



#### There's a new Sheriff in Town CICS Policy Based Management

Dr Chris Poole

chrispoole@uk.ibm.com @chrispoole





SHARE is an independent volunteer-run information technology association that provides education, professional networking and industry influence.

Agenda

**CICS** policy-based management Resources Actions Policy scope Summary

### POWER TO THE SYSPROG!

"The Cart browse operation shouldn't use more than 1 millisecond of CPU"

"I want to see a message if version 1.1 of the Order **Update application** allocates more than 1MB of storage"

"Abend any application running on the Retail **Banking platform that** tries to request any 24-bit storage"

### **Policies:**

**Control behaviour of apps and** platforms **Define threshold conditions to** manage user tasks Automatically take action when a threshold is exceeded **Detect looping or runaway tasks** 



# Phone plans



#### Defined in a CICS bundle A condition and action pair: a rule Multiple rules per policy Multiple policies per bundle

### **Available actions**

Issue a message: DFHMP3001 Emit an Event Abort the task: Abend code AMPB or user specified

### **Emit an event**

Name an EP adapter or EP adapter set Same behaviour as CICS system events Policy event can be sent to an async. non-transactional EP adapter

### Abend the task

**Transaction dump is taken by** default Suppress/request a sys. dump with **CEMT SET TROUMPCODE** SYDUMPCODE EXEC CICS SET TRANDUMPCODE SYDUMPCODE Handle the abend with EXEC CICS **HANDLE ABEND** 

# **Rule types**

**Requests:** Database 5.1 File (delete, read, write...) 5.1 Program (LINK) 5.1 **START** 5.2 Storage (24/31/64-bit, task/shared) 5.1 Syncpoint 5.2 TD Queue (READQ, WRITEQ) 5.2 TS Queue bytes (main, AUX) 5.2 Time: **CPU** 5.1 Elapsed 5.2

#### Database

#### Define a threshold for no. of SQL requests Includes requests issued in exits

#### Create Policy Definition

#### Add a rule

Add a policy rule to define what action is taken when a task exceeds a s

Policy Informa	ation				
Name:*					(
Description:					
Rule Informati	ion				
Name:*					
Description:					
What is the co	ndition that trigge	rs the rule	e?		
Type:	Database request File request Program request Start request		▲ HI	Item:	SQL comma
Operator:	Greater Than	Value:*	0		l
What action sl	hould be taken wh	en the rule	e's condi	tion is ex	ceeded?
	Issue message	DFHMP3	001		
	$\bigcirc$ Emit event to				
	EP Adapter			O EP	Adapter Set
	O Abend task with the second task with task with the second task with the second task with	th abend of	code AN	1PB	
Open Editor	r				
?	<	Back	) N	ext >	Fin

**File** 

#### Define a threshold for no. of FILE requests Applies to a specific file command (e.g., READ) Not cumulative **Counted regardless of SUCCESS** Counted for user task in AOR if local or remote

Policy Information					
Name:*					
Description:					
Rule Informat	tion				
Name:*					
Description:					
What is the co	ondition that triggers the rule?				
Type:	Database request	Delete cor			
	File request	Read com			
	Program request	Read next			
	Start request	Read prev			
<b>.</b> .		Pood und			
Operator:	Greater Than Value:* <sup>8</sup>				
What action s	hould be taken when the rule's condition is	exceeded?			
What action s	hould be taken when the rule's condition is a Issue message DFHMP3001	exceeded?			
What action s		exceeded?			
What action s	<ul> <li>Issue message DFHMP3001</li> <li>Emit event to</li> </ul>				
What action s	<ul> <li>Issue message DFHMP3001</li> <li>Emit event to</li> </ul>				
	<ul> <li>Issue message DFHMP3001</li> <li>Emit event to</li> <li>EP Adapter</li> <li>Abend task with abend code AMPB</li> </ul>				
What action s	<ul> <li>Issue message DFHMP3001</li> <li>Emit event to</li> <li>EP Adapter</li> <li>Abend task with abend code AMPB</li> </ul>				
	<ul> <li>Issue message DFHMP3001</li> <li>Emit event to</li> <li>EP Adapter</li> <li>Abend task with abend code AMPB</li> </ul>				
	<ul> <li>Issue message DFHMP3001</li> <li>Emit event to</li> <li>EP Adapter</li> <li>Abend task with abend code AMPB</li> </ul>	exceeded? P Adapter Se			
	<ul> <li>Issue message DFHMP3001</li> <li>Emit event to</li> <li>EP Adapter</li> <li>Abend task with abend code AMPB</li> </ul>				

