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WDS_c: Remote System Explorer (RSE) Tooling for RPG/COBOL development

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WebSphere software

Spring COMMON
Mar 25-30, 2006



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Table of contents

Development Studio Client

Remote System Explorer

Subsystems, filters and actions

Editors

Integrated iSeries Debugger

Designer

Summary

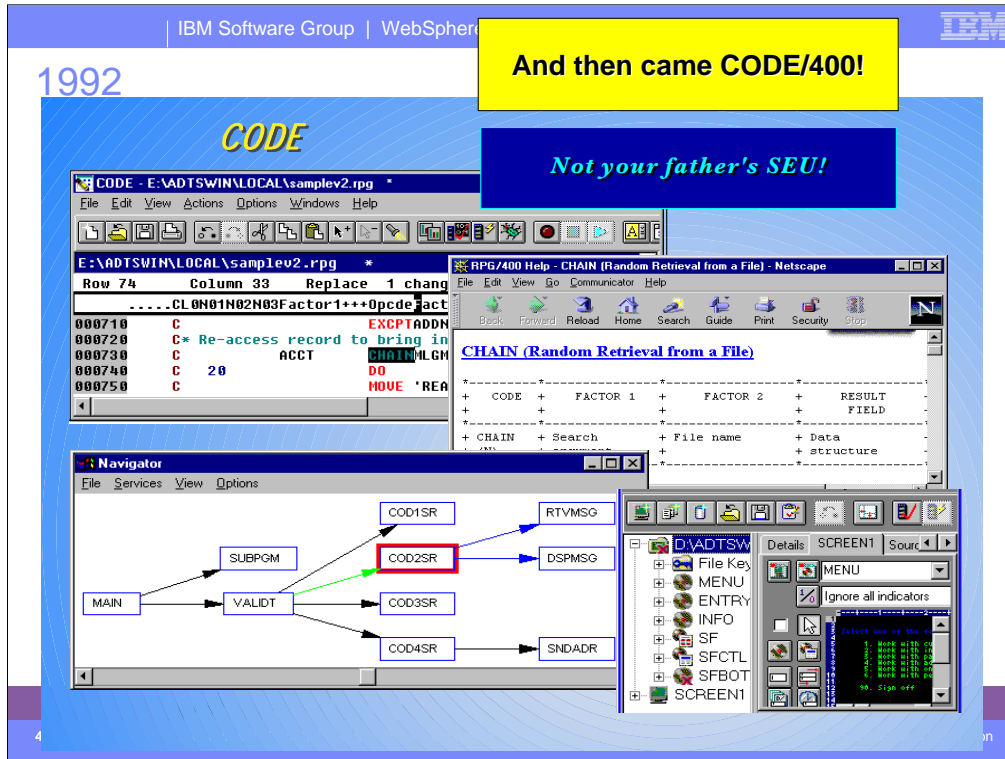
This presentation covers first the strategy behind Development Studio Client and is then followed by a review of the Remote System Explorer in Development Studio Client

1988

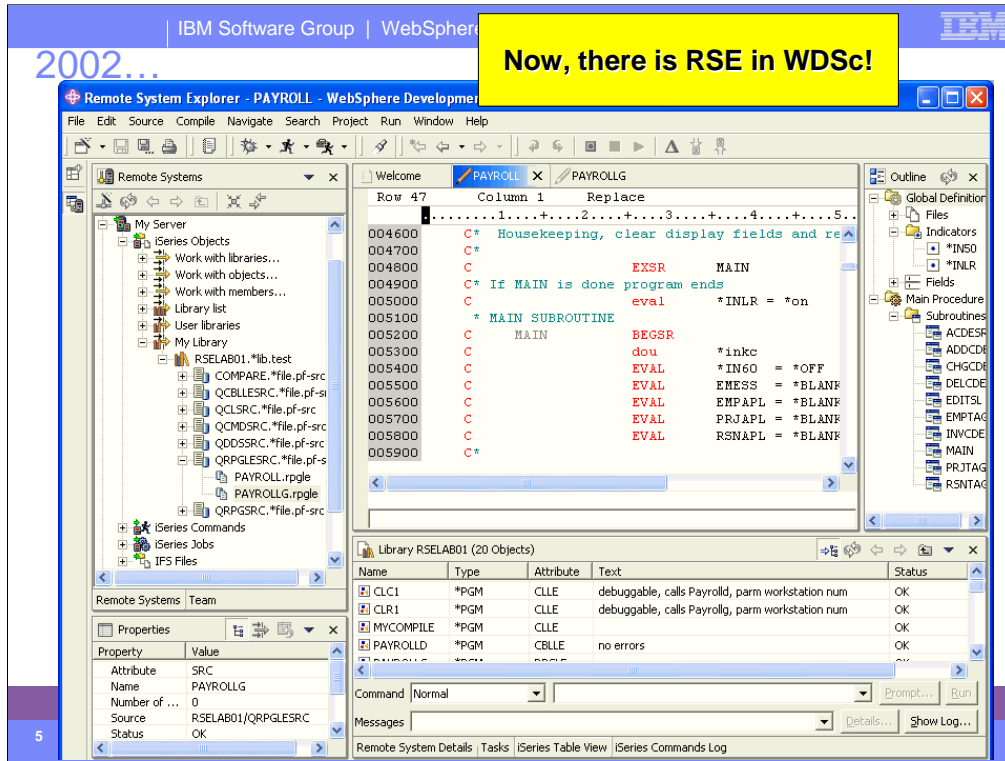
**In the beginning, there was
PDM and SEU**

```
Columns . . . : 6 76      Edit      RSELAB01/QAPGLESRC
SEU==>          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      *IN60 = *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*
```

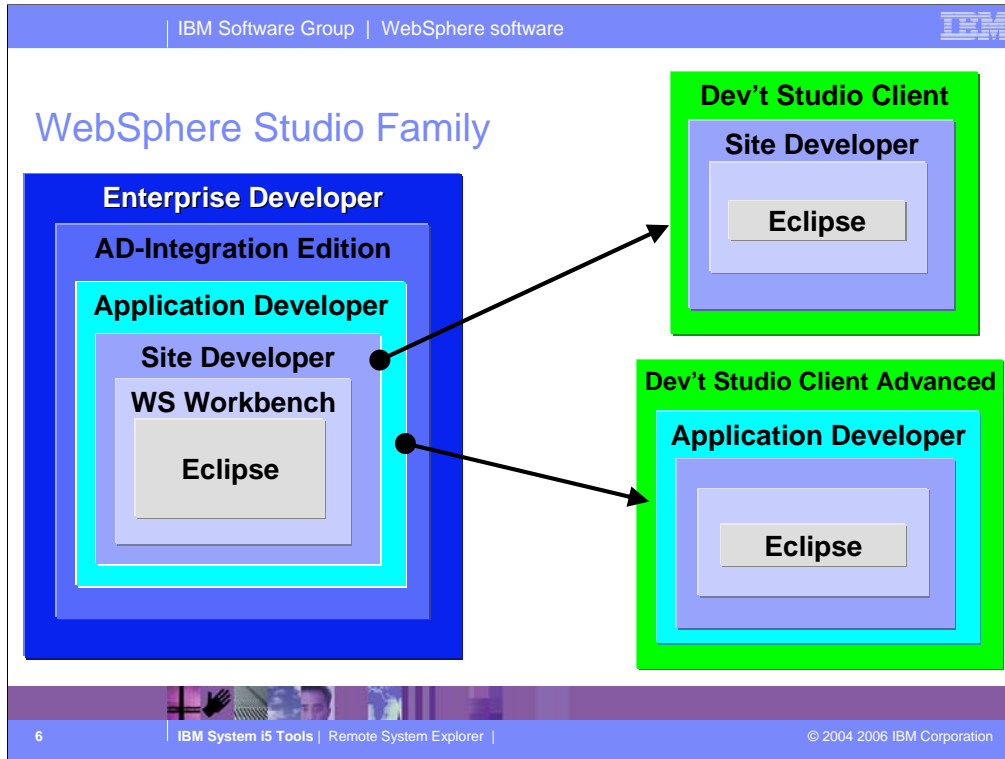
In the beginning, there was SEU, PDM, SDA, etc



Then came CODE/400, in 1992 on OS/2 and in 1997 on Windows.



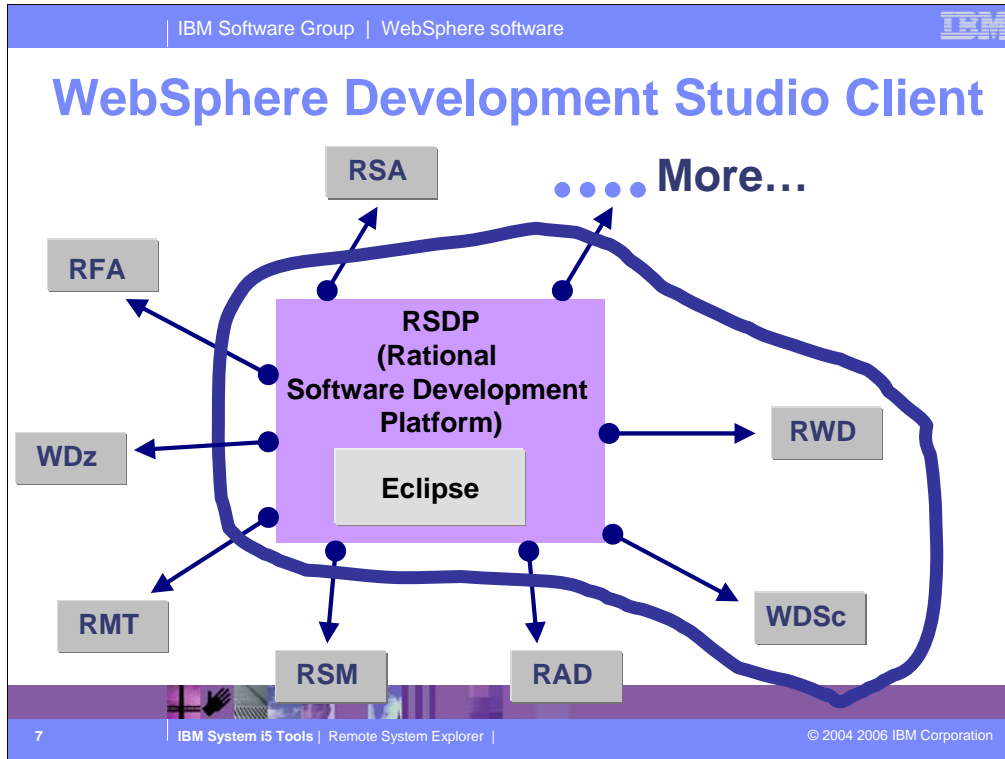
Today, we have the follow-on to CODE... the Remote System Explorer in WebSphere Development Studio Client.



Here you see that Development Studio Client is based on WebSphere Studio Site Developer, while Development Studio Client Advanced is based on WebSphere Studio Application Developer.

The Workbench is based on the open-source Eclipse technology about to be discussed. It is not for sale, but is the basis of all IBM WebSphere Studio products, and is available to business partners.

Site Developer is IBM's entry level offering based on eclipse, and it is for building dynamic Web sites out of non-EJB Java. Application Developer extends Site Developer and adds support for EJBs. Application Developer-Integration Edition extends Application Developer and adds support for JCA Connectors and for Workflow. Enterprise Developer extends Application Developer-Integration Edition and adds support for S/390 and Enterprise Generation Language (EGL), the follow-on to VisualAge Generator.



The Workbench is based on the open-source Eclipse technology about to be discussed. It is not for sale, but is the basis of all IBM WebSphere Studio products, and is available to business partners.

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WebSphere Development Studio

Current 5722-WDS customers with software subscription for V5R3, to upgrade to WDS V6.0 use feature #: 2656 Available after GA

Upgrade from WDS 6.0 to 6.0.1 using Rational Product updater

Unlimited Licenses

New WDS Lite
Technology preview

Host Compilers: RPG, COBOL, C/C++, PDM, SEU, SDA, RLU

Additional Tools: +CODE, +VisualAge RPG

iSeries	iSeries	iSeries	iSeries	Web Facing WDHT support	iSeries Projects	RSE
Java™	Debug	Struts Web	Web Service			
JSF	EGL Java generation	Trace	Profiling	DB	XML	App Server
						HATS Toolkit

WebSphere Development Studio Client V6.0.1 based on RWD V6

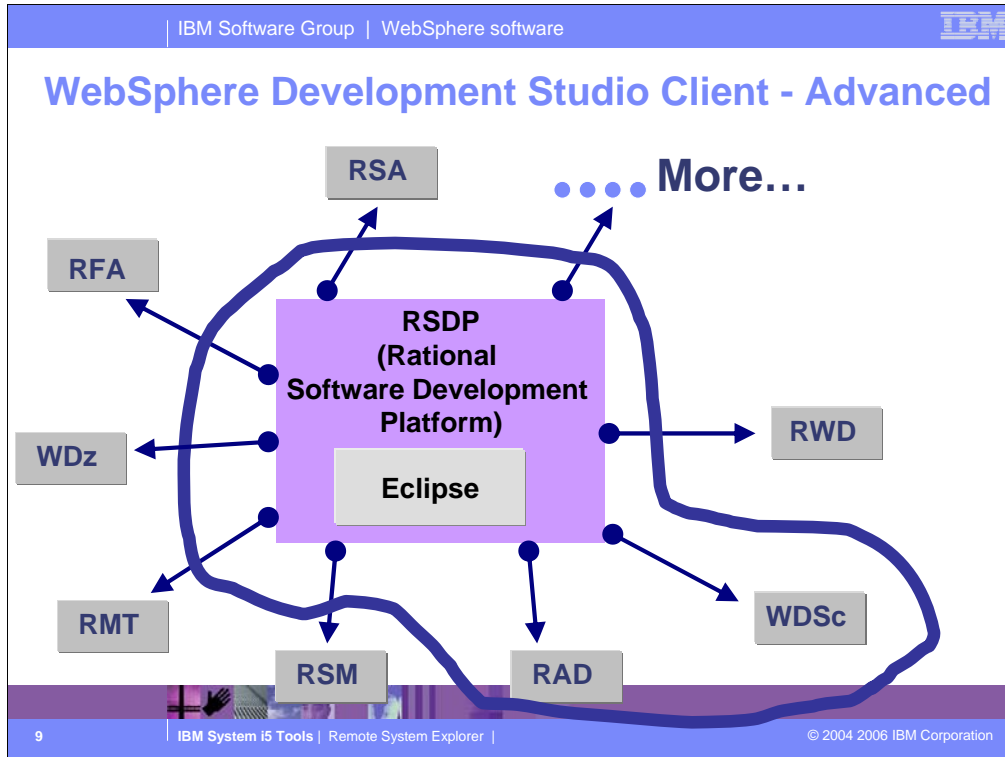
8 | IBM System i5 Tools | Remote System Explorer | © 2004 2006 IBM Corporation

There is now only one application development product sold by IBM, for iSeries, as of V4R5. This is WebSphere Development Studio (Development Studio), which includes all four host compilers, all traditional tools (ADTS = PDM+SEU+SDA+RLU+DFU+AFP+CGU), and unlimited licenses of the workstation-based toolset named WebSphere Development Studio Client (formerly WebSphere Development Tools).

If you are an existing customer who has a subscription, you can upgrade to Development Studio free of charge. Without a Software Subscription, there is an upgrade fee. New licenses of Development Studio are priced very competitive compared to the combined prices of all constituent products. As of V5R1, there is no way to purchase the compilers or tools individually. So if you have RPG at V5R1 or higher, you must have Development Studio and hence are entitled to Development Studio Client.

For consultants who do not have an iSeries of their own, but still wish to have the client tools, Development Studio Client is also made available as a passport advantage product so it can be purchased "off the shelf" from IBM Direct.

Development Studio has been a huge success, with over 80,000 licenses sold. Just as every development machine used to have PDM and SEU, every development machine will now have all the modern Application Development tools from IBM. This ubiquity is especially important for business partners who build and sell software. These Business Partners are now free to build software using any of the technologies or tools in Development Studio, and can assume their customers will have the tools required to tailor everything from RPG to Java and Web user interfaces. This effectively raises the lowest common denominator to a level unparalleled by any other operating system.



- RSM – Software Model
- RMT – Manual Test
- RFT – Functional Tester
- RSA – Rational Software Architect
- WDZ – WSED)

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WebSphere Development Studio Client Advanced Edition 6.0.1

Workstation License
order through Passport Advantage
http://www.lotus.com/services/passport.nsf/WebDocs/Passport_Advantage_Home

Upgrade from WDSC 6.0 to 6.0.1 using Rational Product updater

iSeries	iSeries	iSeries *	iSeries	Web Facing * WDHT support	iSeries Projects RSE	+CODE +VisualAge RPG
Java	Debug	Struts Web	Web Service			
JSF	EGL Java generation	Trace	Profiling	DB	XML	App Server
	EGL * COBOL generation	EJB * J2EE *	Test * Cases	Portal *		HATS Toolkit

New WDS Lite
Technology preview

www.ibm.com/software/awdtools/iseries

WebSphere Development Studio Client V6.0.1 based on RAD V6

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Installation

WDS 6.0.1 is an electronic update to WDS 6.0. It can be installed directly from the Internet via the Rational Product Updater (after GA on Feb 14th)

Product	Version	Install Date
IBM WebSphere Development Studio ...	6.0.0	12-Jan-2006 2:46 PM
6.0.1 Refresh Pack	6.0.1	
Interim Fix 6.0.1.1 for iSeries Tutorials		

IBM WebSphere Development Studio Client for iSeries, Version 6.0.1, Readme file

Contents

[About this release](#)

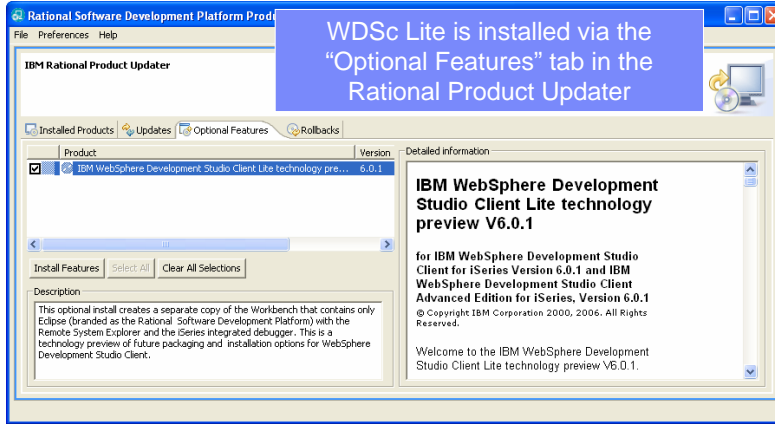
[Before you begin](#)

Manual downloads and iSeries PTFs will be made available after electronic GA.

