



TPF Toolkit

# TPF Users Group – 2012 TPF Toolkit Updates

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AIM Enterprise Platform Software  
IBM z/Transaction Processing Facility Enterprise Edition 1.1.0

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# Updates

- **TPF Toolkit 3.6.3 (December 2011)**
- **TPF Toolkit 3.6.4 (May 2012)**
- **TPF Toolkit 3.6.5 (July 2012)**

# TPF Toolkit 3.6.3

- **Source Scan updates**

- OTRBITVb, PJ29575a
- New feature to allow users to attach help files to their custom rules. The help for the rule can be opened directly from the Remote Error List

Remote Error List x Remote

Filter matched 9 of 9 messages

ID	Message
OTRREGSa	OTRREGSa
OTRREGSa	OTRREGSa
OTRREGSa	OTRREGSa
OTRREGSb	OTRREGSb
OTRREGSb	OTRREGSb
OTRREGSb	OTRREGSb
OTRREGSb	OTRREGSb - Occurrence of C5 found.
OTRREGSb	OTRREGSb - Occurrence of C5 found.

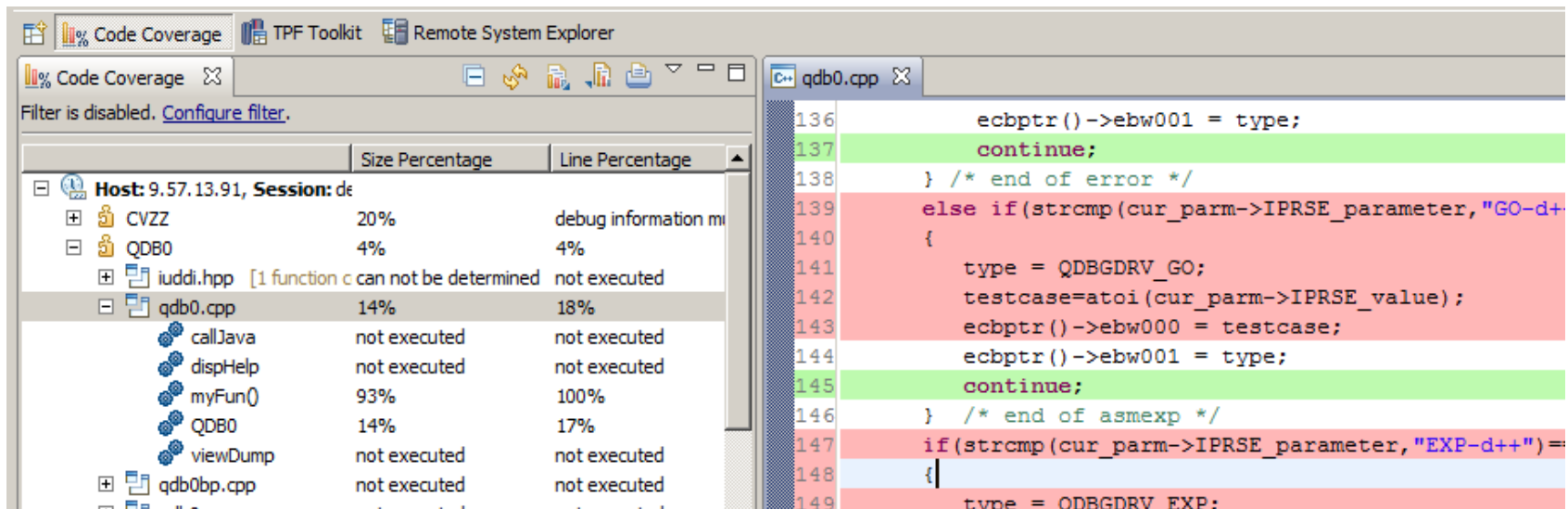
- Select All Messages
- Remove Message
- Remove All Messages
- Compare File with Corrected Version
- Auto Correct Source Scan Problem
- Help**
- Properties

Location	Host Name	Date
D:\Bug Fix Files\test_OTRREGSb.asm	LOCAL	Oct 19, 2012 2:11:08 AM
D:\Bug Fix Files\test_OTRREGSb.asm	LOCAL	Oct 19, 2012 2:11:08 AM
D:\Bug Fix Files\test_OTRREGSb.asm	LOCAL	Oct 19, 2012 2:11:08 AM
D:\Bug Fix Files\test_OTRREGSb.asm	LOCAL	Oct 19, 2012 2:11:08 AM
D:\Bug Fix Files\test_OTRREGSb.asm	LOCAL	Oct 19, 2012 2:11:08 AM
D:\Bug Fix Files\test_OTRREGSb.asm	LOCAL	Oct 19, 2012 2:11:08 AM
D:\Bug Fix Files\test_OTRREGSb.asm	LOCAL	Oct 19, 2012 2:11:08 AM
D:\Bug Fix Files\test_OTRREGSb.asm	LOCAL	Oct 19, 2012 2:11:08 AM

# TPF Toolkit 3.6.3

## • Code Coverage

- Source analysis feature: analyze modules, objects and functions to determine which lines are executed in response to test programs
- Requires APAR PJ38995 which is included in PUT 8



The screenshot displays the Code Coverage window in the TPF Toolkit. The left pane shows a tree view of the code coverage results for the host 9.57.13.91, session de. The right pane shows the source code for qdb0.cpp with lines highlighted in green (executed) and red (not executed).

