

Remote System Explorer in WDS Sc 5.0

By Phil Coulthard and George Farr

Hello and welcome back. This is the second article in our series. In the first installment (“An RPG-to-J2EE Roadmap,” *TUG eServer magazine V20N2*), we introduced a simple roadmap for moving from RPG or Cobol to Java 2 Enterprise Edition (J2EE), making it clear we expect that most people won’t go all the way to full, pure J2EE but will probably find themselves happily staying at one of the steps along the way.

The next step in that roadmap calls for *better tools* – not to change what you develop initially, but to change what you develop it with. These new tools for RPG and Cobol give you transferable skills to the other steps in the roadmap and set the culture in your shop to one that embraces change. To embark on any path to modernization, you must overcome a certain inertia – a resistance to change.

To that end, this month we introduce you to the Remote System Explorer (RSE) within WebSphere Development Studio Client (WDS Sc) 5.0. This is the new generation of PDM and SEU, developed by the same team in Toronto who brought you PDM and SEU. We hope you will find it compelling enough to overcome the natural resistance to change.

Have you heard of WDS Sc? Hopefully you have, and maybe you’re already using it. If not, you should know that if you have RPG or Cobol, and you’re at V5R1 or higher (or maybe even V4R5), then you’ve already paid for it and are entitled to unlimited licenses of it. Your job now is to find or order the CDs for it.

RSE Lpex Editor – The New SEU

The editor in the RSE can edit any member, IFS file, local file, or even remote Unix, Linux, or Windows file. However, it is for RPG, Cobol, C, C++, CL, and DDS that it has special language-sensitive support, including colorization of the tokens (even when printed!). The 4.0 release was the first release of this brand new editor, which is a Java port of the CODE editor.

In release 5.0, IBM has added considerable new functionality to this editor, both in terms of ported CODE function and totally new function. It now offers a superset of SEU’s functionality, although there are a few things still to be ported from CODE’s editor, which can easily be launched from the RSE, too. The biggest enhancements in the editor are the introduction of Syntax Checking, Program Verification (PV), and F1 language-sensitive help. The syntax checkers are ported from SEU, but the PV and F1 help are unique and come from CODE.

The PV lets you do full compiles without the generation of target code to find any and all errors before compile submission. For the F1 help, if you’re editing a source member, just position the cursor at a specification and press F1. The browser will open and you’ll be presented with specific help for the token under the cursor, from the appropriate RPG, Cobol, DDS, or CL reference manual. The programmer’s guides for RPG and Cobol are also shipped in the product.



IBM has also added two new and interesting enhancements that are not even in CODE/400:

- Code assist (for RPG only, until next release)
- Outline view (for both RPG and Cobol)

Code assist (or *content assist* in Java) lets you get help anywhere in the editor as you type in your source code. **Figure 1** shows an example of getting a list of the allowable keywords on the D specification.

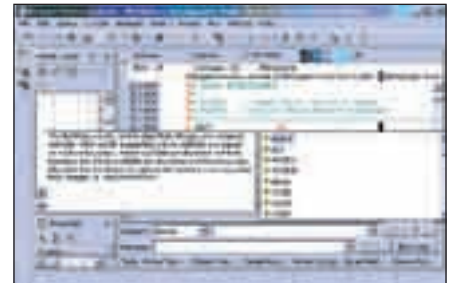


Figure 1.

To get this list, you need only press Ctrl-Space. As you start typing the keyword, you’ll see the list narrowing down to the specific characters that you type. The list is specific to the position where your cursor is. For example, if you’re on an F specification in the keyword area, then the list of keywords of the F specification will be displayed.

As you scroll down the list, another pop-up window appears with detail information about the selected item in the list. In addition, this enhancement has what is called auto-activation characters. In RPG, the two auto-activation characters are

“.” and “%”. If you type in a name of a qualified data structure (say, in free form factor two), the minute you press the “.” character, you’ll be presented with the list of subfields for that data structure. If you type in the “%” character, you’ll be presented with the list of all built-in functions in RPG. Nice? Better than SEU?

