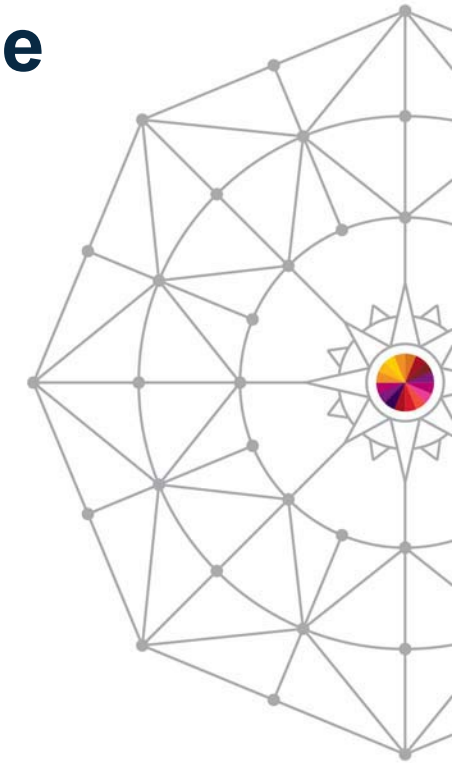
15884: Using Policies to Manage Critical CICS Resources

Matthew Webster, IBM



#SHAREorg

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

SHARE in Pittsburgh 2014

Please Note

IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice at IBM's sole discretion.

Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision.

The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for our products remains at our sole discretion.

Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon many factors, including considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve results similar to those stated here.

Abstract

CICS V5 introduces significant capability to help manage CICS as a private cloud. The Platform definition can monitor the health of shared services and maintain consistency across regions simplifying application deployment while threshold policies can protect production systems against rogue applications by enforcing coding standards throughout the development lifecycle. See how to use these new resources in conjunction with existing facilities including CICS Monitoring and tools like CICS PA to manage and measure the health of your CICS environment. This session will cover recent enhancements to CICS including support for deploying and managing shared services such as TCP/IP connectivity, web services resources and Java runtimes as part of a Platform. Customers using workload management will discover how Application context information can now assist with dynamic routing. We will also describe the new threshold policies.

CICS Cloud and CICS Tools Sessions

- Monday
  - **15855: Modernizing CICS for Cloud**
- Wednesday
  - **15552: Modernizing CICS - Hands-on Lab Parts 1 & 2**
  - **15882: Managing Multi-version Applications in CICS**
- Thursday
  - **15883: CICS Futures Interactive Discussion**
  - **15884: Using Policies to Manage Critical CICS Resources**
  - **15559: CICS Question Box and Pot Luck**

Topics

- CICS Platform
- CICS Threshold Policy
- CICS Tools

CICS Cloud “Toolbox”