Host	Size Percentage	Line Percentage
CVZZ	20%	debug information m
QDB0	4%	4%
iuddi.hpp [1 function c	can not be determined	not executed
qdb0.cpp	14%	18%
callJava	not executed	not executed
dispHelp	not executed	not executed
myFun()	93%	100%
QDB0	14%	17%
viewDump	not executed	not executed
qdb0bp.cpp	not executed	not executed

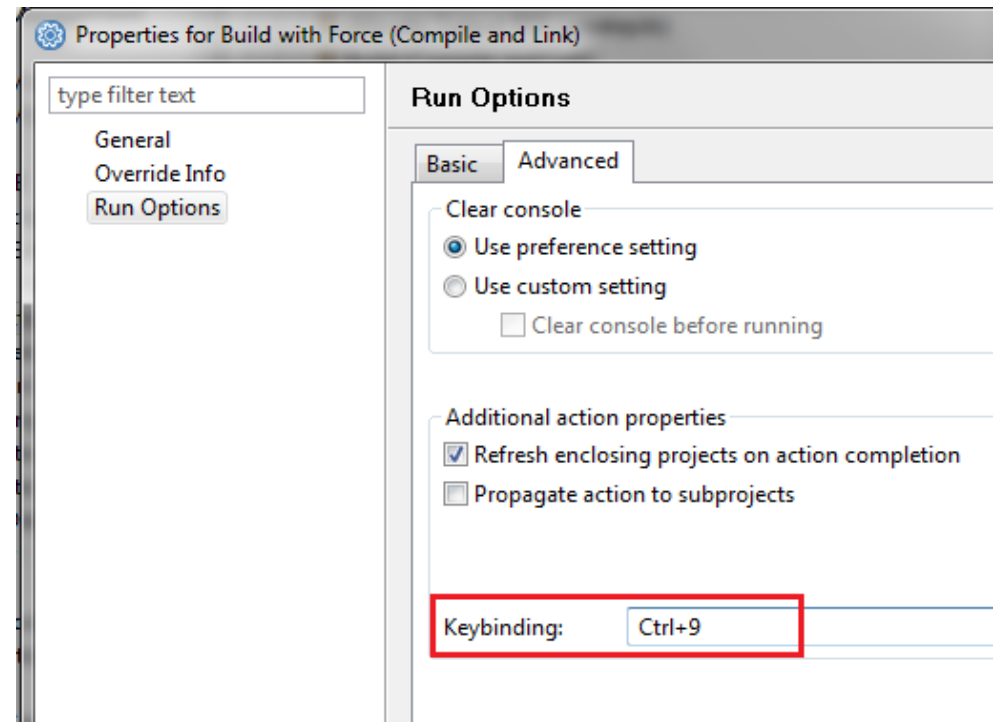
```

136         ecbptr()->ebw001 = type;
137         continue;
138     } /* end of error */
139     else if(strcmp(cur_parm->IPRSE_parameter, "GO-d+
140     {
141         type = QDBGDRV_GO;
142         testcase=atoi(cur_parm->IPRSE_value);
143         ecbptr()->ebw000 = testcase;
144         ecbptr()->ebw001 = type;
145         continue;
146     } /* end of asmexp */
147     if(strcmp(cur_parm->IPRSE_parameter, "EXP-d++")=
148     {
149         tvpe = ODBGDRV_EXP;

```

# TPF Toolkit 3.6.3

- **Menu Manager**
  - New feature to associate keybindings with Menu Manager actions
  - Keybindings can be used to invoke action



# TPF Toolkit 3.6.3

- **Debug Record View**

- New view that records debug session, including responses from debugger, user actions and contents of various debugger views (e.g. SW00SR, ECB Summary, etc.)

```
Debug Record x
Thread: TPF Thread 1032A000 is suspended at qdb0.cpp on line 41
  Local variable information for Thread: TPF Thread 1032A000
  Registers information for Thread: TPF Thread 1032A000
  TPF Memory Views
    ECB Summary: Registers
      R0 0000000000000010 R1 000000040995CFC8 R2 000000000000
      R3 0000000000000000 R4 00000000D8C4C2F0 R5 000000040A6
      R6 0000000409D191E8 R7 0000000012DA0000 R8 000000000000
      R9 0000000000000000 R10 0000000000000000 R11 0000000012C
      R12 0000000409D18000 R13 0000000409967728 R14 00000000001
      R15 0000000012C5F450
      PSW 4715000180000000 000000040995CFC8
    Step Over on Thread: TPF Thread 1032A000
  Thread: TPF Thread 1032A000 is suspended at qdb0.cpp on line 42
    Local variable information for Thread: TPF Thread 1032A000
    Registers information for Thread: TPF Thread 1032A000
```

## TPF Toolkit 3.6.3

- **Miscellaneous**

- Performance improvement in the TPF Project source lookup mechanism
- Trace Log Editor has been enhanced to handle trace log data that does not contain return statements
- Performance Analyzer has been updated to allow the merging of two trace files