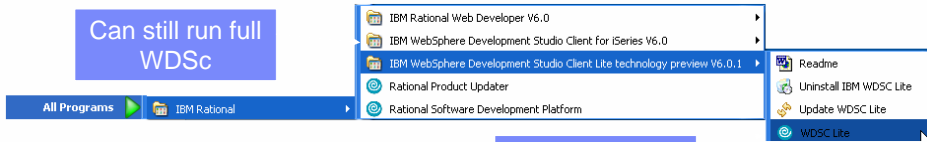
WDS Sc Lite – Technology Preview

- WDS Sc Lite is a slimmed down workbench with only the:
 - Eclipse workbench (branded as the Rational Software Development Platform)
 - Remote System Explorer
 - iSeries Projects
 - iSeries Integrated Debugger
- Requires only 256 MB RAM !!!
- Optional installation feature for 6.0.1
 - Must already have full WDS Sc 6.0.1 installed
 - Creates a second copy of the workbench
- Fully supported technology preview
 - Preview of future packaging directions ☺

WDS Sc Lite – Installation and Startup



Can still run full WDS Sc

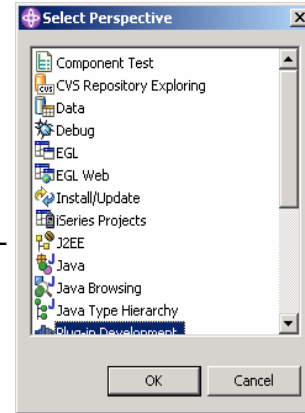


Run WDS Sc Lite

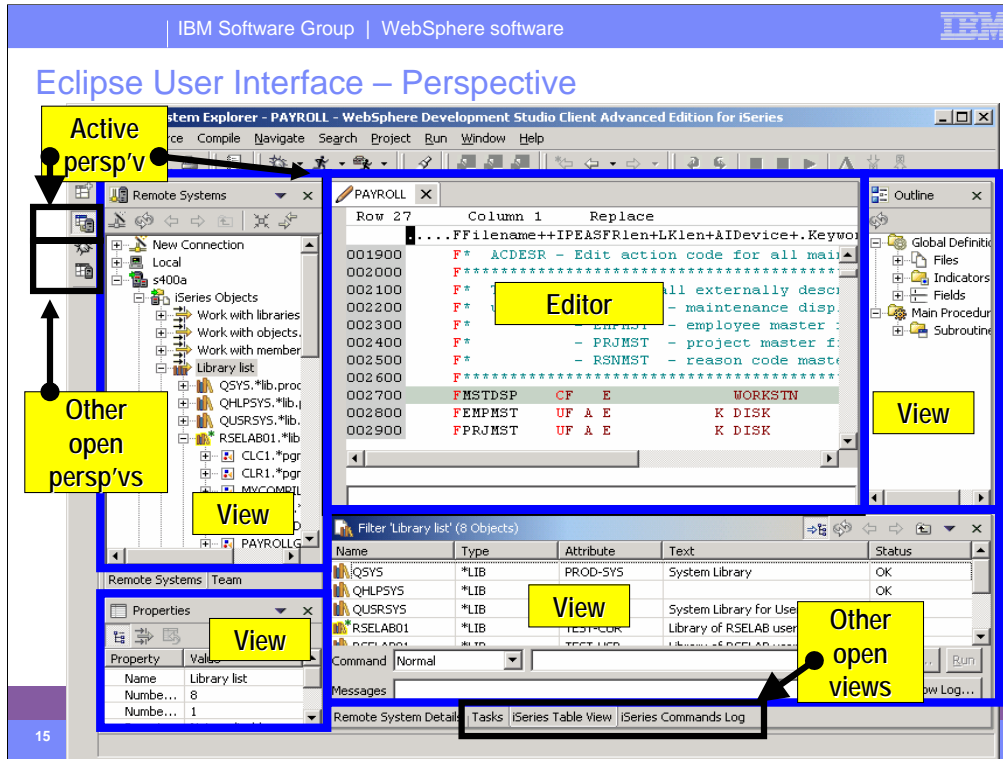
Eclipse User Interface – Select Perspective

- Users work with **perspectives**
 - Collection of **editor** and **views**
 - Tools for a particular task
 - Allows for role-based development
 - Many perspectives are pre-supplied for specific tasks like Java, Web, XML, RPG/CBL
 - Users can create their own perspectives

- The user interface is very Windows-like
 - Eg: views can be re-sized and re-positioned through drag 'n drop



The core features of the Eclipse user interface include perspectives which is a collection of views and tools. Perspectives allow role based development. For example, if you are a Java developer you would use the Java perspective which includes tools and views for Java development. You can also create your own perspectives. Naturally, the Eclipse user interface applies to all Eclipse-based products, like Development Studio Client.



An example of an eclipse perspective... the active one contains the editors and views you see. Other perspectives can be open simultaneously, but not active. These are shown in the tray on the left, and can be made active by simply clicking on them. To open new perspectives, use the Window pulldown.

Table of contents

Development Studio Client

 **Remote System Explorer**

Subsystems, filters and actions

Editors

Designer

Integrated iSeries Debugger

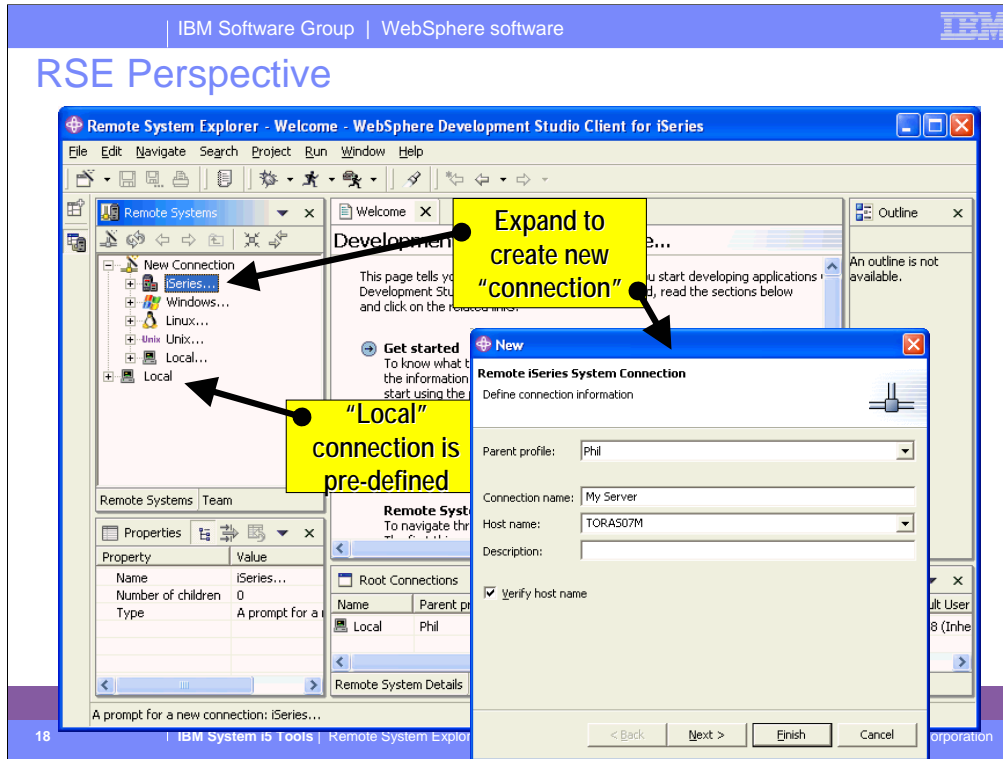
Summary

Now you know the story behind Development Studio Client. Lets look at the Remote System Explorer, the tool for iSeries application development and maintenance.

RSE Perspective – PDM Drill down, Filtered Access

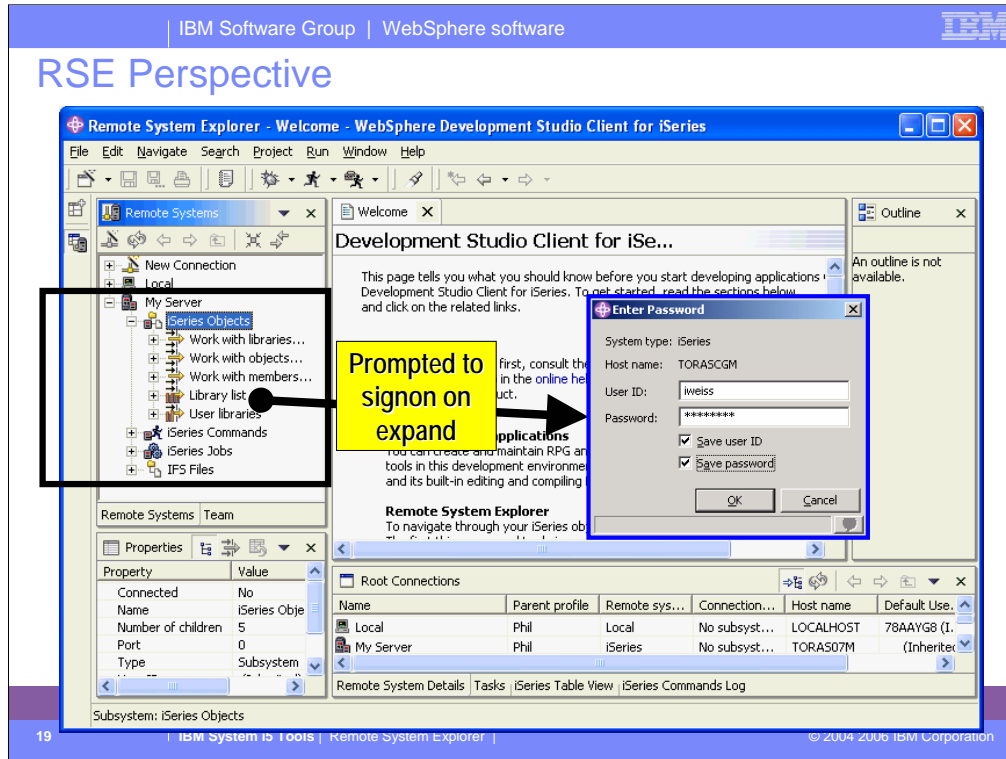
- iSeries QSYS artifacts
libraries, objects, members, records, fields, modules, etc
- iSeries Jobs
- iSeries IFS Folders and Files, and QShell Cmds
- Local Folders, Files and Cmds
- Remote Unix, Windows, Linux Folders, Files and Cmds

The Remote Systems Explorer goes well beyond PDM! It also allows exploration of iSeries jobs and commands, and the IFS file system. Further, it can also be used to explore the file system of remote Linux, Unix and Windows systems. The Linux support works for any Linux, including Linux in an iSeries Logical Partition.

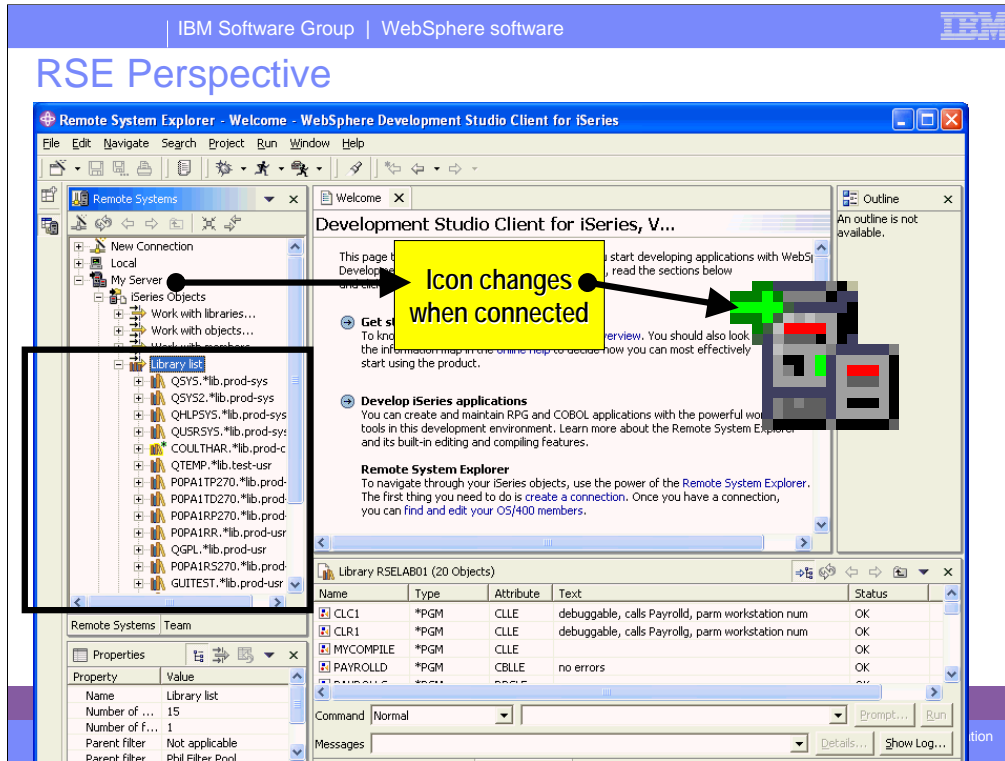


When you first open the Remote System Explorer, you are not connected to any system except your local hard drive on our workstation. To connect to a remote iSeries host, you need to define a connection. In the Remote Systems view you use the New Connection wizard to configure a connection to your iSeries host. You can also use the Remote Systems view to explore the file system of remote Linux, UNIX and Windows systems. The Local connection is pre-defined.

RSE Perspective



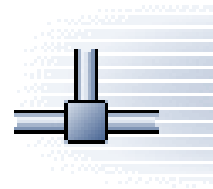
After creating an iSeries connection, and then expanding it to the point where stuff from the iSeries is to be shown, you are asking to signon to the iSeries. You can optionally choose to remember the user ID and password, such that you won't be prompted again for them.



Once a communication session is established with the target iSeries system, the icons for the connection, and the nodes immediately underneath it, change to have a small green arrow indicating you are connected. Of course, you also then can expand to see resources from that iSeries.


What is an RSE “Connection”?

- Represents a remote system
 - Given an arbitrary name
 - Multiple connections to one system permitted
- Contains environment info
 - Such as library list and environment variables
 - Specified in properties dialogs of connection
- Used in many Development Studio Client for iSeries tools
 - RSE, iSeries Projects, Java Tools, Web Tools, WebFacing



A very central concept to all of Development Studio Client for iSeries is that of connections. A connection defines information needed to access a remote system. Each connection is given an arbitrary name by you, and so multiple connections to the same system are permitted. Each connection also captures information that is applied when connecting to that remote system, such as the initial library list for iSeries connections. All iSeries tools within Development Studio Client for iSeries use connections to access a remote iSeries system. Connections are created and managed in the Remote Systems Explorer.

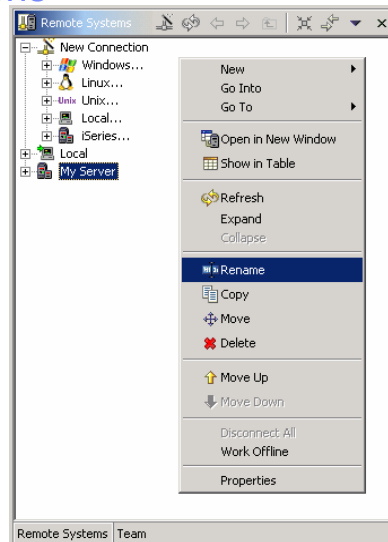
Working with RSE Connections

- Remote Systems view manages connections 

Create connections here
(using wizard)

Change, rename, copy,
delete them here

Expand them to work with
resources here

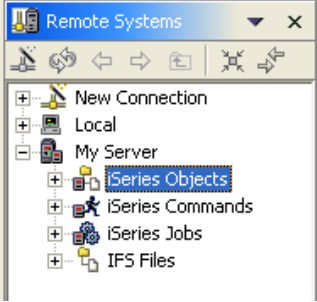


The Remote Systems view is the primary view for managing connections, via right click actions. While this view is normally accessed in the Remote Systems Explorer perspective, you can open any view in any perspective.

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iSeries Connections

- Connections expand to
 - “subsystems”
 - Named grouping of functionality
- Subsystems for iSeries connections:
 - 1 **–iSeries Objects**
 - For working with Libraries, Objects and Members
 - 2 **–iSeries Commands**
 - For pre-defining and running QSYS command sets
 - 3 **–iSeries Jobs**
 - For working with jobs
 - 4 **–IFS files**
 - For working with Integrated File System files and commands



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Once connections are defined they can be expanded within the Remote Systems Explorer. On expansion, the user sees subsystems, which are merely a functional grouping of the various types of remote resources that can be explored in the remote system

For iSeries connections, there are four subsystems:

- iSeries Objects is the PDM-like grouping, allowing access to libraries, objects and members
- iSeries Commands allows developers to predefine command sets each of which contain one or more often used commands. When run, all commands in a command set are sent to the remote system and executed, and the results are logged in the Commands view.
- iSeries Jobs allows developers to see various jobs, subsettable by job attributes, and to perform a limited number of operations on those jobs
- IFS Files allows developers to explore folders and files in the Integrated File System of the remote iSeries system

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1

iSeries Objects

- For drill-down or filtered access to QSYS
 - ✓ Libraries, objects, mbrs
 - ✓ Expand lib to see objs
 - ✓ Expand file to see mbrs
 - ✓ Expand device file to see record fmtns, then flds
 - ✓ Expand pgm/srvpgm to see modules, then procs
 - ✓ Expand msgf to see messages
- Similar to PDM

Remote Systems

Series Objects

Work with libraries...

Work with objects...

Work with members...

Library list

User libraries

My Library

RSELABXX.*lib.prod

CLC1.*pgm.cle

CLR1.*pgm.cle

MYCOMPILE.*pgm.cle

PAYROLL.*pgm.rpgle

PAYROLLD.*pgm.cbile

PAYROLLG.*pgm.rpgle

PAYROLLG.*module

PAYROLLG

COMPARE.*file.pf-src

EMPMST.*file.pf-dta

EVFVEVENT.*file.pf-dta

MSTDSP.*file.dspf

SELECT

EMPMNT

PRJSEL

PRJMNT

RSNSEL

RSNMNT

MSTDSP2.*file.dspf

PRJMST.*file.pf-dta

QCBLLSRC.*file.pf-src

PAYROLLC.cbile

PAYROLLC2.cbile

CREATE new filters

Supplied filters

User filter

Objects within expanded library

Fields within device file

Members within expanded file

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The iSeries Objects subsystem is the subsystem you will use most often! It is very similar to PDM, in that it allows you to access objects in the QSYS file system, and perform actions on those objects.

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1

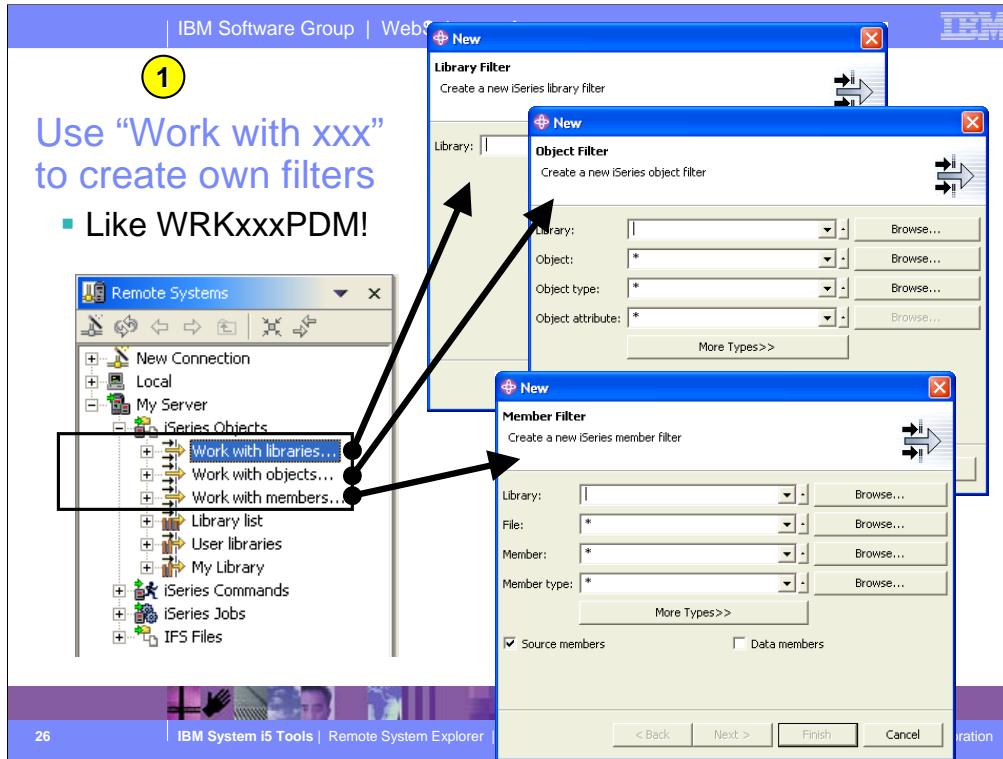
“Library list” is a pre-defined filter

- For accessing and manipulating libl
 - ✓ Like WRKLIBPDM with *LIBL
 - ✓ Filter actions to add to library list, change current library
 - ✓ Library actions to move within libl, remove from libl, add to libl, change curlib

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When the pre-defined library list filter is expanded, and the connection is successful, you will see the libraries on your library list. For each library, you can right-click and select from a number of useful actions. There is an action to create a new source file within the selected library, to refresh the contents of the library if it is expanded, to rename the library, copy the library or delete the library. These last three actions remotely run the appropriate iSeries command and you will see it logged in the Command Log view.