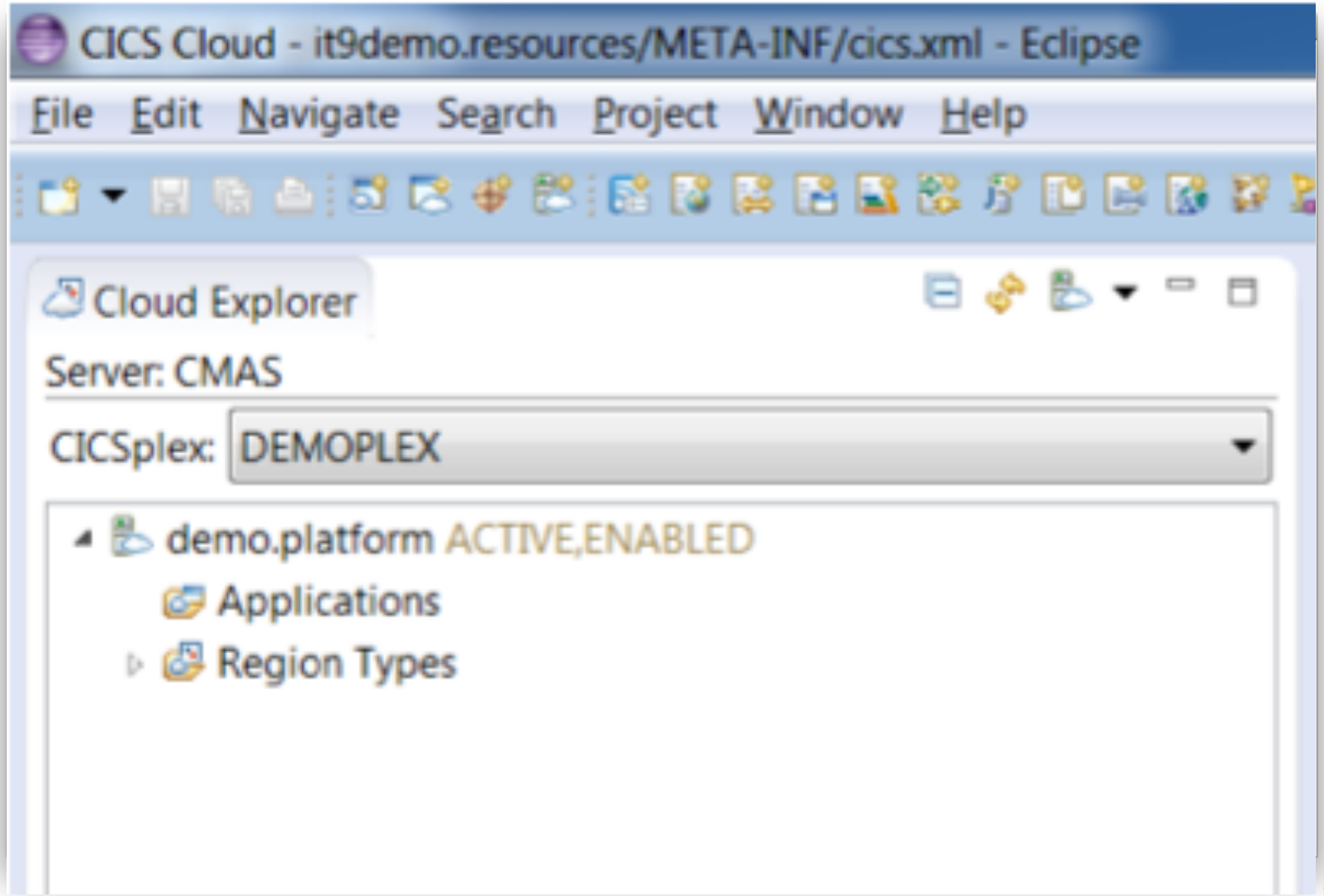
- **Artifacts** like Platform that can be kept under version control describe what the system should look like
- A RESTful, batch and online **API** to help automate deployment and management
- The CICS Explorer **UI** for administration integrates the CICS Tools and with source code management
- Monitoring **Data** allows you measure resource consumption
- Creating **Policy** helps you enforce coding standards throughout the application lifecycle and protect production environments

CICS PLATFORM

CICS Cloud Resources

- Application:
  - Entry points: PROGRAM, URIMAP
  - Resources: LIBRARY, OSGIBUNDLE, WEBSERVICE, …
  - Dependencies: JVMSERVER, PIPELINE, …
- Binding
  - Deployment rules
  - Policy
  - Resources: URIMAP, …
  - Dependencies: TCPIPSERVICE
- **Platform**
  - **Topology**
  - **Policy**
  - **Services: FILE, JVMSERVER, PIPELINE, TCPIPSERVICE**

