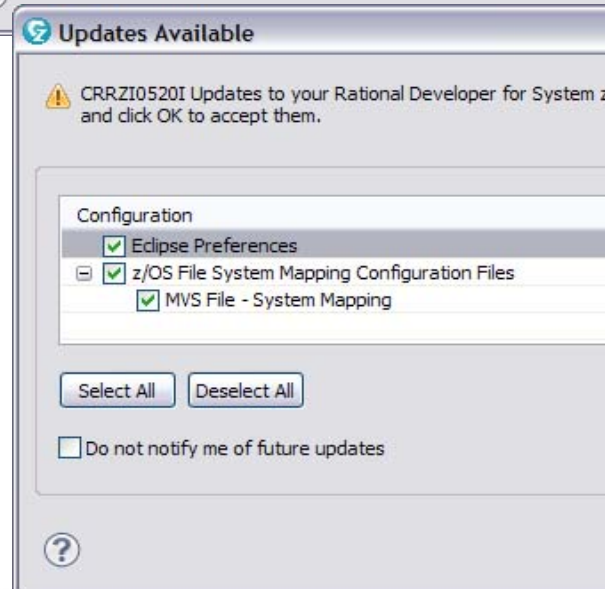
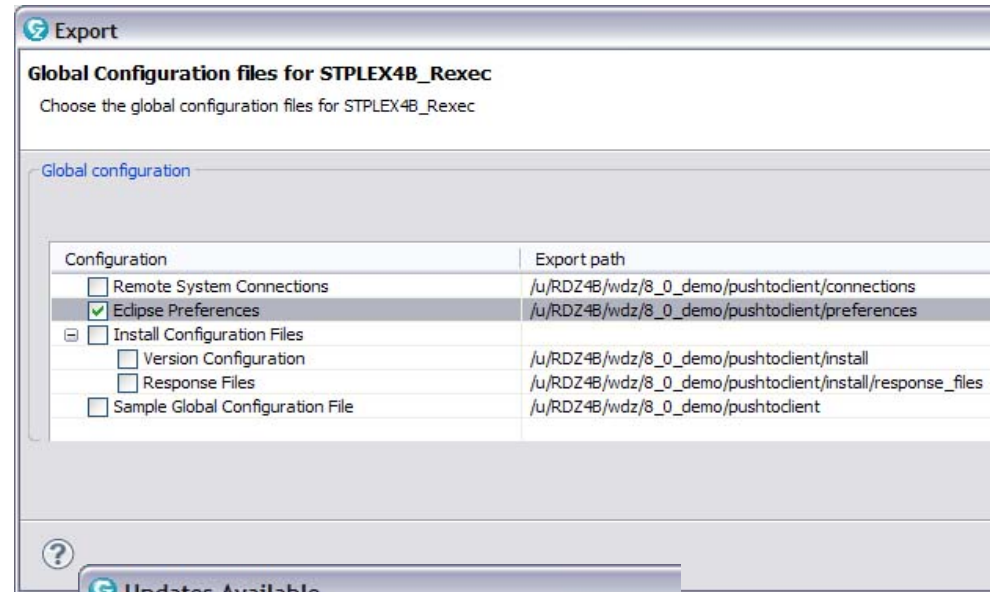
... problem analysis

22/045
pool TCP51046 and port 23
Microsoft Office Document Image Writer on Micros
    
