Rational Developer for IBM i (RDi)
Introduction to RDi

*Featuring: Creating a connection, setting up the library list, working with objects using Remote Systems Explorer.*
Agenda

Rational Developer for and Remote System Explorer (RSE)

- New packaging for Rational Development Tools for IBM i
- Intro to RDi and RSE
- Getting started
- Creating a connection
- Accessing libraries, objects, and members
New Packaging for WebSphere Development Studio

ILE Compilers
- ILE RPG
- ILE RPG *PRV Compiler
- ILE COBOL
- ILE COBOL *PRV Compiler
- ILE C
- ILE C++
- IXLC for C/C++

Heritage Compilers
- S/36 Compatible RPG II
- S/38 Compatible RPG II
- RPG/400 (RPG III)
- S/36 Compatible COBOL
- S/38 Compatible COBOL
- OPM COBOL

Stabilized

WDSc
- WDSc 7.0

ADTS
- ADTS

5722-WDS
New Development tools

- RDi
  - Edit, Compile, Debug
  - RPG, COBOL, CL

- RDi SOA
  - RPG, COBOL Programmers
  - With Web 2.0 & SOA

- Advanced Java & J2EE Developers

- RDi, RAD
  - Java Development

- WDSc
- ADTS
  - (SEU, PDM, SDA, DFU, ET)
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  - Getting started
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In the beginning, there was PDM and SEU

```plaintext
Columns . . . :  6 76  Edit
SEU=>
RSELAB01/QRPGLESRC
PAYROLLG
FMT *
*. 1 ...+... 2 ...+... 3 ...+... 4 ...+... 5 ...+... 6 ...+... 7 ...
0000.45 C*****************************************************************
0000.46 C* Housekeeping, clear display fields and reset indicators.
0000.47 C*
0000.48 C EXSR MAIN
0000.49 C* If MAIN is done program ends
0000.50 C eval *INLR = *on
0000.51 * MAIN SUBROUTINE
0000.52 C MAIN BEGSR
0000.53 C dou *INKC
0000.54 C EVAL *ING0 = *OFF
0000.55 C EVAL EMESS = *BLANK
0000.56 C EVAL EMPAPL = *BLANK
0000.57 C EVAL PRJAPL = *BLANK
0000.58 C EVAL RSNAPL = *BLANK
0000.59 C*
0000.60 C* Write the SELECT format to display. If end of job requested,
0000.61 C*
```
And then there was CODE/400
And now there is the Remote System Explorer (RSE)
What is the RSE?

- **Application Development Tools** for RPG and COBOL developers
  - Tightly integrated set of tools
  - Modern, graphical, workstation based tools
  - PDM / SEU like features to make transition easier

- Remote access to IBM i development resources
  - Libraries, objects and members
  - CL commands
  - Jobs
  - Integrated file system

- Replacement for SEU/PDM and CODE/400
  - But so much more than just a replacement

- A “perspective” inside of RDi
Why the RSE?

- Integrated set of tools for developing IBM i applications
  - Tools based on Eclipse open source IDE
  - RPG, COBOL, DDS, CL
  - Integrated with change management systems
  - Open source tools
  - Vendor tools

- Improve productivity for native development
  - Closely integrated edit, compile, run / debug experience
  - Tools to help better understand large applications
  - Setup and customize development environment based on projects and individual preferences

- Lower learning curve for other technologies
  - Learn the Workbench tools with RPG / COBOL development
  - Then branch into Web, XML and Web Services development using the same tools platform
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Welcome to the Remote System Explorer (RSE). The RSE provides an integrated development environment for IBM i programmers. It allows you to work with your libraries, objects, members, jobs and IFS files, as well as edit source members, compile programs and debug applications.

We recommend that you follow the steps below to quickly get started using the RSE. This overview is meant to help you find some of the key features of the RSE. Each step also includes a link to additional information in the on-line help. There are also PDM to RSE and an SEU to LPEX transition guides available in the on-line help with more information on how to move from green screen programming tools to the RSE.

The topics below assume you are in the Remote System Explorer perspective with the default Workbench layout. Look in title bar for this Window to see which perspective you currently have open. If this is not the Remote System Explorer then select Window > Open Perspective > Other and select the Remote System Explorer from the list.

You can click the help (?) button to view more information on each step in the on-line help.