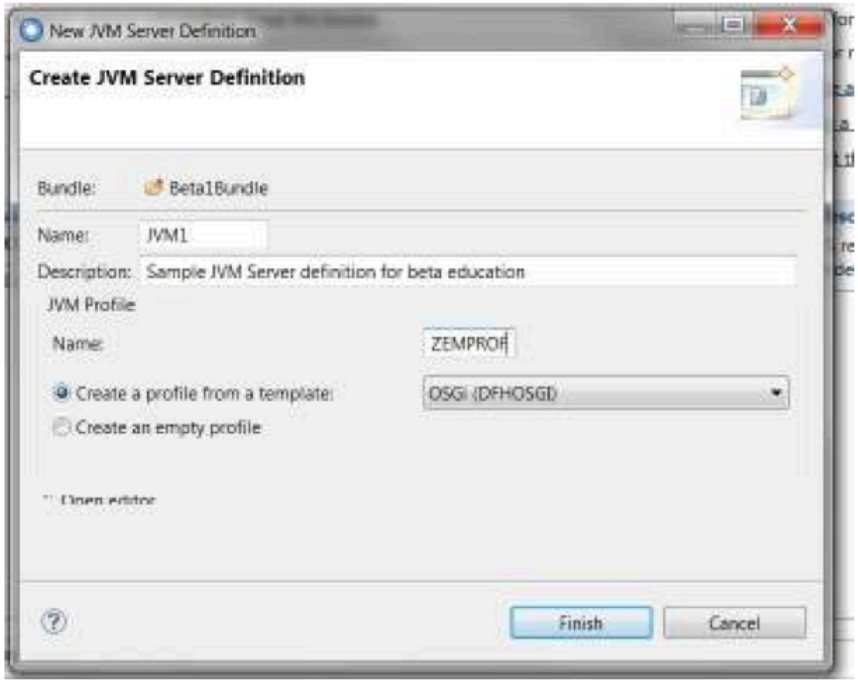
CICS Explorer: “CICS Cloud” Perspective

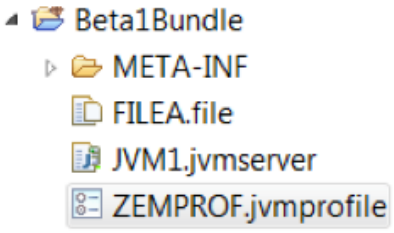


New in CICS TS V5.2: Platform Resources

- Resources
  - FILE
  - JVMSERVER (including Liberty)
  - TCPIPSERVICE
  - PIPELINE (web services)
- Example driven configuration
  - JVM server profile
  - pipeline configuration
- Configuration life-cycled with parent resource
  - definition, configuration, …
  - creation, collaboration, deployment