```



# RDz 8.0.1 Push to Client - Configuration Files

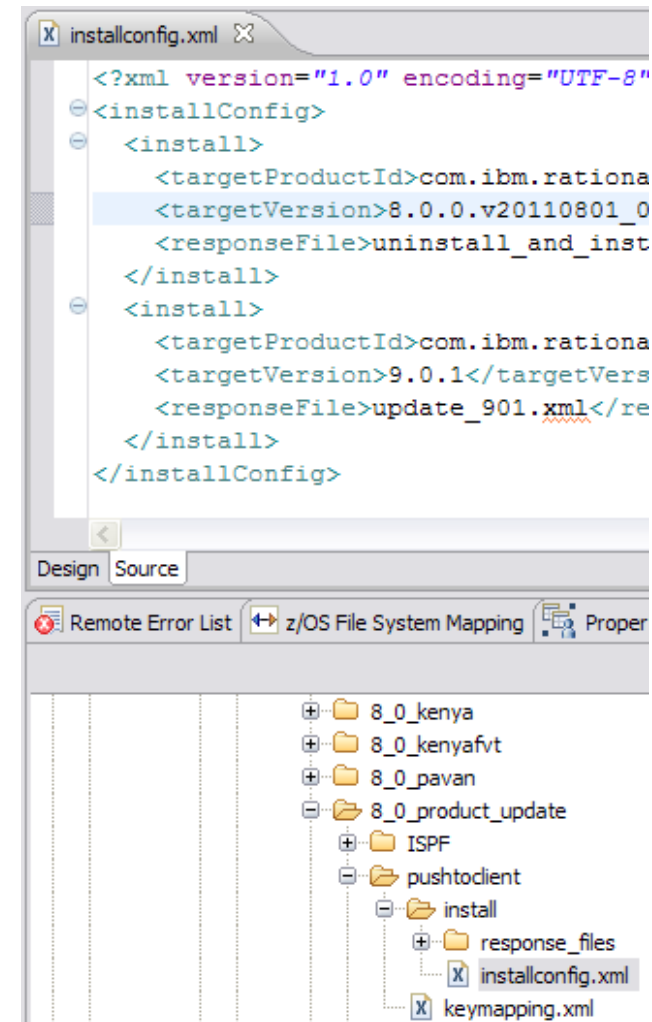
- An Export Wizard – to help one person – preferably an Admin to configure various settings on RDz client and upload it to a central location.
  - Settings are grouped by function into configuration files such as remote connections or system mappings.
  - The export wizard allows the administrator to 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.





# 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

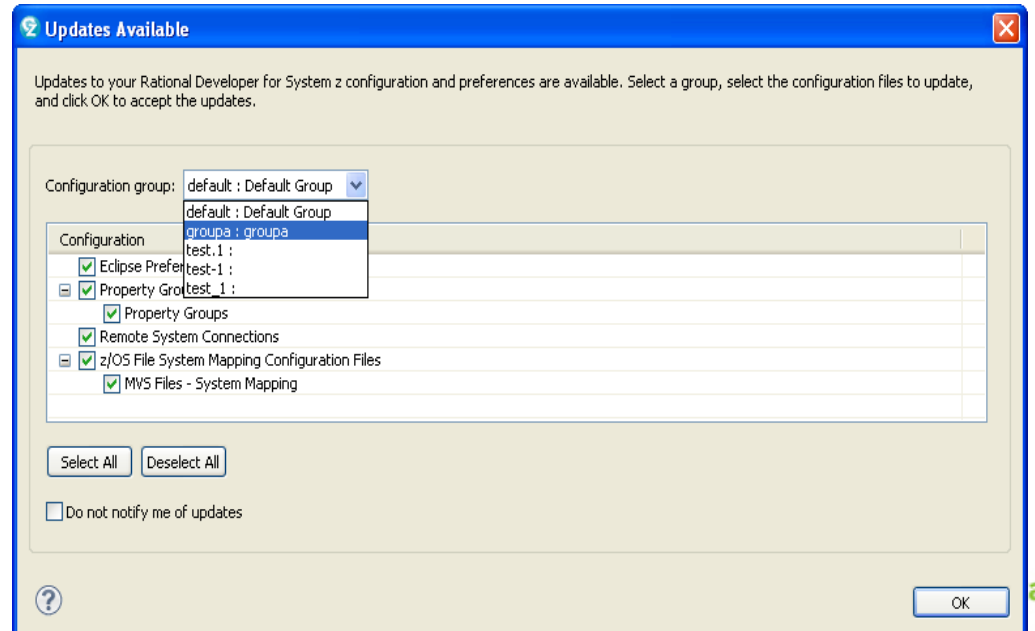
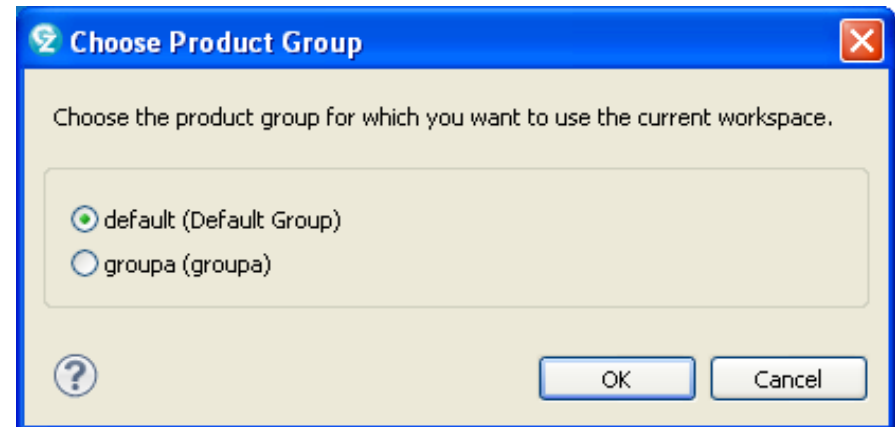
- Allow Menu Manager preferences and Data Connections to be part of the configurations that can be “pushed” to the client.
- Allow “Group” based configurations
  - ▶ RDz 801 configuration management is one size fits all
  - ▶ Shops have various users working on specific projects with each project having 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

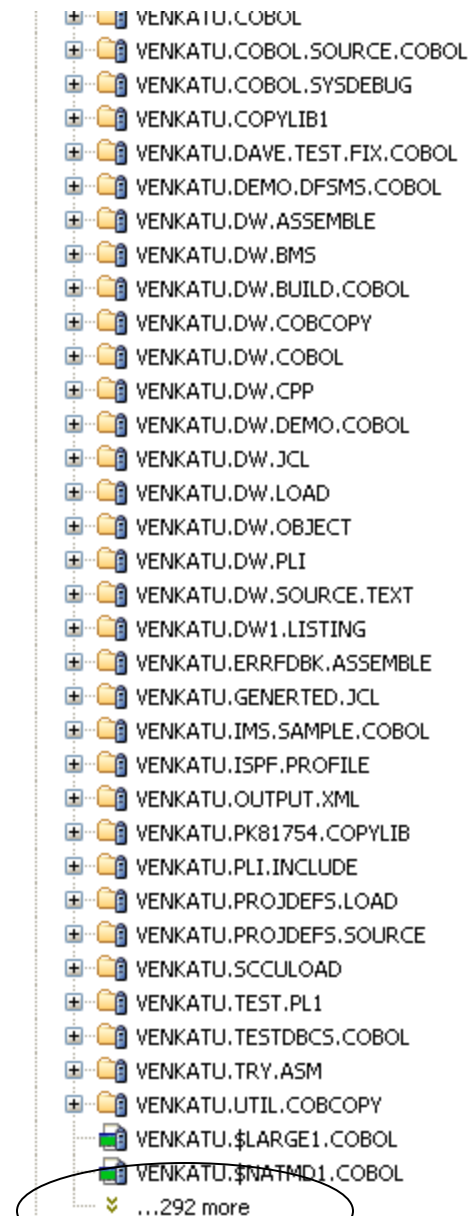
Updates to Configurations dialog is presented to show what configuration the user would get when part of different groups

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



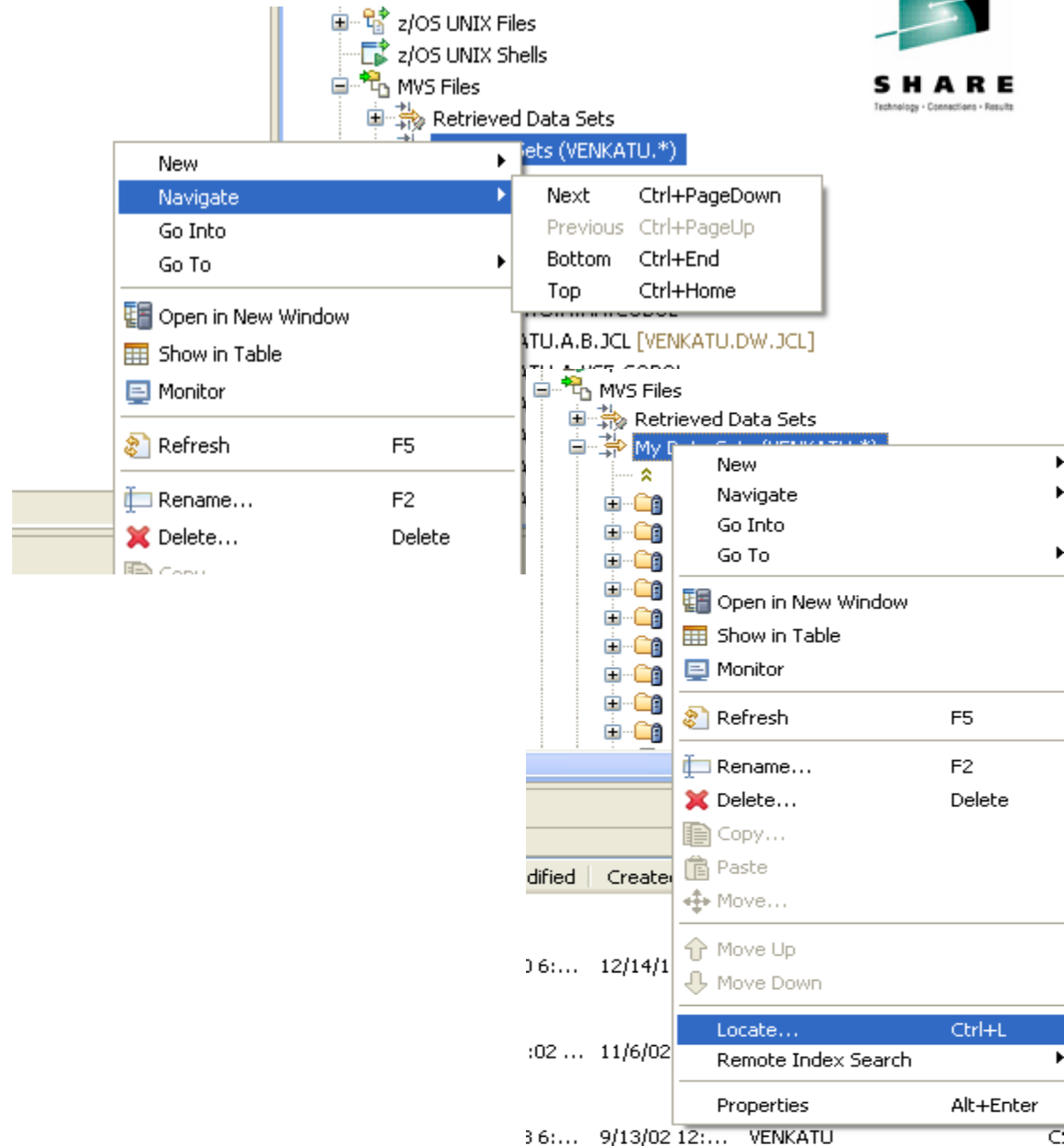
# Large filter handling

- 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



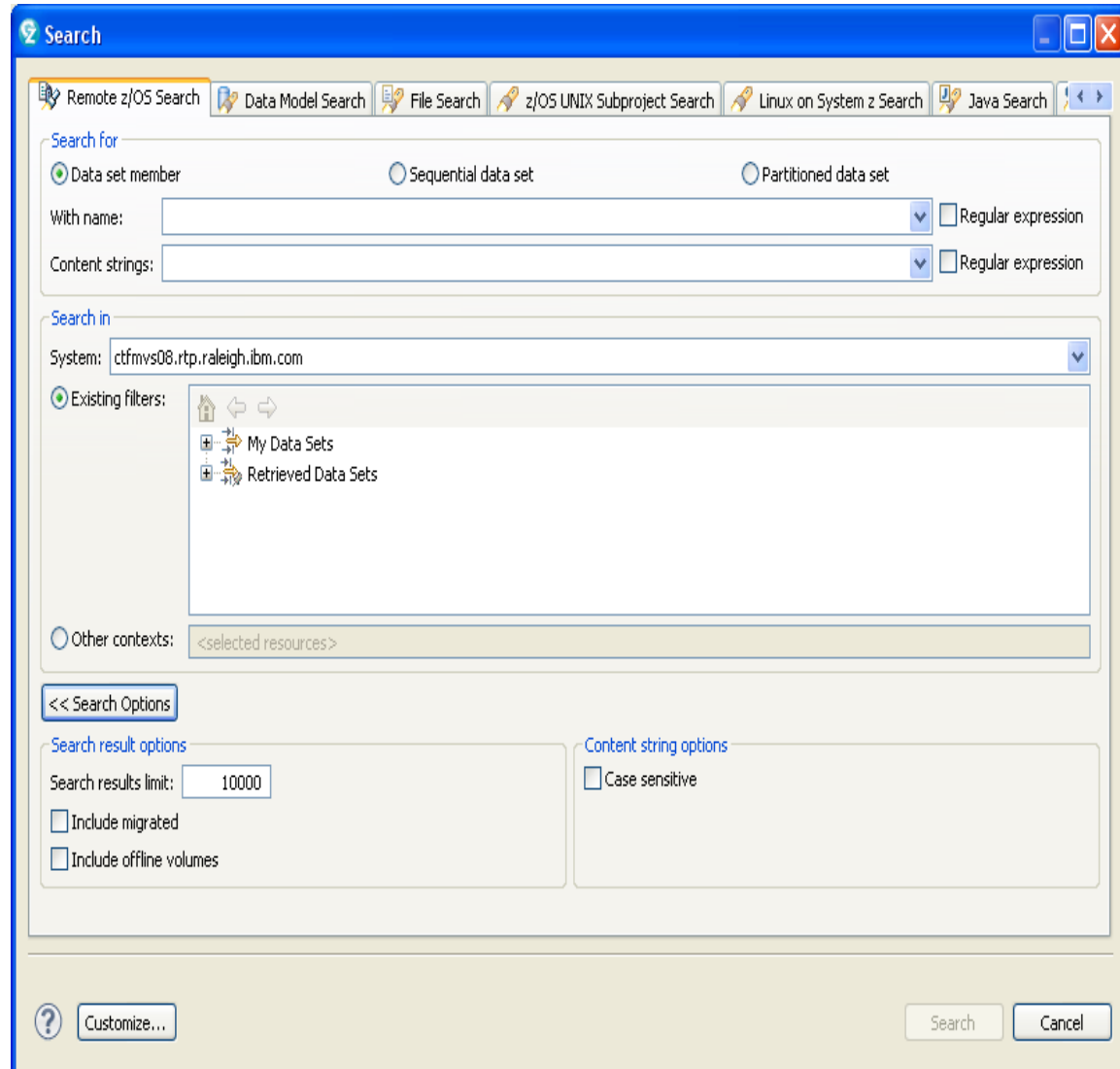
# Large filter handling

- 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”



# 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

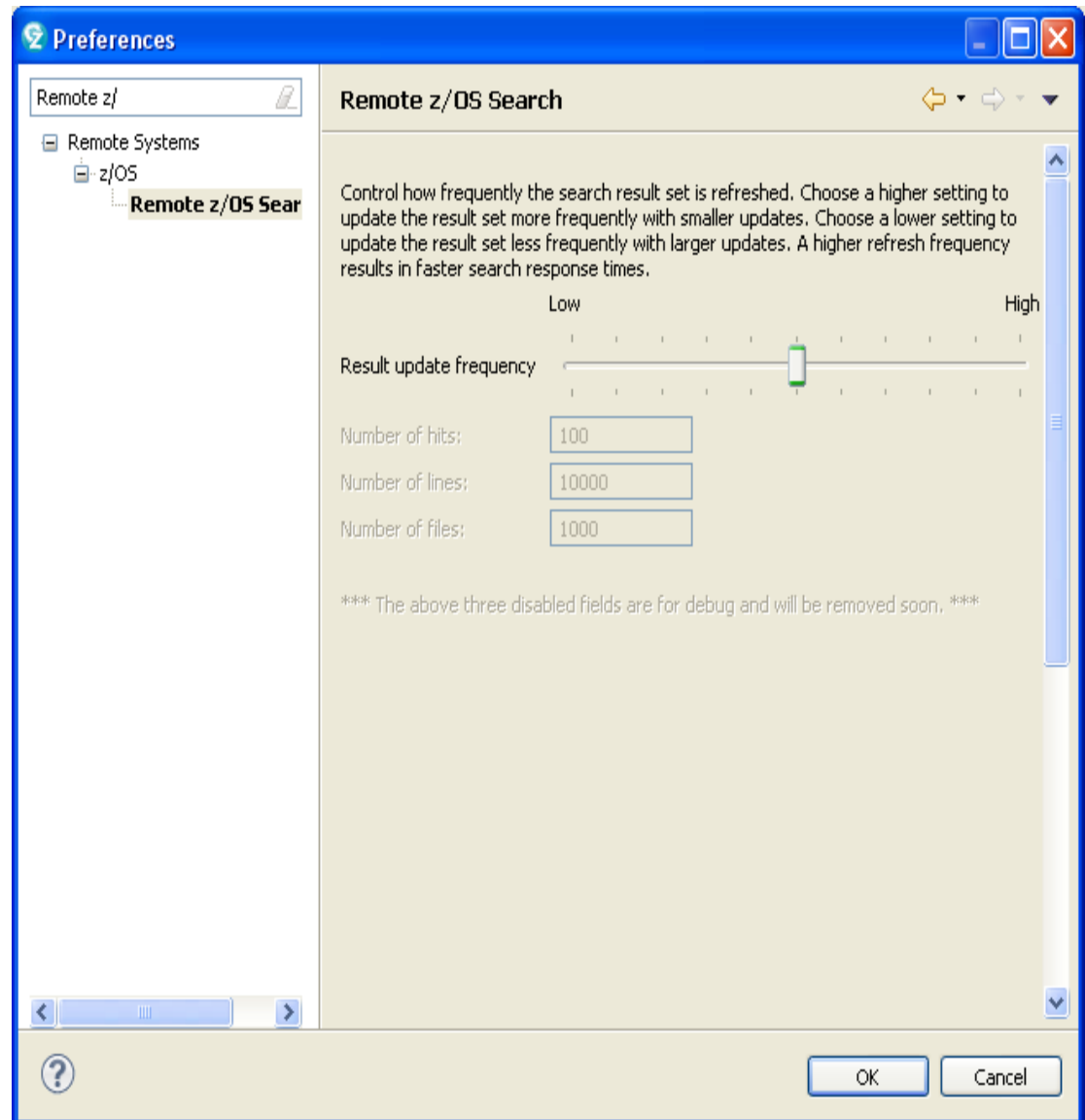


The screenshot shows the 'Search' dialog box with the 'Remote z/OS Search' tab selected. The 'Search for' section has three radio buttons: 'Data set member' (selected), 'Sequential data set', and 'Partitioned data set'. Below these are text boxes for 'With name:' and 'Content strings:', each with a 'Regular expression' checkbox. The 'Search in' section has a 'System:' dropdown set to 'ctfmvs08.rtp.raleigh.ibm.com'. Below this is an 'Existing filters' section with a tree view showing 'My Data Sets' and 'Retrieved Data Sets'. There is also an 'Other contexts:' field with '<selected resources>'. A '<< Search Options' button is present. The 'Search result options' section includes a 'Search results limit:' field set to '10000', and checkboxes for 'Include migrated' and 'Include offline volumes'. The 'Content string options' section has a 'Case sensitive' checkbox. At the bottom are 'Customize...', 'Search', and 'Cancel' buttons.



# 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



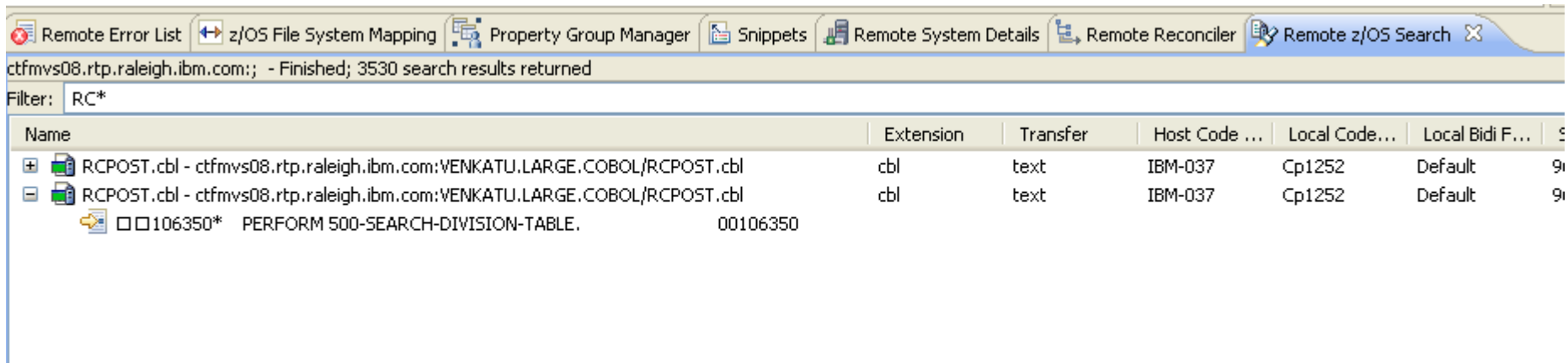
# z/OS Remote Search enhancements

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

ctfmvs08.rtp.raleigh.ibm.com: - Finished; 3530 search results returned							
filter: <input type="text"/>							
Name	Extension	Transfer	Host Code ...	Local Code...	Local Bidi F...	Size	Last Modifi
A.cbl - ctfmvs08.rtp.raleigh.ibm.com:VENKATU.BUILD1.COBO/A.cbl	cbl	text	IBM-037	Cp1252	Default	4 KB	10/14/10 7
BCTS3200.cbl - ctfmvs08.rtp.raleigh.ibm.com:VENKATU.CICS.COBO/BCTS3200.cbl	cbl	text	IBM-037	Cp1252	Default	26 KB	2/27/09 2:5
BCTS3200.cbl - ctfmvs08.rtp.raleigh.ibm.com:VENKATU.COMPTTEST.COBO/BCTS3200.cbl	cbl	text	IBM-037	Cp1252	Default	42 KB	2/27/09 2:5
BKBCRE.cbl - ctfmvs08.rtp.raleigh.ibm.com:VENKATU.UTIL.COBO/BKBCRE.cbl	cbl	text	IBM-037	Cp1252	Default	22 KB	5/7/07 12:0
CBL11KL.cbl - ctfmvs08.rtp.raleigh.ibm.com:VENKATU.LARGE.COBO/CBL11KL.cbl	cbl	text	IBM-037	Cp1252	Default	874 KB	3/11/11 3:3
CBL11KL.cbl - ctfmvs08.rtp.raleigh.ibm.com:VENKATU.LARGE.COBO/CBL11KL.cbl	cbl	text	IBM-037	Cp1252	Default	874 KB	3/11/11 3:3
CBL21KL.cbl - ctfmvs08.rtp.raleigh.ibm.com:VENKATU.LARGE.COBO/CBL21KL.cbl	cbl	text	IBM-037	Cp1252	Default	1,746 KB	3/11/11 3:3
CBL21KL.cbl - ctfmvs08.rtp.raleigh.ibm.com:VENKATU.LARGE.COBO/CBL21KL.cbl	cbl	text	IBM-037	Cp1252	Default	1,746 KB	3/11/11 3:3
CBL21KL.cbl - ctfmvs08.rtp.raleigh.ibm.com:VENKATU.LARGE.COBO/CBL21KL.cbl	cbl	text	IBM-037	Cp1252	Default	1,746 KB	3/11/11 3:3
CBL21KL.cbl - ctfmvs08.rtp.raleigh.ibm.com:VENKATU.LARGE.COBO/CBL21KL.cbl	cbl	text	IBM-037	Cp1252	Default	1,746 KB	3/11/11 3:3
CBL5KL.cbl - ctfmvs08.rtp.raleigh.ibm.com:VENKATU.LARGE.COBO/CBL5KL.cbl	cbl	text	IBM-037	Cp1252	Default	410 KB	3/11/11 3:3
CBL5KL.cbl - ctfmvs08.rtp.raleigh.ibm.com:VENKATU.LARGE.COBO/CBL5KL.cbl	cbl	text	IBM-037	Cp1252	Default	410 KB	3/11/11 3:3
CLSTCOMM.cbl - ctfmvs08.rtp.raleigh.ibm.com:VENKATU.BUILD1.COBO/CLSTCOMM.cbl	cbl	text	IBM-037	Cp1252	Default	7 KB	7/19/10 5:1
DB2TEST.cbl - ctfmvs08.rtp.raleigh.ibm.com:VENKATU.UTIL.COBO/DB2TEST.cbl	cbl	text	IBM-037	Cp1252	Default	1 KB	2/12/09 3:4

# z/OS Remote Search enhancements

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



Remote Error List | z/OS File System Mapping | Property Group Manager | Snippets | Remote System Details | Remote Reconciler | Remote z/OS Search

ctfmvs08.rtp.raleigh.ibm.com; - Finished; 3530 search results returned

Filter: RC\*

Name	Extension	Transfer	Host Code ...	Local Code...	Local Bidi F...	S
RCPOST.cbl - ctfmvs08.rtp.raleigh.ibm.com:VENKATU.LARGE.COBOL/RCPOST.cbl	cbl	text	IBM-037	Cp1252	Default	9
RCPOST.cbl - ctfmvs08.rtp.raleigh.ibm.com:VENKATU.LARGE.COBOL/RCPOST.cbl	cbl	text	IBM-037	Cp1252	Default	9
□□106350* PERFORM 500-SEARCH-DIVISION-TABLE.			00106350			

# 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 USING 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  
    dcl theAnswer char(16) varying  
        name or Q to quit')  
        Reply( theAnswer );
```

```
3  *process prefix(nofofl);  
4  
5  /* MODULE NAME  HELLOAPP.PLI */  
31 helloapp: proc() options(main);  
32  
33 Dcl theAnswer char(16) varying;  
34  
35 Do Forever;  
36  
37   Display('Enter a name or Q to quit')
```