### Program

#### Define a threshold for no. of LINK requests Includes INVOKE APPLICATION

Create Policy	Definition	
Add a rule		
🙆 Rule Name:	contains invalid characters. Valid characters are a-z, A-2	Z, C
must start wi	th a-z, A-Z.	
Policy Informa	tion	
Name:*		(i
Description:		
Rule Information	on	
Name:*		
Description:		
What is the cor	ndition that triggers the rule?	
Type:	Database request  Item: LINK com	h
.,,,	File request	
	Program request	
	Start request	
Operator:	Greater Than Value:* <sup>8</sup>	ι
What action sh	ould be taken when the rule's condition is exceeded?	
	Issue message DFHMP3001	
	© Emit event to	
	EP Adapter     EP Adapter Second	et
	Abend task with abend code AMPB	
Open Editor		
?	< Back Next >	Fini

#### **Start**

#### Define a threshold for no. of START requests Counted despite success: XICREQ->IGNORE XICERES->NOT AVAIL

Auu a luie	
Rule Name: must start wi	contains invalid characters. Valid characters are a-z, A-z ith a-z, A-Z.
Policy Informa	tion
Name:*	
Description:	
-Rule Informati	on
Name:*	
Description:	
What is the co	ndition that triggers the rule?
Туре:	Database request File request Program request Start request Storage
Operator:	Greater Than Value:* <sup>8</sup>
What action sł	nould be taken when the rule's condition is exceeded?
	Issue message DFHMP3001
	Emit event to
	EP Adapter     EP Adapter Se
	O Abend task with abend code AMPB
🔽 Open Editor	r
?	< Back Next >

Create Policy Definition

مارير مامام ٨

### Storage

#### Define a threshold for no. of STORAGE allocated Includes all GETMAIN requests **Decremented** with FREEMAIN (not for SHARED)

Create Policy	Definition	1				
Add a rule						
Rule Name: must start wi			haracters. \	/alid ch	aracters	are a-z, A-Z,
Policy Informa	ition					
Name:*	_					
Description:						
Rule Informati	on					
Name:*						
Description:						
What is the co	ndition tha	at trigge	ers the rule	?		
Type:	File reque Program Start requ Storage	request uest	t	•	Item:	24-bit Task 31-bit Task 64-bit Task 24-bit Shar 21-bit Shar
Operator:	Greater 1	Гhan	Value:*			
What action sh	nould be ta	aken wh	en the rule	's cond	ition is ex	ceeded?
	Issue n	nessage	DFHMP30	01		
	C Emit e	vent to				
	@ EP /	Adapte	r		) (O) EP	Adapter Set
	Abend	task wi	th abend c	ode AN	<b>I</b> PB	
Open Editor	r					
?		<	Back	Ν	lext >	Fi

### Syncpoint

#### Define a threshold for no. of SYNCPOINT requests Rolback is included

Add a rule	
Rule Name: must start w	contains invalid characters. Valid characters are a-z, A-Z ith a-z, A-Z.
Policy Informa	ition
Name:*	
Description:	
Rule Informati	ion
Name:*	
Description:	
What is the co	ndition that triggers the rule?
Туре:	Storage Item: SYNCPOIN
	Storage request
	TD Queue request
Operator:	Greater Than Value:* <sup>6</sup>
What action sl	hould be taken when the rule's condition is exceeded?
	Issue message DFHMP3001
	Emit event to
	EP Adapter     EP Adapter Se     Se
	O Abend task with abend code AMPB
🔽 Open Edito	r
?	< Back Next > Fi
U.S.	