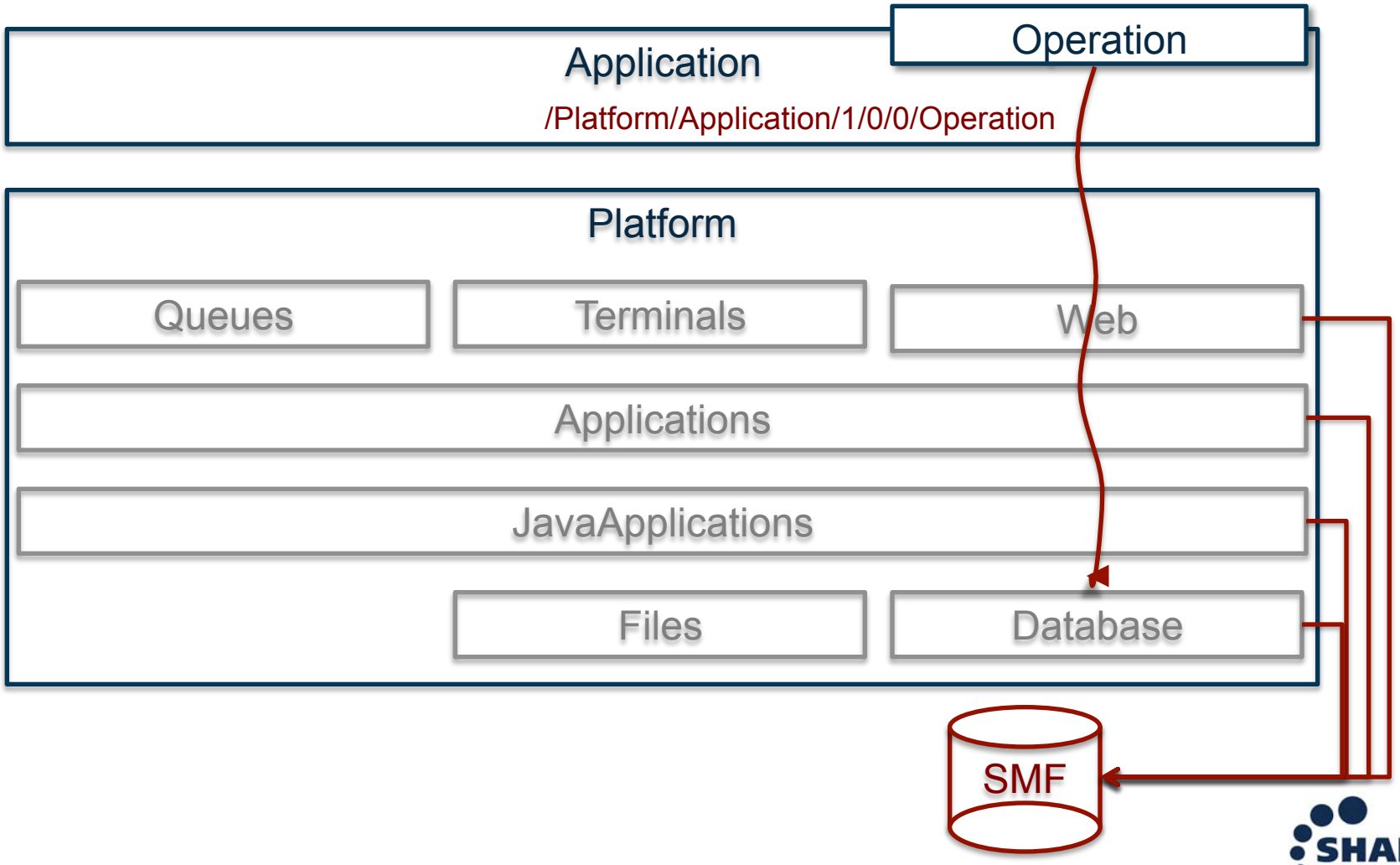
Create JVM Server Definition in a CICS Bundle






```
##############################                                  #######
# JVM profile: DFHOSGI                                                #
#                                                                     #
#   This sample CICS JVM profile is for a JVM server.                 #
#                                                                     #
#######################################################################
#
#                       Symbol Substitution
#                       -------------------
#
# The following substitutions are supported:
#   &USSHOME;    => The value of the USSHOME SIT parameter.
#   &CONFIGROOT; => the location of configuration files, such as the
#                   JVM profile.
#   &APPLID;     => The applid of the CICS region.
#   &JVMSERVER;  => The name of the JVMSERVER resource.
#   &DATE;       => Date the JVMSERVER is enabled.  Dyymmdd
#   &TIME;       => Time the JVMSERVER is enabled.  Thhmmss
#
# All variables must be delimited with & and ;
# Using substitutions means that you can use the same profile
# for multiple regions and still have unique working directories
# and output destinations for each region.
#
# With this substitution
#     ENV_VAR=myvar.&APPLID;.&JVMSERVER;.data
# becomes
#     ENV_VAR=myvar.ABCDEF.JSERVER1.data
# for a JVMSERVER resource with the name JSERVER1 in a CICS region with
# applid ABCDEF.
#
```

Monitoring


Application
Operation
/Platform/Application/1/0/0/Operation
Platform
Queues
Terminals
Web
Applications
JavaApplications
Files
Database
SMF