The second interesting enhancement is the outline view. If you press the Refresh button in this view, you’ll be presented with a tree listing of all fields, structures, subfields, subroutines, and procedures that are defined and used in your source member. By clicking on a node in the tree, you are positioned in the source to that entry. This offers a great bird’s-eye view of your source for easier understanding and navigation.

Another great enhancement that was added in the editing area is the ability to browse or edit a copy member in RPG or Cobol. This can be accomplished by placing the cursor on a /COPY statement (in RPG, for example) and selecting

Source, /COPY member from the drop-down menu.

As **Figure 2** shows, IBM has added to RPG the ability to show indentation in your source member. If you select Show Indentation, a new view of your source member appears showing all RPG structures indented, similar to the functionality you have today in CODE.

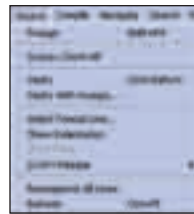


Figure 2.

Along the lines of cool stuff, there is also a menu item in the pop-up menu to show fields when the cursor is on a file declaration in RPG, Cobol, or CL. This will open a table view showing all the fields in the declared file, with the fields attributes shown in sortable columns.

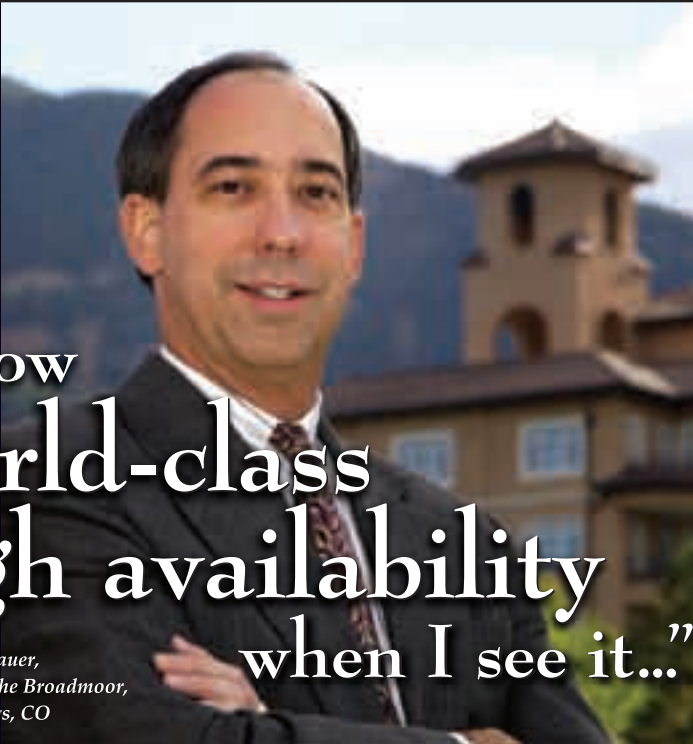
This editor includes many other neat features; many of them are configurable from the Preferences window (see Lpx Editor under Remote Systems). These

features include auto-uppercasing, CL formatting, RPG and DDS column-sensitive editing (so insert/delete are restricted to the current section of the spec), and auto-generation of signature stamps in the first five columns for RPG and DDS. Of course, all usual SEU line commands (e.g., I and DD/CC) are supported, as are prompting and rich find/replace support. Of course, if you want to add new capability to the editor, you can easily extend it by writing Java macros. This is a great way for you to learn a bit of Java (or to put that student to good use).

We’ve only scratched the surface of the existing functionality in the new editor. In future releases of WDS, IBM will continue to dramatically improve the editor functionality to make writing RPG, Cobol, CL and DDS not only easier, but indeed fun again! Stay tuned.

RSE Tree View – The New PDM

So how do you get to that great editor? You start in the RSE perspective (collection of views and editors), which is



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the first screen you see when you start WDS. You create a connection to your iSeries machine, specifying its host name. You expand the connection to see a number of functional areas to work with (what we call *subsystems*). These include iSeries Objects, iSeries Commands, iSeries Jobs, and IFS Files.