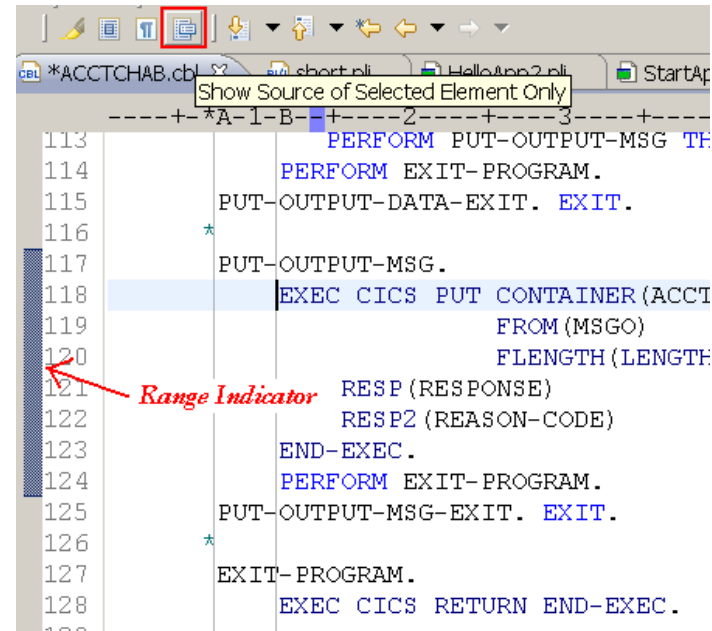
# Closing feature gap between COBOL and PL/I Editors and Java Editor



- 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

Toggle Mark Occurences

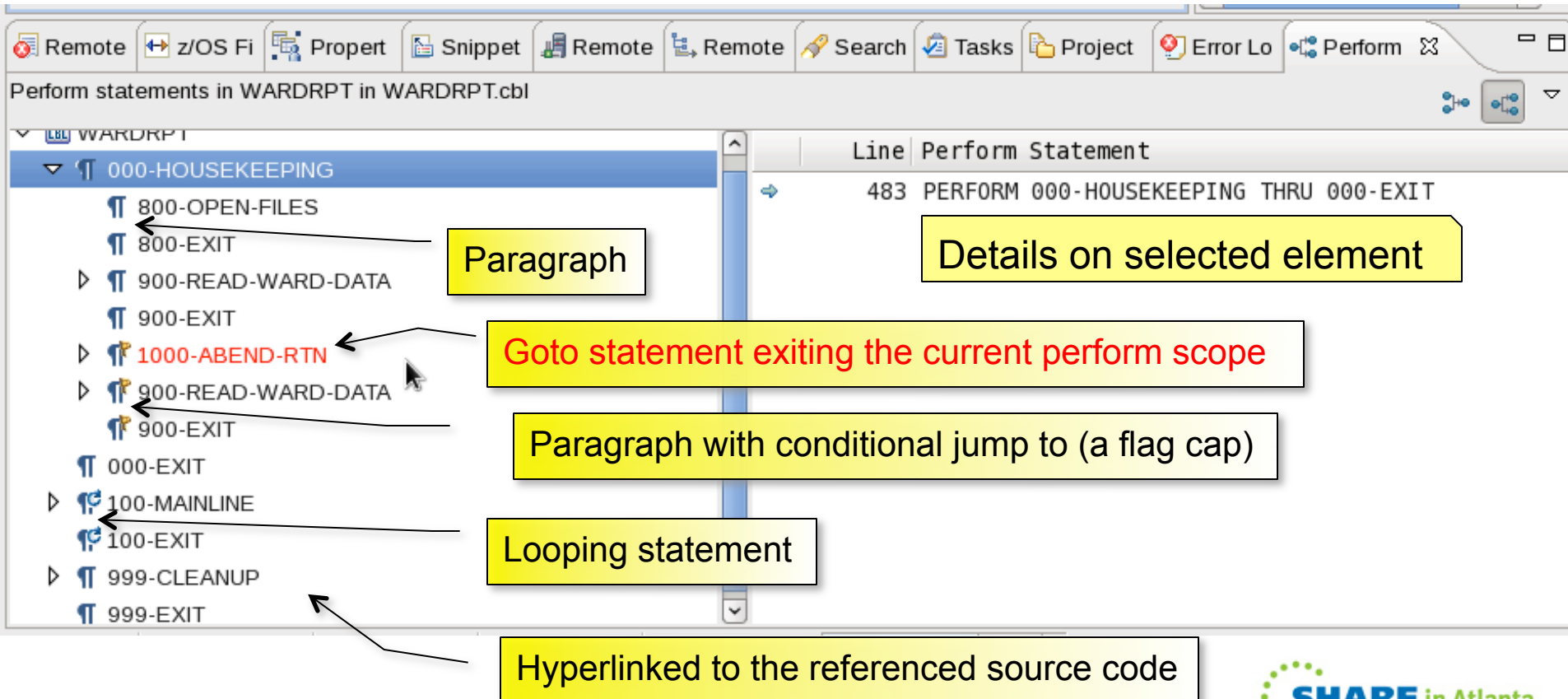
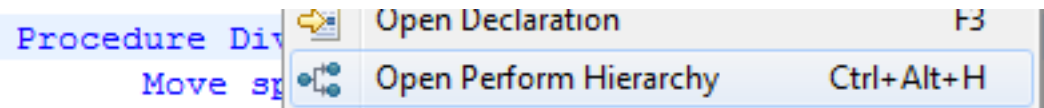
Modified variables are gold

Read variables are gray

```
-----*A-1-B-----2-----3-----4-----5-----6-----7--|-----8
044390              SIZE-DORMANT-RETURNS-USED (SBTOT-SUBSC) +
044400              WEIGHT1-CHECK-AMOUNT-PACKED.
044410
044420      IF BAD-COLR-RECOVERIES
044430          IF RDZEDIT-TRAN-CODE EQUAL 755
044440              COMPUTE SIZE-BAD-COLR-RECOVERIES (SBTOT-SUBSC) =
044450                  SIZE-BAD-COLR-RECOVERIES (SBTOT-SUBSC) +
044460                  RDZEDIT-ITEM-AMOUNT-PACKED
044470          ELSE
044480              COMPUTE SIZE-BAD-COLR-RECOVERIES (SBTOT-SUBSC) =
044490                  SIZE-BAD-COLR-RECOVERIES (SBTOT-SUBSC) -
044500                  RDZEDIT-ITEM-AMOUNT-PACKED.
044510
044520      IF CATALOG001-COST
044530          IF RDZEDIT-TRAN-CODE EQUAL 741
044540              COMPUTE SIZE-CATALOG001-COST (SBTOT-SUBSC) =
044550                  SIZE-CATALOG001-COST (SBTOT-SUBSC) +
044560                  RDZEDIT-ITEM-AMOUNT-PACKED
044570          ELSE
044580              COMPUTE SIZE-CATALOG001-COST (SBTOT-SUBSC) =
044590                  SIZE-CATALOG001-COST (SBTOT-SUBSC) -
044600                  RDZEDIT-ITEM-AMOUNT-PACKED
```

# Perform Hierarchy enhancements

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



Perform statements in WARDRPT in WARDRPT.cbl

▼ WARDRPT

- ▼ 000-HOUSEKEEPING
  - 800-OPEN-FILES
  - 800-EXIT
  - 900-READ-WARD-DATA
  - 900-EXIT
  - 1000-ABEND-RTN
  - 900-READ-WARD-DATA
  - 900-EXIT
  - 000-EXIT
  - 100-MAINLINE
  - 100-EXIT
  - 999-CLEANUP
  - 999-EXIT

Line | Perform Statement

483 PERFORM 000-HOUSEKEEPING THRU 000-EXIT

Paragraph

Details on selected element

Goto statement exiting the current perform scope

Paragraph with conditional jump to (a flag cap)

Looping statement

Hyperlinked to the referenced source code



# 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.

**Task Tags**

Strings indicating tasks in COBOL comments.

Tag	Priority
FIXME	High
TODO	Normal

☒ Case sensitive task tag names

Buttons: New..., Edit..., Remove, Restore Defaults, Apply, OK, Cancel

44

45 `/* TODO: CLEANUP */`

46 `Do Forever;`

47

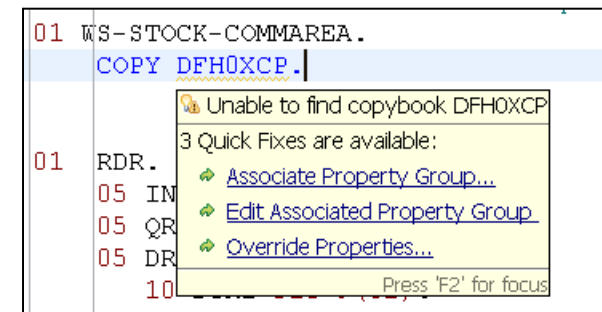
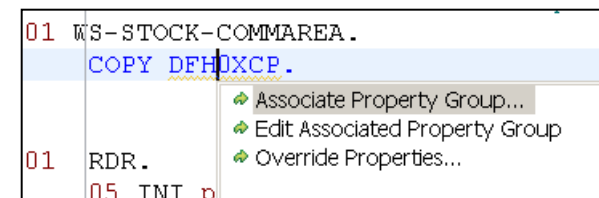
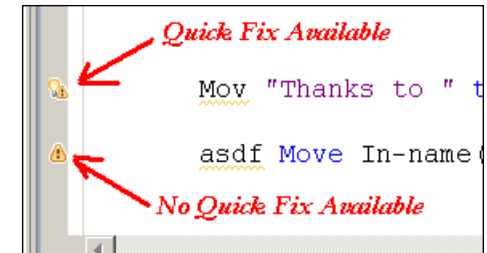
Tasks Remote Error List z/OS File System Mappi Property Group Manag

4 items

✓	!	Description	Resource	Path	Location	Type
		TODO: CLEANUP	HelloApp.pli	/pLI Example/pli	line 45	PL/I Task
		TODO	ACCTCHAB....	/Demo COBOL ...	line 81	COBOL Task
	!	FIXME	... ACCTCHAB....	/Demo COBOL ...	line 83	COBOL Task
<input type="checkbox"/>		Compute In-Len =...	PrintApp.cbl	/COBOL EXAMP...	line 76	Task

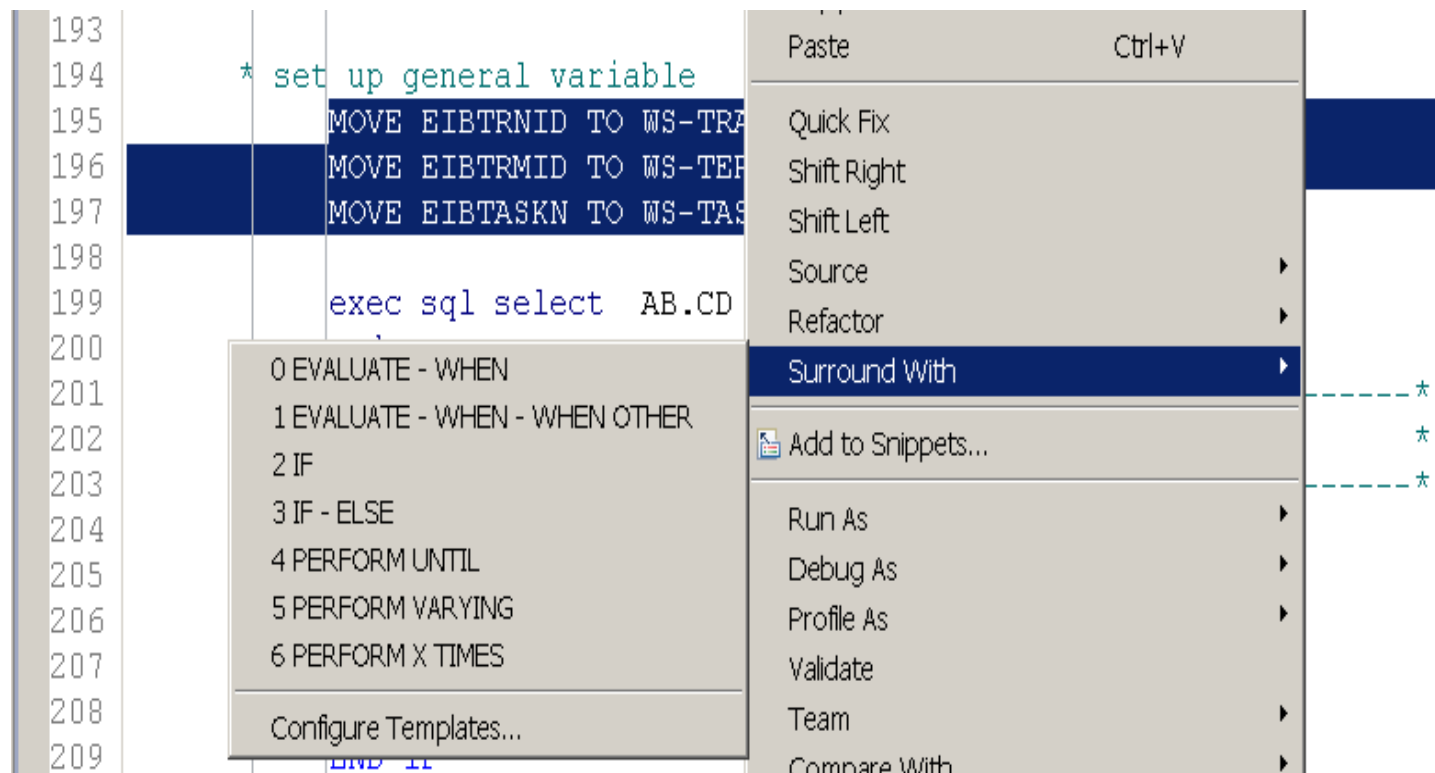
# Quick fixes

- ▶ 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.