Dynamic routing by application context

- PROGRAM and URIMAP entry points set application context
- Application context available in addition to TRANID in the following URMs:
  - The CICS Dynamic Routing Exit Commarea (DFHDYPDS)
  - The CPSM User Service Program Commarea (EYURWTRA)
  - The CPSM WLM Router Access Program Commarea (EYURWCOM)

CICS THRESHOLD POLICY

Real World Example: Phone Contract

200 free minutes

Unlimited text messages

500MB of data

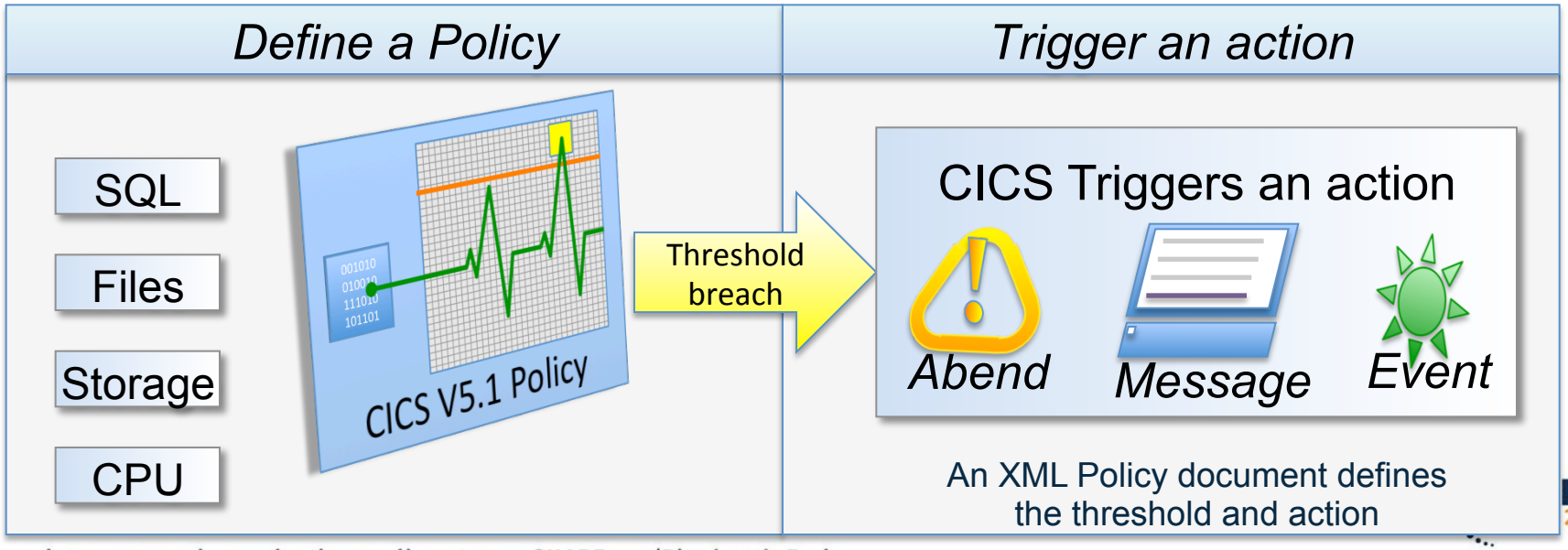
“You have now used 80% of your data allowance”