If you expand a library, you will see all the objects in that library...

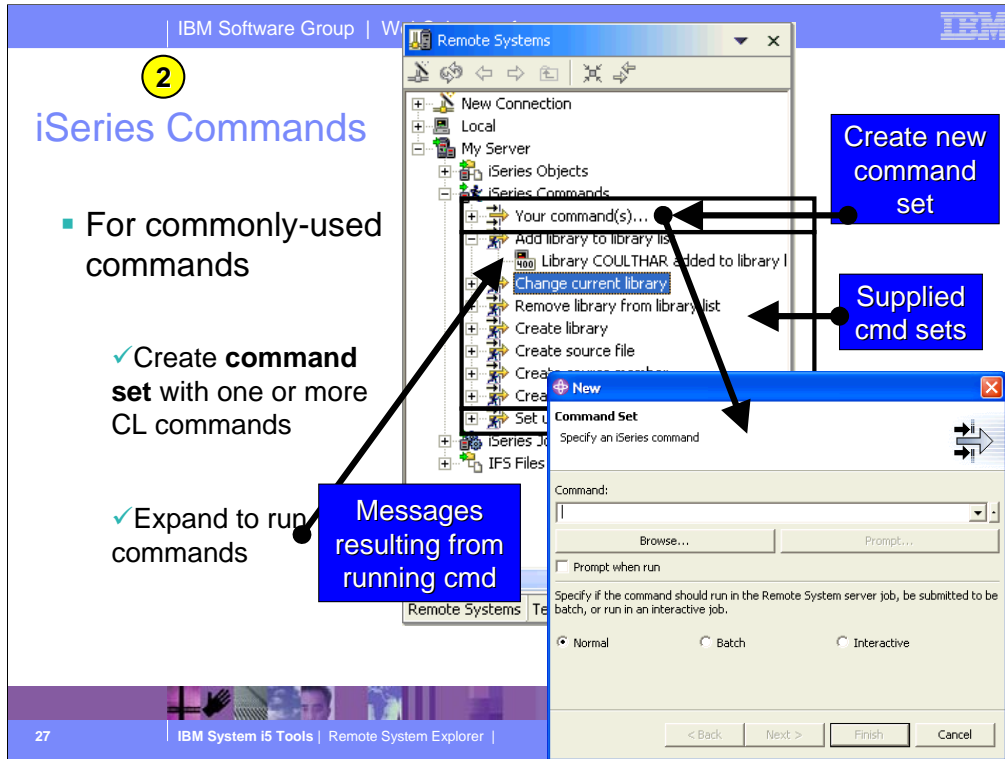


The three child items at the top of the list are for creating filters, much like in PDM:

- Work with libraries... prompts you for a simple or generic library name, and lists all matching libraries. It is similar to WRKLIBPDM.

- Work with objects... prompts you for a simple or generic library name and simple or generic object name, as well one or more object type and attribute pairs. It lists all matching objects in all matching libraries. it is similar to WRKOBJPDM.

- Work with members... prompts you for a simple or generic library name, simple or generic file name, and simple or generic member name, as well as one or more member types which can also be generic. It lists all matching members in all matching files in all matching libraries. It is similar to WRKMBRPDM. Unlike PDM, the filters you create are permanently remembered and displayed in this list for easy re-use. We will have more to say about filters. To simulate STRPDM's option 12, you can start with the pre-defined Library list filter, that when expanded lists all libraries in your library list. With any filter, once it is expanded you can subsequently expand a library to see all objects in the library, and expand files to see all members in the file. When you expand your first filter, such as the pre-defined Library List filter, you are prompted for your password and then connected to the remote iSeries. Then, the results of resolving the filter are shown...



The iSeries Commands subsystem is merely a place for creating often-used commands. The commands are created in a Command Set, which is simply a named list of commands. By default you are only prompted for a single command, but after creating the command set you can use the Change action to add more commands.

Once a command set is created it appears in the tree. There are a number of command sets pre-supplied by IBM. When a command set is expanded, the commands in it are run and any messages are shown as children of the command set. The commands are also logged in the command log view.

This is only one way to run commands in the RSE. There is also a Command Log where you can enter commands just like a command line on the iSeries. You will see that you can also create user-defined actions that appear in the menu for selected objects and members, just like PDM user defined options.

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3 iSeries Jobs

- For accessing jobs
 - Like WRKxxxJOB
 - Create filters to see jobs with specific attributes (right click)
 - Use predefined filters to see your own jobs

The screenshot shows the 'Remote Systems Explorer' window. The tree view on the left shows the hierarchy: Local > My Server > iSeries Objects > iSeries Jobs. A right-click context menu is displayed over the 'iSeries Jobs' folder. The menu items include 'Go To', 'Refresh', 'Expand', 'Collapse', 'End', 'Hold', 'Release', 'Add To Job Status View', 'Display job log', 'User Actions', 'Debug As', and 'Properties'. A yellow callout box labeled 'Supplied filters' points to the 'Active jobs', 'My active jobs', and 'My jobs' items in the tree. Another yellow callout box labeled 'Job actions' points to the 'End', 'Hold', and 'Release' items in the menu. A third yellow callout box labeled 'User filter' points to the 'My jobs' item in the tree.

28 | IBM System i5 Tools | Remote System Explorer | © 2004 2006 IBM Corporation

The iSeries Jobs subsystem is for working with jobs.

As with all subsystems, you can create filters (by right clicking on iSeries Jobs) to see just the jobs you want to see. There are three pre-defined filters for you to see all active jobs, only your active jobs and all your jobs.

The job's icon indicates if it is active, done or queued.

Right clicking on a job allows you to work with the job.

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4

IFS Files

- For accessing folders and files
 - ✓ Like WRKLNK
 - ✓ Create filters to see files in specific folders (right click)
 - ✓ Use predefined filters to drill down
 - ✓ Open command console (right click on IFS Files) for QShell

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29 | IBM System i5 Tools | Remote System Explorer | © 2004 2006 IBM Corporation

The IFS Files subsystem allows you easy access to IFS folders and files.

Like all subsystems, you can define your own filters and there are some predefined. In this case, the filters allow access to files within a particular folder.

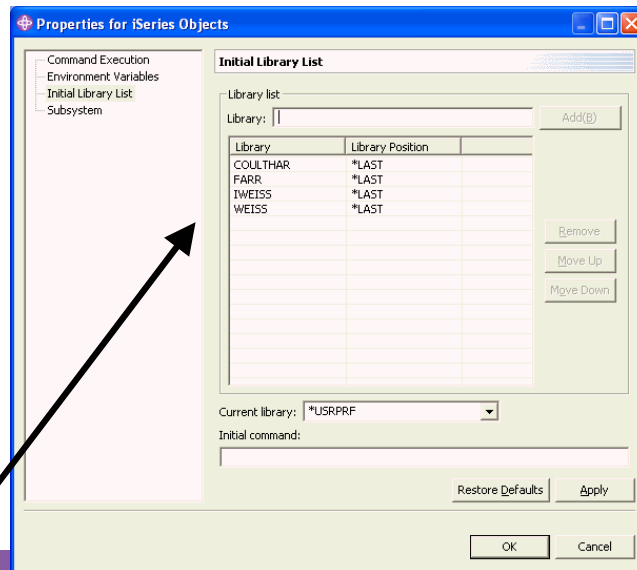
Right-clicking offers access to a very rich set of actions you can perform against the selected folders and files. You can even create your own user actions, as can for the iSeries Objects and iSeries Jobs subsystems.

To run QShell commands, right click on the IFS Files subsystem object and select the Launch Shell action. This opens a command console that is also very rich in function.

SubSystem Properties

- Right click on any subsystem in an iSeries connection to configure it via Properties

- ✓ Specify compile preferences
- ✓ Specify environment variables
- ✓ Specify library list



All iSeries subsystems allow you to configure properties via the Properties action in the right-click menu. These properties are run-time properties that are applied when the connection is connected to the remote server.

A popular question is how to setup the library list such that it is set every time, without manual intervention. This is where to do that.

iSeries Objects

- The following focuses on using the iSeries Objects subsystem to work with artifacts in your native QSYS file system

Now we drill down on the iSeries Objects subsystem, which is by far the most heavily used.

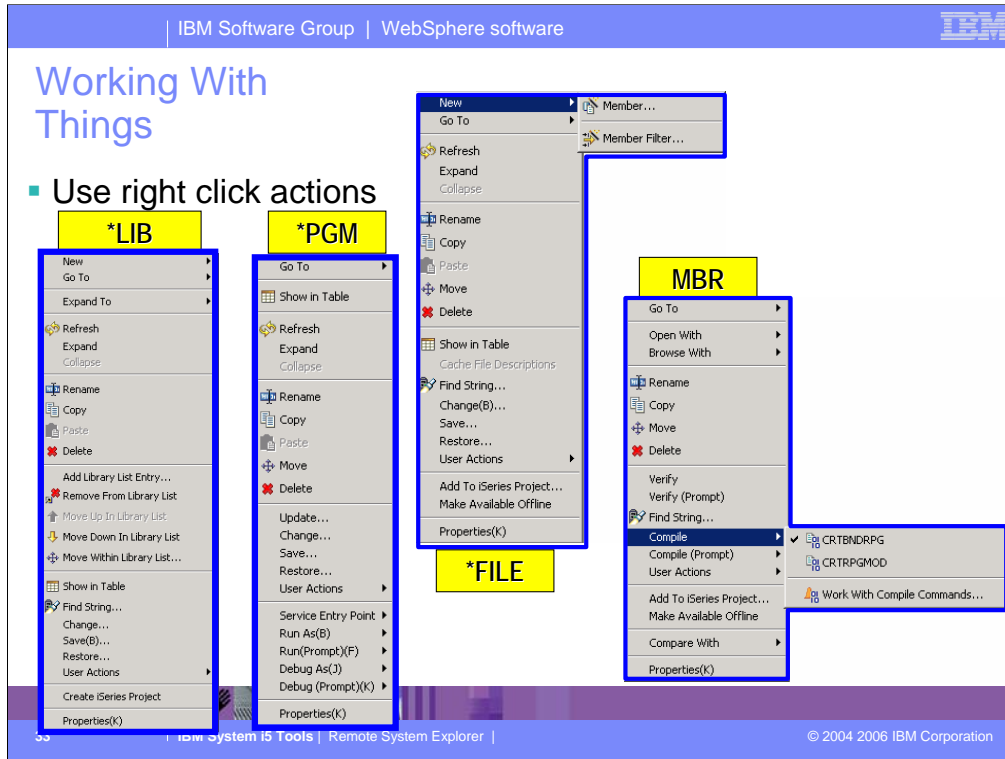
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Creating New Things

- Right click for “new” actions
 - ✓ On library filter for new library
 - ✓ On library object for new object
 - ✓ On file object for new member
 - ✓ On msgf object for new message

The screenshot shows the IBM System i5 Tools Remote System Explorer interface. On the left, a tree view displays the hierarchy of objects under 'My Server'. A right-click context menu is open over the 'RSELAB01.*lib,test' library object, with the 'New' option selected. This opens a sub-menu where 'Source Physical File...' is highlighted. An arrow points from this menu item to the 'New Source Physical File' wizard dialog box. The dialog box is titled 'iSeries Source Physical File' and contains the following fields: 'Library' (RSELAB01), 'File' (MYSRC), and 'Record length' (112). The 'Text' field is empty. At the bottom of the dialog, the text 'CRTSRCPF FILE(RSELAB01/MYSRC) RCDLEN(112)' is displayed. Navigation buttons '< Back', 'Next >', 'Finish', and 'Cancel' are at the bottom.

To create new objects, right click on a library to get access wizards for creating some of the more popular objects for developers. Of course, you can also use the command log or a command set to do this, but these wizards help by simplifying the command.



These are some of the right-click popup menus, based on object type. This shows how rich the functionality is. Indeed, it is a superset of PDM's functionality.

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Properties

- Use Properties view for quick access to common properties

Property	Value
Attribute	TEST
Name	RSELAB01
Number of children	20
Source	QSYS
Status	OK
Text	Library of RSELAB user RSEL
Type	*LIB

Directly editable

- Use Properties dialog for access to all properties

Create iSeries Project
Properties(B)

Properties for RSELAB01

Library Info
Advanced Info
Disk Info
Source and Service Info

Advanced Info

Owner: WDSCLAB01
Primary group: *NONE
Object auditing value: *NONE

Creation information

Created: July 17, 2003 4:13:24 PM EDT
Created by: WEISS
System created on: TORAS07M
System level: V0SR01M00
Domain: *SYSTEM

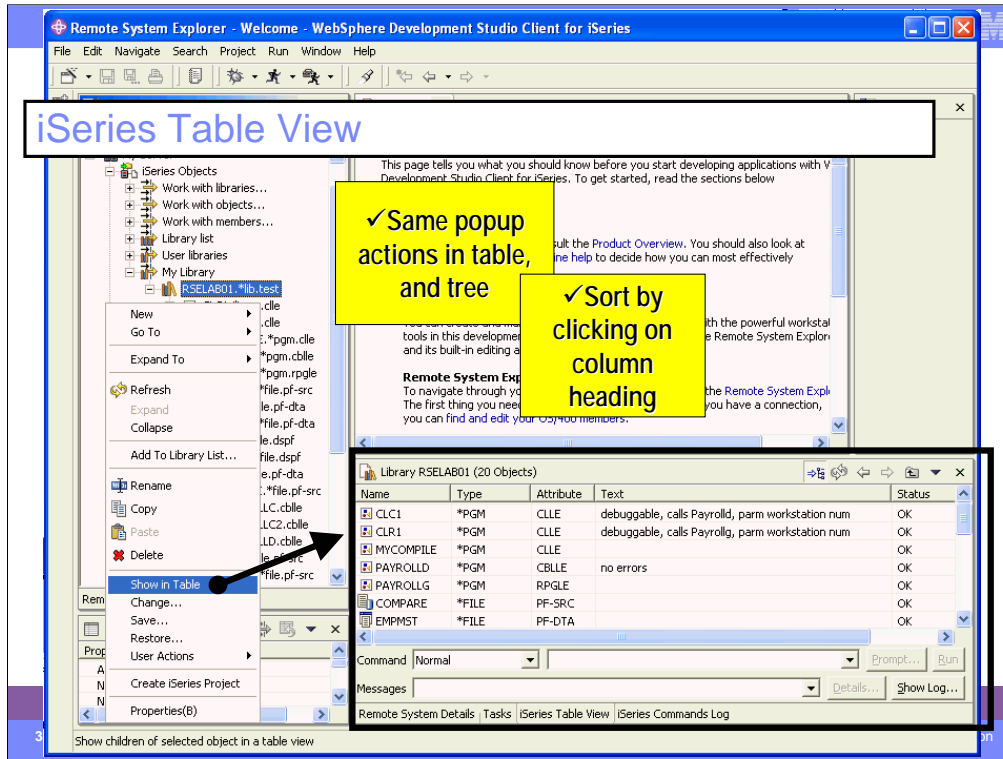
Change/usage information

Modified: July 17, 2003 4:13:45 PM EDT
Usage data collected: No
Last used date:
Days used count: 0
Reset date:
Allow change by program: Yes
Changed by program: No
Changed by user: Yes

34 | IBM System i5 Tools | Remote System Explorer | © 2004 2006 IBM Corporation

The Properties view is normally in the lower left of your RSE perspective. It is where common information about the selected object is shown, some of which is directly editable, such as the Text property, which changes the text of the object on the iSeries.

For a full set of all the properties, right click and select Properties from the bottom of the object's popup menu



For libraries and files we can use a pop-up menu action to open table views to see the contents of the library or file. In these tables, the columns are attributes for the object or member in each row. The table can be sorted by an attribute by simply clicking on the column heading.

The Show In Table action is available for every tree node that has children.

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iSeries Table View

✓ Use local pulldown to see additional columns

Can also

- ✓ Change contents
- ✓ Subset contents
- ✓ Position list
- ✓ Print list

✓ Just like PDM!

Name	Type	Attribute	Text	Status	Last modified	Created	Size
CLC1	*PGM	CLLE	debuggable, calls Pay...	OK	July 17, 2003 ...	July 17, 2003 4:13:24 PM EDT	81920
CLR1	*PGM	CLLE	debuggable, calls Pay...	OK	July 17, 2003 ...	July 17, 2003 4:13:24 PM EDT	81920
MYCOMPILE	*PGM	CLLE		OK	July 17, 2003 ...	July 17, 2003 4:13:24 PM EDT	73728
PAYROLLD	*PGM	CBLL	no errors	OK	July 17, 2003 ...	July 17, 2003 4:13:24 PM EDT	360448
PAYROLLC	*PGM	CBLL		OK	July 17, 2003 ...	July 17, 2003 4:13:24 PM EDT	360448

36 | IBM System i5 Tools | Remote System Explorer | © 2004 2006 IBM Corporation

When listing objects in a library, in a table view, you can turn on “Additional information” to see more attributes: date-created, date-changed and size. Combined with the sorting capability, this can be very powerful.