## TPF Toolkit 3.6.4

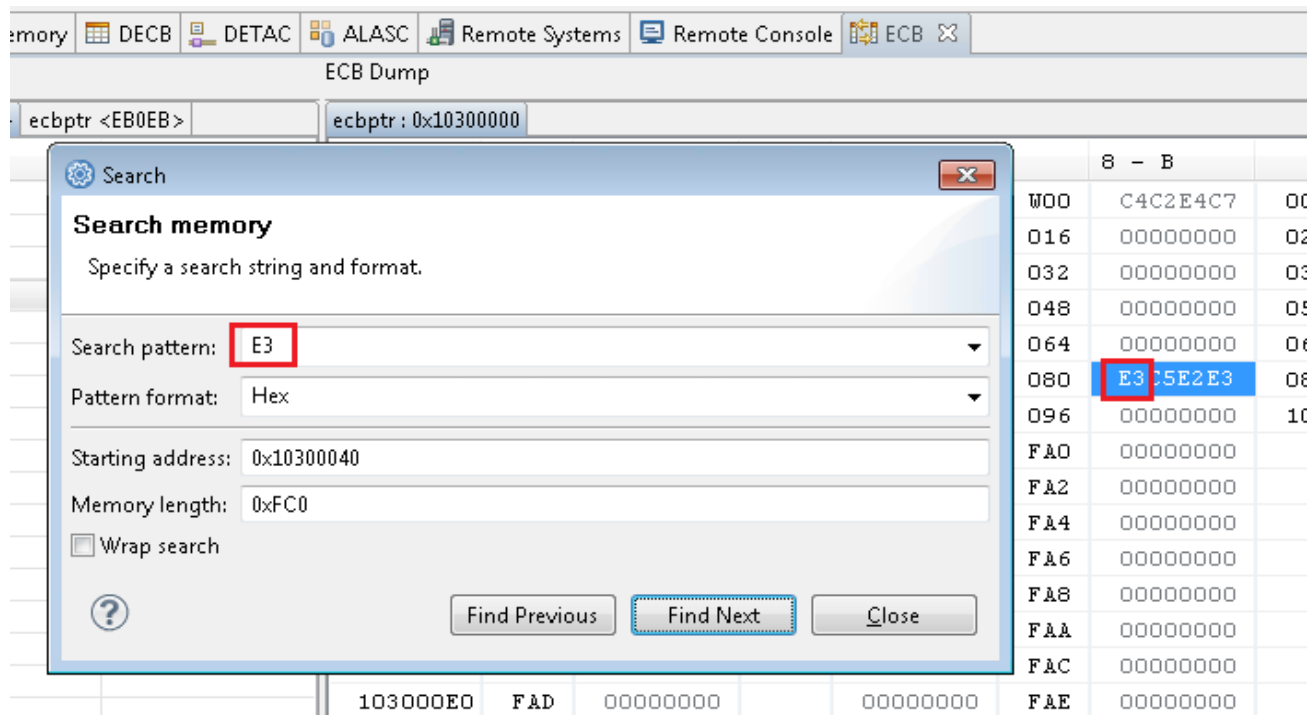
- **Source Scan**
  - OTRPACKc
- **Miscellaneous**
  - Significant improvements in performance when using mounted locations for TPFPROJ and TPFSHARE
  - Message user exit updated to preserve line feeds in the Remote Console



# TPF Toolkit 3.6.4

- **Memory Search feature in debugger**

- Allows user to search for specific patterns in various debugger views (e.g. Memory view, SW00SR, etc.)
- Requires APAR PJ39617 which is included in PUT 9



The screenshot shows the TPF Toolkit debugger interface. A "Search" dialog box is open, titled "Search memory". The dialog contains the following fields and controls:

- Search pattern:** E3 (highlighted with a red box)
- Pattern format:** Hex
- Starting address:** 0x10300040
- Memory length:** 0xFC0
- Wrap search
- Buttons: Find Previous, Find Next (highlighted with a blue dashed border), Close

The background shows a memory dump window titled "ECB Dump". The dump displays memory addresses and their corresponding values in hexadecimal. The value "E3 15E2E3" at address 080 is highlighted with a blue box, indicating a successful search match.

Address	Value	Comment
000	C4C2E4C7	00
016	00000000	02
032	00000000	03
048	00000000	05
064	00000000	06
080	E3 15E2E3	08
096	00000000	10
FA0	00000000	
FA2	00000000	
FA4	00000000	
FA6	00000000	
FA8	00000000	
FAA	00000000	
FAC	00000000	
FAE	00000000	

# TPF Toolkit 3.6.5

- **Miscellaneous**

- Fix problems when installing updates from password protected update site
- Incorporate Eclipse security patch
- Bug fixes

## Disclaimer

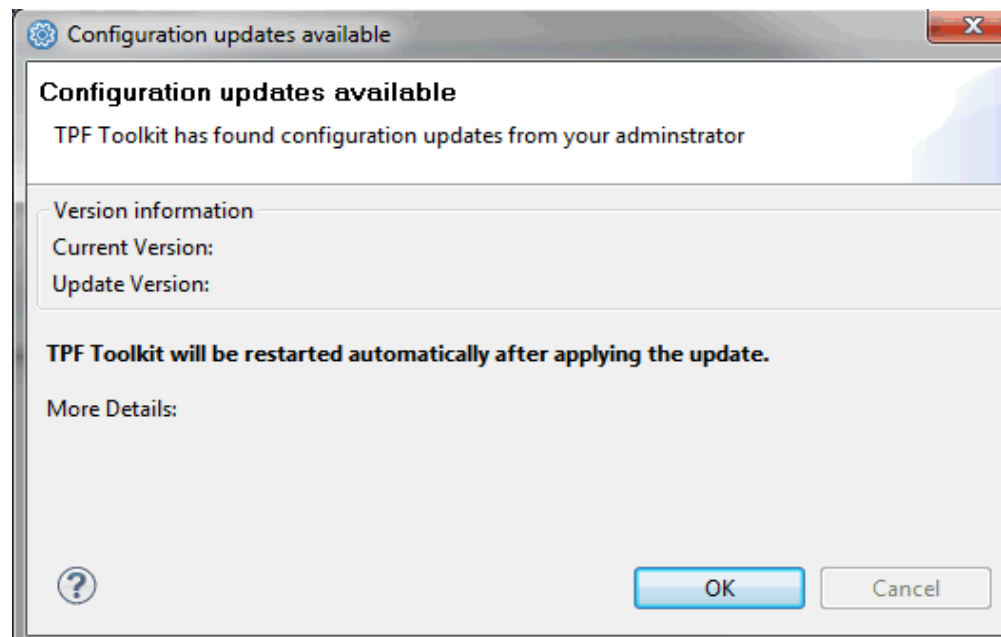
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## TPF Toolkit V.next

- **Tentatively scheduled for release in 4Q 2012**
- **Based on Eclipse 3.6.2**
- **Adoption of IBM Installation Manager**
  - Consistent user experience across other IBM products
  - Easier to share environments between products such as IBM TPF Toolkit and, for example, Rational Team Concert (RTC)
    - Commonly referred to as *shell-sharing*

# TPF Toolkit V.next

- **New mechanism for customizing TPF Toolkit**
  - Goal is to simplify customization process significantly
  - Create and upload customizations to remote system
  - Customizations are applied when user connects to the system