Rules and Policy

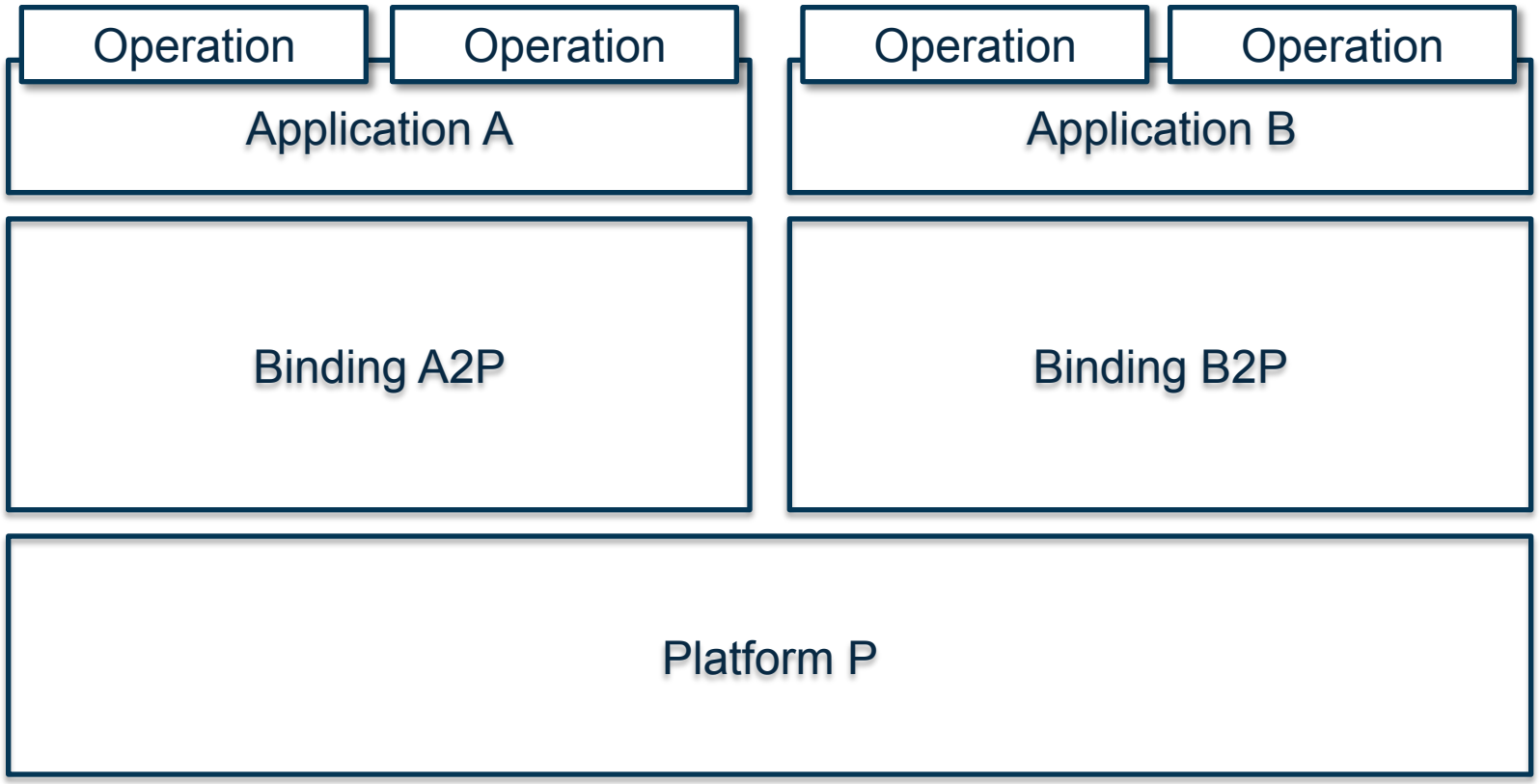
- Rules
  - Resources: minutes, texts, data
  - Threshold: 80%, 100%
  - Action: message, change tariff
- Policy
  - Collection of rules (contract)