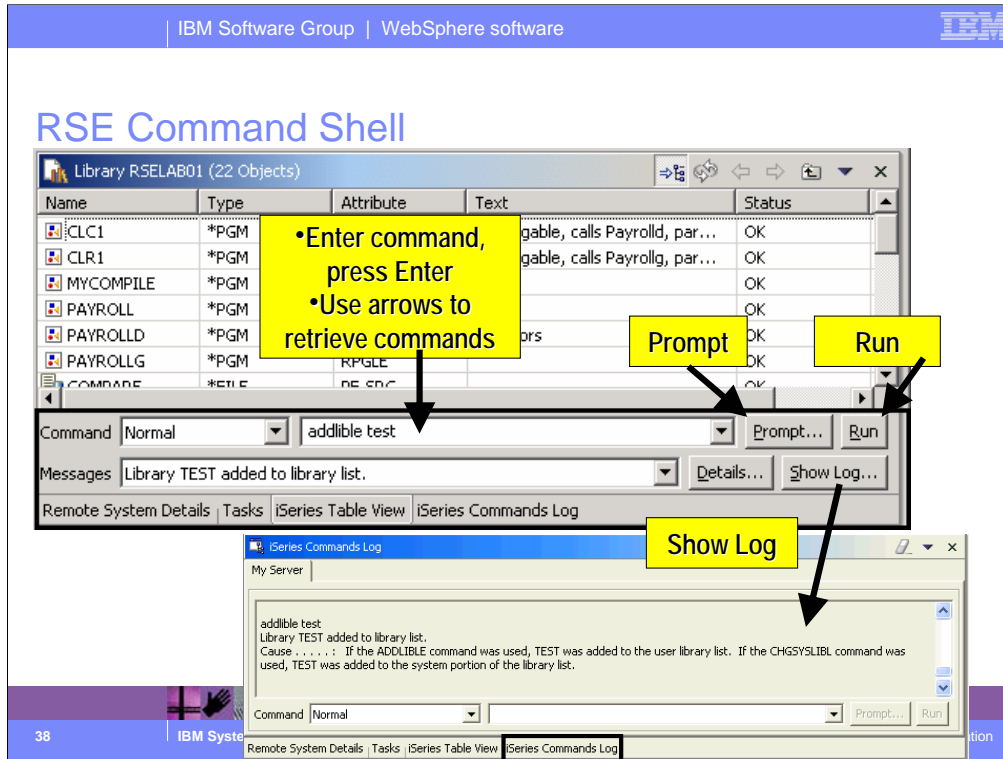
The same little pulldown menu has other actions that PDM users will be familiar with.

iSeries Table View

Name	Type	Text
CLC1	*PGM	debuggable, calls F
CLR1	*PGM	debuggable, calls F
MYCOMPILE	*PGM	
PAYROLL	*PGM	
PAYROLLD	*PGM	
PAYROLLG	*PGM	
COMPARE	*FILE	no errors
EMPMST	*FILE	
EVFEVENT	*FILE	
MSTDSP	*FILE	with no errors
MSTDSP2	*FILE	
PRJMST	*FILE	
QCLLESRC	*FILE	
QCLSRC	*FILE	
QCMSRC	*FILE	
QDSSRC	*FILE	
QRPGLSRC	*FILE	PF-SRC
QRPGLSRC.P	*FILE	PF-SRC
REFMST	*FILE	PF-DTA

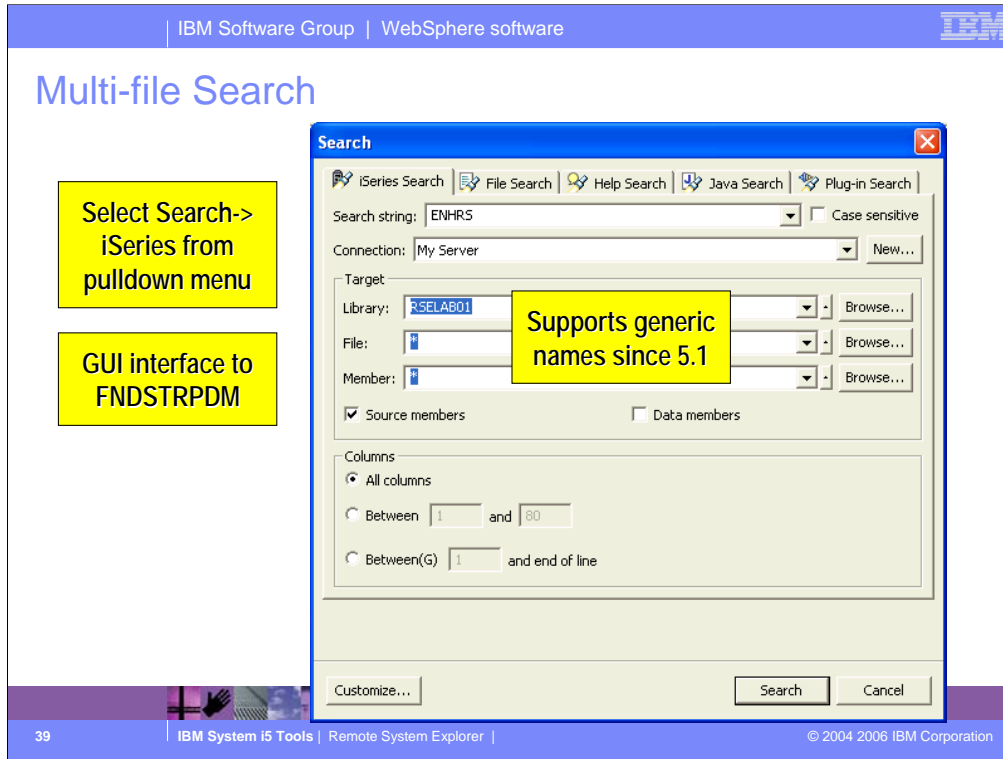
✓ Special PDM Options menu for PDM users

While there is nothing new in this menu, there is a PDM Options menu in the right click menu from the table view, which shows all the actions by the numbers their corresponding option was in PDM, to help with the learning curve of PDM users.

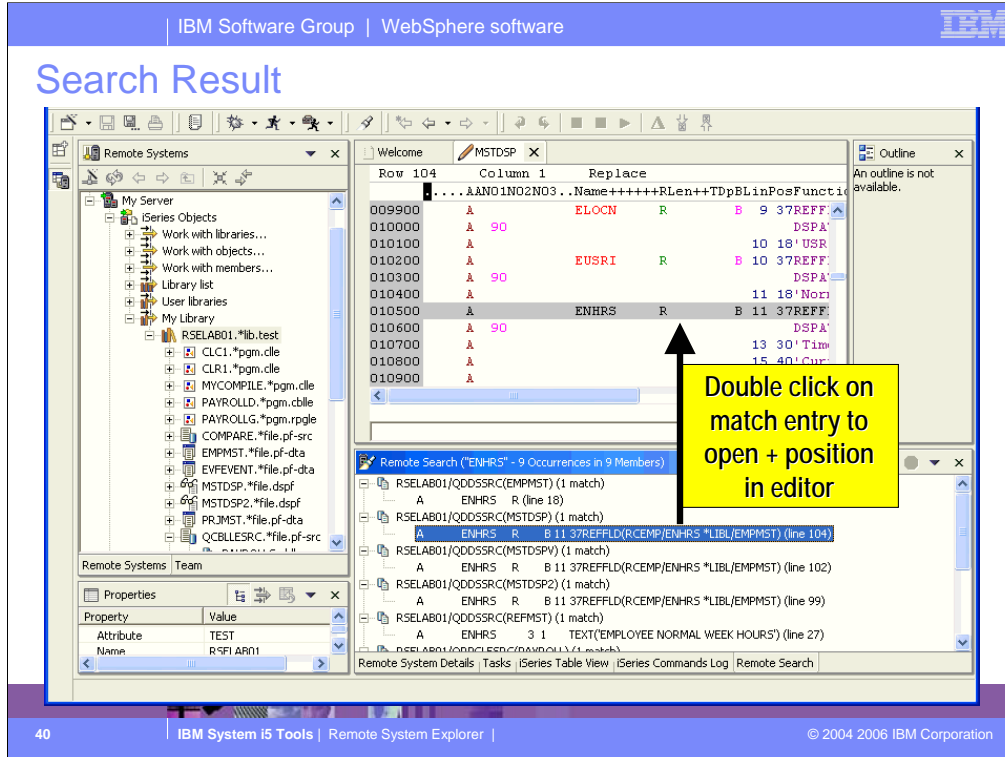


Like PDM, there is command line at the bottom of the table, and it can be used to enter command to be prompted and run. When run the results are shown in the messages combo box, and the command log can be seen via the Show Log button.

Note that in 5.1, you can use F4 and F9 in this command shell.



Often we need to search through members looking for strings. To this from the RSE, there is a dialog to help with it. It supports the same options as FNDSTRPDM ... actually more as it allows generic library and file names (as of 5.1). Indeed, this actually ends up calling FNDSTRPDM to do the search.



The result of searching is a hit-list view where the resulting matches are shown. They can be double-clicked on to open the editor to the line with the match.

RSE Drag and Drop

- RSE has rich support for drag and drop
 - ✓ Same as using Copy and Paste

✓ Within same connection

✓ From tree/table view to editor (5.1 and later)

✓ Between command shell and tree view

✓ Between connections

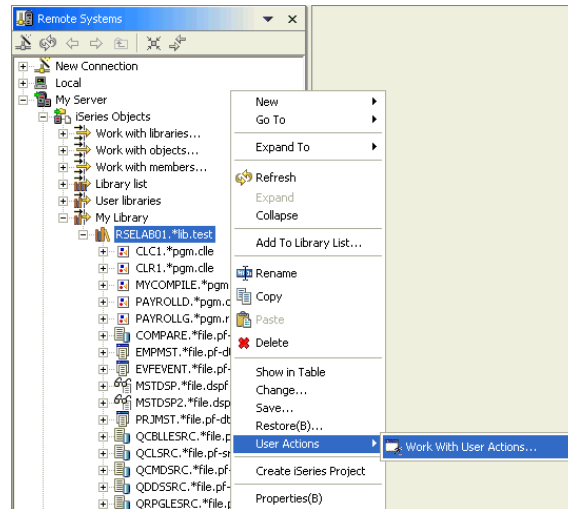
✓ From tree/table view to filter (5.1 and later)

✓ Between table view and tree view

Here you can see that you can drag and drop files or copy and paste files across multiple file systems, within the same connection and using the Remote Systems view, iSeries Table view or the Command Shell.

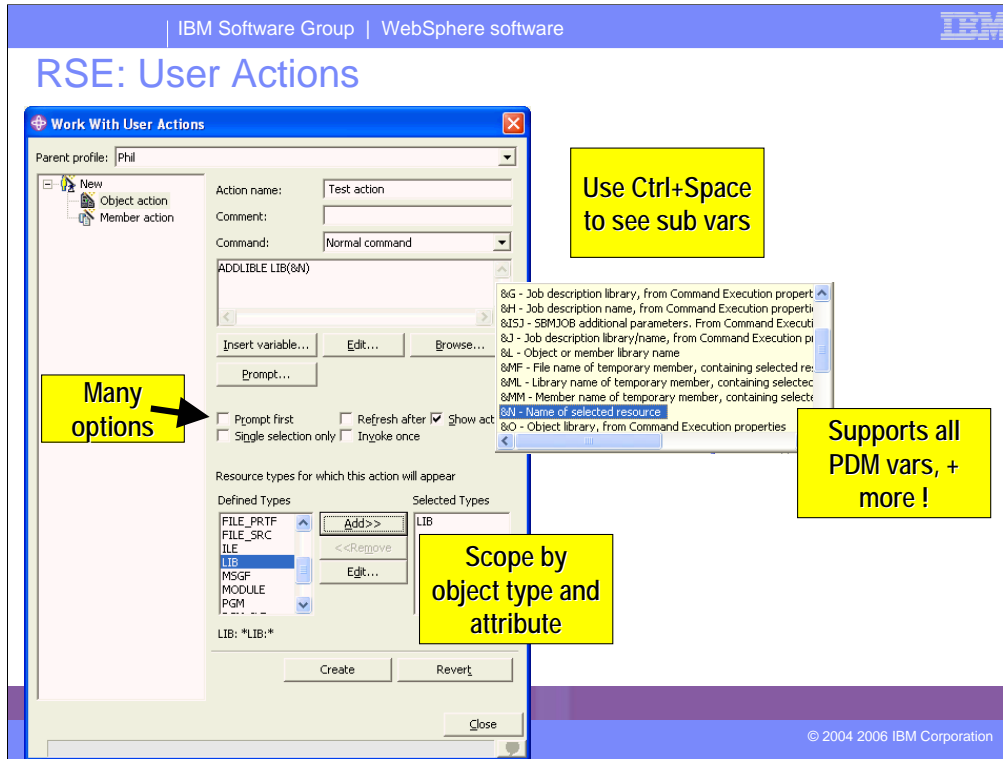
RSE: User Actions

- **User-Defined Actions (like PDM!)**
 - Right-click on iSeries Objects or any iSeries object member
 - **Work With User Actions**
 - Create, delete or change user-defined actions
 - Scope them by type and attribute



While IBM supplies a number of useful actions for remote iSeries objects, it is not possible to supply them all. Like PDM, you can easily define your own actions. To create your own actions, use the Work With actions in the popup menu for iSeries Objects. These user-defined actions will appear in the popup menus for remote resources. To avoid seeing all actions in all popup menus, you scope each action to a one or more object or member types. You first define named collections of object or member types, then you create your actions and scope them to one of these named collections of types. Your actions will then only appear for object or members that match one of the types in the collection. If you are a CODE user, you can use File->Import to import existing actions from CODE Project Organizer.

You can also create user actions for Jobs and for IFS (or local/windows/unix/linux) folders and files.

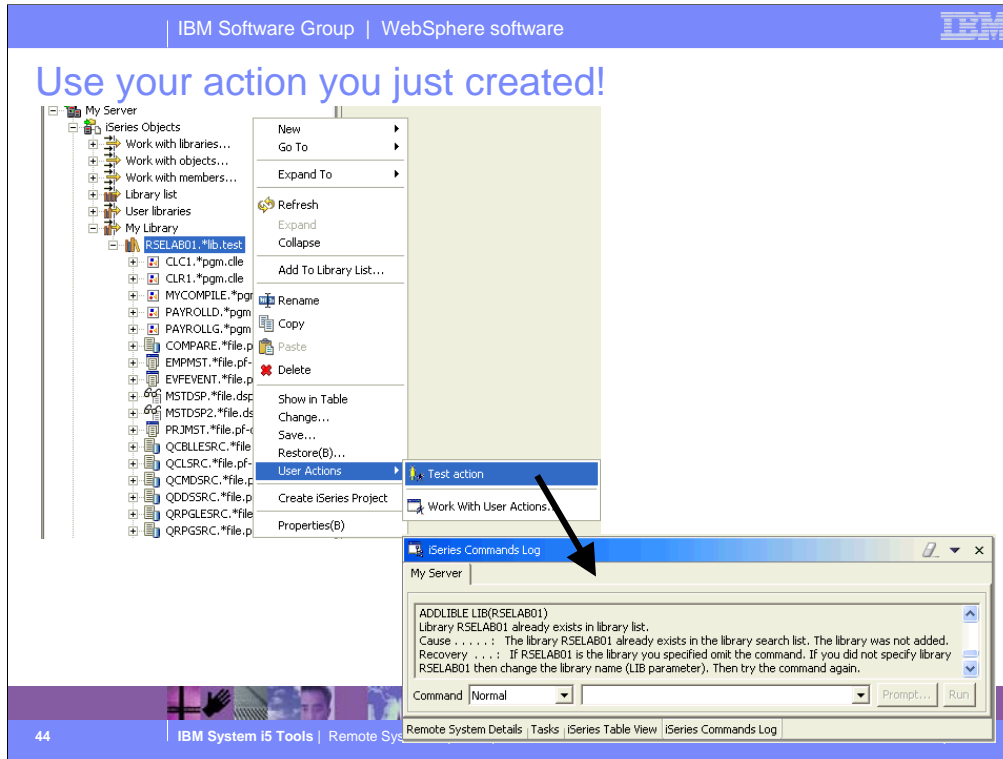


Here is what the dialog that is used to define new user actions looks like.

An action is a name (shown in popup menu), comment, command and a number of options.

All PDM's substitution variables are supported plus additional ones. Use Ctrl+Space, or press Insert variable, to see all the available variables.

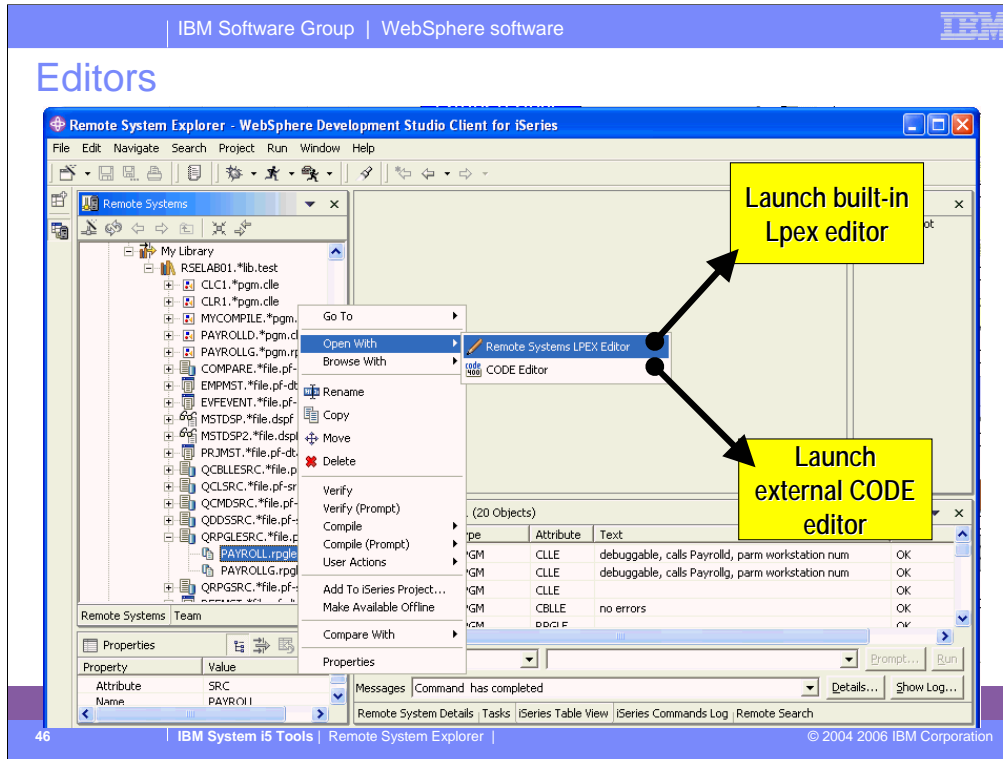
Actions are scoped such that they only appear in the menus for the objects and members they apply to. This is better than PDM allows. Also, you can specify if the command should be prompted before running, whether to refresh the list after running the command, and whether the action should only appear if one item is selected, or what to do if multiple items are selected.



Once your action is defined, you can use it. Right click on an object matching one of the types you specified, and expand the User Actions menu in the pop-up. Your action appears in the menu. Select it. If you chose to prompt the command, you will see the GUI prompt for the command. When the command has finished running, it results are logged in the Commands view.

