



TPF Toolkit V3.2

TPF Users Group Spring 2008 TPF Debugger Update

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AIM Enterprise Platform Software
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Agenda

- **TPF Debugger User's Guide (Initial Draft)**
 - Purpose of document
 - Document contents
 - Examples
 - Document distribution and feedback
- **CDBPUX on z/TPF production system**
- **New z/TPF Features**
 - Non-displayable ECB Storage
 - Set default representation
 - SVC All
 - Event Breakpoints

TPF Debugger User's Guide (Initial Draft)

- **Purpose of document**

- To provide a source of information where common TPF debugger questions can be answered
- To educate about TPF debugging concepts
- To educate about the different debugger functionalities provided by TPF debugger
- To complement other help tools currently available for the TPF debugger
- To provide help information for TPF Debugger on z/TPF and TPF 4.1

TPF Debugger User's Guide (Initial Draft)

- **Document Format**
 - Table of Contents
 - Document contents
 - Features
 - Understanding...
 - How do I...
 - Frequently Asked Questions (FAQs)
 - Index

TPF Debugger User's Guide (Initial Draft)

- **Document Contents**

- Features

- Description of available features of the TPF Debugger and where to find more help

- Understanding...

- Explanation of some important debugging concepts

- How do I...

- “How-to” on most commonly used features in the debugger

- Frequently Asked Questions(FAQs)

- Compiled list of commonly asked questions about the debugger

TPF Debugger User's Guide (Initial Draft)

- **More about Document Contents**

- Frequently Asked Questions(FAQs) and “How do I...” sections are catalogued in sequence of steps
 - Registering
 - Starting Debugger
 - Debugging Program
 - Dump Viewing
 - ECB Monitoring
- For more information on a topic, keywords to use in the TPF Information Center or TPF Toolkit Help are suggested

TPF/IC: “zddb”, “registration”

TOOLKIT: “registering a program for debugging”

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- **Example 1**

- Problem: Debugger doesn't start
- Possible questions:
 - Why doesn't the debugger start?
 - Why is the debugger not trapping my ECB?

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- **Example 1 - Why is the debugger not trapping my ECB?**

How to find the answer:

1. Look under FAQs in table of contents

Frequently Asked Questions (FAQs).....	5
Registering	5
Starting Debugger	5
Debugging Program.....	5

2. Go to the page indicated by “Starting Debugger” since problem occurred when trying to start a program to debug
3. Look for the question “Why is the debugger not trapping my ECB?”

Starting Debugger

Q8: Why is the debugger not trapping my ECB?

A1: No debug session was registered or registration failed. Use ZDDBG to verify and/or view the TPF Toolkit Console for error messages.

4. Follow any links or keywords suggestion to get more information

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- **Example 2**

- Problem: Need to stop the application on a macro
- Possible questions:
 - How do I trace a macro?
 - How do I set a macro breakpoint?

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- **Example 2 - How do I trace/set a macro breakpoint?**

How to find the answer using the index:

1. Go to the page indicated by “Index” in table of contents

Index **32**

2. Go to pages indicated by term “macro breakpoint”

hfs, 4

macro, 2, 11, 13, 18, 20

macro breakpoint, 13, 18, 19

3. In the information found you may follow any links or keywords suggestion to get more information

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- **Example 2 - How do I trace/set a macro breakpoint?**

How to find the answer using the “How do I...” section:

1. Go to the page indicated by your question under “How do I...” in table of contents

How do I.....	10
...	
#12 ...set up my source lookup path?.....	13
#13 ...trace a macro or a macro group?.....	14
#14 ...trace production code?.....	14
...	

2. Follow any links or keywords suggestion to get more information

#13 ...trace a macro or a macro group?

A1: See [setting macro breakpoints](#).

A2: See [debug information -g3](#) #define macro support

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- **Example 2 - How do I trace/set a macro breakpoint?**

How to find the answer using Features section:

1. Look under Features in table of contents

Features	11
Remote System Explorer (RSE) Perspective	11
<input type="checkbox"/> Remote Systems	11
Debug Perspective	11
<input type="checkbox"/> Breakpoints View	11

2. Go to the page indicated by “Breakpoints View” since Macro breakpoints are part of the Breakpoints Feature

- Set macro breakpoint on a macro group on a TPF or user macro group allows the debugger to stop the execution of the application at the invocation of any macro in the macro group. To create a macro group breakpoint, add an entry breakpoint, choose to mark the breakpoint as deferred, and enter the macro group name as the function name. Once created, the breakpoint view will indicate the breakpoint is a macro group breakpoint.