# Business Events and WODM Rule Engine wizards

- **Several wizards have been implemented to help you create various XML descriptors**
  - Business Events
    - Business Event Specification
    - Business Event Dispatch Adapter
  - WebSphere Operational Decision Management (WODM)
    - TPF Object Model
    - WODM Rule Application
    - WODM Endpoint Definition

# Code Coverage Comparison Tool

- **New Code Coverage Compare editor allows you to compare size and source analysis results for multiple sessions**
  - Compare results at several levels:
    - Module level (e.g. QDB0)
    - Object level (e.g. qdb0.o)
    - Function level (e.g. printf(...))
  - You can filter the results to:
    - Show only specific modules by name
    - Show only modules/functions/objects where the size/line percentage lies within a certain range (e.g. only show those modules that are covered < 50% by tests)
  - You can sort the results by size/line percentage or by name



Compare Results ✕

Compare code coverage results ▾

	Size 1	Size 2
iuddi.hpp	n/a	n/a
qdb0.cpp	14	0
qdb0bp.cpp	n/a	n/a
qdb0er.cpp	n/a	n/a
qdb0ff.cpp	n/a	n/a
qdb0go.cpp	41	n/a
qdb0lk.cpp	27	-14
linkCases	29	-15
qdb0ms.cpp	n/a	n/a
qdb0sk.cpp	n/a	n/a
qdb0sy.cpp	n/a	n/a

	Line 1	Line 2
▶ iuddi.hpp	n/a	n/a
▶ qdb0.cpp	18	0
▶ qdb0bp.cpp	n/a	n/a
▶ qdb0er.cpp	n/a	n/a
▶ qdb0ff.cpp	n/a	n/a
▶ qdb0go.cpp	51	n/a
▲ qdb0lk.cpp	31	-18
linkCases	31	-18
▶ qdb0ms.cpp	n/a	n/a
▶ qdb0sk.cpp	n/a	n/a
▶ qdb0sy.cpp	n/a	n/a

Host: 9.57.13.91, Session: test2, Timestamp: October 15, 2012 2:23:59 AM

Host: 9.57.13.91, Session: test2, Timestamp: October 15, 2012 2:19:35 AM

Compare Move up Move down

# Code Coverage Comparison Tool

- Ability to compare source analysis data at the source file level

Compare Results Compare ("\\TPFLINUX.POK.IBM.COM\ztpf\curdr\debug\qdb0lk.cpp" - "\\TPFLINUX.POK.IBM.COM\ztpf\curdr\debug\...)

C Compare (No Structural Differences)

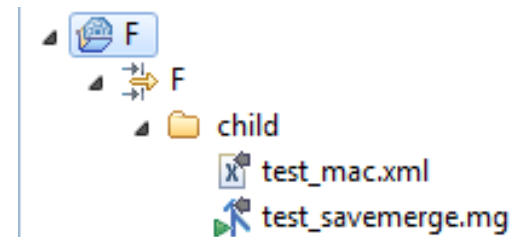
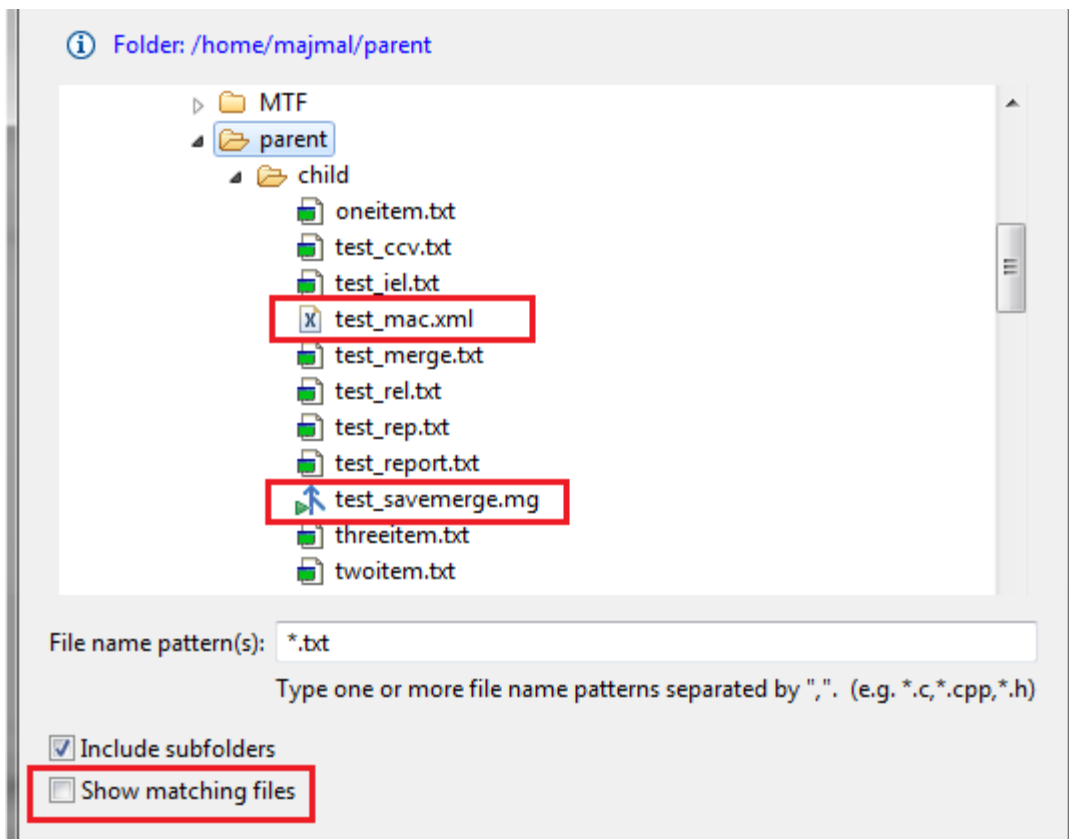
Code Coverage Source Analysis Compare

```
17 case 1:
18 QDBDC1F1(type, caseNum);
19 QDBEP1F1(type, caseNum);
20 QDBFP1F1(type, caseNum);
21 break;
22
23 case 2:
24 stor = malloc(50);
25 QDB0_printf("31bit maloc addr %16.16lX
26 memset(stor, 0x00, 50);
27 memcpy((char *)&ecbptr()->ebw032, &stor
28
```

```
17 case 1:
18 QDBDC1F1(type, caseNum);
19 QDBEP1F1(type, caseNum);
20 QDBFP1F1(type, caseNum);
21 break;
22
23 case 2:
24 stor = malloc(50);
25 QDB0_printf("31bit maloc addr %16.16
26 memset(stor, 0x00, 50);
27 memcpy((char *)&ecbptr()->ebw032, &s
28
```