Remote System Explorer

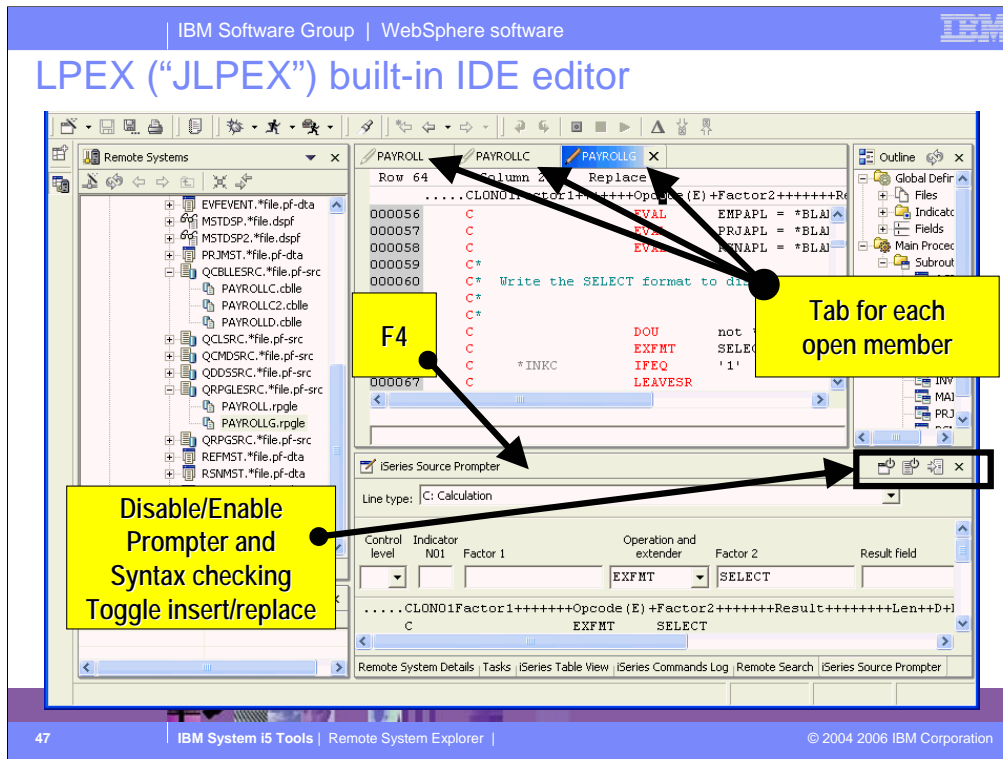
Editors



For a source member, there are two options for editing:

1. Remote Systems LPEX Editor. This is the new editor, written all in Java, that is built-in to the IDE. It is a re-write of the original CODE Editor, but as you will see has a subset of the functionality in CODE at this point.
2. CODE Editor. This is the classic full-functioned CODE editor, which is offered as an alternative until the Lpex editor catches up to the functionality of the CODE editor. This launches the CODE Editor in a separate window.

We will cover the Remote Systems LPEX editor next in more detail...



The Remote Systems LPEX editor is built-in, so it shows up in a pane within the IDE. You can open multiple members for editing, and each will be shown in the editor area with a tab that when selected brings that member to the foreground. You can double click on a tab to expand that member's edit window to full size. When a tab shows an asterisk in it, that indicates there are pending changes that should be saved. For RPG (both III and IV) you will notice there is color highlighting and familiar F4 support to prompt for the current line. The prompter sits in a view that doesn't overlap the editor. When done filling in the prompt, you can press one of two buttons to replace the current line or insert a new line.

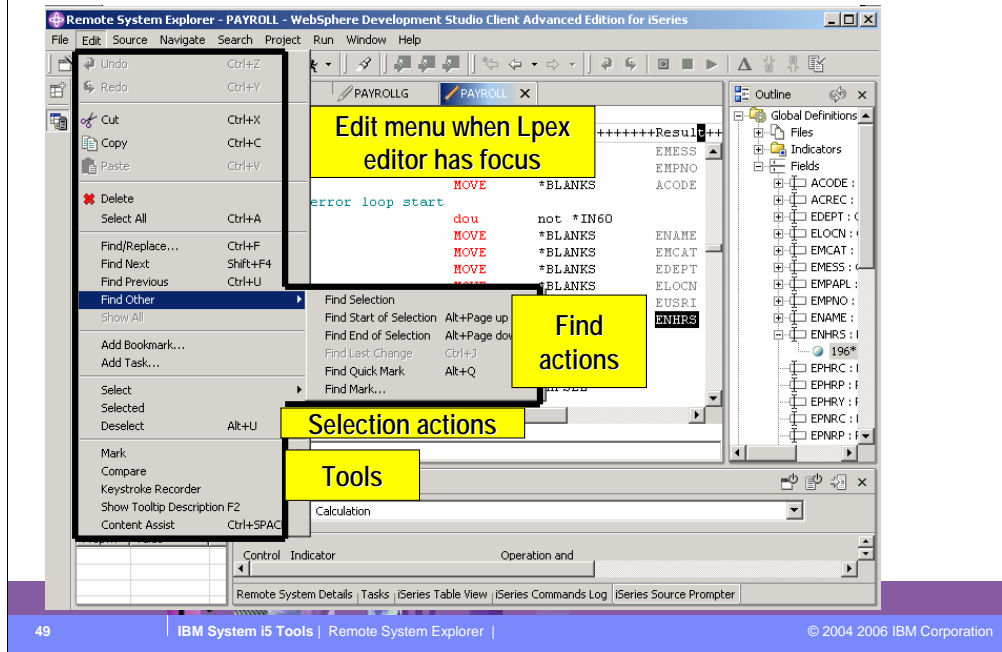
Multiple Views for a Single Source Member

The screenshot shows two views of a source member in a split-pane editor. The top view is titled 'ORDENTR.RPGL E X' and shows a table with columns 'Line', 'Column', and 'Replace'. The bottom view is titled 'WDSRCDemo/QRPGLSRC(ORDENTR): 2' and shows a parameter list for a program. A context menu is open over the bottom view, with 'Vertical split' selected. A yellow callout bubble points to the top view with the text 'New in V6.0.1'. A blue box on the right contains the text 'Same source member, multiple *editable* views'.

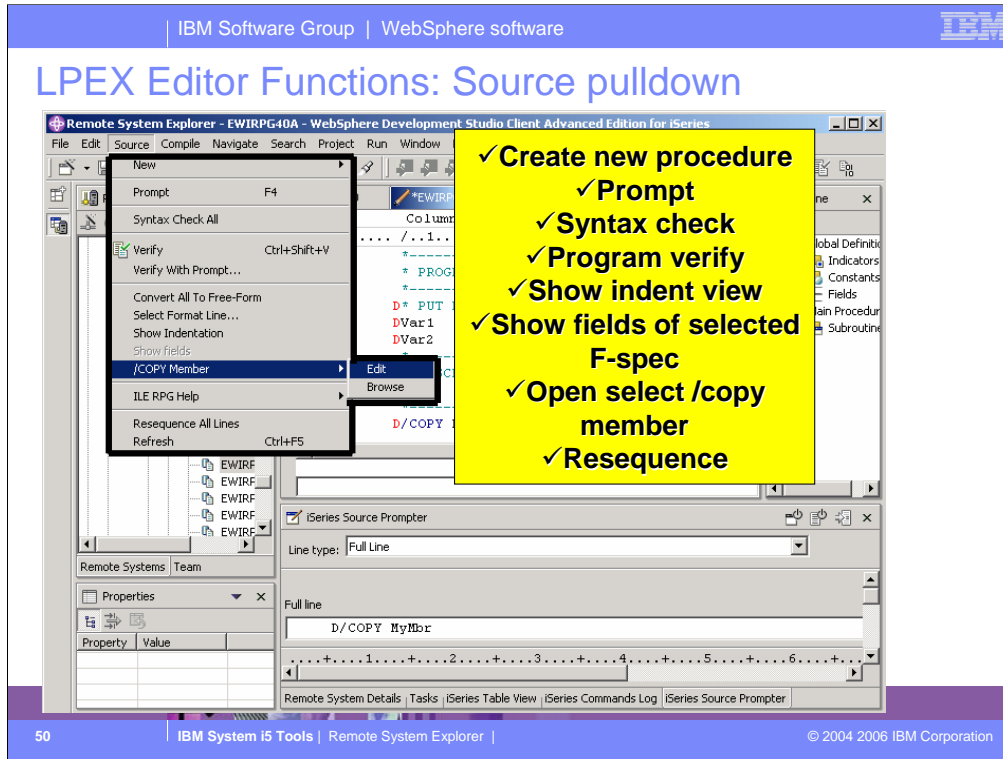
Line	Column	Replace
006300	D	DistrictID
006400	D	WarehousID
006500	D	OrderID

Line	Column	Replace
064500	C	PARM
064600	C	PARM
064700	//	
064800	//	Parameter list for SLTCUSTR prog
064900	C	CustSlt
065000	C	PLIST
065100	//	
065200	//	Parameter list for SLTPARTR prog
065300	C	PartSlt
065400	C	PLIST
065500	//	

LPEX Editor Functions: Edit pulldown

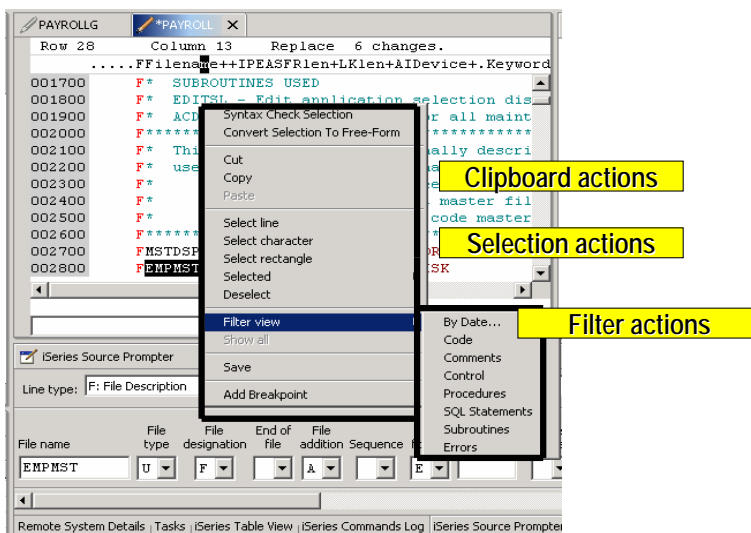


This shows the Edit menu, when the editor is open and in focus. This menu offers actions for clipboard, searching, selecting and a number of cool tools.



This is the Source menu when the editor is open and in focus. It has a number of actions that apply to the entire source member, as opposed to what is selected.

LPEX Editor Functions: Context menu



Here we see the pop-up menu within the LPEX editor. This contains clipboard and selection actions, as well as filtering actions which we will discuss.

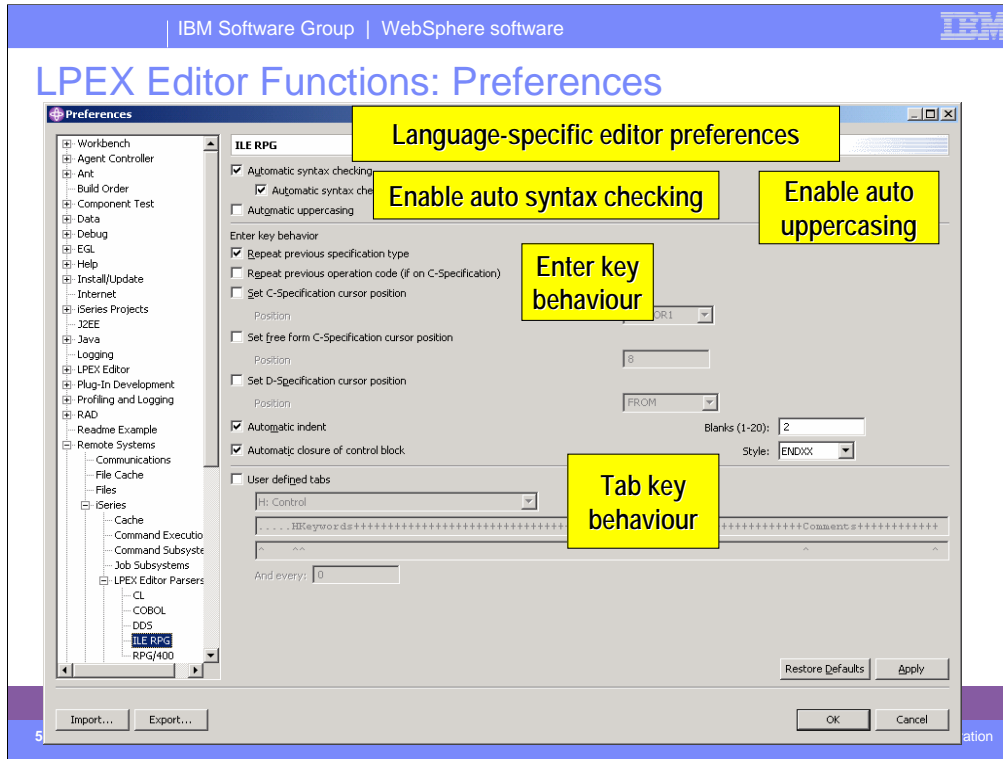
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LPEX Editor Functions: Preferences

- There are also a number of cool functions you can enable via the editor preferences
 - Window->Preferences

52 | IBM System i5 Tools | Remote System Explorer | © 2004 2006 IBM Corporation

There are a number of other interesting Editor capabilities available for enabling in the editor's preference page. The most exciting of these are the column-sensitive editing and the highlight current line option. The former allows editing within a range of the RPG/DDS spec such that other areas of the same line are not affected by insert or delete, while the latter highlights the line containing the cursor.

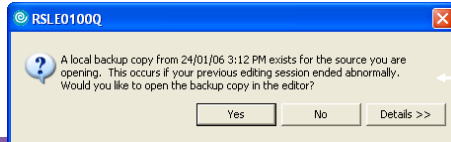
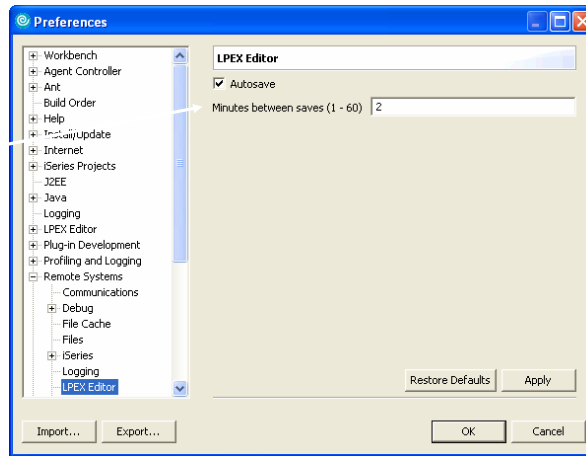


In addition to preferences that apply to all languages, there are preferences that apply specifically to individual languages.

Autosave

Autosave preferences

New in V6.0.1



Dialog when opening a member and autosave backup exists

SEU Style Prefix Commands

- SEU common prefix commands
- ILE RPG Format Line prefix commands
- ILE RPG Prompt prefix commands
- OPM RPG prefix commands

Example:

I, I5, D, DD ...etc.
FD, FC, FO, PP ...etc.
PH, P?, PC, PO, PP ...etc.
F, F?, P, IP, IP? ...etc

You can configure the LPEX editor to adopt the keyboard and command personalities of many popular editors. Most editor profiles differ only in the keys and commands used to perform various editor tasks. Some base editor profiles, listed below, also add a prefix information and command area at the start of each line:

ispf

seu

xedit.

The editor recognizes prefix commands used by these editor profiles. Depending on which profile you are using, you can enter SEU, XEDIT, or ISPF commands when the prefix area is active.

By default, the SEU profile is the active profile.

Getting More Editor Space

- Double-click on any Workbench view or Editor tab to maximize the view or Editor window
- Views can be dragged around and stacked into tabbed notebooks
- Views can be dragged to the left hand side of the Workbench as Fast views
 - Single click on the Fast view icon to open the view
 - Click Fast view icon again to close the view
- Oh – oh, what have I done?
 - Window -> Reset Perspective

You can easily double click on a view or editor tab to maximize the view or Editor window. If you double-click again you will return the view or Editor window to its original size. You can easily rearrange views by selecting them and dragging them to another location in the workbench. If you are going to use a view frequently but don't want to see it all the time in the workbench you can make it a Fast view. You select the view, right click and select as fast view. The view will then appear in the left hand frame of the Workbench as a Fast view icon. To reset your workbench window to its original layout, you can select Window -> Reset perspective.

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Fast View

The screenshot shows the Remote System Explorer interface with the following content:

- Remote Systems view:** A yellow box with an arrow pointing to the left-hand pane of the Remote System Explorer.
- Outline View:** A yellow box with an arrow pointing to the Outline view within the Remote Systems view.
- Tip:** A yellow box containing the text: "Tip: ✓Use the Outline view (in fast view mode) to easily navigate in the editor while keeping the editor maximized!"
- Main Editor:** Displays a code editor with the following content:


```

      Row 28      Column 13      Insert
      .....FFilename++IPEASFRlen+LKlen+AIDevice+.Keywords+.....
      000023      F*          - EMPMST - employee master file
      000024      F*          - PRJMST - project master file
      000025      F*          - RSNMST - reason code master file
      000026      F*****
      000027      FMSTDSP    CF   E          WORKSTN
      000028      FEMPMST    UF  A  E          K DISK
      000029      FPRJMST    UF  A  E          K DISK
      000030      FRSNMST    UF  A  E          K DISK
      000031      D*
      000032      D* Compile time array containing error descriptions.
      000033      D ERR      S          50      DIM(10) CTDATA PERRCD(1)
      000034      D EMESS    S          50
      000035      E*
      000036      C*****
      000037      C* MAINLINE CALCULATIONS
      000038      C*****
      000039      C* This mainline routine controls the display file processing and
      ing. Using the function keys described on each display
      t, you can transfer from one maintenance application to
      er. The action code you select on the selection formats
      mines if the program will add a new record to the file or
      e an existing record in the file.
      *****
      keeping, clear display fields and reset indicators.
      
```

57 | IBM System i5 Tools | Remote System Explorer | © 2004 2006 IBM Corporation

Here you see an example of the Remote Systems view and the Outline view as Fast views in the workbench left hand frame.

LPEX Editor Views – Outline view

The screenshot shows the LPEX Editor interface. The main editor window displays assembly code for a program named PAYROLL. The Outline view on the right shows a hierarchical tree of program structures, including subroutines like ACDESR and ADDCDE. A yellow callout box with an arrow pointing to the refresh icon in the Outline window says "Refresh: This populates Outline view". Another yellow callout box with an arrow pointing to the ACDESR entry in the Outline view says "Click on entry to position to it".

The Outline view helps you visualize the member you are editing by displaying all the program structures and functions in a clear-cut view.

Content Assist

The screenshot shows the 'Remote System Explorer - PAYROLL - WebSphere Development Studio Client Advanced Edition for iSeries' window. The main editor displays COBOL code with a Content Assist popup menu open over the 'VARYING' keyword. The popup menu lists various keywords: NOOPT, PERRCD(NUMERIC-CONSTANT), PROCPTR, STATIC, TIMEFORMAT(TIME-FORMAT{TIME-SEPARATOR}), TOFILE(FILE-NAME), and VARYING. A yellow callout box with the text 'Use Ctrl+Space for context-sensitive selection' points to the popup menu. Another yellow callout box with the text 'Available for COBOL in 5.1 and later' is positioned at the bottom of the editor. The editor content includes a table with columns 'Row 34', 'Column 44', and 'Replace', and several lines of COBOL code with comments.

Row 34	Column 44	Replace
002500	F*	- RSNMST - reason code master file
002600	F*	*****
002700	FMSDST	CF E WORKSTN
002800	FEMPST	UF A E K DISK
002900	FPRJMS	UF A E K DISK
003000	FRSNMS	UF A E K DISK
003100	D*	
003200	D*	Compile time array containing error description
003300	D ERR	S 50 DIH(10) CTDA
003400	D EMESS	S 50

VARYING

The VARYING keyword indicates that a character, graphic, or UCS-2 field, defined on the definition specifications, should have a variable-length format. If this keyword is not specified for character, graphic, or UCS-2 fields, they are defined as fixed length.