# 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

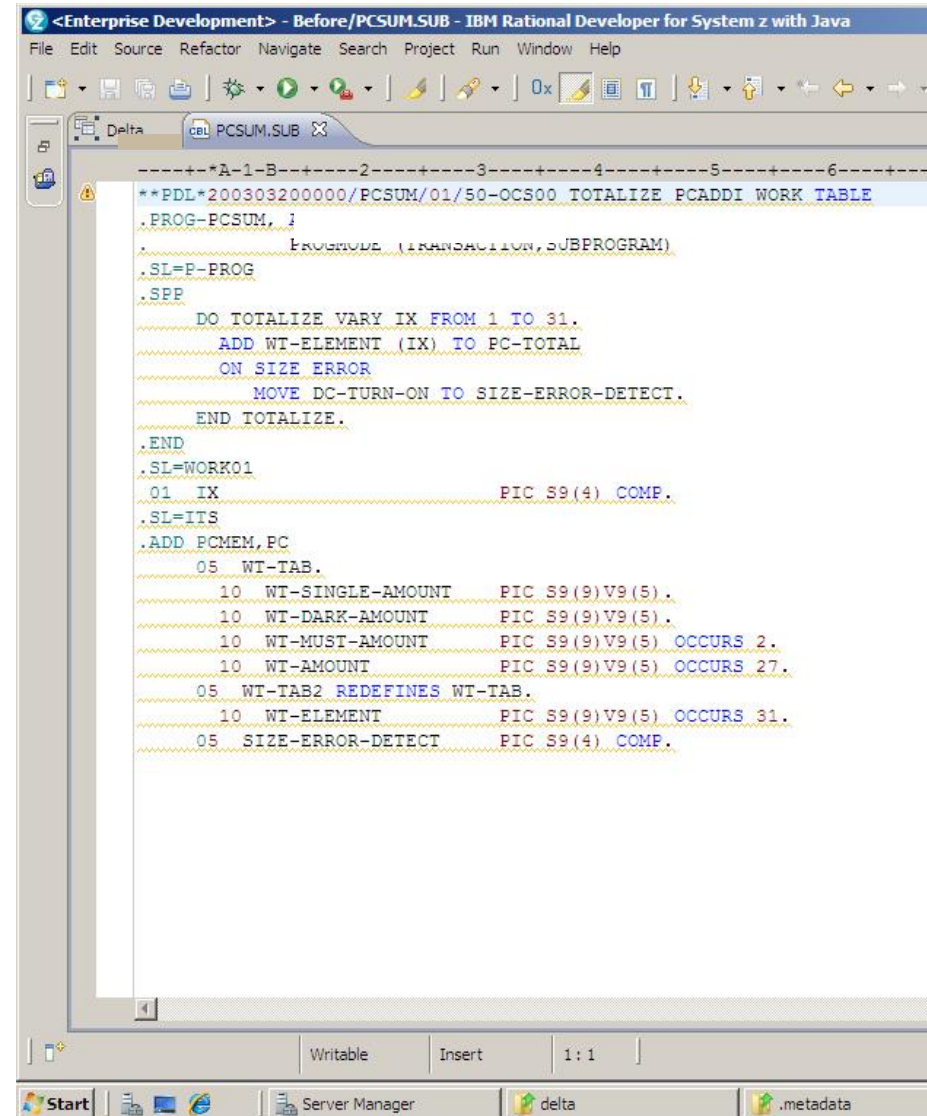
# Preprocessor integration with editors – pre 8.0.3



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

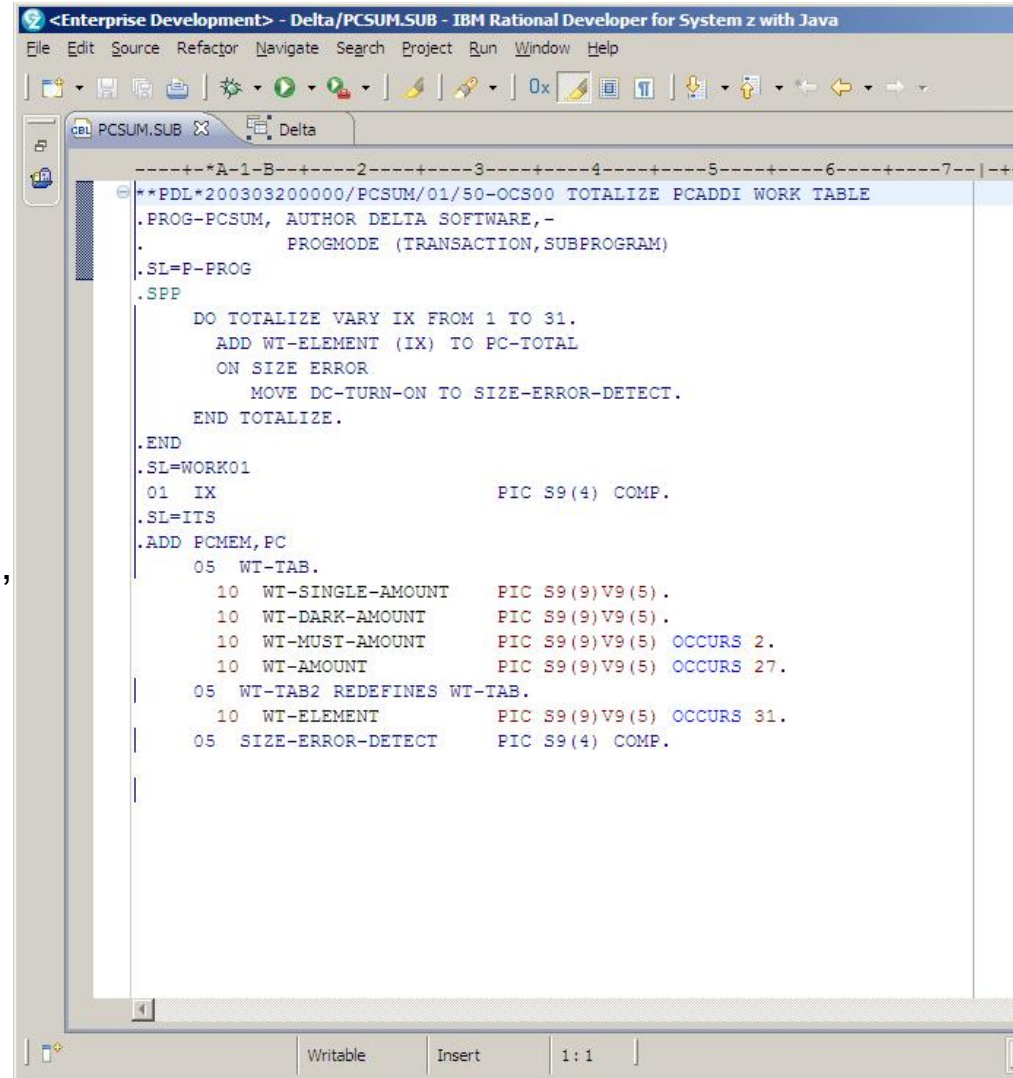
The syntax parsers of the COBOL, PL/I, and System z LPEX Editors now support integration with preprocessor config.

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.



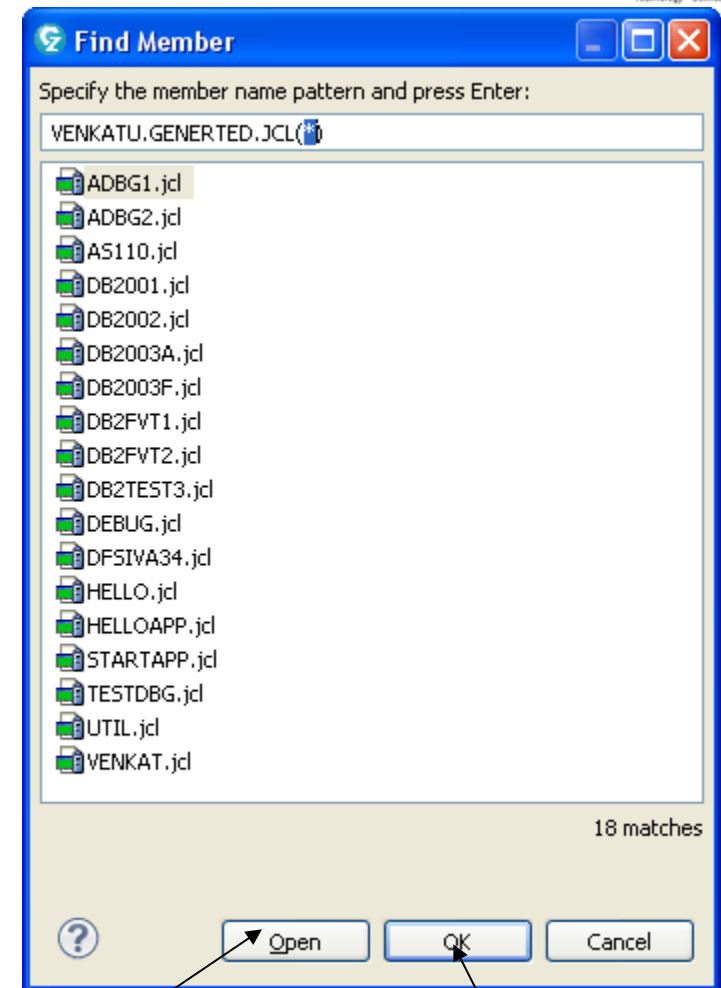
```
<Enterprise Development> - Delta/PCSUM.SUB - IBM Rational Developer for System z with Java
File Edit Source Refactor Navigate Search Project Run Window Help

PCSUM.SUB Delta
-----1-----2-----3-----4-----5-----6-----7-----
**PDL*200303200000/PCSUM/01/50-OCS00 TOTALIZE PCADDI WORK TABLE
.PROG-PCSUM, AUTHOR DELTA SOFTWARE,-
        PROGMODE (TRANSACTION,SUBPROGRAM)
.SL=P-PROG
.SPP
        DO TOTALIZE VARY IX FROM 1 TO 31.
          ADD WT-ELEMENT (IX) TO PC-TOTAL
          ON SIZE ERROR
            MOVE DC-TURN-ON TO SIZE-ERROR-DETECT.
        END TOTALIZE.
.END
.SL=WORK01
01 IX                                PIC S9(4) COMP.
.SL=ITS
.ADD PCMEM,PC
05 WT-TAB.
10 WT-SINGLE-AMOUNT    PIC S9(9)V9(5).
10 WT-DARK-AMOUNT     PIC S9(9)V9(5).
10 WT-MUST-AMOUNT     PIC S9(9)V9(5) OCCURS 2.
10 WT-AMOUNT          PIC S9(9)V9(5) OCCURS 27.
05 WT-TAB2 REDEFINES WT-TAB.
10 WT-ELEMENT         PIC S9(9)V9(5) OCCURS 31.
05 SIZE-ERROR-DETECT  PIC S9(4) COMP.
```



# 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...

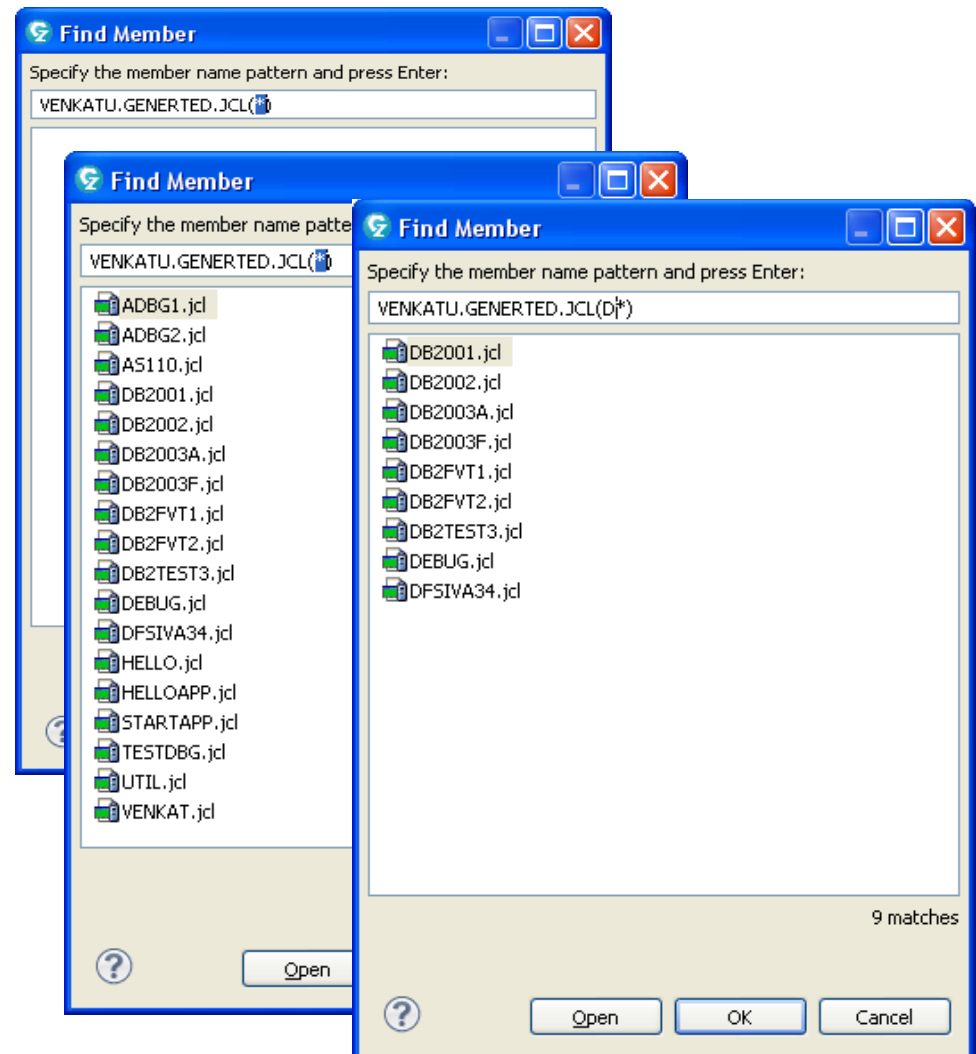


Opens the member in editor

Highlights in Tree view

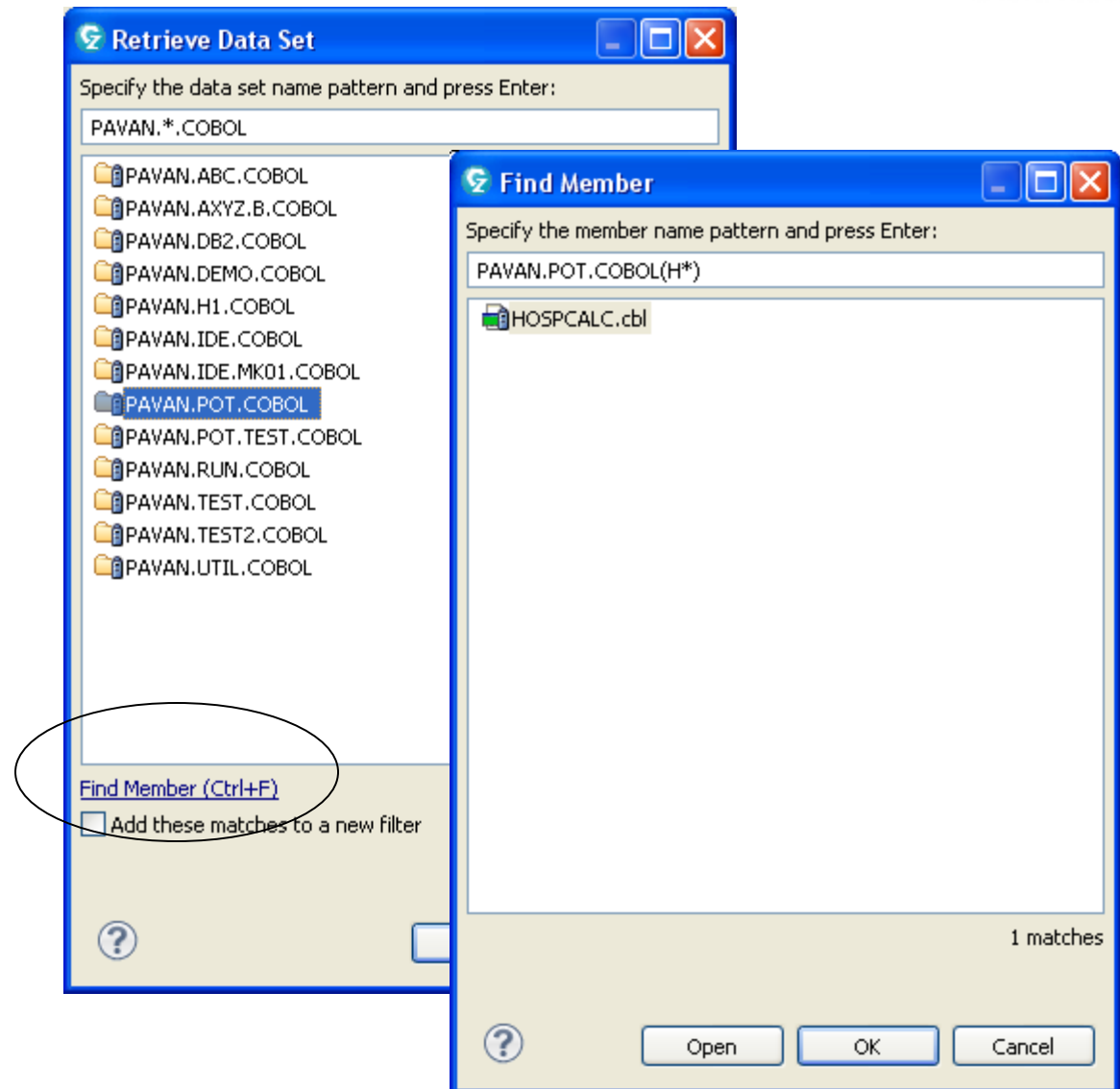
# Find Member – Data set member access w/o filter