To edit source members, expand iSeries Objects and then one of the predefined filters for library list or user libraries. You then simply drill down by expanding libraries and files. To subset what you see, you can use the new Expand To menu item on a library, or create a persistent filter. There are three prompts for filters within iSeries Objects to allow you to easily create a library filter, object filter, or member filter. When a filter is

created, it appears from then on in the list. When expanded, only the libraries, objects, or members meeting the filter criteria are shown. This is identical to WRKxxxPDM, except the filter criteria are named so as to allow easy re-use.

When you're working with libraries, objects, and members in the RSE, there are many right-click actions for renaming, copying/pasting, deleting, moving, changing, and working with the properties, among other things. You can also use drag and drop to copy members between files on the same or different servers, or even to or from your local PC.

When working with a library list filter, you can now use actions to manipulate the library list, just as in PDM. There

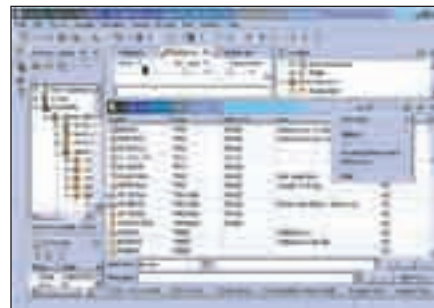


Figure 3.

are also GUI wizards for easily creating new things such as libraries, files, and members. If you don't see an action you like, create your own user action using the same substitution variables that PDM supports. Unlike PDM, however, RSE actions are scorable by object type or by attribute. Business partners can also contribute actions to the menus via plug-ins, as SoftLanding, MKS, Aldon, and ASC already do.

Beyond iSeries objects, you can also create command sets for easy execution, and work with your jobs or IFS folders and files, again with very rich filtering capability.

The Table View

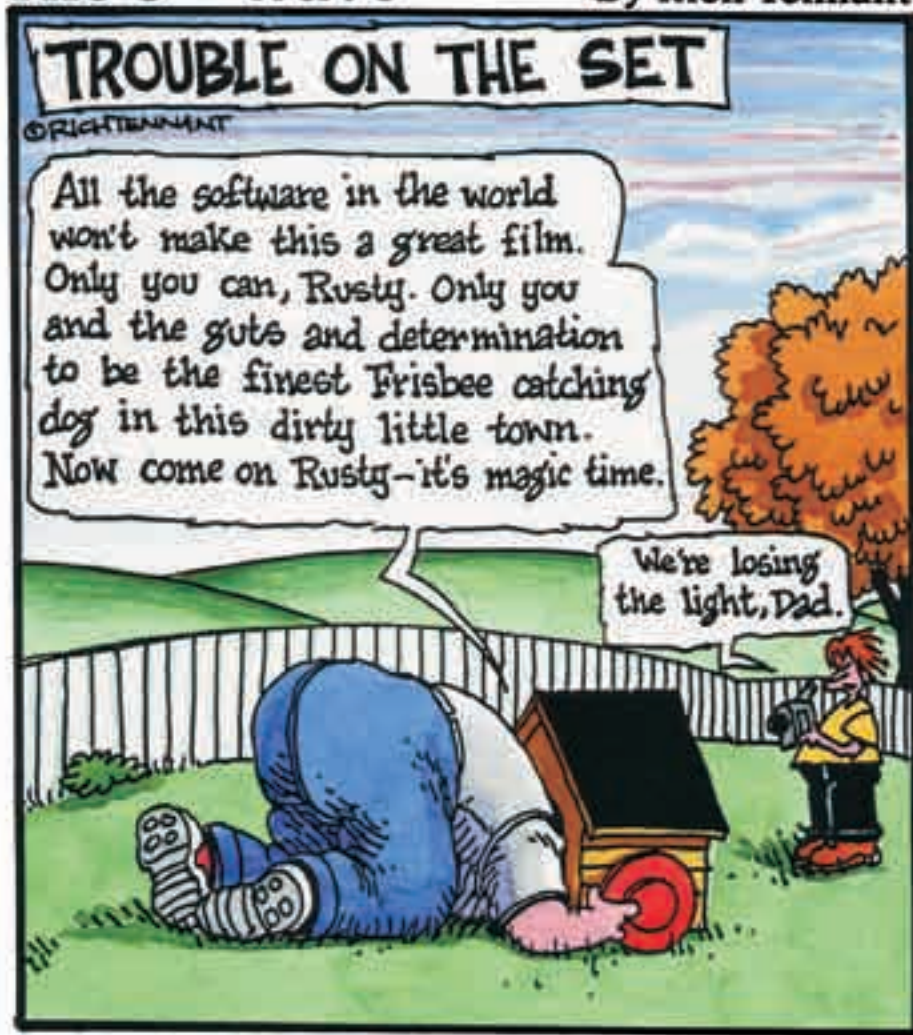
The RSE tree view is very powerful, letting you see common properties of a selected object in the property view or dialog. But many people prefer to work in a table view where the properties appear as sortable columns. The RSE supplies such a view; named the iSeries Table View (Figure 3), it is available in the lower right corner by default. In fact, just as in PDM, this view also has a command line at the bottom where you can enter OS/400 commands.