- NOOPT
- PERRCD(NUMERIC-CONSTANT)
- PROCPTR
- STATIC
- TIMEFORMAT(TIME-FORMAT{TIME-SEPARATOR})
- TOFILE(FILE-NAME)
- VARYING

004300 C* determines if the program will be executed.

004400 C* update an existing record in the file.

004500 C*****

004600 C* Housekeeping: clear display fields and reset indicators.

004700 C*

004800 C

004900 C* If MAIN is

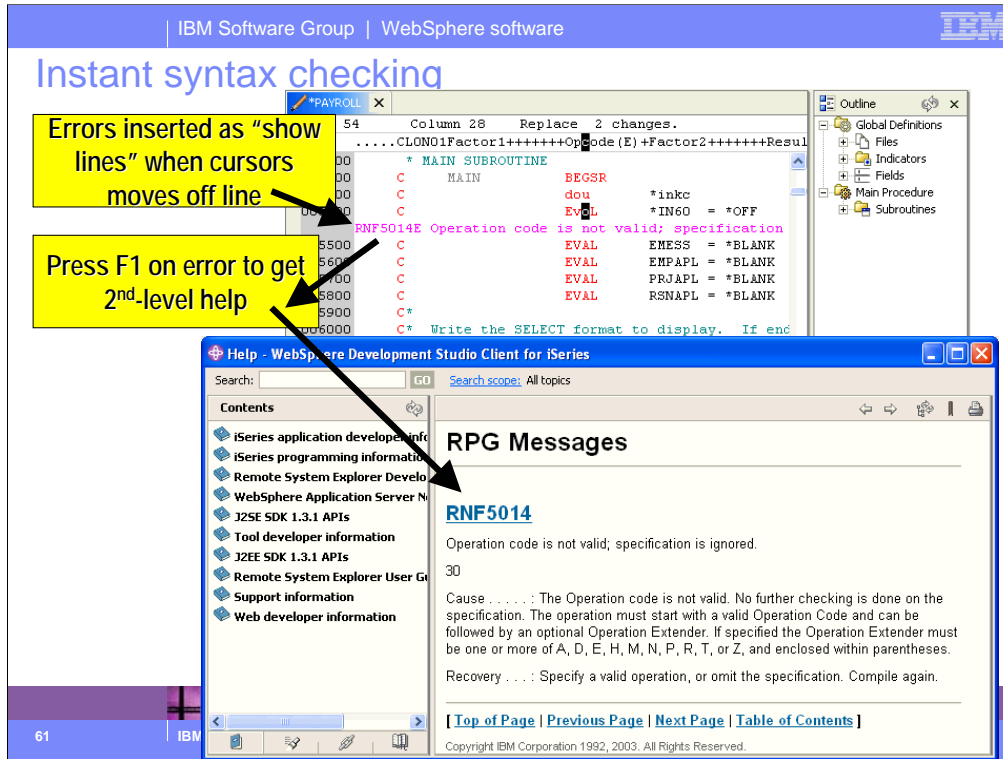
The Content Assist tool offers not only auto-complete functionality, by giving you a list of possible functions, objects or keywords to use, but also offers documentation on each of these to help you decide.

Help – at your Fingertips

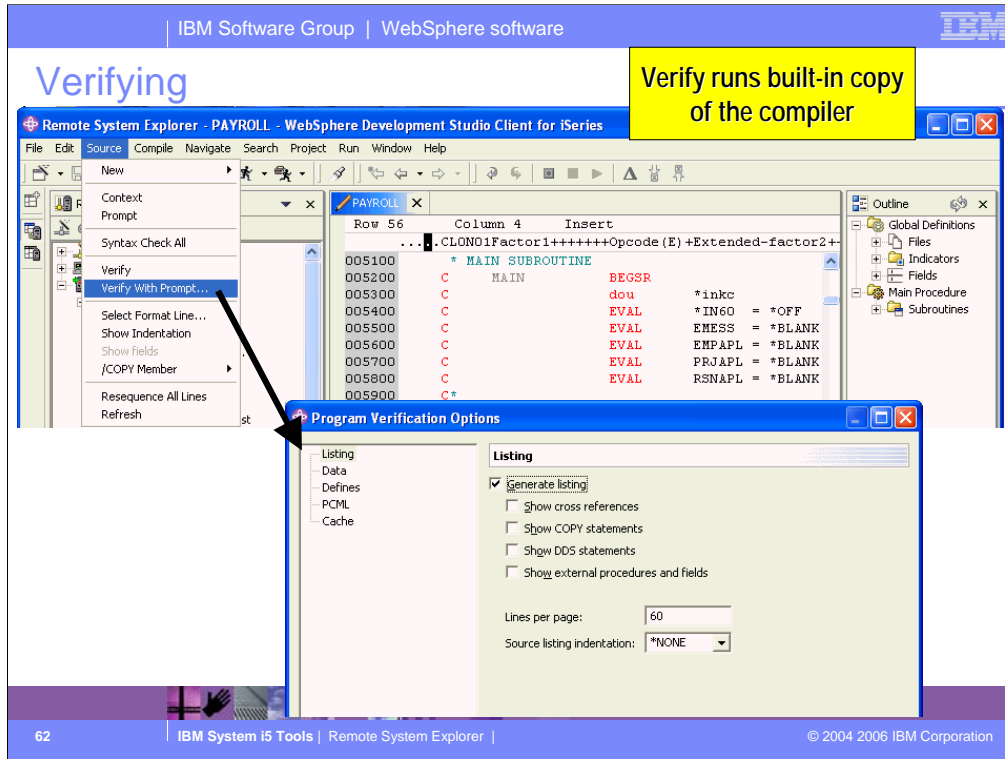
- RPG, Cobol, DDS online references
- Programming Guides including CL
- F1 Help
 - Sensitive to where cursor is in the editor
- Message Help
- and much more

The screenshot shows the 'Help - WebSphere Development Studio Client: Advanced Edition for iSeries' window. The 'Contents' pane on the left is expanded to 'iSeries programming information', with 'File Description Specifications' selected. The main pane displays the 'WebSphere(R) Development Reference' for 'File Description Specifications'. The text explains that file description specifications identify each file and must have a corresponding file description specification. It notes that a file can be either program-described or externally described. Externally described files have descriptions included within their specifications. It lists limitations: only one primary file can be specified, only one record-address file, a maximum of eight PRINTER files, and no limit for the maximum number of files.

Now you can have a ILE RPG reference at your finger tips. Simply press F1



The Remote Systems LPEX Editor gives you instant feedback for your code, at the location where a syntax error occurs. This happens as you cursor off a changed line.



Use the Source pulldown to verify your work. The verifier is a built-in copy of the compiler, for the purpose of catching all errors, not just syntax. The verify has options, which effectively are the subset of the compiler options that affect error checking.

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Verify – Error List

The screenshot displays the 'Remote System Explorer - PAYROLL - WebSphere Development Studio Client for iSeries' interface. The main editor shows a source file with the following code snippet:

```

actor1+++++Opcode (E) +Factor2+++++Result+++++
03 6500          MOVE      ERR (2)      EMES
           Move operands ERR and EMES have types that are not
           the same or indicator EMES is not defined.
03 6600          ELSE
03 6700          MOVE      '0'          *IN60
03 6800          END
03 6900
03 7000          following IF AND combination ensures that at
03 7100          application has been selected.
03 7200
03 7300:MPAPL    IFEQ      ' '

```

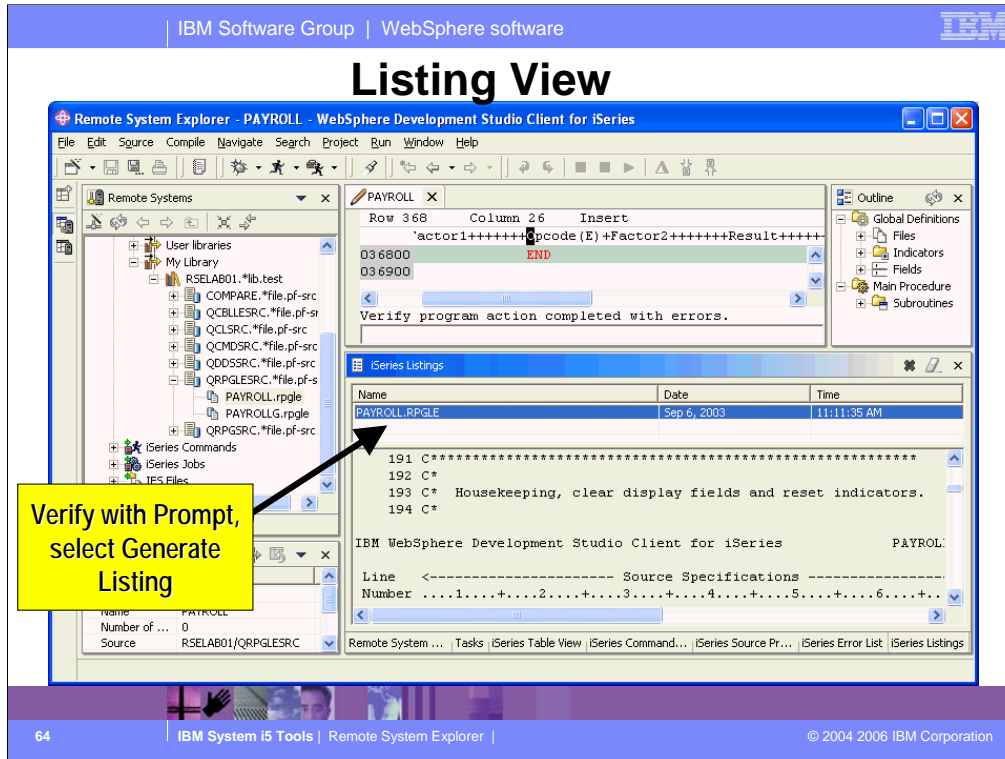
The 'iSeries Error List' window is open, showing the following errors:

ID	Message	Se...	Line	Location	Cor	
RNF5184	Factor 2 must be '0' or '1' when the Result is an l...		30	364	RSELAB01/QRPGLES...	My
RNF7515	Move operands ERR and EMES have types that ...		30	365	RSELAB01/QRPGLES...	My
RNF7089	RPG provides Separate-Indicator area for file M...		0	27	RSELAB01/QRPGLES...	My
RNF7031	The name or indicator RSNTAG is not referenced.		0	110	RSELAB01/QRPGLES...	My

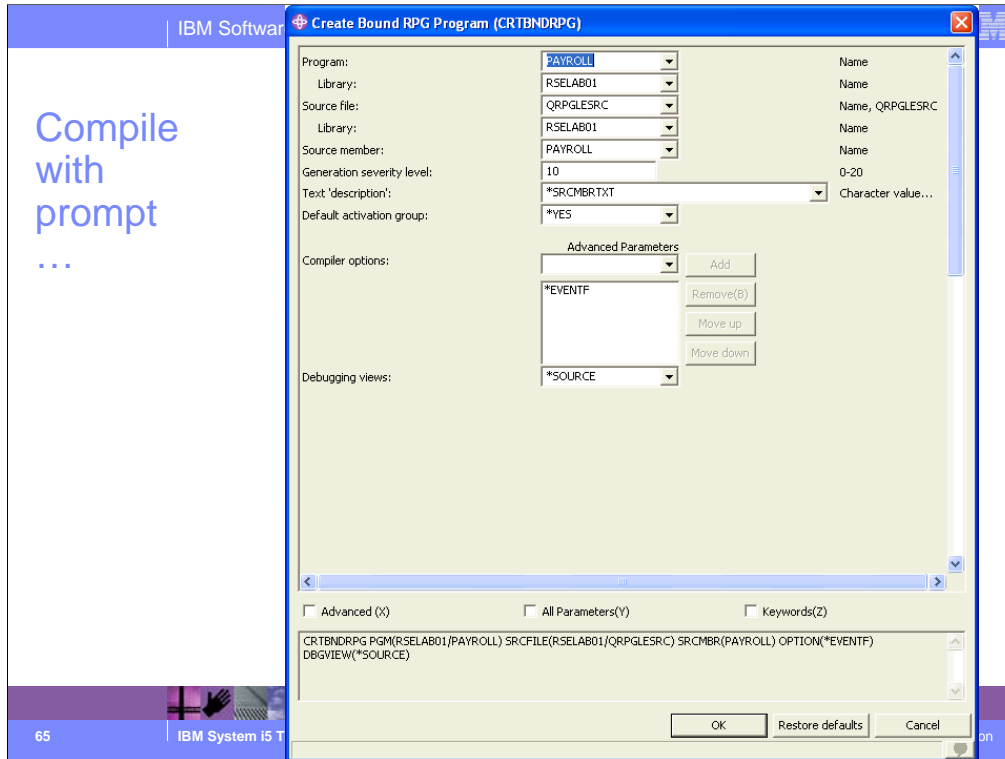
A yellow callout box with the text "Double clicking on error takes you to error in source" has two arrows pointing to the error list entries and the corresponding code in the source editor.

63 | IBM System i5 Tools | Remote System Explorer | © 2004 2006 IBM Corporation

After performing a verify, the Error List window lists the errors that are found and their severity, inserts the error messages directly into the source and helps you to navigate between the errors.



Here is the Listing view from the Program Verifier, if that option was chosen.



When you select to prompt the compile command, the command prompt is converted to a GUI and displayed. For the 5.1 release, this GUI was re-written from Java's Swing to Eclipse's SWT so it more consistent with the rest of the dialogs in the IDE.

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Compiling

- To compile a member, use Compile pulldown when editing, or right-click menu on the member

Choose from existing compile commands or

Create or modify compile command

66 | IBM System i5 Tools | Remote System Explorer | rration

After you have verified and fixed all your errors, it is time to launch the compile. This is done via the Compile pulldown (only if editor is active) or the member's popup menu. There are a number of compile commands pre-supplied for you, for each member type, or you can create your own compile command. Like user actions, these support substitution variables. Once you create a compile command, it appears in the cascading Compile menu.

The last-used command, for this member's type, is checked in the Compile menu.

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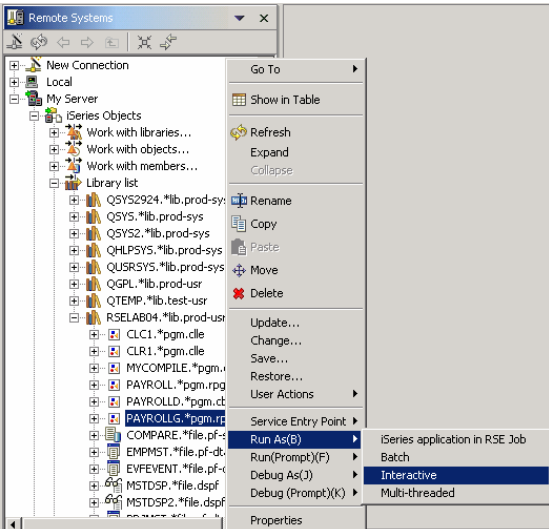
Run: from popup menus

Run from Popup menu of *PGM

- ✓ iSeries appl. in RSE job
- ✓ Batch
- ✓ Interactive
- ✓ Multi-threaded

Run As

Run(Prompt)



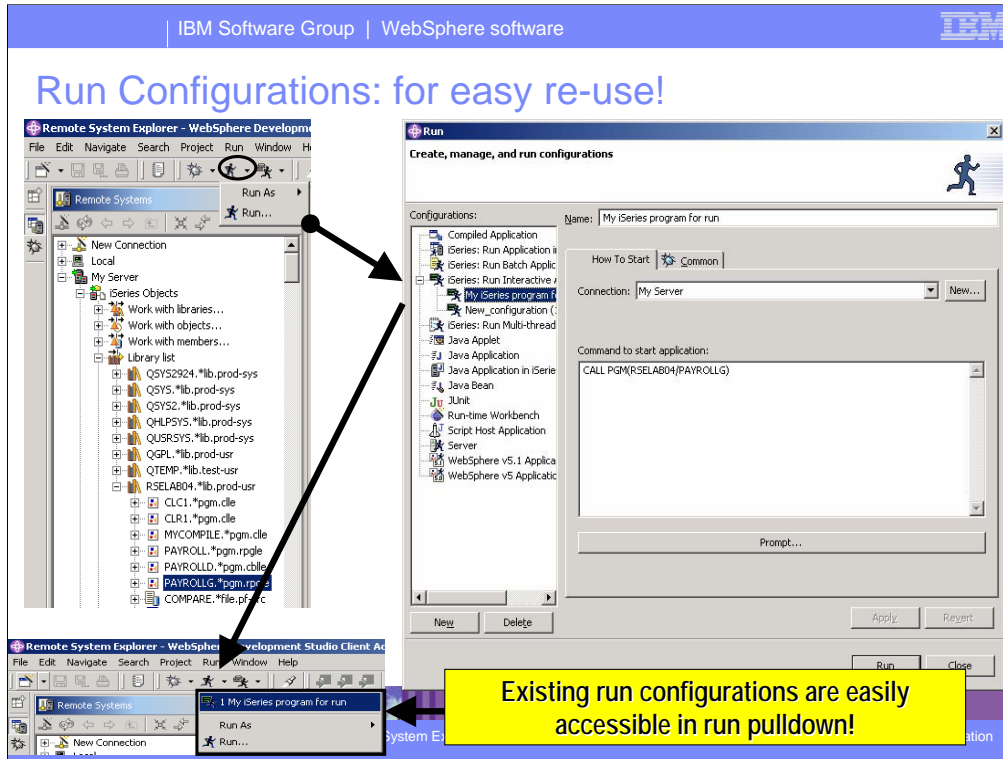
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You can run programs from the Remote Systems view or the iSeries Table view in four ways:

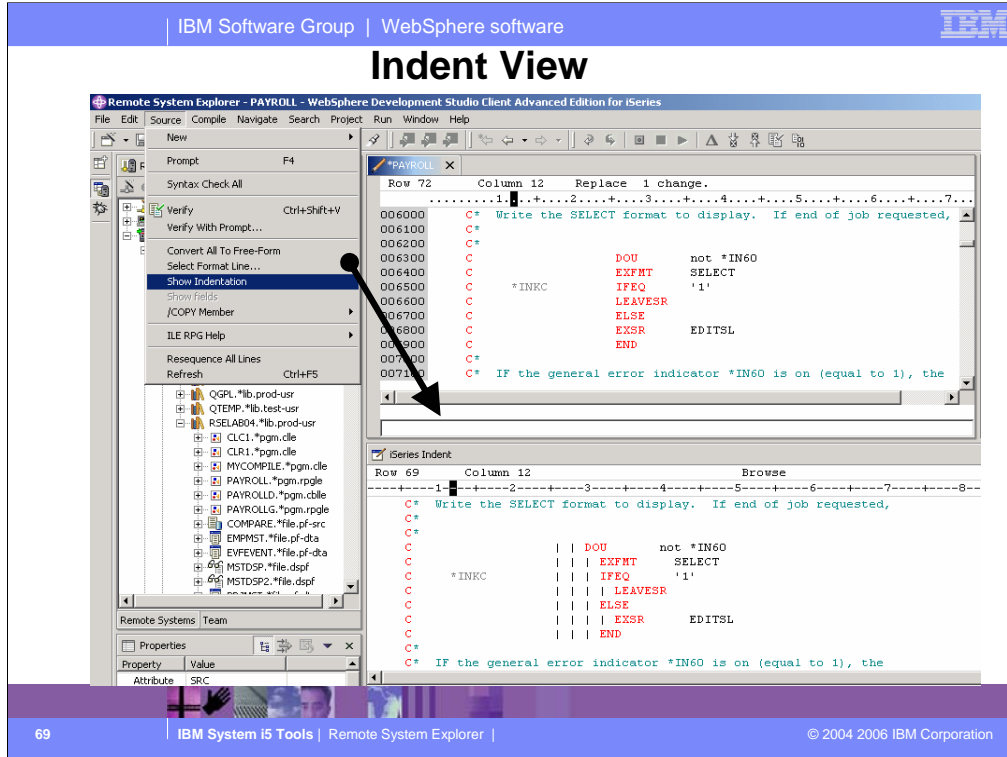
- In the RSE communications server job
- In a batch job
- In an interactive job
- In a server job

In the first case, running the program in the same job as the Remote System Explorer communications server job, will tie up that job until your program ends. With batch and interactive jobs, you cannot monitor the status as easily, however, you do not tie up your communications server and you are notified when the program ends. Batch jobs work as you would expect, your application will be submitted to the default batch subsystem.