#### Time

#### Define a threshold for no. of TIME consumed **CPU time** Check made when a task gives up control **Elapsed time** Check made when issuing EXEC CICS or invokes a TRUE

Add a rule			
Rule Name: must start wi	contains invalid characters. Vali th a-z, A-Z.	d character	s are a-z, A-Z,
Policy Informa	tion		
Name:*			(
Description:			
Rule Informati	on		
Name:*			
Description:			
What is the co	ndition that triggers the rule?		
Type:	Storage request Syncpoint request TD Queue request Time	▲ Item:	CPU time Elapsed tin
Operator:	Greater Than Value:* <sup>©</sup>		
What action sh	ould be taken when the rule's c	ondition is	exceeded?
	Issue message DFHMP3001		
	Emit event to		
	EP Adapter	© E	P Adapter Set
	Abend task with abend code	e AMPB	
Open Editor			
?	< Back	Next >	Fin

### **Transient data**

#### Define a threshold for no. of TRANSIENT DATA requests Other products write to TD: KE for diagnostic info. **TCP/IP** socket interface for CICS

	Add a rule		
	Rule Name: must start w	contains invalid characters. Valid th a-z, A-Z.	characters are a-z, A-Z,
e	Policy Informa		
ł	Name:*		
e (	Description:		
	Rule Informati	on	
l	Name:*		
l	Description:		
L	What is the co	ndition that triggers the rule?	
	Туре:	Storage Storage request Syncpoint request TD Queue request	Item: READQ TO WRITEQ TO
l	Operator:	Greater Than Value:* <sup>8</sup>	
	What action sł	ould be taken when the rule's cor Issue message DFHMP3001 Emit event to EP Adapter Abend task with abend code A	O EP Adapter Se
	Open Editor		
	?	< Back	Next > Fi

# Temp. storage bytes

Define a threshold for amount of data written to TEMP. STORAGE **Both READ and** REWRITE **REWRITE** is total data size, not delta

	Create Policy	Definition
_E	Add a rule	
0	& Rule Name: must start w	contains invalid characters. Valid characters are a-z, A-Z ith a-z, A-Z.
te D.(	Policy Informa Name:* Description: Rule Informati Name:* Description:	ition
	Operator:	TS Queue bytes
	What action sl	nould be taken when the rule's condition is exceeded?
		Issue message DFHMP3001
		© Emit event to
		EP Adapter     EP Adapter     EP Adapter Se     Abend task with abend code AMPB
	Open Edito	-
1		
у		
	?	< Back Next > F

### Temporary storage

#### Define a threshold for no. of TEMP. STORAGE requests **REWRITE TS is counted** as a WRITEQ Synchronous events to **TS** are counted

Add a rule					
Rule Name: must start with	contains invalid th a-z, A-Z.	characters. Va	alid cha	racters a	ire a-z, A-Z
Policy Informa	tion				
Name:*					
Description:					
Rule Information	on				
Name:*					
Description:					
What is the cor	ndition that trig	gers the rule?			
Туре:	TD Queue requ Time TS Queue byte TS Queue requ	s	▲ E	Item:	READQ T WRITEQ T WRITEQ T WRITEQ T
Operator:	Greater Than	Value:* <sup>8</sup>	•		
What action sh	ould be taken v	when the rule's	condit	ion is ex	ceeded?
	Issue message Emit event t		)1		
	EP Adapt	ter		O EP	Adapter Se
	Abend task	with abend co	de AM	PB	
Open Editor					
?		< Back	Ne	ext >	F

A problem has been detected and windows has been shut down to prevent damage to your computer.

The problem seems to be caused by the following file: int15.sys

PAGE\_FAULT\_IN\_NONPAGED\_AREA

of this is the first time you've seen this Stop error screen, restart your computer. If this screen appears again, follow these steps:

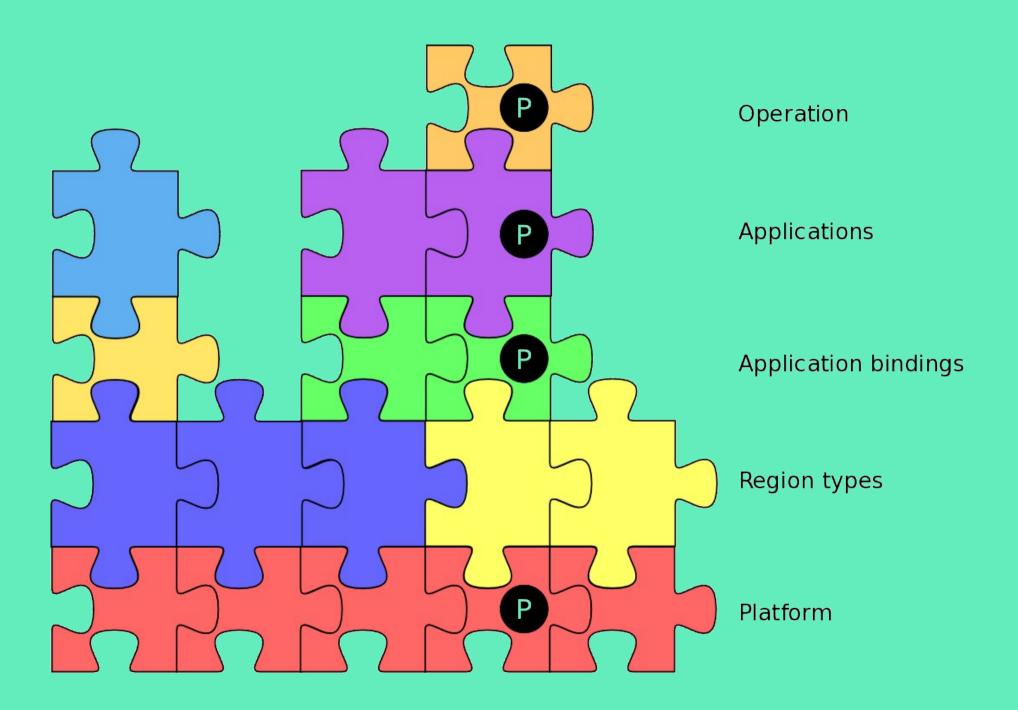
Theck to make sure any new hardware or software is properly installed. If this is a new installation, ask your hardware or software manufacturer For any windows updates you might need.

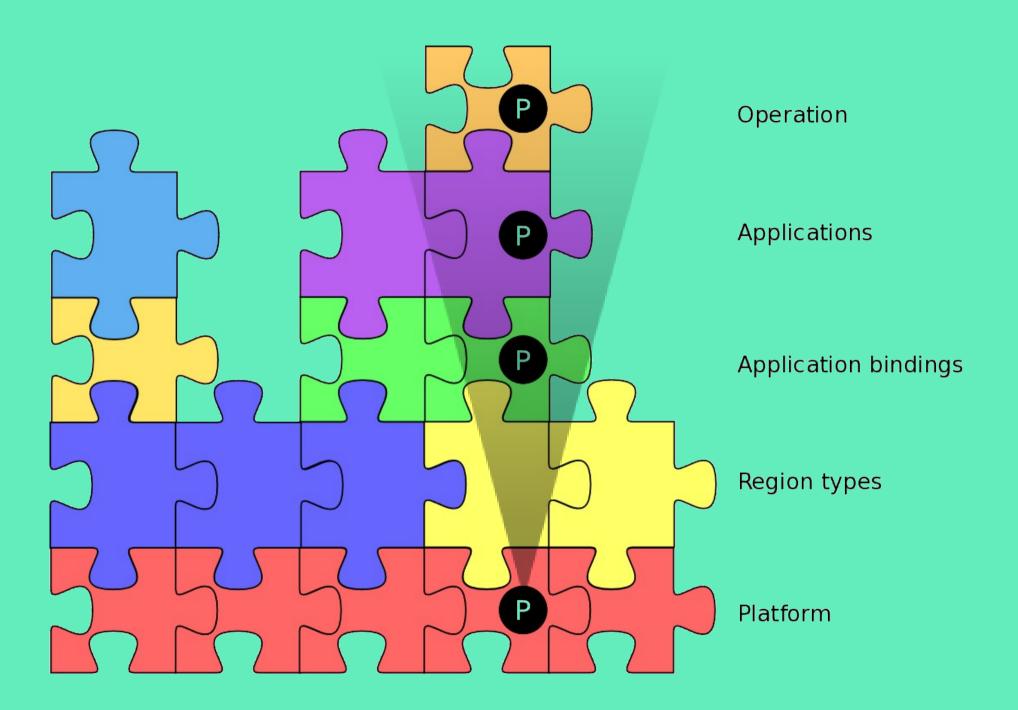
If problems continue, disable or remove any newly installed hardware or software. Disable BIOS memory options such as caching or shadowing. If you need to use Safe Mode to remove or disable components, restart your computer, press F8 to select Advanced Startup Options, and then select Safe Mode.