- Creating a Connection to Your IBM i server
- Managing your Library List
- Object Table view
- Opening a member
- Compiling a Member
- Running Your Program
- Debugging Your Program
- Using Filters
- Tips
Create a Connection to your IBM i

Expand to create a new “connection”
Setup Library List

- Expand the new connection shows “subsystems”
  - Represent different resources you can access on the server

- Expanding a subsystem shows predefined filters
  - Subsets of resources
  - Create your own (more on this later)

- Objects > Library List
  - Shows library list for connection
  - Right click on Library List filter to add additional libraries
  - Right click on libraries in the list to:
    - Remove from LIBL
    - Move [ up | down | within ] LIBL
Drill Down To Source Member

Actions are “context sensitive” → different actions appear based on what is currently selected

Properties view shows details for selected object or member
Understanding your applications

Application Diagram Viewer

Select member + use action visualize Application Diagram

Subroutines

Called from

Calling

Main entry point

Procedures
Editing Source Members

When the ALTSEQ("NONE") keyword is specified, the alternate collating sequence will not be used for comparisons involving this field, even when the ALTSEQ keyword is specified on the control specification. ALTSEQ("NONE") on Data Definition specifications will be meaningful only if one of ALTSEQ, ALTSEQ("SRC") or ALTSEQ("EXT") is coded in the control specifications. It is ignored if this is not true.
Compiling (and Fixing Errors)

Launch compiles directly from editor or pop-up menu.

Compile errors automatically downloaded and shown in Error List.

Double clicking on an error opens editor and positions to the line.
Integrated IBM i Debugger

What can you debug?
- RPG, Cobol, CL, C, and C++
- ILE and non ILE, including free-form RPG
- DB2 and SQL stored procedures
- Batch, interactive, and Multi-Threaded Applications
- Client/Server Applications
- Distributed Applications
- Java

Easily use service entry points
Debug Perspective

- **Debug view**
  - Tabbed notebook with views for Breakpoints, Variables, Programs

- **Editor – LPEX or Debug Editor**

- **Outline view**
Welcome Page
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What is an RSE “Connection”? 

- Represents a remote system
  - Given a display name
  - Multiple connections to one system permitted

- Each connection can be customized with its own:
  - i5/OS user profile
  - Library list and environment variables
  - Command execution parameters
    - Object library for compiles
    - JOBD for batch compiles / commands
  - Filters and filter pools

- Try thinking of a connection as a development project instead of a remote system
  - Order Entry Application
  - Inventory Management Application
Customizing a Connection

Properties for iSeries Objects

- Command Execution
- Environment Variables
- Initial Library List
  
Initial Library List

<table>
<thead>
<tr>
<th>Library</th>
<th>Library Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>COULTHAR</td>
<td>*LAST</td>
</tr>
<tr>
<td>FARR</td>
<td>*LAST</td>
</tr>
<tr>
<td>IWEISS</td>
<td>*LAST</td>
</tr>
</tbody>
</table>

Current library: #USRPRF
Initial command:

- Restore Defaults
- Apply
- OK
- Cancel
Customizing a Connection - 2

Properties for iSeries Objects

Command Execution

Properties for running remote commands or compiles. Each can be specified uniquely for this connection, or inherited from the Remote Systems >> Series >> Command Execution preferences page. To specify a property uniquely for this connection, toggle the button to the left of the property so that the arrow is pointing to the right.

Properties for compiles and user action variables

- Object library: *SRCLB
- Replace object:
- Compile in batch:

Properties for batch compiles, commands, and user action variables

- Job description library: *JCL
- Job description:
- Submit with flat:
- Job name:
- Job description:
- Startjob additional parameters:

Properties only for user action variables

- Run in batch:

[Buttons: Restore Defaults, Apply, OK, Cancel]
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Accessing Libraries, Objects and Members

- **Remote Systems View**
  - Shows all connections
  - Allows drill down access to remote objects

- **Expanding a connection shows “subsystems”**
  - These are not IBM i OS job subsystems
  - Just different parts of the IBM iOS you can access
  - Drill down to access

- **Subsystems**
  - Objects
  - Commands
  - Jobs
  - IFS files
  - Qshells
Drilling Down

- Typically we start using the RSE by just expanding:
  - Expand Library list to see libraries on library list
    - Expand a library to see all objects in it
    - Expand a source file to see members in it
  - Expand Home directory to see folders in \home in IFS
    - Expand a folder to see all folders and files in it
    - And so on