- 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



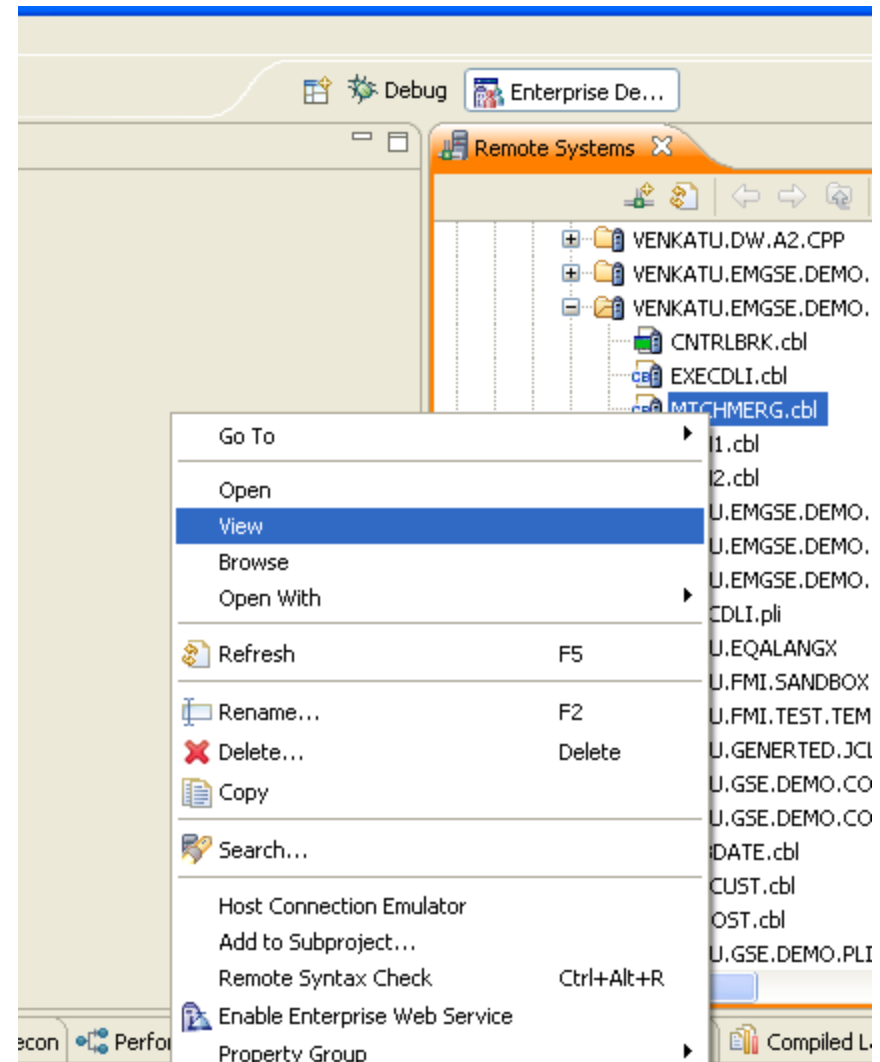
# Find Member – Data set member access w/o filter

- 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



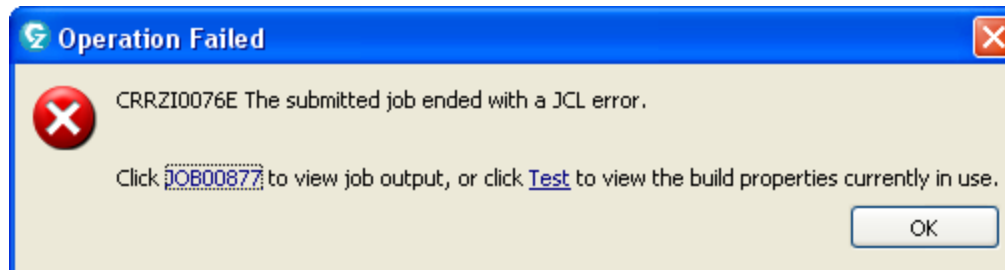
# View Capability

- 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 ..



# 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:



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  - Developing COBOL, PL/I, Assembler, and C++ applications
    - Transitioning from 3270 ISPF to Rational Developer
  - Becoming familiar with zIDE perspectives and views
    - Remote System Explorer
    - z/OS Projects perspective
    - Enterprise Development perspective
    - JES Subsystem
    - Outline view
    - Snippets view
    - z/OS Integrated Development Environment (zIDE)
      - Remote Systems view**
      - z/OS Projects view

Developing > Development

Rational Developer

## Remote Systems view

This topic describes the Remote Systems view.

Table 1. Remote Systems view icons

Icon	Description
	Active project
	Target project
	Target project
	Target project
	Target project
	Active project
	Target project

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



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# 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 <b>Retrieve Data Set</b> or <b>Retrieve Job</b> action		The <b>My Search Queries</b> folder in the MVS Files subsystem



















# Icon descriptions - projects

## z/OS Projects or Enterprise Projects view

This topic describes icons commonly seen in the z/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 <b>CARMA Repositories</b> 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

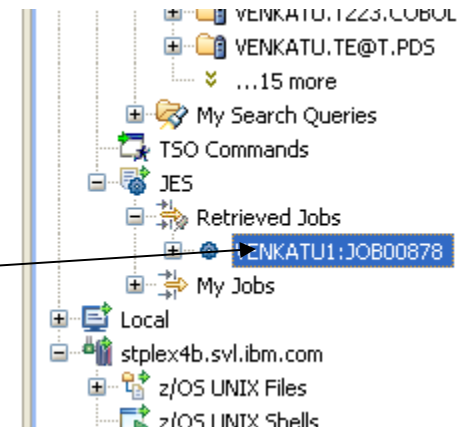
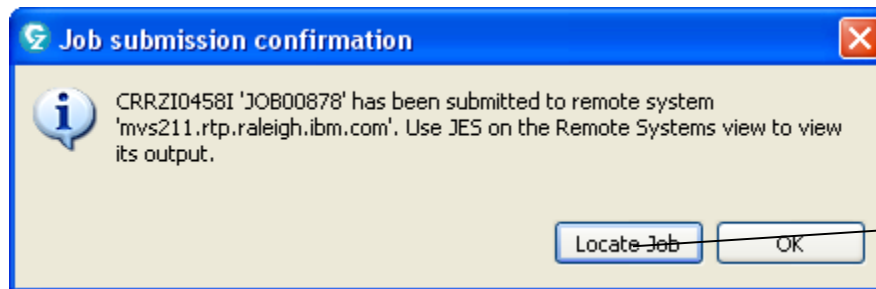
The following are icons commonly seen in the CARMA Fields Table view.

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

Enterprise Development - \\FttRemoteTempFiles\PLEX4B00\MEL\MEL.ASMEXIT.ADATA1.ASSEMBLE\RUNASM.asm - IBM Rational Developer for zEnterprise

File Edit Navigate Search Project API Samples Internal API Samples Run Window Help

Enterprise Projects

- PROJEFB04
- RMTIDE011
- RMTPROJ1
- RMTPROJINC
- SIMPLECOB
- STARTAPP
- TED
- TESTPROJ
  - TESTPROJA [PLEX4B00]
    - MEL.A001.ASSEMBLE(IAA0001).asm
    - MEL.ASMEXIT.ADATA1.ASSEMBLE(ASMAXFLU...)
    - MEL.ASMEXIT.ADATA1.ASSEMBLE(RDZSRC...)
    - MEL.ASMEXIT.ADATA1.MACLIB(ASMAXDATA...)
  - TESTPROJB [PLEX4B00]
    - MEL.ASMEXIT.ADATA1.ASSEMBLE(RUNASM...)
  - TESTPROJ1
    - TESTPROJ1A [PLEX4B00]
    - TESTPROJ2 [Offline]
    - TESTPROJ2A [PLEX4B00]
      - MEL.A001.A0.XCOB1(HEY)
    - TESTPROJ3
      - TESTPROJ3A [PLEX4B00]
        - MEL.ASMEXIT.ADATA1.ASSEMBLE(JOHN2).asm
  - XFER
  - XFER2
  - XFER3
  - XFER4

Properties Outline

RDZ

- SAVE
- qT
- LOAD
- wto
- DELETE
- RETURN
- HLA\_Args
- HOB
- PlistLen
- Plist
- L\_Plist
- DDLen
- DDList
- L\_DDList
- AsmAddr

ASMTEST RUNASM.asm

```

Line 21      Column 29      Replace
-----1-----2-----3-----4-----5-----6-----
*****
* Test scaffold for RDZ-to-HLASM interface
*****
* Method:
* (1) Set up parm list.
* (2) For CMS, Set COMPSWT ON, Load ASMA90 (or Link or Attac
* (3) Call ASMA90
* (4) Check the return code
*****
* Simulate call from RDZ to HLASM
*****
RDZ          Print NoGen
RDZ          CSECT ,
RDZ          RMODE 24 (for testing; ANY normally)
RDZ          AMODE 24 (31 normally; 24 for testing)
* RDZ        AMODE 31
* RDZ        RMODE ANY
              SAVE (14,12),,*
              LR 12,15
              Using RDZ,12
              qT 13,RDZSave+4
              LA 0,R
              ST 0,8
              LR 13,0
*****
* Load and Call HLASM
    
```

Remote Systems

- MEL.ASMEXIT\*
  - MEL.ASMEXIT.ADATA1.ASMLIST
  - MEL.ASMEXIT.ADATA1.ASMOPT
  - MEL.ASMEXIT.ADATA1.ASSEMBLE
    - ASMASAMP.asm
    - ASMAXFLU.asm
    - ASMAXFMT.asm
    - JOHN2.asm
    - RDZ001.asm
    - RDZSRC.asm
    - RDZX.asm
    - RUNASM.asm
  - MEL.ASMEXIT.ADATA1.COBLIST
  - MEL.ASMEXIT.ADATA1.COBOLE
  - MEL.ASMEXIT.ADATA1.DECK
  - MEL.ASMEXIT.ADATA1.ILC.ASSEMBLE
  - MEL.ASMEXIT.ADATA1.ILC.C
  - MEL.ASMEXIT.ADATA1.ILC.SAVE11.C
  - MEL.ASMEXIT.ADATA1.JCL
  - MEL.ASMEXIT.ADATA1.LISTING
  - MEL.ASMEXIT.ADATA1.LOAD
  - MEL.ASMEXIT.ADATA1.MACLIB
  - MEL.ASMEXIT.ADATA1.MACLIB2
  - MEL.ASMEXIT.ADATA1.OBJECT
  - MEL.ASMEXIT.ADATA1.PDSE.LOAD
  - MEL.ASMEXIT.ADATA1.SAVE001.COBOLE
  - MEL.ASMEXIT.ADATA1.SAVE001.MACLIB
  - MEL.ASMEXIT.ADATA1.SAVE002.COBOLE

Remote Error

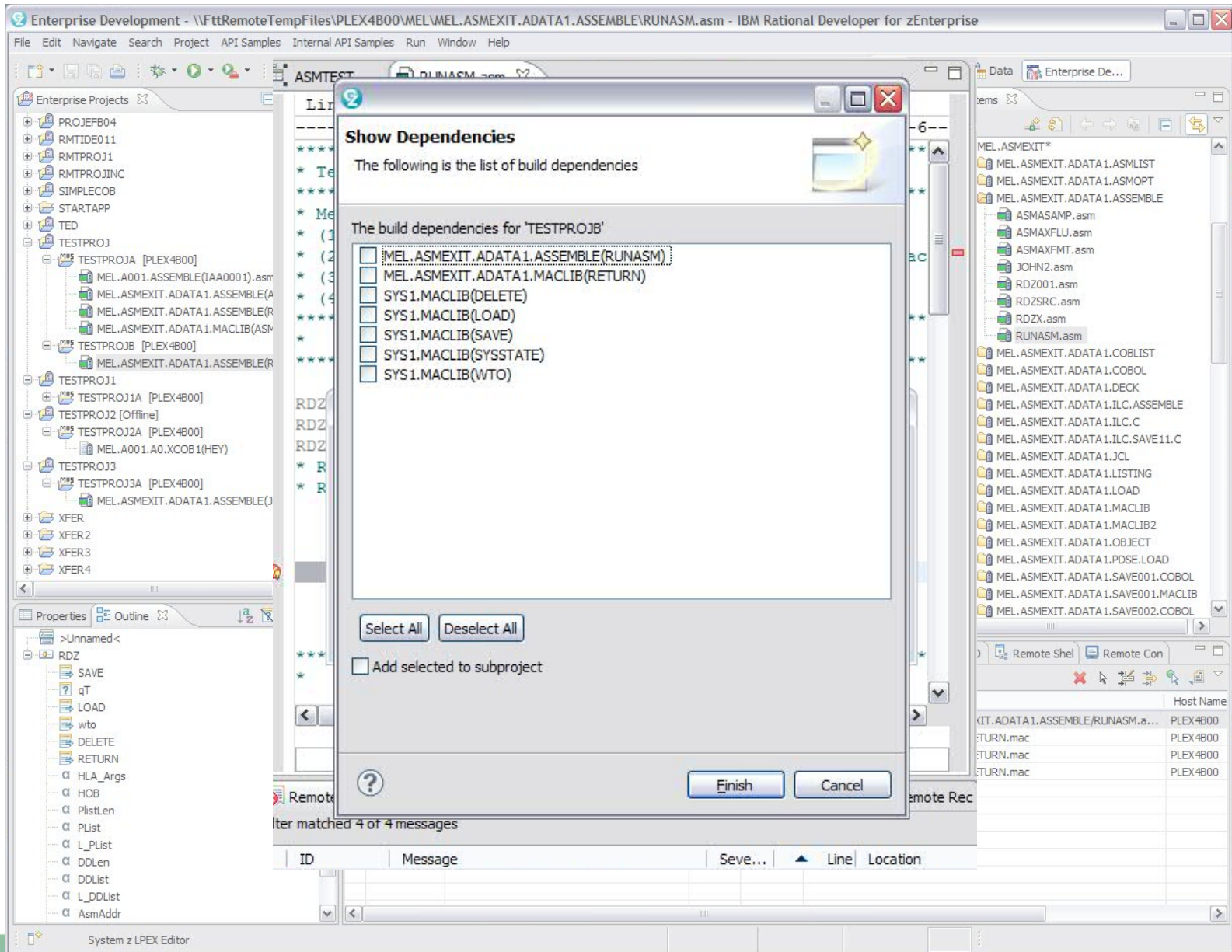
Filter matched 4 of 4 messages

ID	Message	Seve...	Line	Location	Host Name
ASMA057	ASMA057E Undefined operation code - QT	2	21	TESTPROJ/TESTPROJB/MEL.ASMEXIT.ADATA1.ASSEMBLE/RUNASM.a...	PLEX4B00
ASMA057	ASMA057E Undefined operation code - RE...	2	23	MEL.ASMEXIT.ADATA1.MACLIB/RETURN.mac	PLEX4B00
ASMA003	ASMA003E Undeclared variable symbol; de...	2	23	MEL.ASMEXIT.ADATA1.MACLIB/RETURN.mac	PLEX4B00
ASMA003	ASMA003E Undeclared variable symbol; de...	2	23	MEL.ASMEXIT.ADATA1.MACLIB/RETURN.mac	PLEX4B00

System z LPEX Editor



# HLASM Show Dependencies



The screenshot displays the IBM Rational Developer for zEnterprise interface. A 'Show Dependencies' dialog box is open, showing the build dependencies for the project 'TESTPROJ3'. The dialog box contains a list of dependencies with checkboxes next to them. The dependencies listed are:

- ☐ MEL.ASMEXIT.ADATA1.ASSEMBLE(RUNASM)
- ☐ MEL.ASMEXIT.ADATA1.MACLIB(RETURN)
- ☐ SYS1.MACLIB(DELETE)
- ☐ SYS1.MACLIB(LOAD)
- ☐ SYS1.MACLIB(SAVE)
- ☐ SYS1.MACLIB(SYSSTATE)
- ☐ SYS1.MACLIB(WTO)

Below the list, there are buttons for 'Select All' and 'Deselect All', and a checkbox for 'Add selected to subproject'. At the bottom of the dialog box are 'Finish' and 'Cancel' buttons.