3. Follow any links or keywords suggestion to get more information

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- **Document distribution and feedback**
 - Will be distributed as a PDF document
 - Can be accessed through the TPF Website
 - <http://ibm.com/software/http/tpf/zdebugger/zdebugger.htm>
 - This is a living document, please provide us feedback
 - Send all questions, comments and suggestions to TPFQA@us.ibm.com

CDBPUX on z/TPF production system

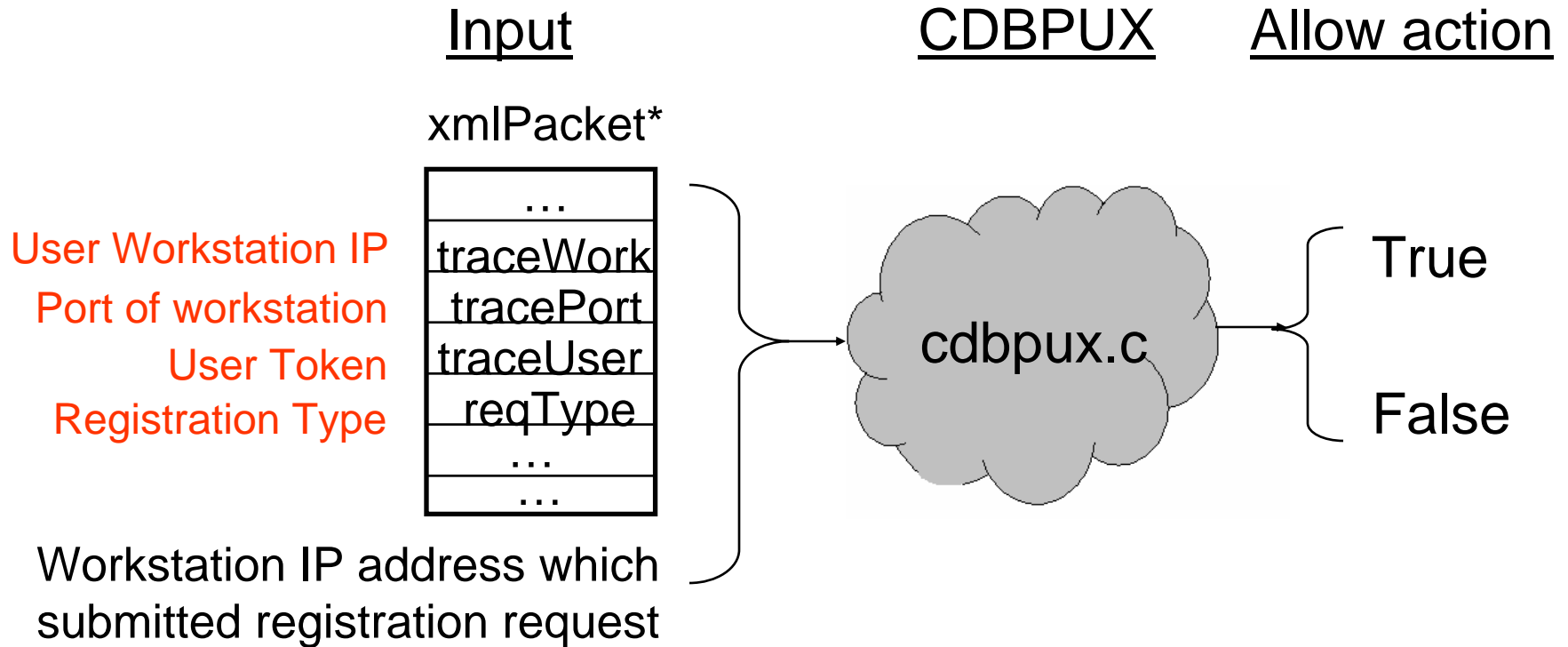
- **Allows administrators to manage registration tasks on a production system**
- **On TPF 4.1, debugger registration tasks were prohibited by not starting the DBUG INET daemon**
- **On z/TPF, the DBUG INET daemon should be started such that ECB Monitor and Dump Viewing can be used on a production system**
- **Debugger registration tasks should be discouraged on a production system because**
 - Application could be stopped while holding locks which could be detrimental to the system integrity
 - PER and operating system hooks would be turned on negatively affecting performance
- **The CDBPUX user exit should be used to limit debugger registration tasks on a production system**