- But this usually results in lists that are too large
  - It's unwieldy to scroll through thousands of items in a list
  - You really want to keep lists small, less than one hundred at most
Working With Things

- Use right click actions

*LIB
- New
- Go To
- Expand To
- Refresh
- Rename...
- Copy
- Paste
- Delete...
  - Add Library List Entry...
  - Remove From Library List
  - Move Up In Library List
  - Move Down In Library List
  - Move Within Library List...
- Show in Table
- Find String...
  - Change...
  - Save(B)...
  - Restore...
- User Actions
- Create i5/OS Project...
- Properties(J)

*PGM
- Go To
- Show in Table
- Refresh
- Rename...
- Copy
- Paste
- Move...
- Delete...
  - Update...
  - Change...
  - Save...
  - Restore...
- User Actions
- Run As...
- Run(Prompt)
- Debug(Service Entry)
- Debug As(F)
- Debug (Prompt)(F)
- Visualize Application Diagram
- Properties(J)

MBR
- Go To
- Open With
- Browse With
- Rename...
- Copy
- Move...
- Delete...
  - Find String...
  - Verify
  - Verify (Prompt)...
  - Compile
  - User Actions
  - Add To i5/OS Project...
  - Make Available Offline
  - Properties(J)

*FILE
- Compile (Prompt)
- CRTENRPGM...
- Work With Compile Commands...
Introducing Filters

- Eventually you will need to see a subsetted list
  - Using criteria like generic names, types and attributes
  - All subsystems (nodes under a connection) support "filters"
    - These allow fine-grained control over what is shown in the RSE.

- To create a filter, right click on any subsystem and select New -> xxx
  - Objects -> New -> Library Filter, Object Filter, Member Filter
  - Commands -> New -> Command Set
  - Jobs -> New -> Job Filter
  - IFS Files -> New -> Filter

- Or use the fastpath Work With XXX… prompts under Objects
Object Filters

Specify simple, special, or generic library name.

Specify simple or generic object name.

Specify object type.

Specify simple or generic object attribute.

Specify object type.

More types (next page)

Filter name: My Objects
Filtering objects by type + attribute

When More Types>>> pressed

Prompt for object type

Prompt for object attribute

Specify multiple object type + attribute pairs

Will list all objects with any of the specified types+attributes
Expanding Object Filters

Filter is created, and expanded. It lists all objects matching the given criteria.

Filter exists until you delete it.

Filter exists in all connections by default.
Changing Filters

Filters are really made up of 1 or more filter strings. You can add additional filter strings in the change dialog.

This can allow you to create filters that capture exactly the objects or members you are interested in.

Show all *PGM and *FILE starting with A and B
Object Table View

- **Remote Systems View**
  - Tree view of resources
  - Great for seeing hierarchical structure
    - Library > Object > Member
  - Not natural for people used to PDM

- **Object Table View**
  - Table view of resources showing additional attributes
  - Select “Show in Table” from the pop-up menu of any filter, library, or file in the Remote Systems View
Same popup actions in table, and tree

Sort by clicking on column heading
Object Table View

- Use local pulldown to see additional columns
- Can also
  - Change contents
  - Subset contents
  - Position list
  - Print list
- .... Just like PDM!
Data Table View

- Shows records from data physical file in the Data Table view
  - Retrieves and displays first few records for performance
  - Additional records retrieved as you scroll through table

- Read-only access

- Position to record by key
  - Start typing in table and dialog box appears where you enter search values for key fields
Running CL Commands

- Enter command
- Press Enter
- Use arrows to retrieve commands

Prompt
Run

Show messages

Show Log
Multi-file Search

Select Search → IBM i

GUI interface to FNDSTRPDM

Supports multi-generic names
Double click on match entry to open + position in editor

Use as a “task list”, select line and click X button to remove from view.
Summary

Remote System Explorer (RSE)
- Much more than just a replacement for SEU / PDM
- Modern application development tools for IBM i developers
- First step in learning new Eclipse based development tools
- Easily use other Eclipse tools as you need to write modern applications for IBM i and other platforms
- Gain productivity using:
  - Application Diagram Viewer
  - Outline view
  - Content assist
  - Many more

Lots of resources available to get you started:
- **RPG Café with RDi hub**
- midrange mailing list
- Webcasts and System i magazines
- COMMON and IBM Power Technical Conferences
- User group meetings
Thank You
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