To populate the iSeries Table View, you can use the "Show in Table right-click" action on filters, libraries, objects, and members, from the RSE tree view. This will populate the table with the children of the selected node. You can also "unlock" the view so it automatically populates from the selected node. There is also a Work With pull-down menu item from within the table itself.

Once you've populated the table, you can change the content by double-clicking a library or file to show its children,

The 5th Wave

By Rich Tennant



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and then arrowing back to the previous contents (just as in a Web browser). Further, the table is sortable by clicking on a column heading, and it has all the same actions in the pop-up menus that the tree view has, including user actions and business partner actions. It also has a cascading PDM Actions menu that offers all the PDM-like options, as menu items, to reduce your learning curve. Also, as with PDM, you can use the drop-down menu to subset the list, position you in the list, and print the list.

Working Offline

One of the design goals of WDS*c* is to allow for an effective editing environment while disconnected from your iSeries. To enable this, much of the remote information extracted by the RSE is cached locally each time it is accessed. This enables you to enter “work offline” mode and perform a number of actions, such as expanding lists and doing program verification, without requiring a live connection.

Of course though, the offline support is really not that interesting until you make local copies of your source members so you can access them for editing. One way to do this is to use drag and drop in the iSeries to copy to a local folder. Another way is to use the iSeries project support. An iSeries project is a local Eclipse project, into which you can copy iSeries members.


In fact, this is as easy as right-clicking the member in the RSE and selecting Make Available Offline, which creates a project with the same name as the member’s library, if necessary, and copies the member(s) to the project.

You can subsequently work with the local member copy, doing editing and program verification. And when you’re done, you can use the iSeries project support to push the changed members back to the iSeries.

iSeries projects contain considerable functionality in themselves and are of value beyond just use in a disconnected mode. We will go into more details about this in our next article.

The New Tools

With its single Eclipse-based development environment for all programming tasks, RSE is the PDM and SEU of the 21st century. It is where you will spend your day, and what software vendors will target their tools for.

In our next installment, we’ll cover the iSeries project support and the enhancements we did in this area for version 5.0, rounding out our introduction to *better tools* – the first step in our modernization roadmap. 

George Farr works at the IBM Toronto lab, where he is the technical development manager for the RPG


and VisualAge for RPG languages, as well as the new RPG and Cobol tools in WDS*c*.

Phil Coulthard works at the IBM Toronto lab, where he is the lead architect for application development tools and languages on iSeries.

Phil and George are frequent speakers at many conferences and user groups worldwide, and their books Java for RPG Programmers, 2nd Edition and Java for S/390 and AS/400 COBOL Programmers, are available from Penton and MC Press.

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