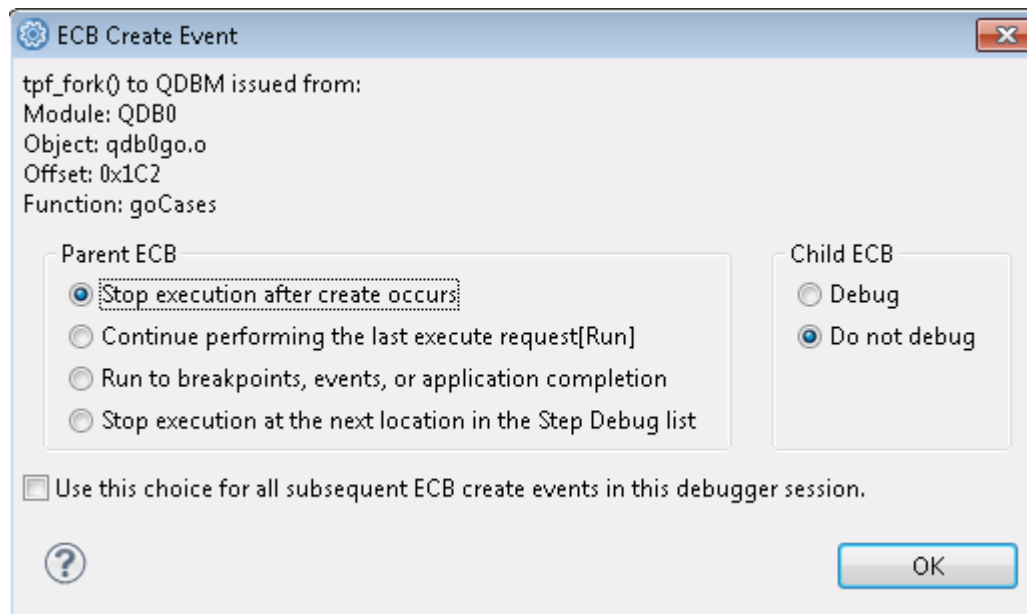
## Negative Filters in TPF Projects (zLinux only)

- **Allows a user to specify what NOT to show when creating a new TPF filter**



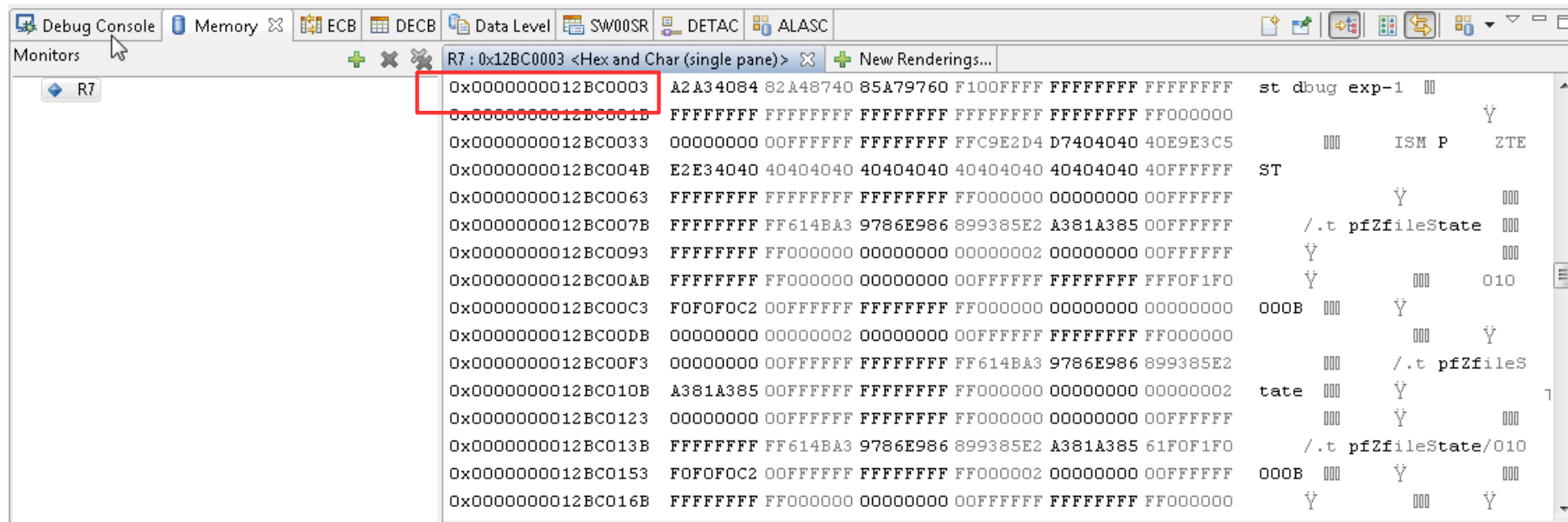
## Enhanced fork support in z/TPF debugger

- **Currently, users are able to choose to debug a parent ECB, child ECB or both ECBs when a fork event occurs**
  - This interface has been enhanced to supply additional information to the user to help make a more informed decision