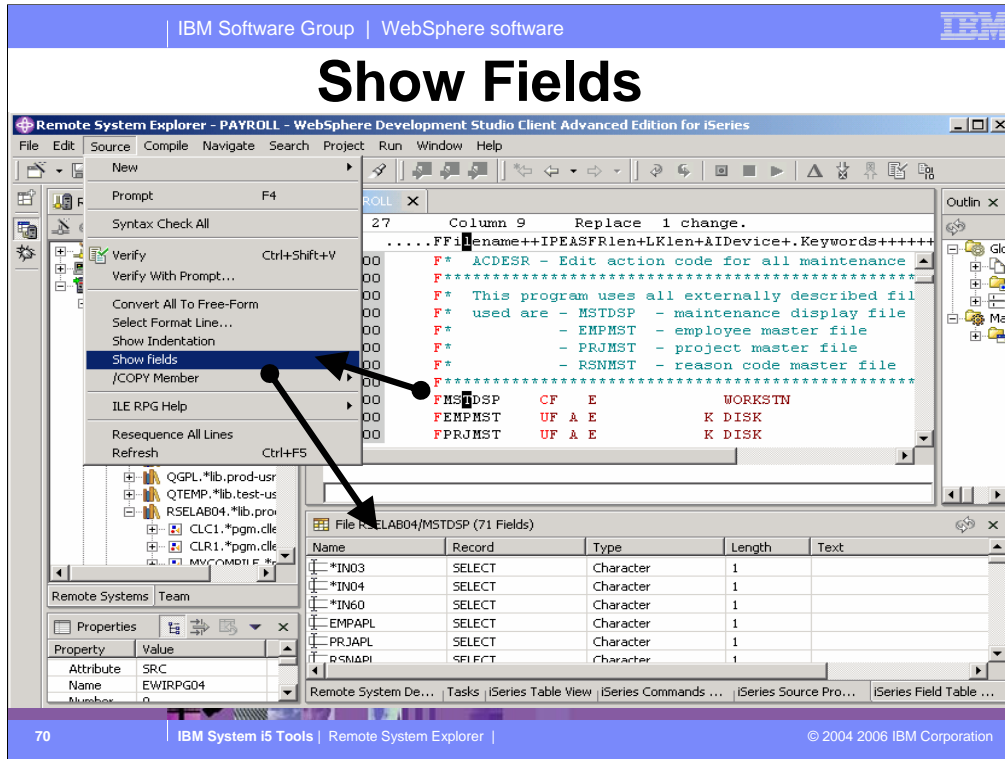
Note: A multi-threaded debug session creates a new server job and this way keeps the RSE communications server job free for other tasks.



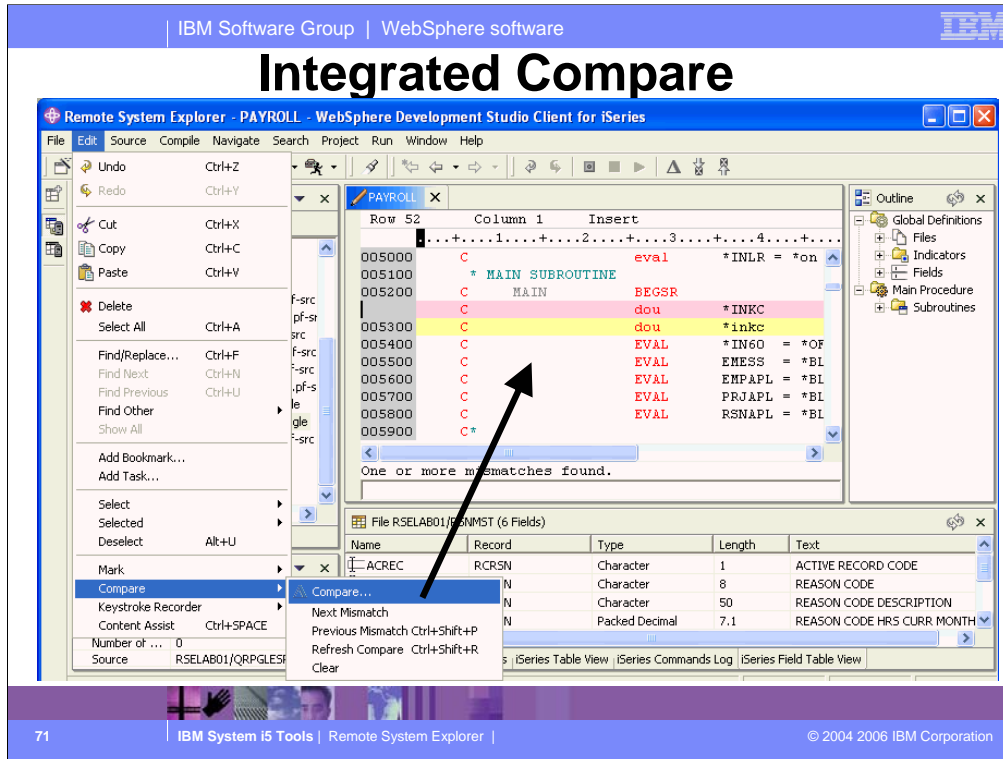
Run configurations are for powerful re-use. If what you want to run a program that takes a number of parameters, or is not straightforward to launch, you can predefine this information into a named configuration. Once created, the configuration appears in the configuration list, and can be selected from there. Every configuration run also appears in the pulldown menu of the Run tool bar button. Clicking the Run tool bar button itself, will run the previous configuration again.



Here you see the results of the indent option: a readonly view showing the code indented, much as it is in a compiler listing, but with color.



Here you see the results of the Show Fields tool. It retrieves the fields for the file under the cursor, and shows the fields in a table view.



The compare tool under the Edit menu is used to compare the currently active member in the editor with another member you select, and the differences are shown within the edit window, as we see here.

Alternatively, there is another compare utility not editor based, in the popup menu for members.

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Filtering

Right click in editor to filter view

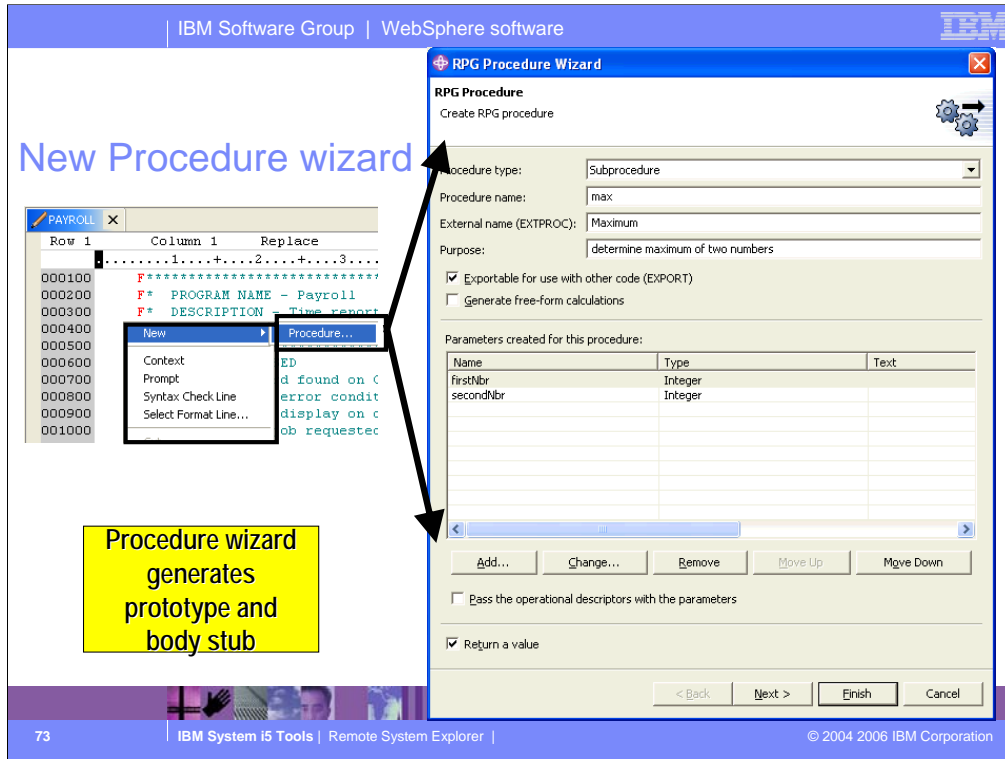
Only lines meeting filter criteria are shown

Use + / - to expand or collapse filtered sections

The screenshot displays the IBM System i5 Tools interface. The main editor window shows a code editor with a right-click context menu open. The menu includes options such as 'Syntax Check Selection', 'Convert Selection To Free-Form', 'Cut', 'Copy', 'Paste', 'Select line', 'Select character', 'Select rectangle', 'Selected', 'Deselect', 'Filter view', 'Show all', 'Save', 'Add Breakpoint', 'By Date...', 'Code', 'Comments', 'Control', 'Procedures', 'SQL Statements', 'Subroutines', and 'Errors'. The 'Filter view' option is highlighted. A second window shows the filtered code with plus signs in the left margin, and a callout points to these signs with the text 'Use + / - to expand or collapse filtered sections'.

72 | IBM System i5 Tools | Remote System Explorer | © 2007-2009 IBM Corporation

A very popular feature of LPEX is its support for subsetting the source to show only lines meeting a criteria, such as containing a given string or representing the begin or end of a subroutine / procedure. This capability is accessed from the right click menu of the editor. In subset mode, you will notice plus signs, that if expanded will un-hide the lines up to the next visible line.



In 5.1, the Procedure SmartGuide from CODE/400 was ported to the new editor. This will prompt for a procedures signature information (name, parameters and return type) and generate the procedure prototype and the body. It is up to you to subsequently add logic to that body.

The prototype is generated at the top, after the last D-spec, while the body is placed at the bottom of the current member.

The screenshot displays the 'Change Procedure Parameter' dialog box in the IBM System i5 Tools environment. The dialog is titled 'Change Procedure Parameter' and features a close button in the top right corner. The main content area is divided into several sections:

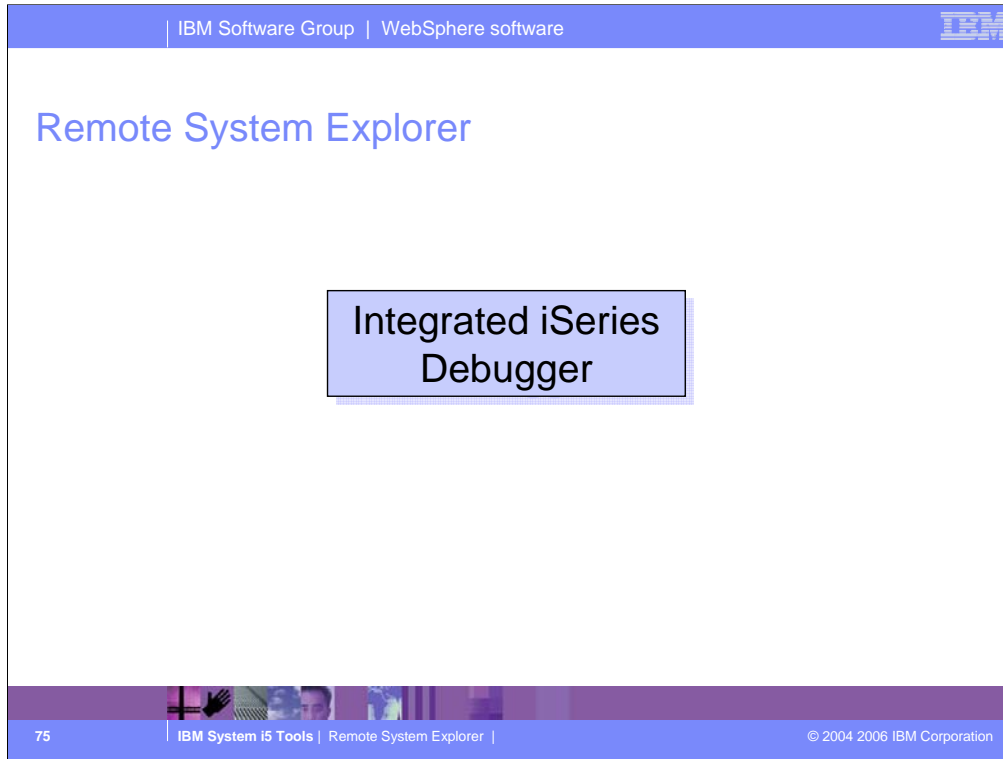
- Parameter name:** firstNbr
- Parameter description:** (empty)
- Attributes:**
 - Defined like another field: (empty)
 - Field
 - Data Structure
 - Record Format
- Type:** Integer (selected in dropdown)
- Length:** 5 (with options 3, 5, 10, 20)
- Decimals:** 0
- The class of the object:** (empty)
- CCSID number: *DFT (with options 0 - 65535, *DFT)
- DATEFMT:** (dropdown)
- Separator:** (dropdown)
- Sample:** (empty)
- Array entries (DIM):** (empty)
- Other keywords:**
 - ALTSEQ
 - ASCEND
 - DESCEND
 - NOOBT
- Parameter passing options:**
 - Pass copy of contents (VALUE)
 - Pass read-only reference (CONST)
- Parameter options (OPTIONS):**
 - Optional (*NOPASS)
 - Parameter is passed by value
 - Optional (*OMIT)
 - Variable size (*VARSIZE)
 - Null-terminated string (*STRING)
 - Right adjusted string (*RIGHTADJ) (>=VAR4)

Two yellow callout boxes are overlaid on the dialog:

- One box states: "Procedure wizard helps with complexity of RPG language".
- Another box states: "Flyover help describes each option".

The background of the slide shows the 'New Procedure wizard' title and the IBM Software Group | WebSphere logo at the top. The bottom of the slide includes the page number '74' and the text 'IBM System i5 Tools | Remote System Explorer'.

The procedure wizard can help with users not fully familiar with RPG IV, especially for the parameters and return type information.



With the Integrated iSeries Debugger you can debug your program running on the iSeries host from a graphical user interface on your workstation. You can also set breakpoints before running the debugger, by inserting breakpoints directly in your source while editing. The integrated iSeries debugger client user interface also enables you to control program execution. For example, you can run your program, set line, watch, and service entry point breakpoints, step through program instructions, examine variables, and examine the call stack. You can also debug multiple applications, which may be written in different languages, from a single debugger window. Each session you debug is listed separately in the Debug view.

Integrated iSeries Debugger - Overview

- Supports many languages
 - RPG, COBOL, CL, C, and C++
 - ILE and non ILE
 - Java
- Supports many views
 - Source and Listing
- Supports many applications
 - Batch and Job
 - Interactive
 - Multi-Threaded Applications
 - Client/Server Applications
 - Distributed Applications

The Integrated iSeries Debugger is powerful and complete.

IBM Software Group | WebSphere software

Debugger Invocation: from popup menus

Debug As... from Popup menu of:

*PGM, *SRVPGM, job

Debug As...

Batch, Interactive,

The screenshot shows the 'Remote Systems' window with a tree view of 'My Server' containing 'iSeries Objects'. A job named '136728/IWEIS5' is selected. A context menu is open over it, showing options like 'Refresh', 'End', 'Hold', 'Release', 'Add To Job Status View', 'Display job log', 'User Actions', and 'Debug As'. The 'Debug As' sub-menu is open, showing 'Batch', 'Interactive', and 'Multi-threaded' options.

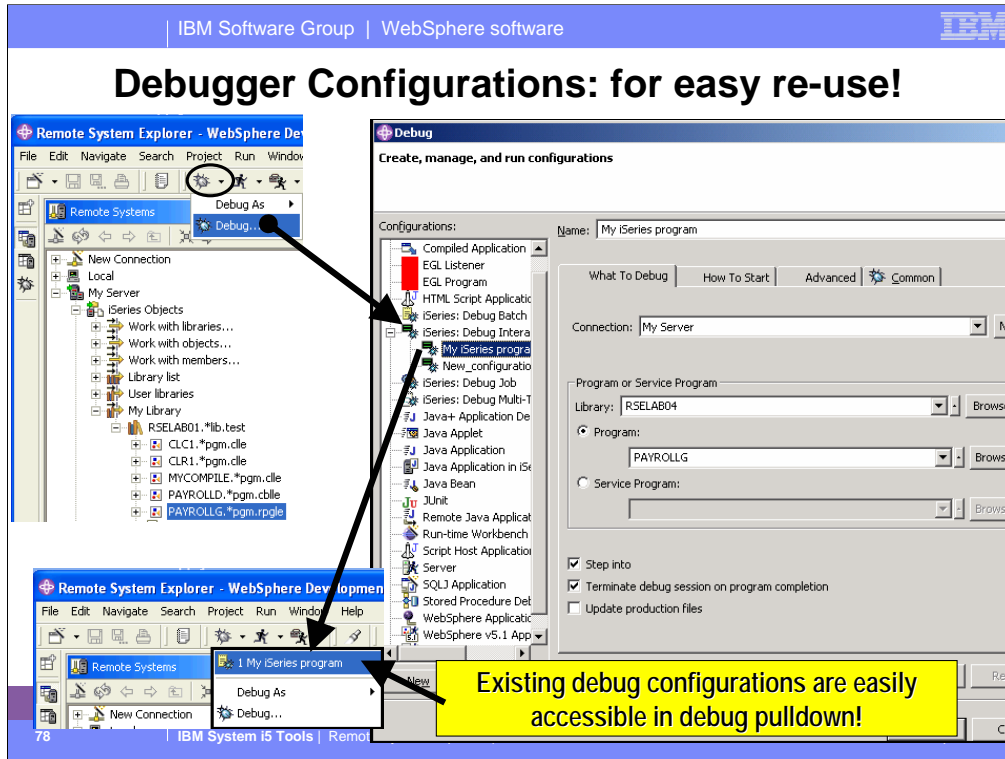
77 | IBM System i5 Tools | Remote System Explorer | © 2004 2006 IBM Corporation

You can run and debug programs from the Remote Systems view or the iSeries Table view in three ways:

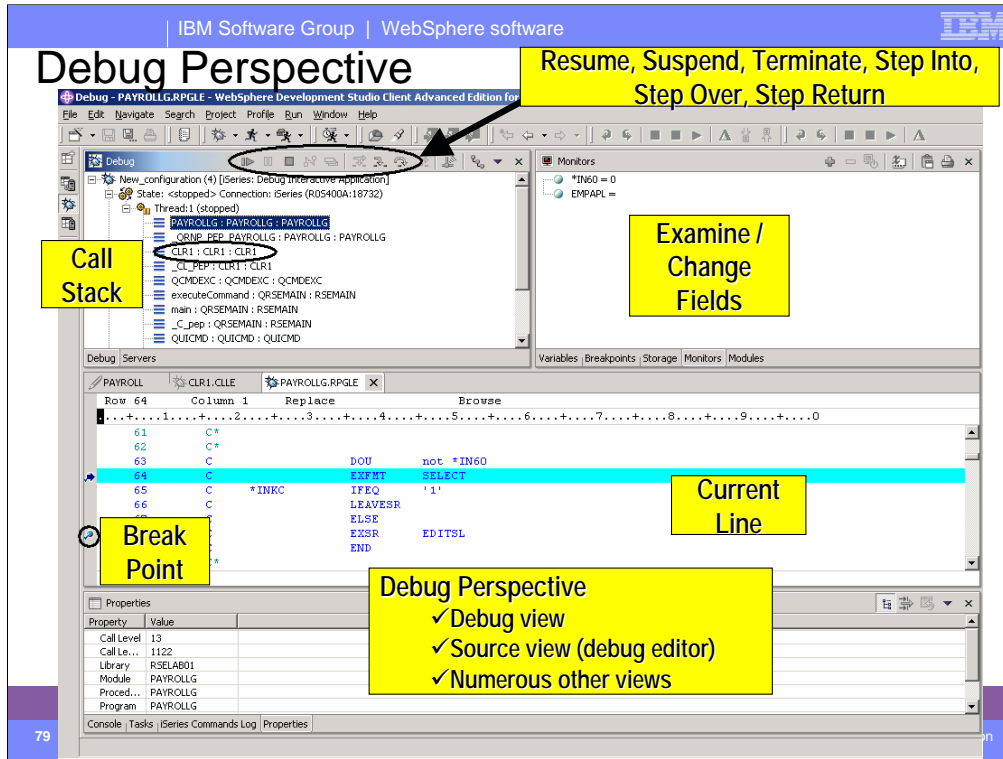
- In a batch job
- In an interactive job
- In a server job

In the third case, running the program will use the same job as the Remote System Explorer communications server job. With batch and interactive jobs, you cannot monitor the status as easily, however, you do not tie up your communications server and you are notified when the program command ends. Batch jobs work as you would expect and do not require any initial setup.