### **Policy Exceptions**

Policies do not apply to: **CICS** system tasks Includes CPLT at systems initialization All terminal initiated CICS supplied transactions **Except CEC** All user tasks started by event processing All non-terminal CICS supplied transactions Except All web interface tasks All CICS MQ bridge tasks AI CICS mirror transactions **All Liberty initiated transactions** All CICS pipeline tasks

### **Policy scope**





### Policy scope: Operation

### PROGRAM 5.2 URIMAP 5.2 TRANSACTION 5.3 Open Beta

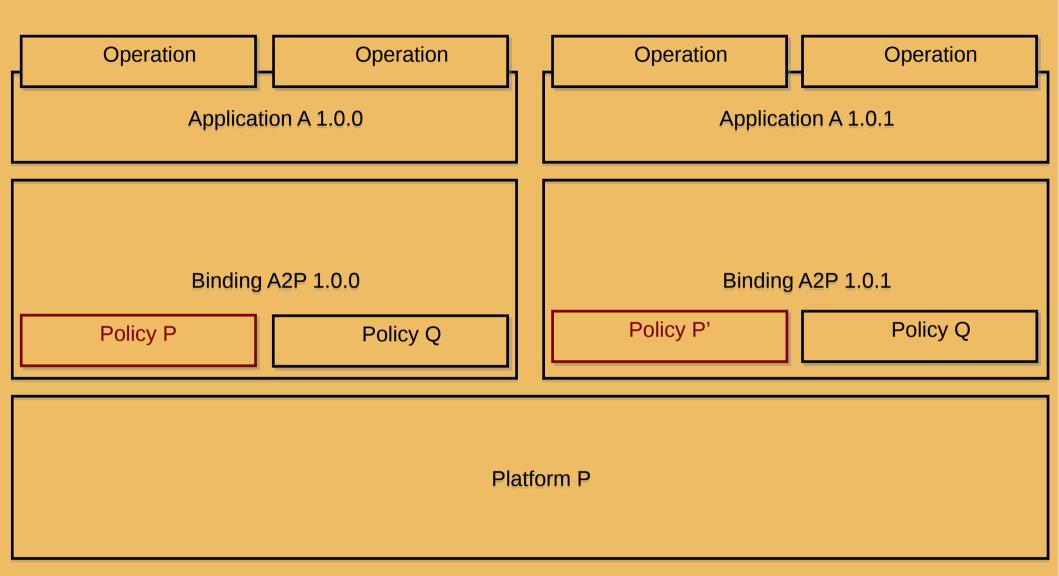
#### Policy Scopes

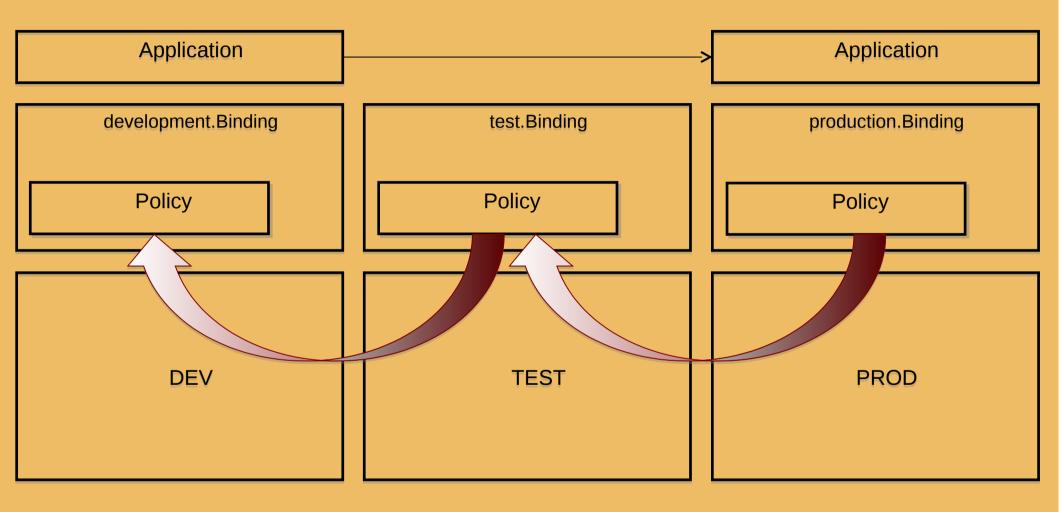
#### **Policy Scope**

Specify the scope of a Policy.

Create Policy	/ scope
Create Policy	y scope
Choose the pr	roperties of a Policy scope
¥	
Operation:"	CarInsuranceQuote
Policy Name:*	QUOTEPOL
-	- ,

Overview Entry Points Policy Scopes





3. (9e) 🗮 🐹 🔛		) 🐼 📽 🛱 😫	💇 📽 🖾 😂 🏶 🖹 💁 🗸 🥖	? ∽   ≜ ~ ∛ ~ ♥ ♦	
□ <b>%</b> ► □	abendLinksBundle				
*	Attributes				
ABLED	type here to filter on Name and	d CICS Name			
	Name	CICS Name	Value		
	- Basic				
	Critical	CRITICAL			
	Data Set Name 01	DSNAME01	CHPOOLE.DEMO.POLICY.ROUTER.V110	Extract value to variable	
	Data Set Name 02	DSNAME02		Insert variable	<b>N</b>
	Data Set Name 03	DSNAME03		Copy all	_
	Data Set Name 04	DSNAME04		E Copy	Ctrl+C
sources (1.0.0) ENABLED	Data Set Name 05	DSNAME05		· · · · · · ·	
	Data Set Name 06	DSNAME06			
	Data Set Name 07	DSNAME07			

### **\${Variable Substitution}**

inksBup	dla	P							
	× +	T		Extra	ct value to v	ariable			↑
to filter	The f	iollo	wing changes are	necessary to perfo	rm the refacto	ring.			