Threshold Policy

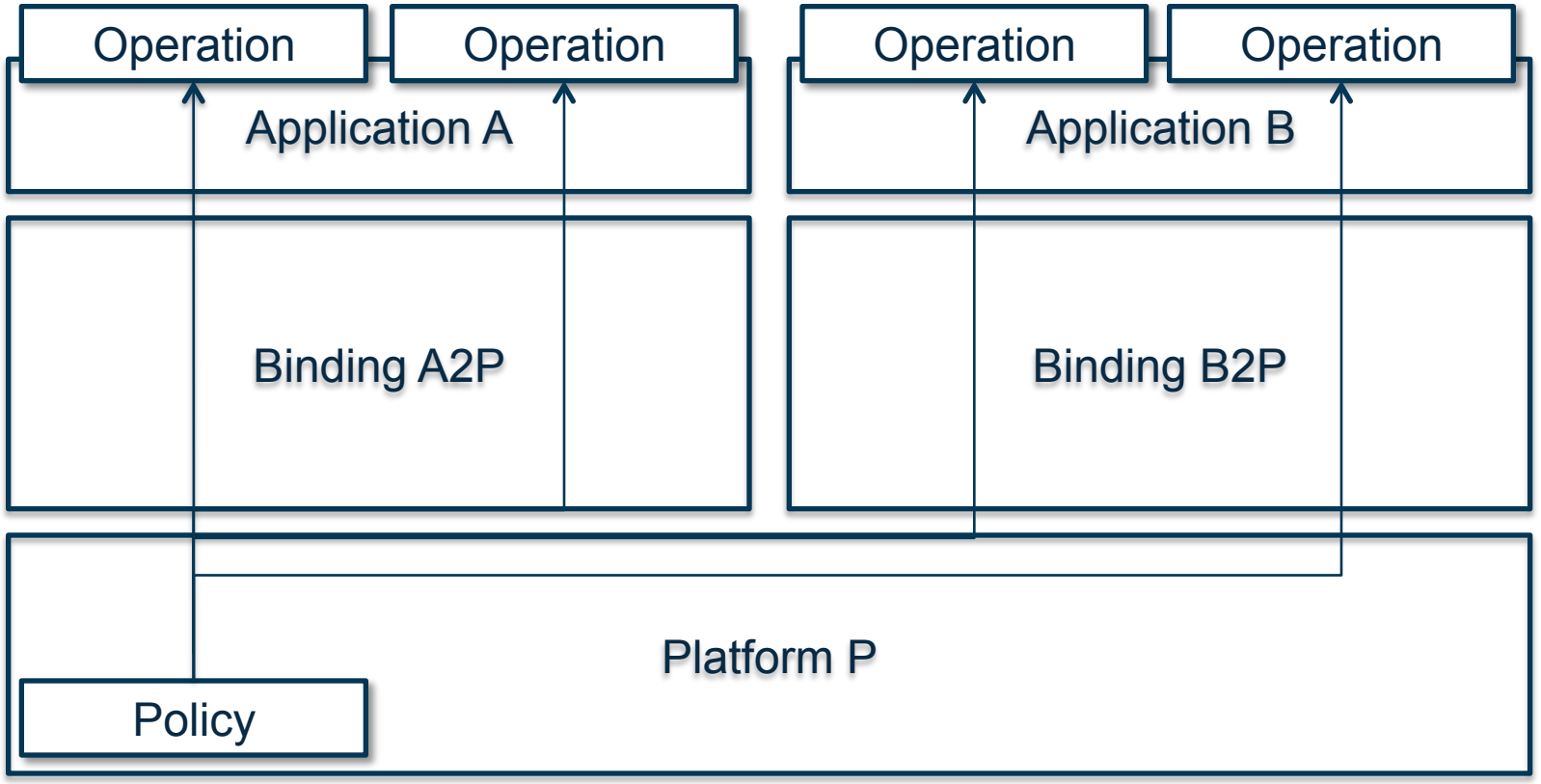
- Policy Based Management
  - Resource, threshold, and action
  - Action can be:
    - Emit a message
    - Emit a system event
    - Abend the task
- Scoped
- New resources in CICS TS V5.2