Note: A multi-threaded debug session creates a new server job and this way keeps the RSE communications server job free for other tasks.



Debug configurations are for powerful re-use. If what you want to debug takes a number of parameters, or is not straightforward to launch, you can predefine this information into a named configuration. Once created, the configuration appears in the Debug configurations, and can be selected easily.



Here we see the common Eclipse Debug perspective, which is being used to debug an RPG program. The common debug user interface has been connected to the iSeries debug engine in Version 5.0, to offer a common and compelling debug story for OPM/ILE RPG and COBOL and CL, and ILE C and C++.

In the upper left pane is the call stack, much like option 11 in the OS/400's WRKACTJOB. It shows the calls that reflect your current program execution. When you double click an item in the stack, its source (if available) is shown in the source pane in the middle. The upper right is where all the various views are for working with data contents, breakpoints etc.. The middle is the debugger source view, with source executable (debug) lines in blue, others in green. The current line of execution is highlighted, and breakpoints appear as a dot with a check mark in the left margin.

Although not part of the common Debug Perspective, the Properties view contains valuable information about the selected object, which could be a breakpoint selected in the Breakpoints view, an entry selected in the call stack, etc. To add the Properties view, click on the menu item **Window** and **Show View** on the pull down menu, select **Other** from the submenu, expand **Basic**, select **Properties** and click OK.

Setting Breakpoints

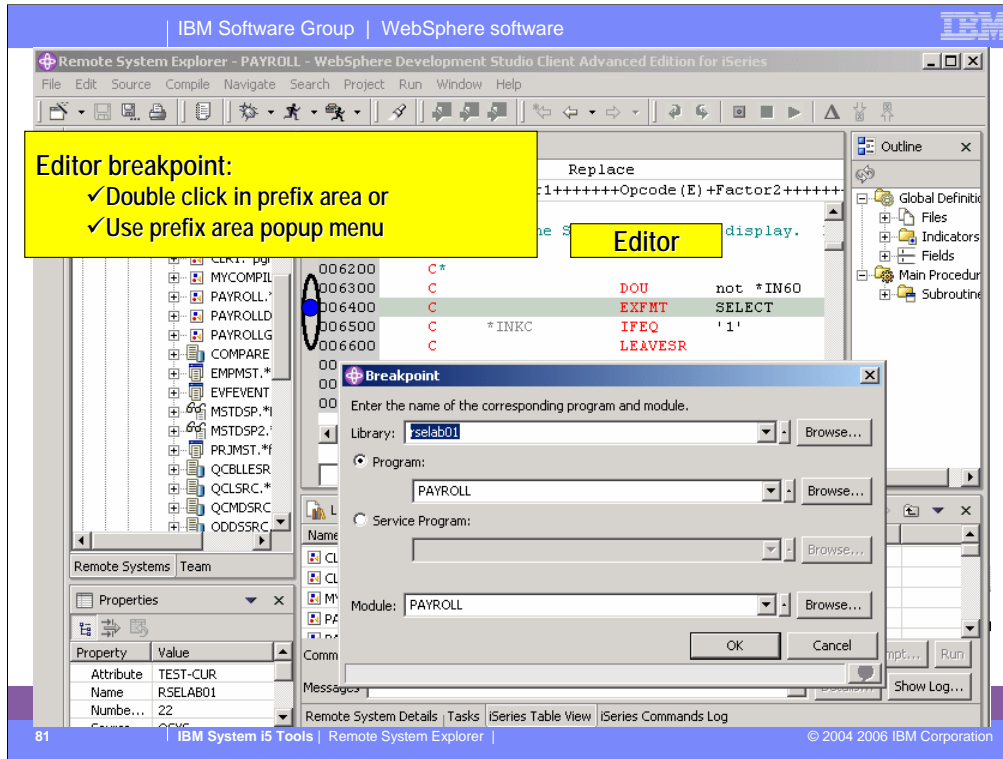
Setting Breakpoints:

- ✓ Double click in prefix area
- ✓ Prefix area popup menu
- ✓ Source popup menu
- ✓ Breakpoints view popup menu

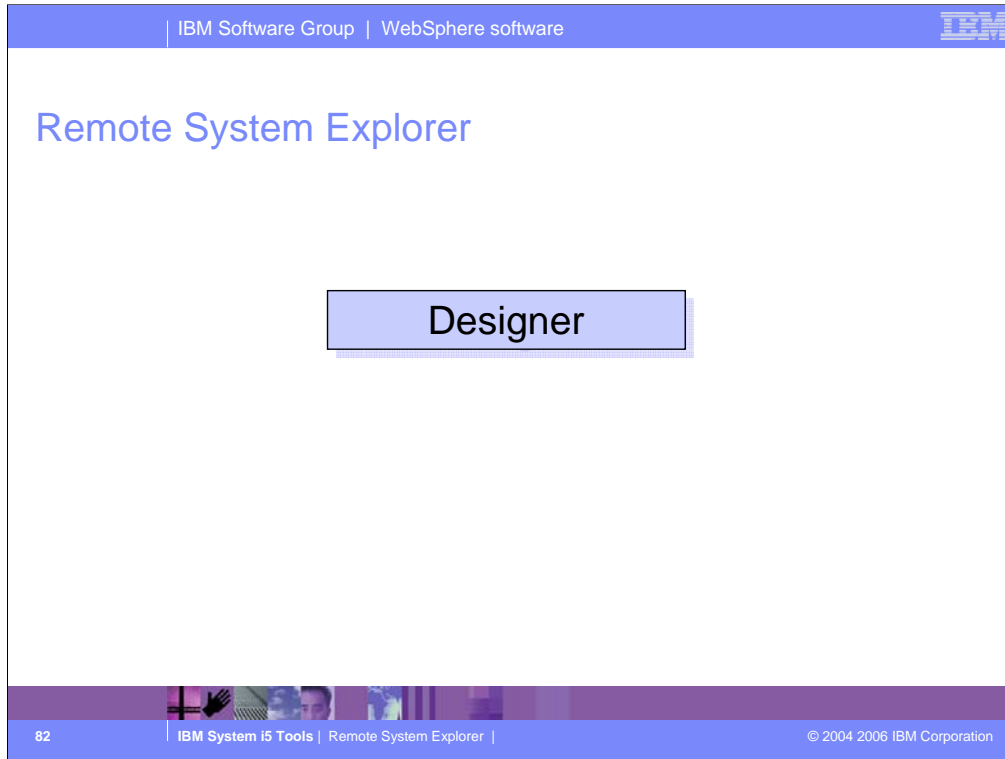
The screenshot shows the following components:

- Breakpoints Window:** Lists breakpoints for lines 11, 8, 64, and 68.
- Source Editor:** Shows code with line 64 highlighted in blue. A context menu is open over line 64, with 'Add Breakpoint' selected.
- Properties Window:** Shows properties for the current line, including Call Level (13), Call Le... (1680), Library (RSELAB01), Module (PAYROLLG), and Proceed... (PAYROLLG).

You can only set breakpoints at executable lines. All executables lines are displayed in blue.



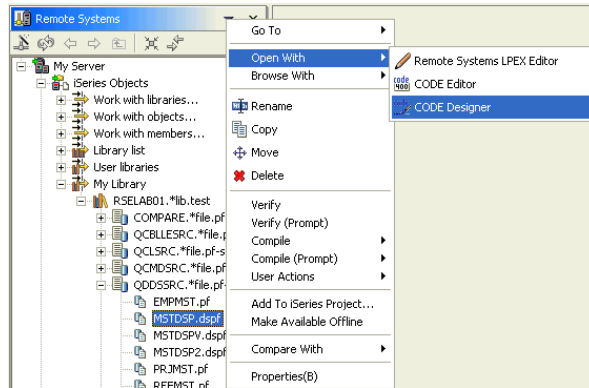
This is the dialog for edit breakpoints. Enter the library name and select Program or Service Program. The breakpoint is shown as a dot in the prefix area. If there is an active debug session, the breakpoint will be set in that session and there will be no marker in the editor. The breakpoint is then listed in the Breakpoints view in the Debug perspective.



Now we'll describe the CODE Designer tool, launchable from the IDE.

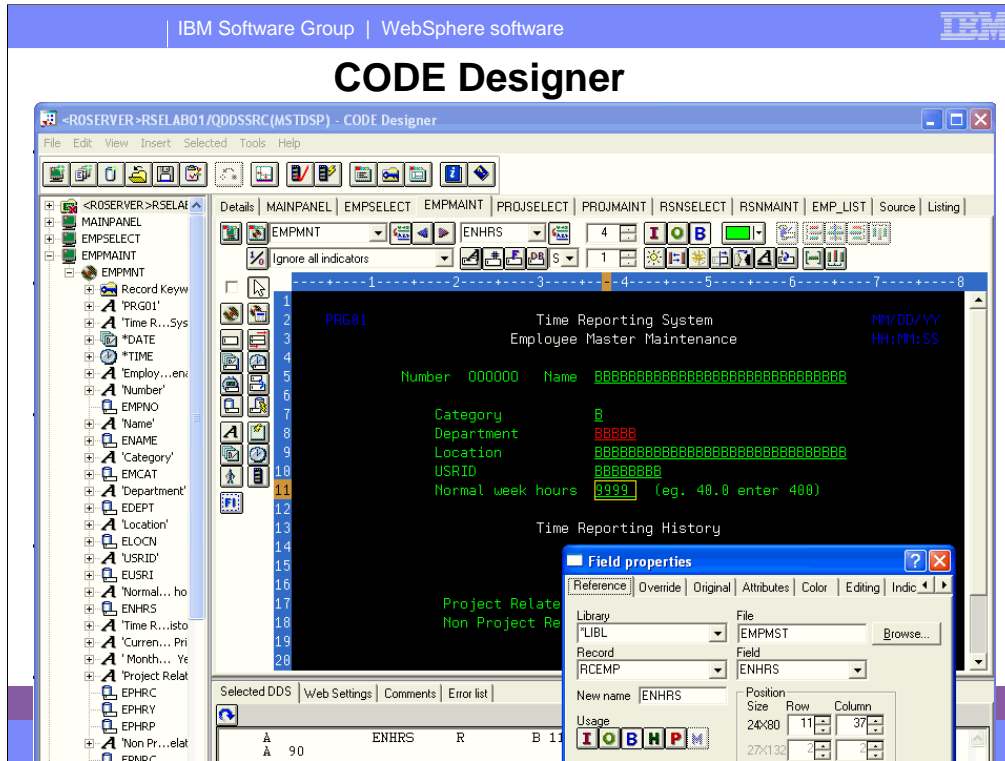
CODE Designer

- Use **Open With** -> **CODE Designer** to open Designer
 - For DSPF, PRTF, PF
 - Launches in separate window
 - Currently no built-in DDS Designer, but built-in source editor does support DDS



CODE Designer is an editor like SDA and RLU, for WYSIWYG development of display files and printer files. It also supports physical files.

Unlike the source editor, this editor has not been ported into the IDE yet, so those wanting a great WYSIWYG tool have to use it still. To make that easy, there is a right click action to launch it from a selected member.



This is the CODE Designer. As you can see, because its not in the IDE, it launches in its own main window.

CODE Designer

- **Graphical design tool for DDS**

- display files - screens

- printer files - reports

- physical files - databases

- **Powerful intuitive interface**

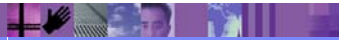
- Lets novice create DDS quickly and easily while giving expert access to all the features of DDS

- WYSIWYG graphical design - Drag/drop ease

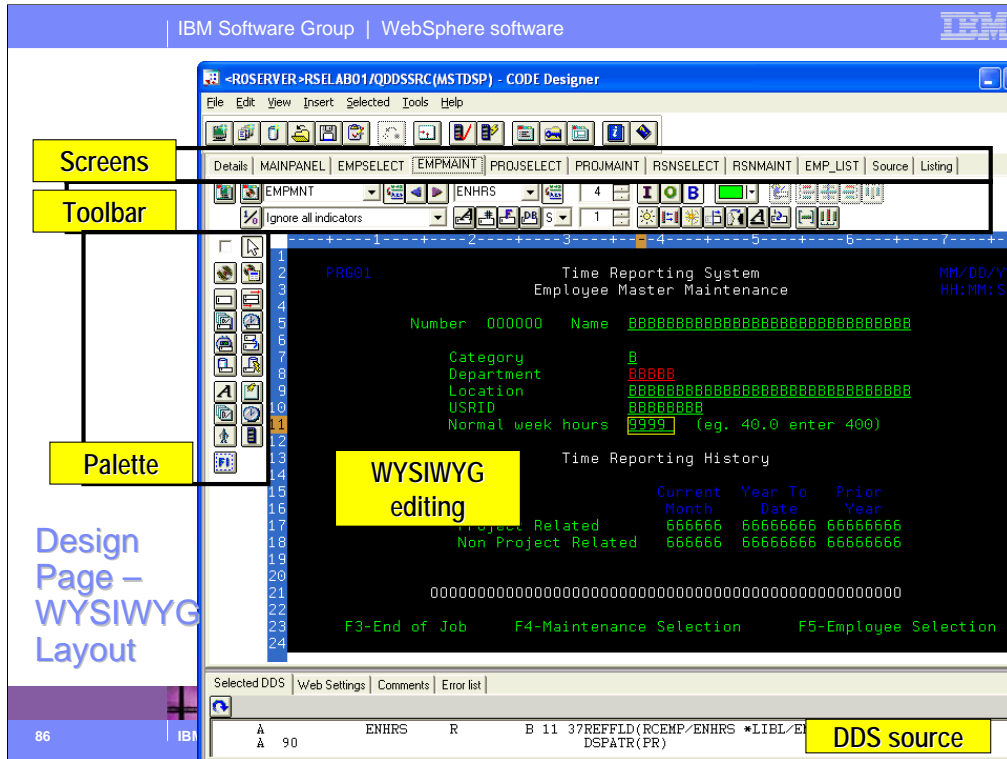
- Properties notebook

- Integrated local verifier

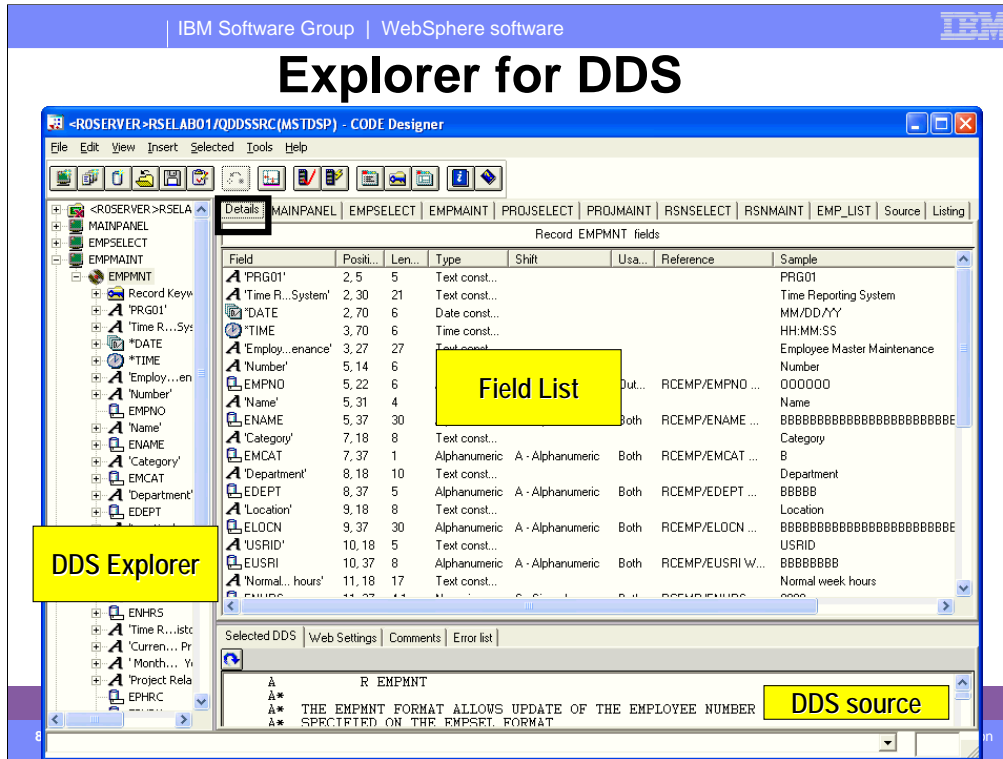
- Explorer-like browsing of DDS hierarchy



CODE Designer is a very popular and powerful tool.



This is the equivalent of SDA's option 12 design screen. It is rich in toolbar and palette items, and supports drag and drop, and direct editing.



For those who prefer non-WYSIWYG, there is also a field list where you can create, change and re-order fields. It contents changes as records are selected in the DDS Explorer primary view on the left. The field list is the only option for PF editing.

Remote System Explorer

Reference
information

Getting Service Packs and Verifying PTFs

- To get client service packs from web:
Use Help->Software Updates->IBM Rational Product Updater
Repeat until told no new updates
- To verify you have all required host PTFs:
On an iSeries connection, right click on iSeries Objects subsystem
Select Verify Connection

Please try the RSE! And to ensure success, we want to ensure you have the latest client and server fixes.

Additional Information

- **homepage:**

<http://www.ibm.com/software/awdtools/wdt400/>

- **newsgroup:**

<news://news.software.ibm.com/ibm.software.websphere.code400>

- **WDCS 6.0.1 Announcement Letter**

<http://www-306.ibm.com/common/ssi/fcgi-bin/ssialias?infotype=an&subtype=ca&appname=Demonstration&htmlfid=897/ENUS206-021>

- **email distribution list:**

To post a message email: WDSCI-L@midrange.com

To subscribe, unsubscribe, or change list options,

visit: <http://lists.midrange.com/mailman/listinfo/wdsci-l>

or email: WDSCI-L-request@midrange.com

Before posting, please take a moment to review the archives

at <http://archive.midrange.com/wdsci-l>.”

We hope this presentation helped you understand more about Development Studio Client iSeries application development tools. We started with an overview of our strategy for iSeries application development tools, went onto review the Remote System Explorer, the perspective for iSeries programmers to maintain and develop iSeries applications and explained how to extend RSE to include your own iSeries application development tools.

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