CDBPUX on z/TPF production system

- **This user exit can also be used for a variety of other purposes**
 - to limit the number of ECB monitor sessions that can occur simultaneously on a production system
 - to manage accessibility to dump viewer use, judging on workstation IP addresses or registration IP addresses
 - any other variation

CDBPUX on z/TPF production system

- Different customers may use different criteria to manage debugger registration tasks



New Features

- **Non-displayable ECB Storage**

- TPF Debugger now supports the Non-displayable ECB Storage feature
- If ZMNDS DISABLE has been issued, the values of variables and memory will be shown
 - Variables and Monitors view
 - A message is displayed instead of the actual contents of the protected storage

Name	Value
something	Value is protected and can not be displayed (see NDSPC macro documentation)
decb_name	
decb_name[0]	'\x00'
decb_name[1]	Value is protected and can not be displayed (see NDSPC macro documentation)

New Features

- **Non-displayable ECB Storage**

- Memory View

- Protected contents will show as “5C” in Hex Rendering

DECB Memory Data Level ECB SW00SR Debug Console

Monitors Renderings

decb_name : 0xDB0D1A6 <Hex>

Address	0 - 3	4 - 7	8 - B	C - F
00000000DB0D1A0	5C5C0000	00010000	00005C5C	5C5C0000
00000000DB0D1B0	00000000	0000005C	5C5C5C5C	5C5C5C5C
00000000DB0D1C0	5C5C5C5C	5C5C5C5C	00000000	00000000
00000000DB0D1D0	00000000	0B200100	00000000	0B200188

- Protected contents will show as asterisks “*” in EBCDIC rendering

Renderings

decb_name : 0xDB0D1A6 <EBCDIC>

Address	0 - 3	4 - 7	8 - B	C - F
00000000DB0D1A0	** ��	����	��**	** ��
00000000DB0D1B0	����	���*	****	****
00000000DB0D1C0	****	****	����	����
00000000DB0D1D0	����	����	����	����

- It is our intention to substitute “5C” and “*” with an icon in the future

New Features

- **Set default representation**

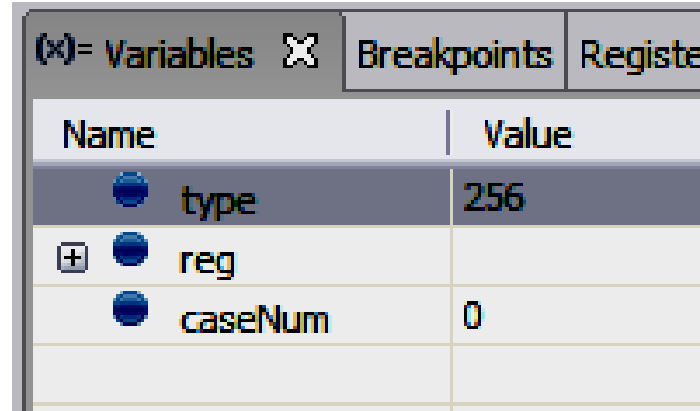
- Ability to manage default data representation for variables shown in the monitors and variables view