## Hex and char (single pane) rendering

- **New Hex and char rendering added to Memory view**
  - Displays hex and text in the same pane
  - Displays contents starting from arbitrary address



The screenshot shows the Memory view in the IBM z/OS Debugger. The window title is "R7 : 0x12BC0003 <Hex and Char (single pane)>". The address 0x12BC0003 is highlighted with a red box. The memory contents are displayed in a single pane, showing hex values on the left and their corresponding ASCII characters on the right. The hex values are: 0x00000000, 12BC001D, 0x00000000, 12BC0033, 0x00000000, 12BC004B, 0x00000000, 12BC0063, 0x00000000, 12BC007B, 0x00000000, 12BC0093, 0x00000000, 12BC00AB, 0x00000000, 12BC00C3, 0x00000000, 12BC00DB, 0x00000000, 12BC00F3, 0x00000000, 12BC010B, 0x00000000, 12BC0123, 0x00000000, 12BC013B, 0x00000000, 12BC0153, 0x00000000, 12BC016B.

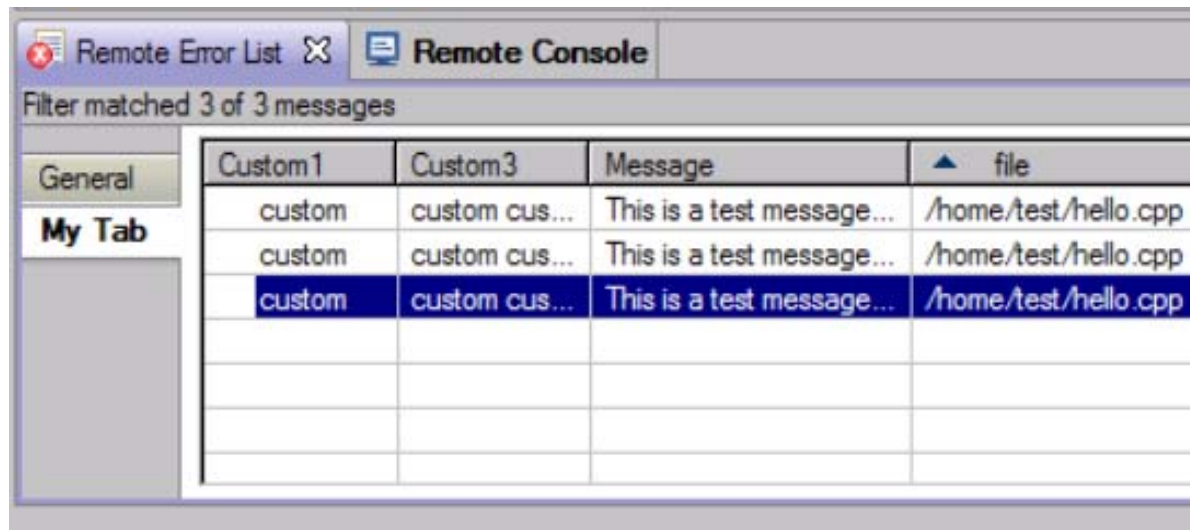
Hex Address	Hex Value	ASCII Character
0x0000000012BC0003	A2A34084 82A48740 85A79760 F100FFFF FFFFFFFF FFFFFFFF	st debug exp-1
0x0000000012BC001D	FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF	ISM P ZTE
0x0000000012BC0033	00000000 00FFFFFF FFFFFFFF FFC9E2D4 D7404040 40E9E3C5	ST
0x0000000012BC004B	E2E34040 40404040 40404040 40404040 40404040 40FFFFFF	ST
0x0000000012BC0063	FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF	PFZfileState
0x0000000012BC007B	FFFFFFFF FF614BA3 9786E986 899385E2 A381A385 00FFFFFF	PFZfileState
0x0000000012BC0093	FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF	PFZfileState
0x0000000012BC00AB	FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF	PFZfileState
0x0000000012BC00C3	F0F0F0C2 00FFFFFF FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF	PFZfileState
0x0000000012BC00DB	00000000 00000002 00000000 00FFFFFF FFFFFFFF FFFFFFFF	PFZfileState
0x0000000012BC00F3	00000000 00FFFFFF FFFFFFFF FF614BA3 9786E986 899385E2	PFZfileState
0x0000000012BC010B	A381A385 00FFFFFF FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF	PFZfileState
0x0000000012BC0123	00000000 00FFFFFF FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF	PFZfileState
0x0000000012BC013B	FFFFFFFF FF614BA3 9786E986 899385E2 A381A385 61F0F1F0	PFZfileState
0x0000000012BC0153	F0F0F0C2 00FFFFFF FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF	PFZfileState
0x0000000012BC016B	FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF	PFZfileState

## Remote Error List API

- **Remote Error List displays message markers generated from a build, source scan, etc.**
  - Users can interact with these messages (e.g. auto-correct source scan error)
- **New API allows users to create custom markers and display them in the Remote Error List**
  - Ability to create custom tab in the Remote Error List for your own markers
  - Ability to further customize Remote Error List view by adding or removing columns

## Remote Error List API

- **API lets try track selection changes in the Remote Error List so you can react appropriately**