The background shows the 'Enterprise Projects' tree on the left, the 'Properties' pane at the bottom left, and the 'Data' pane on the right. The 'Data' pane shows a list of files and folders, including 'MEL.ASMEXIT.ADATA1.ASSEMBLE' and 'MEL.ASMEXIT.ADATA1.MACLIB'.

# 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.

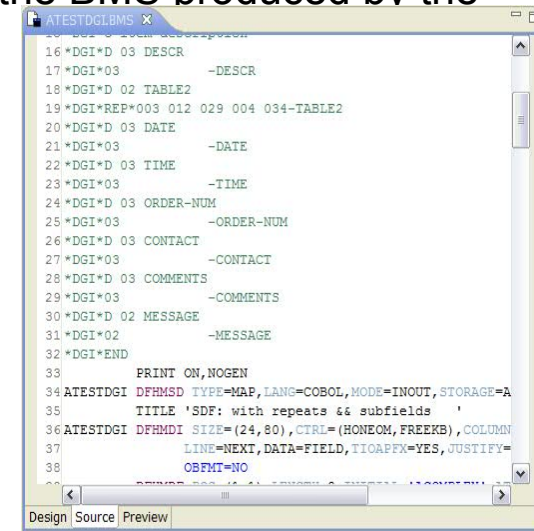
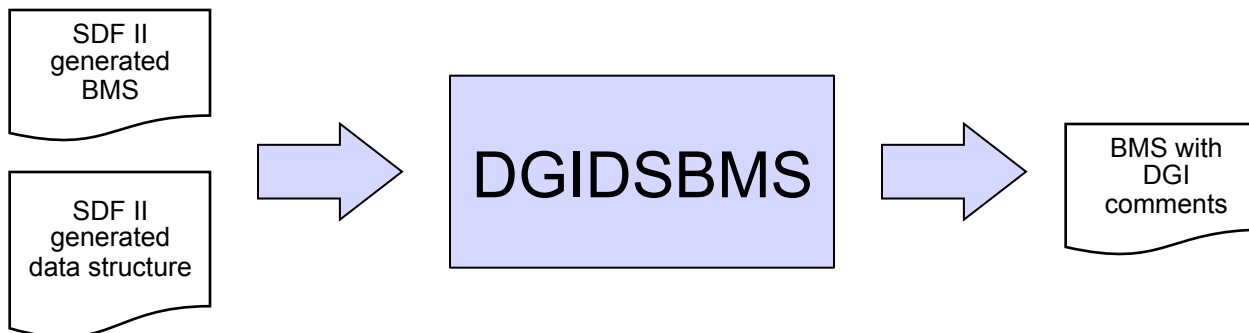
# RDz BMS editor -vs- SDF II

- 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 PQ86243
  - ▶ 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



```
16 *DGI*D 03 DESCR
17 *DGI*03          -DESCR
18 *DGI*D 02 TABLE2
19 *DGI*REP*003 012 029 004 034-TABLE2
20 *DGI*D 03 DATE
21 *DGI*03          -DATE
22 *DGI*D 03 TIME
23 *DGI*03          -TIME
24 *DGI*D 03 ORDER-NUM
25 *DGI*03          -ORDER-NUM
26 *DGI*D 03 CONTACT
27 *DGI*03          -CONTACT
28 *DGI*D 03 COMMENTS
29 *DGI*03          -COMMENTS
30 *DGI*D 02 MESSAGE
31 *DGI*02          -MESSAGE
32 *DGI*END
33
34 ATESIDGI DPHMSD TYPE=MAP, LANG=COBOL, MODE=INOUT, STORAGE=A
35 TITLE 'SDF: with repeats && subfields '
36 ATESIDGI DPHMDI SIZE=(24,80), CTRL=(HONEYCOMB, FREEKB), COLUMN
37 LINE=NEXT, DATA=FIELD, TIOAPFX=YES, JUSTIFY=
38 OBFMT=NO
39
40
```

## 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

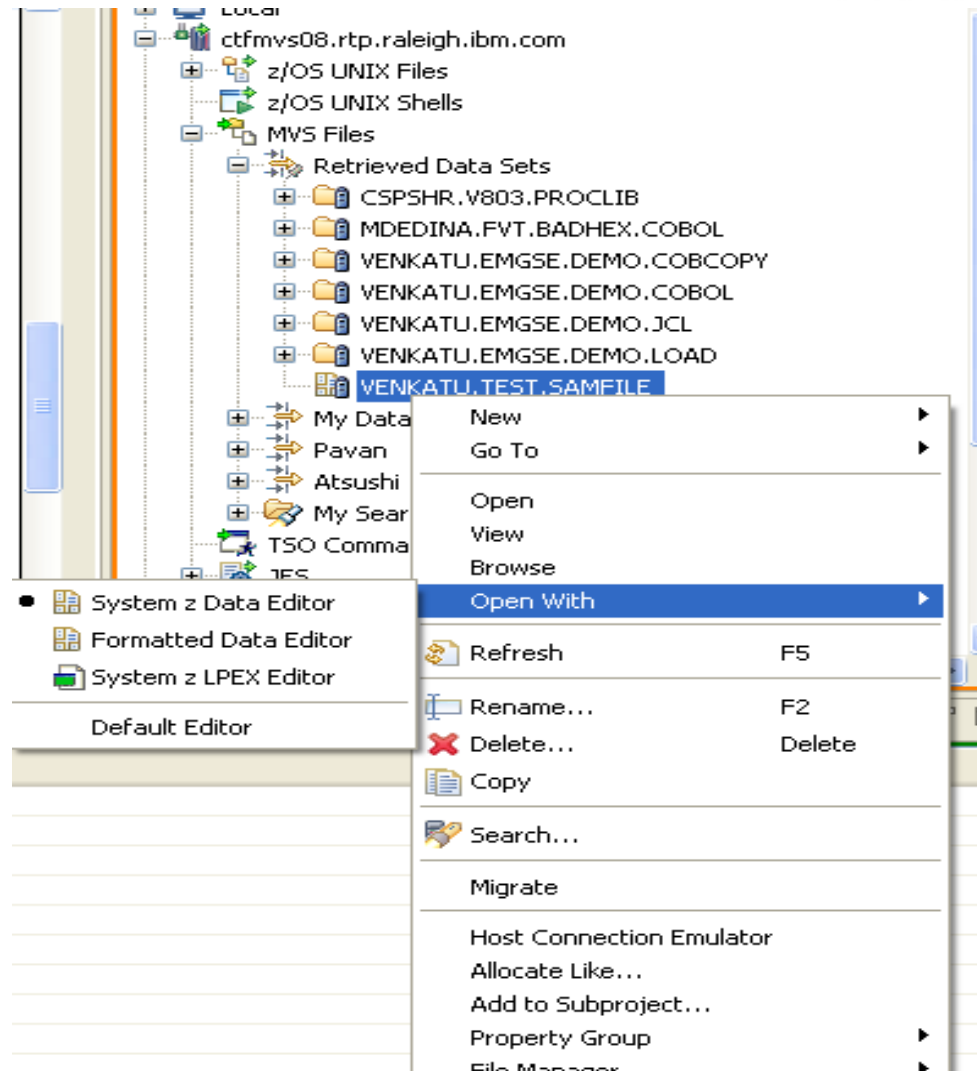
- DGIDSBMS recreates field level comments as DGI metadata

# 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	0004000003100 Oaktree Ct	Raleigh	NCUSA	00000000.
2	05580AMoore, Adeline	000fi*00004700 S. Syracuse	Denver	COUSA	00000000.
3	06075ADubree, Dustin	0000800009229 Delegate's Row	Indianapolis	INUSA	00000000.
4	06927ABuchs, Jillian	000r0000041 Avendale Drive	Carlisle	PAUSA	00000000.
5	07008AHouston, Roger	000N000004111 Northside PkWay	Atlanta	GAUSA	00000000.
6	07025AMarx, Audrey	00000000090 South Cascade	Boulder	COUSA	00000000.
7	11204ANess, Luke	0000000005166 Sprinkle Road	Portage	MIUSA	00000000.
8	11544AGraf, Polly	0000000001551 S. Washington	Dowagiac	MIUSA	00000000.
9	12689ABoyd, Luke A.	000080000221 Yale Rd	South Perth	Australia	00000000.
10	13062ATurner, Paige	0000000003039 Cornwallis Road	Boone	NCUSA	00000000.
11	13295AWell, Alice	000000000125 Nicholson Rd	North Perth	Australia	00000000.
12	13943ASawyer, Dinah	000000000498 Oak Grove Rd	Springfield	Australia	00000000.
13	14207AAuerbach, Hans	000000000Hahnstrasse 46	Frankfurt	Germany	00000000.
14	21508ADante, Al	00000000089140 Rosten 77	Trondheim	Norway	00000000.
15	23084AFurst, Hugo	000000000155 Bailey Avenue	Eagan	MNUSA	00000000.
16	23307ALapp, Victor E.	000000000Rua Tutoia 2258	Sao Paulo	Brazil	00000000.
17	24390ALeavitt, Kent B.	00000000012 Bannerghatta Road	Bangalore	India	00000000.
18	25301ACooke, Amelia	0000000005305 Valley Park	Roanoke	VAUSA	00000000.
19	26130AKleiner, Rick	000000000Av. Hidalgo 3500	Tampico	Mexico	00000000.
20	26620ABerrie, April Lynn	000000000Calzada Legeria #853	Mexico City	Mexico	00000000.