- **Example:**

- Change the representation of all int variables from decimal to hexadecimal

- Before

- variable: "type" (int)
- representation: decimal



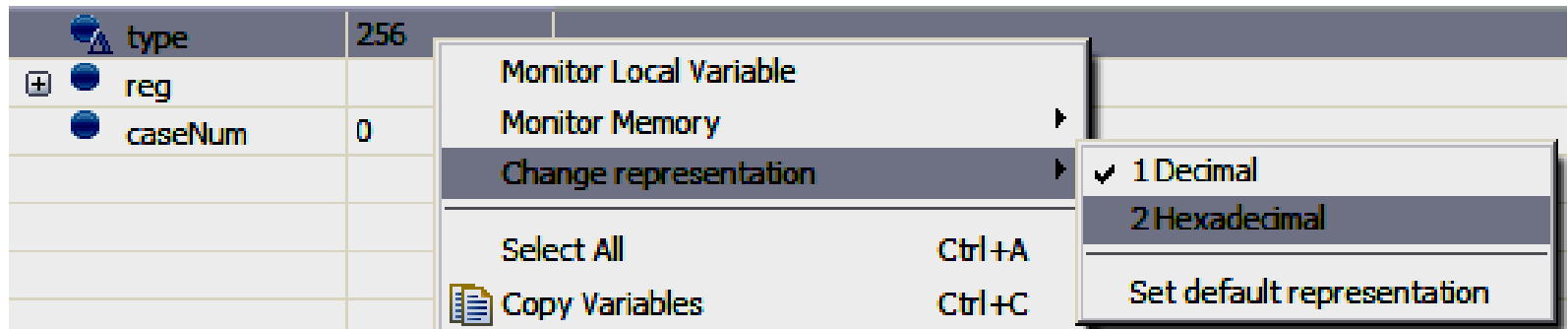
Name	Value
type	256
reg	0
caseNum	0

New Features

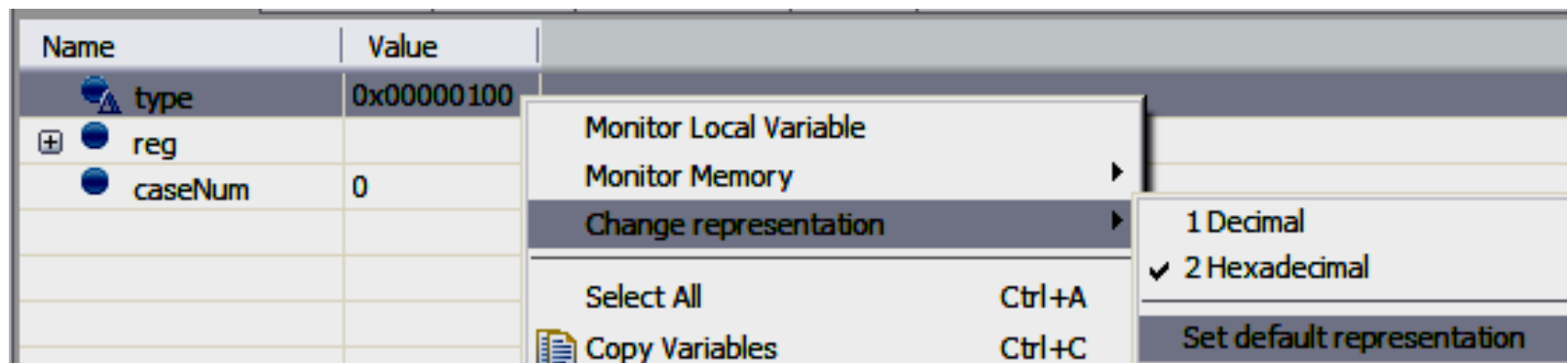
- **Set default representation**

- To change the default representation

- Right click on variable and change the representation



- Right click on the same variable and set default representation



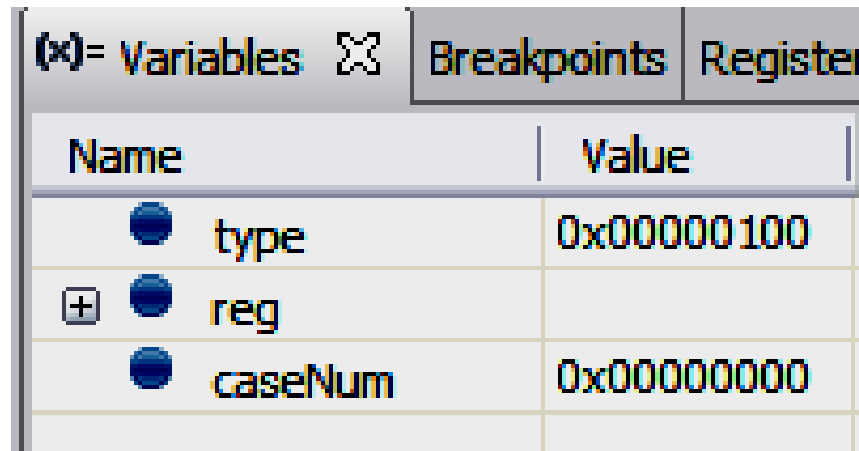
New Features

- **Set default representation**





- **Example** (cont):