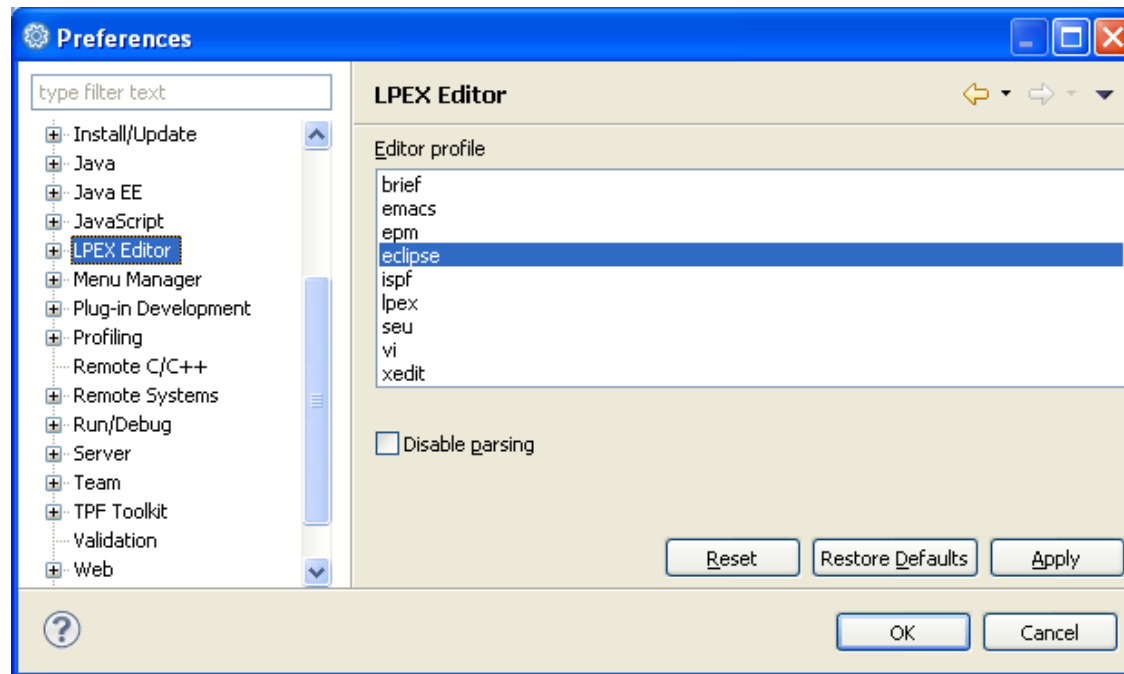
The screenshot shows a window titled "Remote Error List" with a "Remote Console" tab. Below the title bar, it says "Filter matched 3 of 3 messages". The main area contains a table with four columns: "Custom1", "Custom3", "Message", and "file". The table has three rows of data, with the third row highlighted in blue. The first row is also highlighted in light blue.

Custom1	Custom3	Message	file
custom	custom cus...	This is a test message...	/home/test/hello.cpp
custom	custom cus...	This is a test message...	/home/test/hello.cpp
custom	custom cus...	This is a test message...	/home/test/hello.cpp



## New LPEX Profile

- The Basic LPEX Editor and the System z LPEX Editor now include a new profile, which has improved key bindings for eclipse users
- The eclipse profile is the default profile for TPF Toolkit

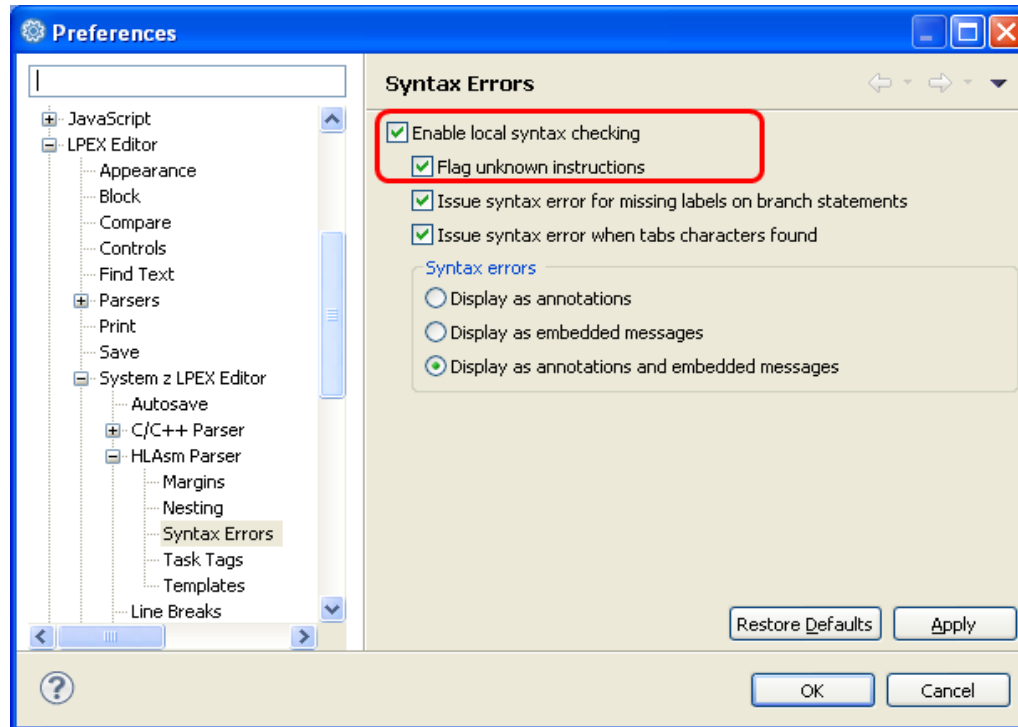


## HLAsm Enhancements

- **New script file to generate HLAsm macro definitions automatically on remote host**
  - Macro definitions can then be used by the HLAsm parser to provide content assist and syntax checking
  - Script file scans user specified directories on remote system to generate a user macro file that can be used in the editor.