Preferences

System z Data

z/OS Solutions

System z Data Editor

System z Data Editor

Editor data set window size (Records) 200

Editor data set step size (Records) 200

Undo Limit 10

New or changed records

Default view options

☐ Collapse Single Mode

☐ Hex Mode On

# 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



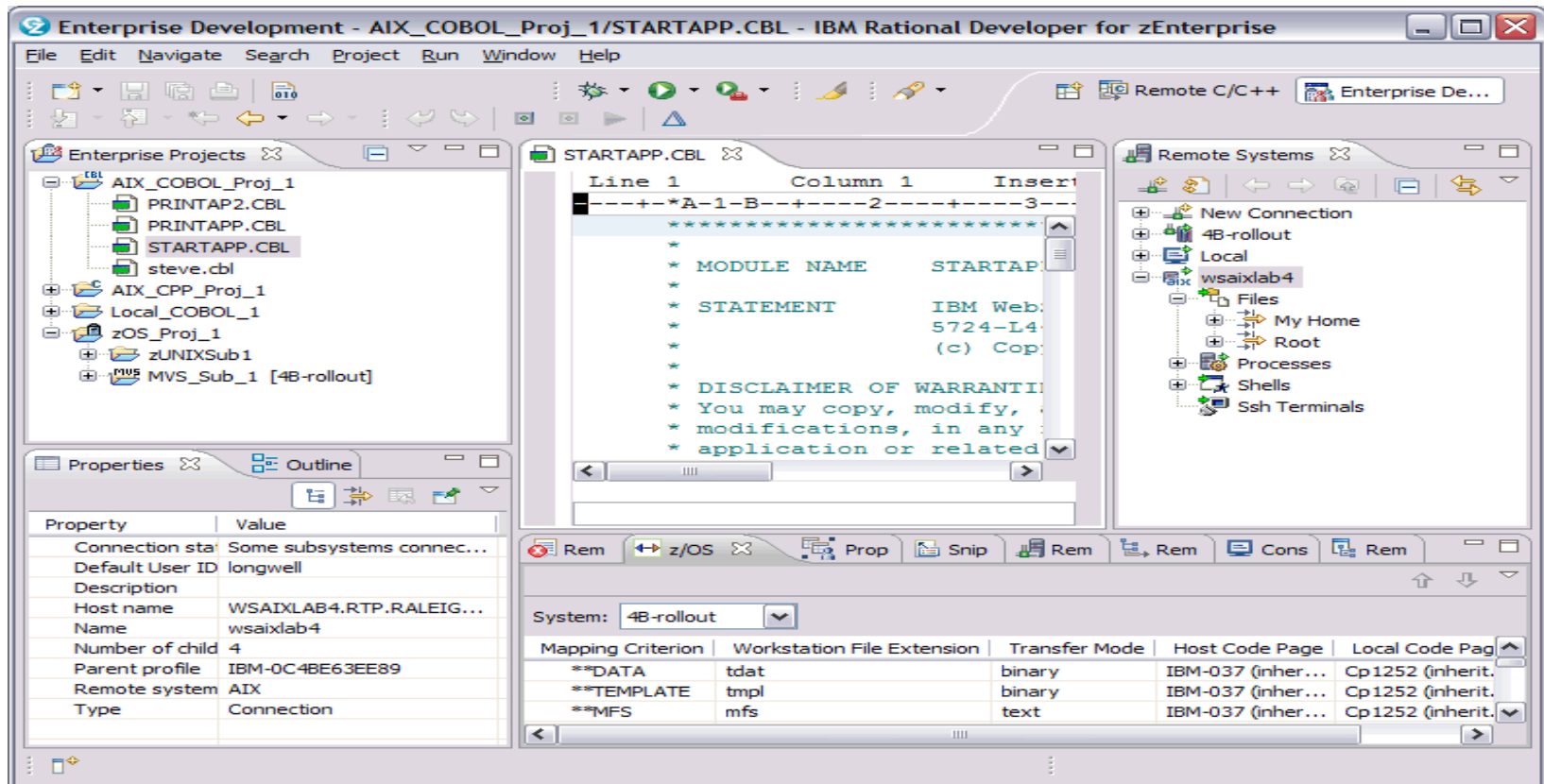
## Integration

- ⌞ 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

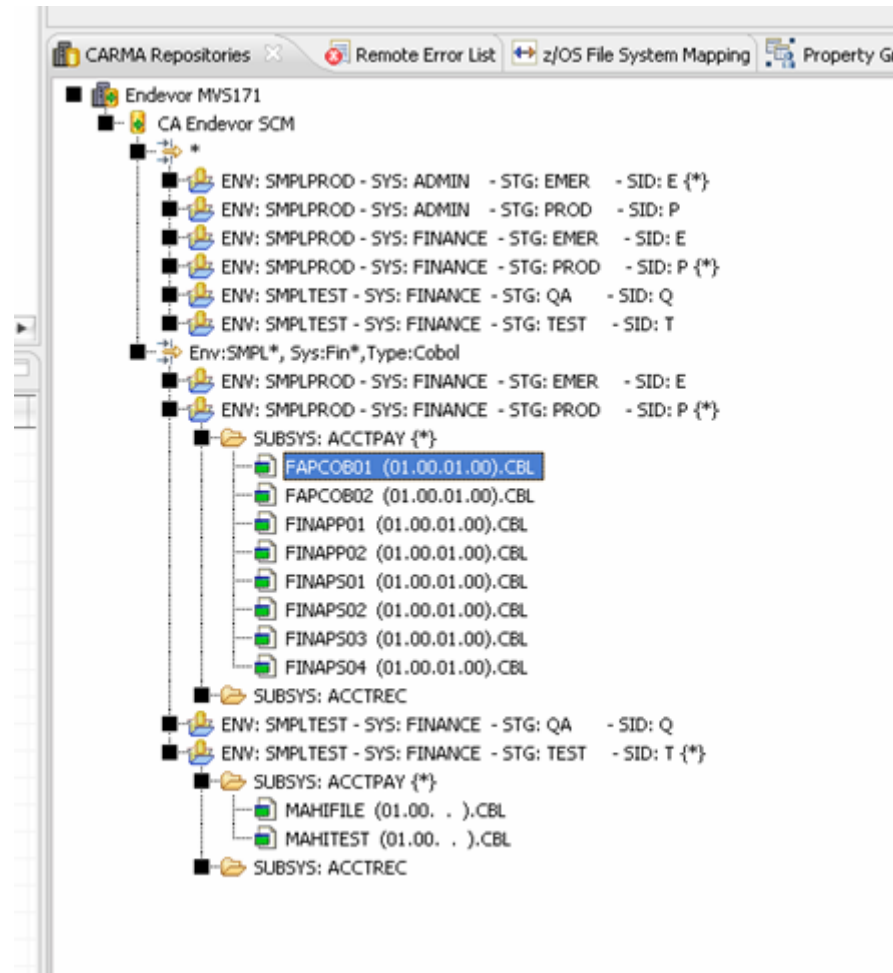
- ▶ Access to typical RDz functionality like syntax check, content assist, debug, etc

ADD/UPDATE members with single click

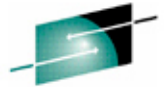
- ▶ RDz remembers Endevor location for retrieve and adds back

QuickEdit (browse) members from CARMA interface

Integration with existing GENERATE configuration

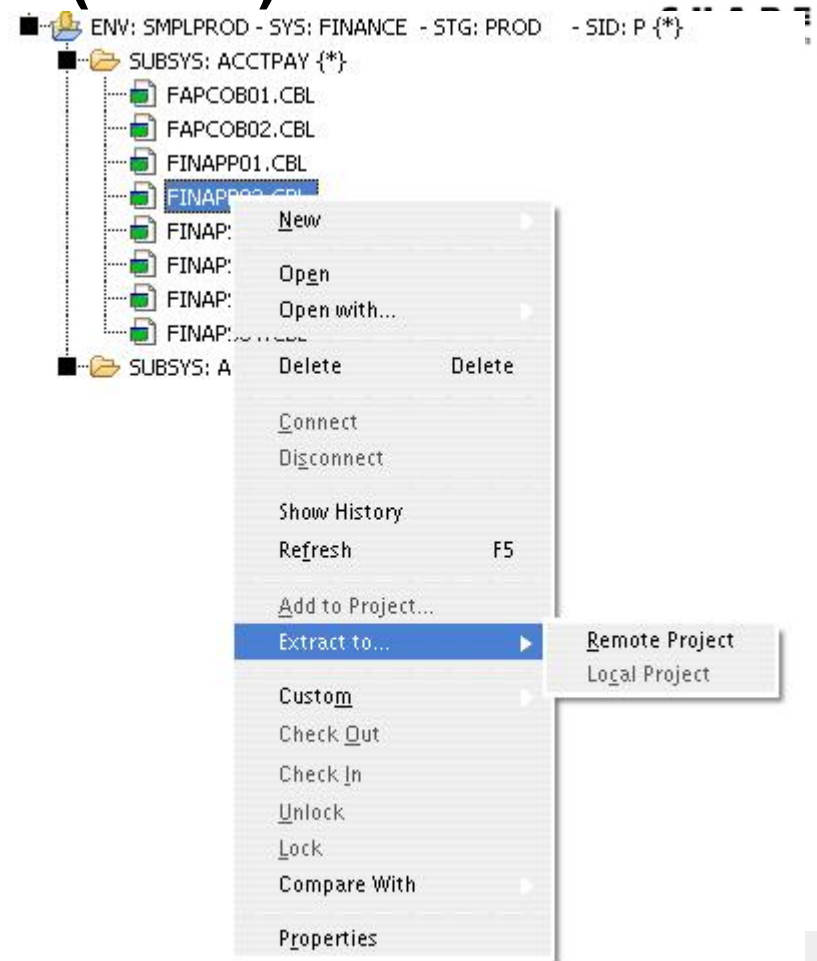


# Integration with RDz projects (avail)



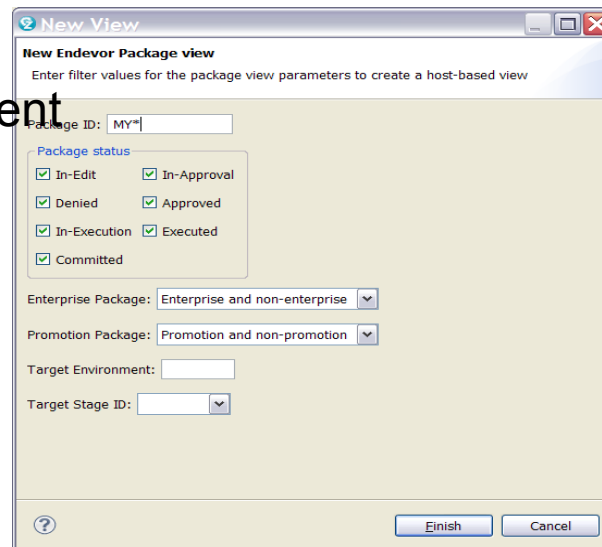
To retrieve files in zOS Projects

- ▶ Extract to remote project
- ▶ Enter Endeavor 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



**New View**  
New Endevor Package view  
Enter filter values for the package view parameters to create a host-based view

Package ID: MY\*

**Package status**

☒ In-Edit    ☒ In-Approval  
☒ Denied    ☒ Approved  
☒ In-Execution    ☒ Executed  
☒ Committed

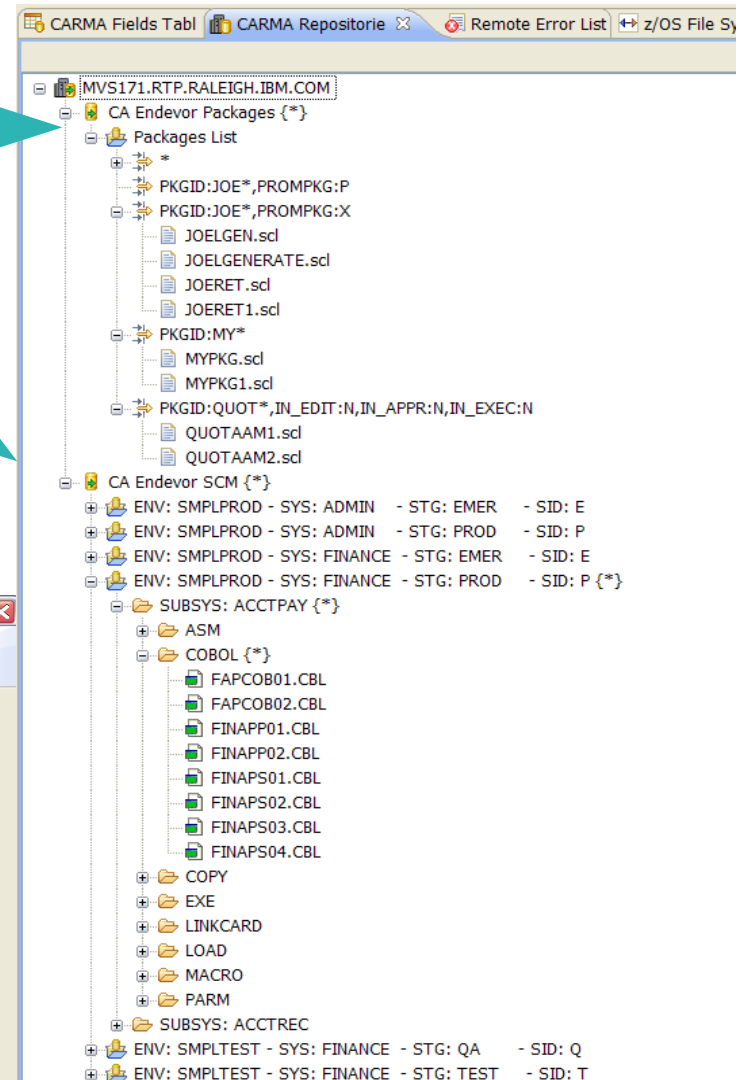
Enterprise Package: Enterprise and non-enterprise

Promotion Package: Promotion and non-promotion

Target Environment:

Target Stage ID:

Finish Cancel



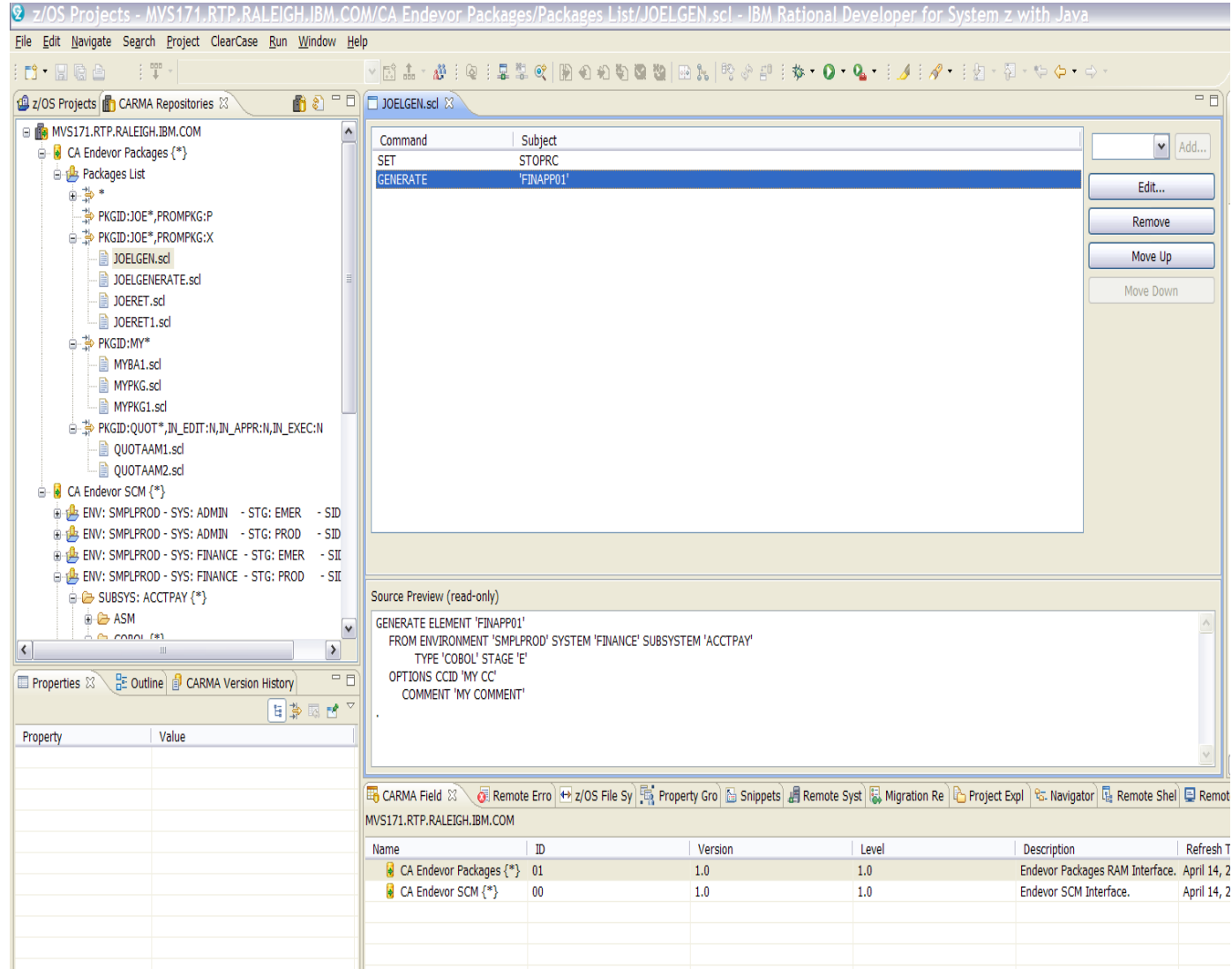
CARMA Fields Tab | CARMA Repositories | Remote Error List | z/OS File Sy

MVS171.RTP.RALEIGH.IBM.COM

- CA Endevor Packages {\*}
  - Packages List
    - PKGID:JOE\*,PROMPKG:P
    - PKGID:JOE\*,PROMPKG:X
      - JOELGEN.scl
      - JOELGENERATE.scl
      - JOERET.scl
      - JOERET1.scl
    - PKGID:MY\*
      - MYPKG.scl
      - MYPKG1.scl
    - PKGID:QUOT\*,IN\_EDIT:N,IN\_APPR:N,IN\_EXEC:N
      - QUOTAAM1.scl
      - QUOTAAM2.scl
- CA Endevor SCM {\*}
  - ENV: SMPLPROD - SYS: ADMIN - STG: EMER - SID: E
  - ENV: SMPLPROD - SYS: ADMIN - STG: PROD - SID: P
  - ENV: SMPLPROD - SYS: FINANCE - STG: EMER - SID: E
  - ENV: SMPLPROD - SYS: FINANCE - STG: PROD - SID: P {\*}
  - SUBSYS: ACCTPAY {\*}
    - ASM
      - COBOL {\*}
        - FAPCOB01.CBL
        - FAPCOB02.CBL
        - FINAPP01.CBL
        - FINAPP02.CBL
        - FINAPS01.CBL
        - FINAPS02.CBL
        - FINAPS03.CBL
        - FINAPS04.CBL
      - COPY
      - EXE
      - LINKCARD
      - LOAD
      - MACRO
      - PARM
    - SUBSYS: ACCTREC
      - ENV: SMPLTEST - SYS: FINANCE - STG: QA - SID: Q
      - ENV: SMPLTEST - SYS: FINANCE - STG: TEST - SID: T