- After

- variable: all int variables
- representation: hexadecimal



The screenshot shows a debugger interface with a 'Variables' window. The window has a title bar with '(x)=' and a close button. Below the title bar are three tabs: 'Variables', 'Breakpoints', and 'Registers'. The 'Variables' tab is active, displaying a table with two columns: 'Name' and 'Value'. The table contains three rows of data:

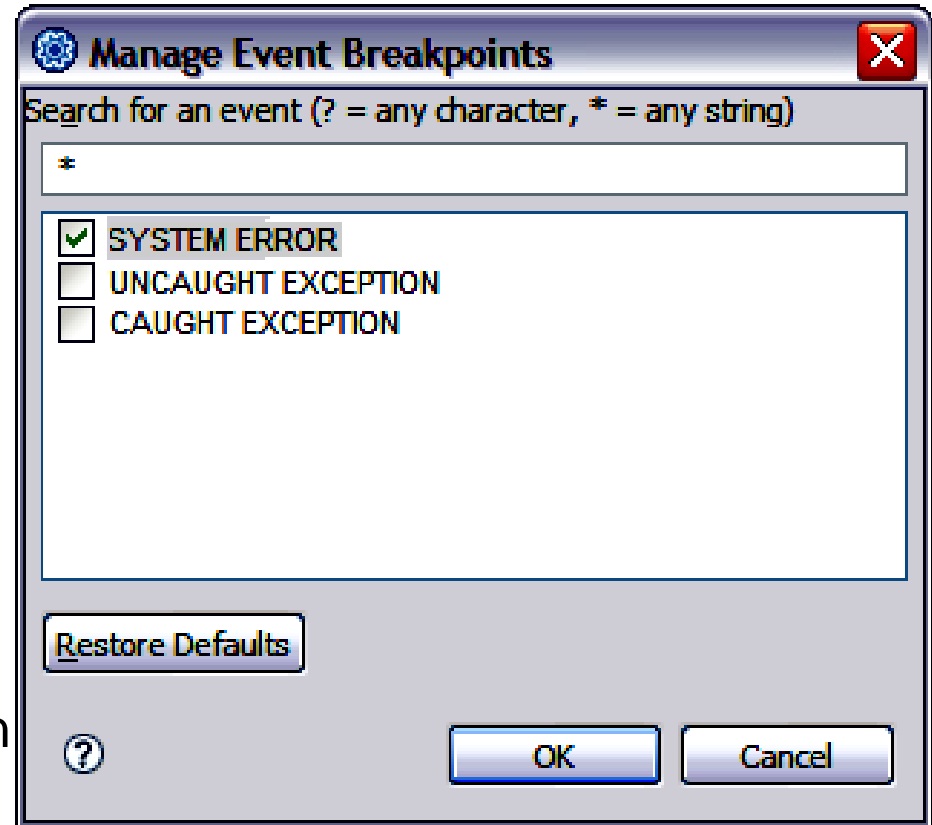
Name	Value
 type	0x00000100
  reg	
 caseNum	0x00000000

New Features

- **SVC All**
 - Ability to use macro breakpoints to stop on all SVC calls
 - The “ALLSVC” macro group is one of the TPF predefined macro groups currently supported by the debugger
 - To know more about macro breakpoints, you can refer to the TPF Debugger User’s Guide

New Features

- **Event breakpoints**
 - Ability to stop at all caught exceptions, uncaught exceptions, or system errors (also stops on assert() functions)
 - The new XCPTRAP debug console command allows the TPF debugger to only stop for specific types of exceptions, which are given by the user



APARS

- **Non-displayable ECB Storage**
 - z/TPF PJ31995
- **Set Default Rep.**
 - TPF Toolkit V3.2
 - z/TPF PJ32731
- **TPF User's Guide link**
 - <http://ibm.com/software/http/tpf/zdebugger/zdebugger.htm>
- **SVC All**
 - TPF Toolkit V3.2
 - z/TPF PJ33189
- **Event breakpoints**
 - TPF Toolkit V3.2
 - z/TPF PJ32719

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