	Changes to be performed						÷	<del>☆</del>   ‡ ~	
cal	🖃 🗹 🔂 Update CICS resource and properties files								
i Set Na			APPLIB						
a Set Na		1	Create file /add	dProgramRouter.res	ources/variabl	es.properties			
a Set Na			🖞 variables.prope	erties - addProgram	Router.resourc	es			
Set Na				2015					

# Resolve with a properties fle

Find Policy Rules for Operation "Invoke\_App1" - 3 results - 2:36:16 PM

#### 🔺 🖾 T71\_Region

- Task Storage Requested
  - 🔺 😂 31 bit
    - > 1 Message APP1POL1 Rule\_1
- File Access Requests
  - 🔺 🎯 READ
    - > 100 Abend code: AMPB PLATPOL1 Rule1p
- 🔺 😂 Database Requests
  - > 500 Message REGPOL1 Rule\_SQL

## CICS TS v5.3 Open Beta

**New Policy Rules** Name Counter Server **GET COUNTER DCOUNTER Temporary Storage** Support for Shared TS WebSphere MQ Number of MQ requests IMS Number of DBCTL calls

### **CICS Policy Based Management**

Allow you to set thresholds on the resources that your applications are allowed to consume Allow you the ability to notify, to react, or to ABEND rogue tasks Allow you to define the scope of your policy rules Give you capabilities to protect and control your CICS systems





#### **Questions?**





SHARE is an independent volunteer-run information technology association that provides education, professional networking and industry influence.





#### Credits

Phone: https://www.flickr.com/photos/highwaysengland/17185230756/ Exceptions: https://www.flickr.com/photos/billjacobus1/2482521750/





SHARE is an independent volunteer-run information technology association that provides education, professional networking and industry influence.