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

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

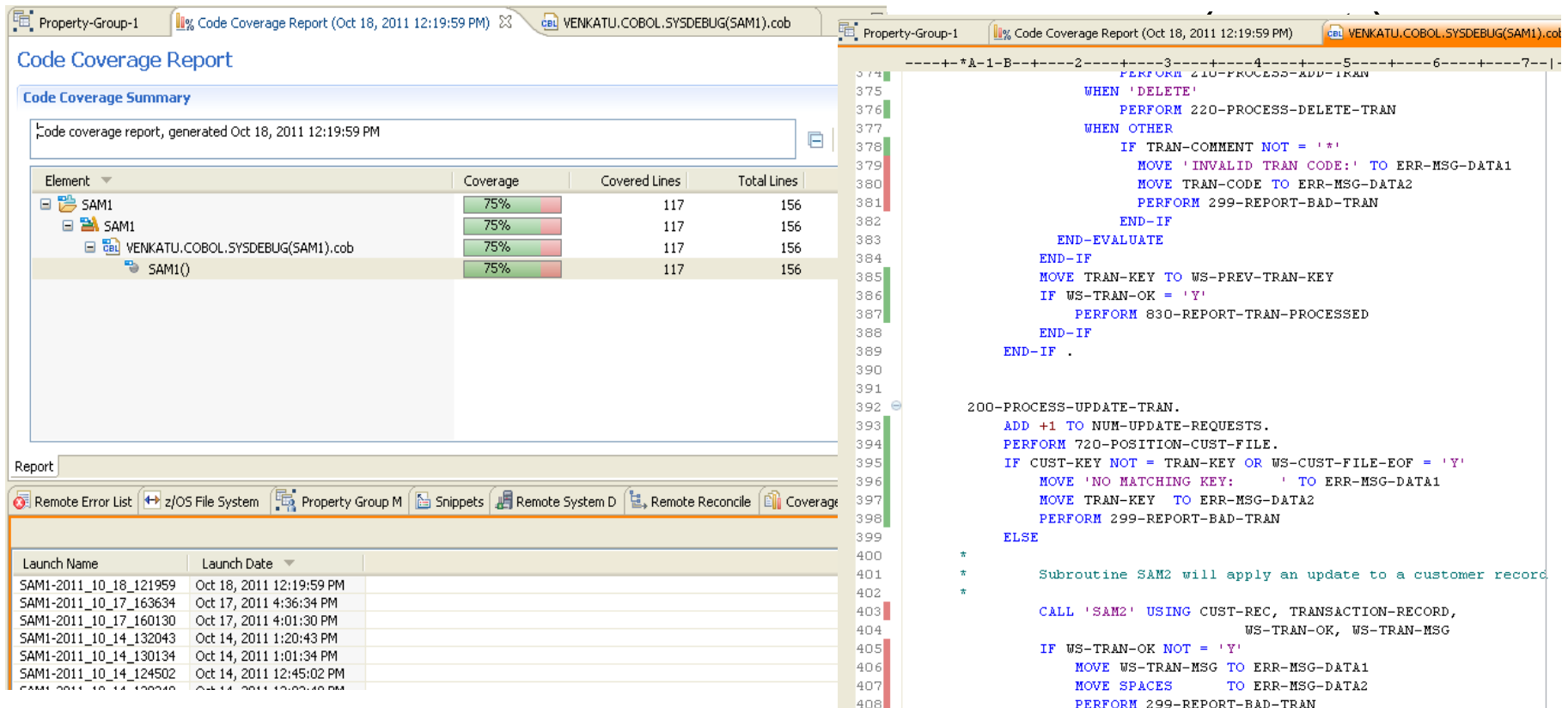


The screenshot displays the IBM Rational Developer for System z with Java interface. The main window shows the 'JOELGEN.scl' package in the 'Packages List' tree. The 'Command' table is visible, showing the 'GENERATE' command with the subject 'FINAPP01'. The 'Source Preview' section shows the source code for the 'GENERATE ELEMENT 'FINAPP01'' command. The bottom status bar shows the project name 'MVS171.RTP.RALEIGH.IBM.COM' and a table of project components.

Name	ID	Version	Level	Description	Refresh T
CA Endevor Packages {*}	01	1.0	1.0	Endevor Packages RAM Interface.	April 14, 2
CA Endevor SCM {*}	00	1.0	1.0	Endevor SCM Interface.	April 14, 2

# 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 Coverage Report**

Code coverage report, generated Oct 18, 2011 12:19:59 PM

Element	Coverage	Covered Lines	Total Lines
SAM1	75%	117	156
SAM1	75%	117	156
VENKATU.COBOI.SYSDEBUG(SAM1).cob	75%	117	156
SAM1()	75%	117	156

**Report**

Remote Error List | z/OS File System | Property Group M | Snippets | Remote System D | Remote Reconcile | Coverage

Launch Name	Launch Date
SAM1-2011_10_18_121959	Oct 18, 2011 12:19:59 PM
SAM1-2011_10_17_163634	Oct 17, 2011 4:36:34 PM
SAM1-2011_10_17_160130	Oct 17, 2011 4:01:30 PM
SAM1-2011_10_14_132043	Oct 14, 2011 1:20:43 PM
SAM1-2011_10_14_130134	Oct 14, 2011 1:01:34 PM
SAM1-2011_10_14_124502	Oct 14, 2011 12:45:02 PM

```

374  -----*A-1-B-----2-----3-----4-----5-----6-----7-----
375  WHEN 'DELETE'
376  PERFORM 220-PROCESS-DELETE-TRAN
377  WHEN OTHER
378  IF TRAN-COMMENT NOT = '*'
379  MOVE 'INVALID TRAN CODE:' TO ERR-MSG-DATA1
380  MOVE TRAN-CODE TO ERR-MSG-DATA2
381  PERFORM 299-REPORT-BAD-TRAN
382  END-IF
383  END-EVALUATE
384  END-IF
385  MOVE TRAN-KEY TO WS-PREV-TRAN-KEY
386  IF WS-TRAN-OK = 'Y'
387  PERFORM 830-REPORT-TRAN-PROCESSED
388  END-IF
389  END-IF .
390
391
392  200-PROCESS-UPDATE-TRAN.
393  ADD +1 TO NUM-UPDATE-REQUESTS.
394  PERFORM 720-POSITION-CUST-FILE.
395  IF CUST-KEY NOT = TRAN-KEY OR WS-CUST-FILE-EOF = 'Y'
396  MOVE 'NO MATCHING KEY:' TO ERR-MSG-DATA1
397  MOVE TRAN-KEY TO ERR-MSG-DATA2
398  PERFORM 299-REPORT-BAD-TRAN
399  ELSE
400
401  *
402  *      Subroutine SAM2 will apply an update to a customer record
403  *
404  CALL 'SAM2' USING CUST-REC, TRANSACTION-RECORD,
405                  WS-TRAN-OK, WS-TRAN-MSG
406  IF WS-TRAN-OK NOT = 'Y'
407  MOVE WS-TRAN-MSG TO ERR-MSG-DATA1
408  MOVE SPACES      TO ERR-MSG-DATA2
409  PERFORM 299-REPORT-BAD-TRAN
  
```

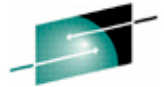
# Code Rules use cases

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



Java - COBOL project/example.cob - Rational® Application Developer for WebSphere® Software

File Edit Navigate Search Project Run Window Help

example.cob

```
Line 57      Column 42      Insert
-----*A-1-B-----2-----3-----4-----5-----6-----7-----8
alter treatment to proceed to Main.

Planet section.

EVALUATE PLANET-NUMBER
    WHEN 1    MOVE "Mercury"    TO PLANET-NAME
    WHEN 2    MOVE "Venus  "    TO PLANET-NAME
    WHEN 3    MOVE "Earth  "    TO PLANET-NAME
    WHEN 4    MOVE "Mars   "    TO PLANET-NAME
    WHEN 5    MOVE "Jupiter"    TO PLANET-NAME
    WHEN 6    MOVE "Saturn  "    TO PLANET-NAME
    WHEN 7    MOVE "Uranus  "    TO PLANET-NAME
```

Outline

- PROGRAM
  - Identification division.
  - Data division.
  - Procedure division.
    - Wrapup section.
    - Planet section.

Problems @ Javadoc Declaration Annotations Work Items Software Analyzer Results

Java Code Review Cobol Analysis

Cindy's COBOL rules config (11/03/13 23:19:14) [8 result]  
Cindy's COBOL rules config (11/03/13 23:17:37) [6 result]  
Cindy's COBOL rules config (11/03/13 23:16:51) [6 result]

Cindy's Category [2 results in 0ms]

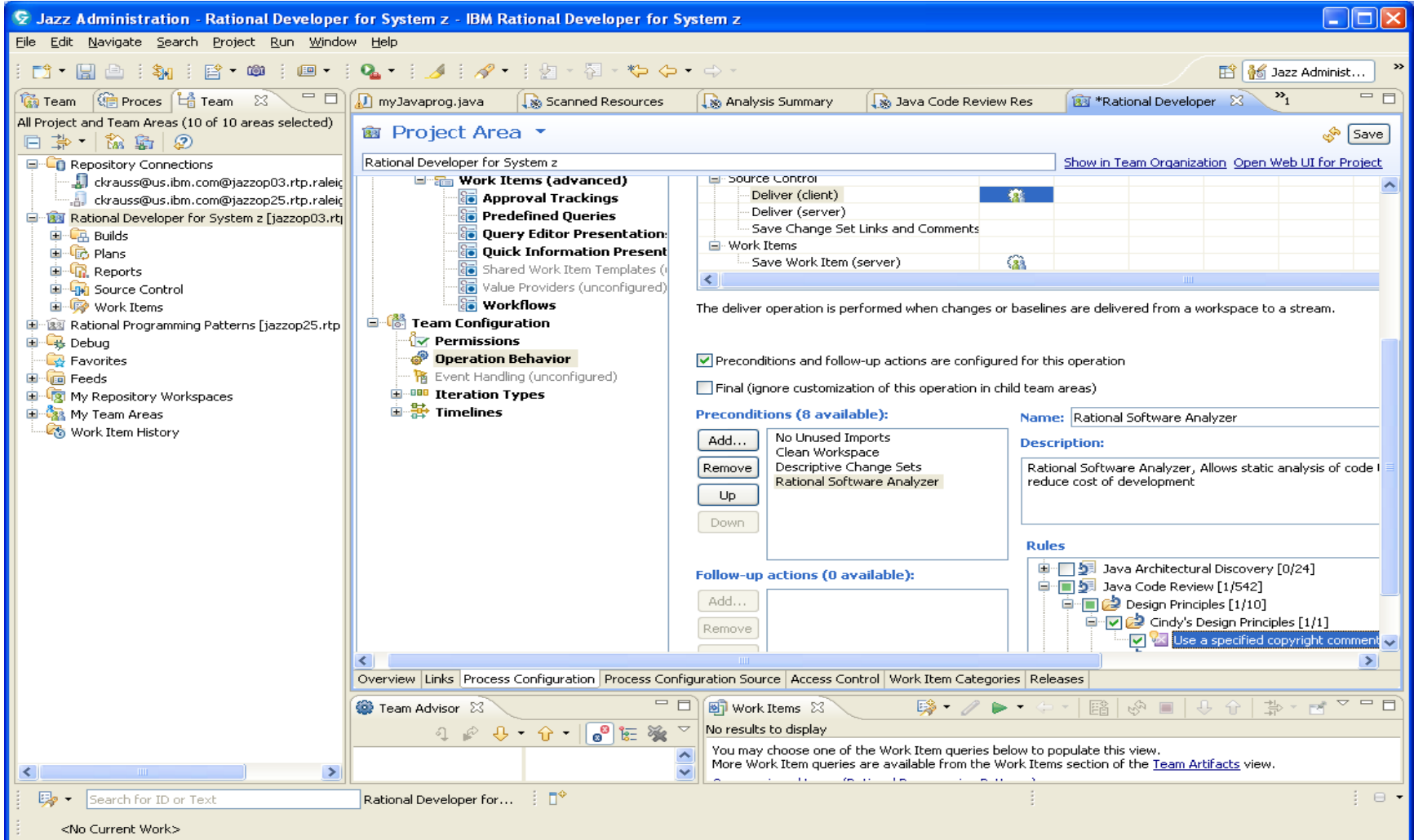
- END clause required for various COBOL statements [2 results in 0ms]

Program Structure [6 results in 7ms]

- Avoid ALTER statements [1 result in 0ms]
  - example.cob:57 Avoid ALTER statements
    - View Result
    - ALTER QuickFix
    - Quick Fix Preview
    - Quick Fix All
    - Quick Fix All Category
- Do not use ACCEPT statements [1 result in 0m]
- Do not use GO TO statements [1 result in 0ms]
- Do not use the CORRESPONDING phrase [1 re
- EVALUATE must have a WHEN OTHER phrase
- PERFORM should not use a THROUGH clause



# SCM (RTC) integration



The screenshot displays the 'Jazz Administration - Rational Developer for System z' interface. The left sidebar shows a tree view of project and team areas, including 'Repository Connections', 'Rational Developer for System z', 'Builds', 'Plans', 'Reports', 'Source Control', 'Work Items', 'Rational Programming Patterns', 'Debug', 'Favorites', 'Feeds', 'My Repository Workspaces', 'My Team Areas', and 'Work Item History'. The main content area is titled 'Project Area' and shows the 'Rational Developer for System z' configuration. The 'Work Items (advanced)' section is expanded, showing 'Approval Trackings', 'Predefined Queries', 'Query Editor Presentation', 'Quick Information Present', 'Shared Work Item Templates', and 'Value Providers (unconfigured)'. The 'Team Configuration' section is also expanded, showing 'Permissions', 'Operation Behavior', 'Event Handling (unconfigured)', 'Iteration Types', and 'Timelines'. The 'Source Control' section is expanded, showing 'Deliver (client)', 'Deliver (server)', 'Save Change Set Links and Comments', 'Work Items', and 'Save Work Item (server)'. The 'Deliver (server)' operation is selected, and its configuration is shown. The 'Preconditions (8 available)' section lists 'No Unused Imports', 'Clean Workspace', 'Descriptive Change Sets', and 'Rational Software Analyzer'. The 'Follow-up actions (0 available)' section is empty. The 'Rules' section shows a list of rules, including 'Java Architectural Discovery [0/24]', 'Java Code Review [1/542]', 'Design Principles [1/10]', 'Cindy's Design Principles [1/1]', and 'Use a specified copyright comment'. The bottom status bar shows '<No Current Work>'.

IBM