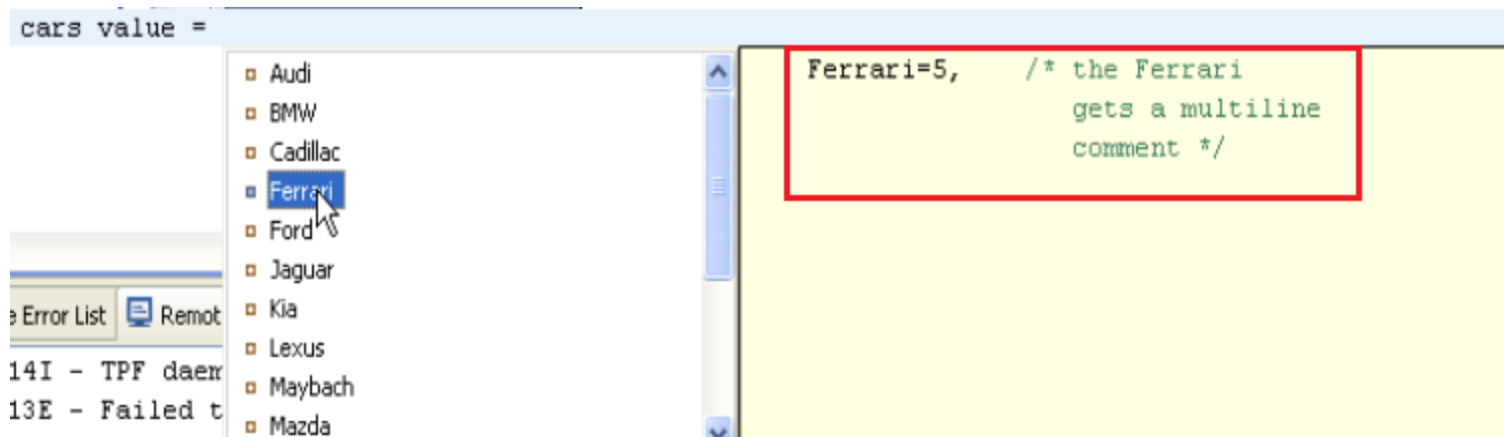
## HLAsm Enhancements

- **The HLAsm syntax checker has added new options for disabling unknown macro checks and local syntax checking**



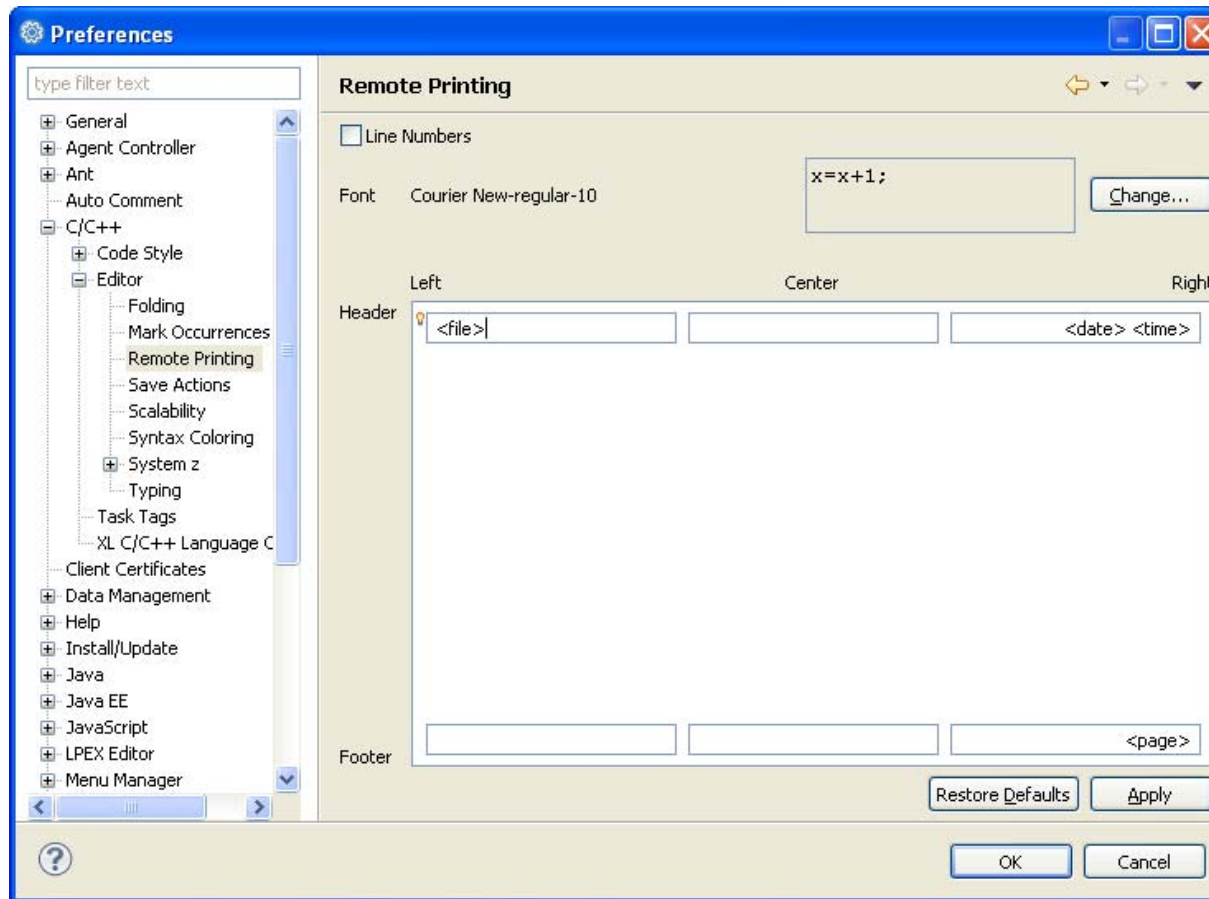
## Content Assist For C/C++ Enumerations

- **Content assist for C/C++ now presents additional information when providing proposals for enumerations**
  - The enumeration declaration is shown when an enumeration proposal is selected



# Print Options for Remote C/C++ Editor

- **The Remote C/C++ Editor now supports unique printing options**



## Remote Index Search

- **RIS now allows multiple concurrent requests for index creation, allowing users to quickly create indexes for multiple locations simultaneously**
- **The buffer size used by the RIS can now also be configured in the host files to ensure either maximum speed, or enforce maximum memory usage.**

# Questions



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