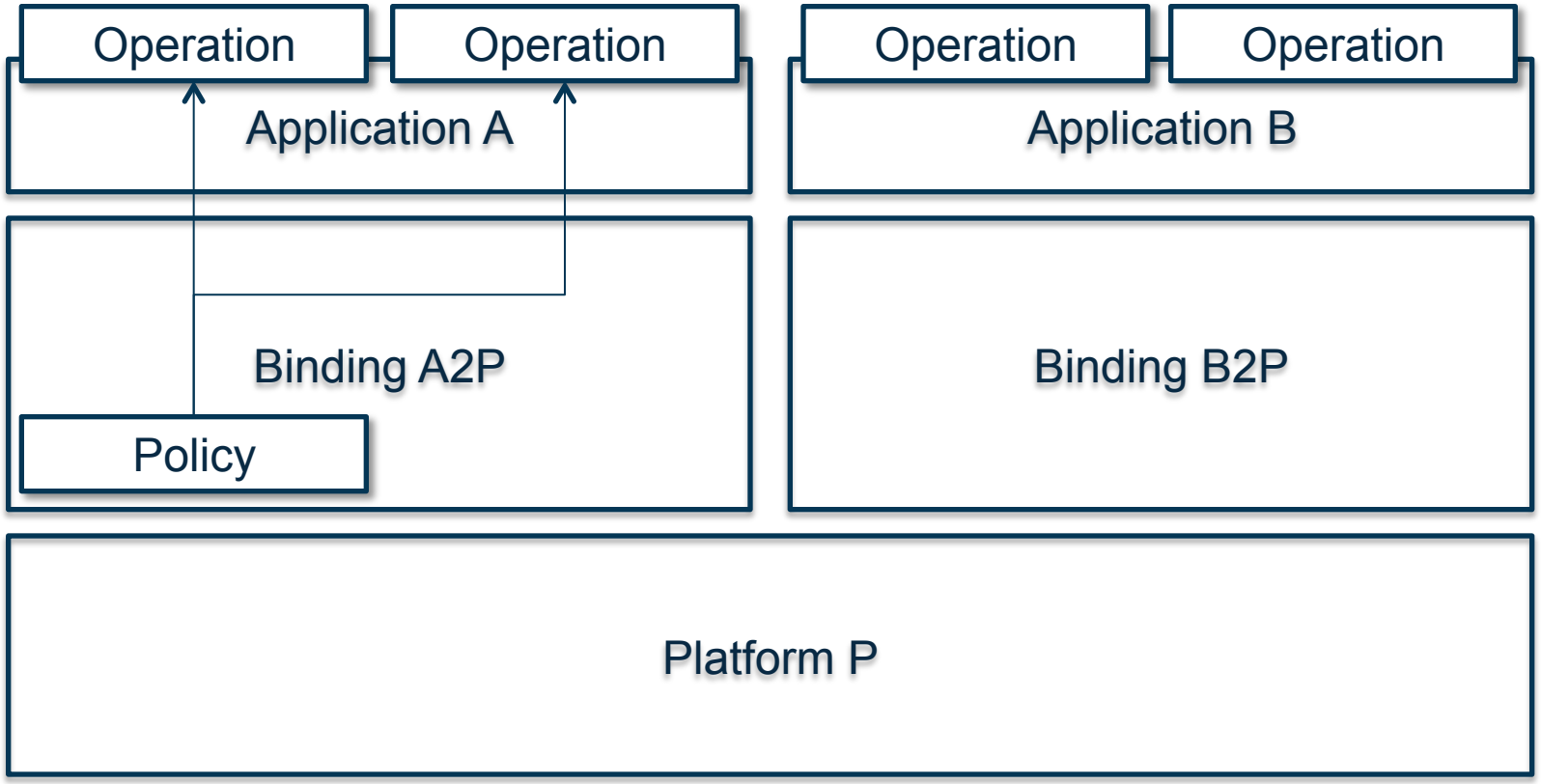
Policy Scoping



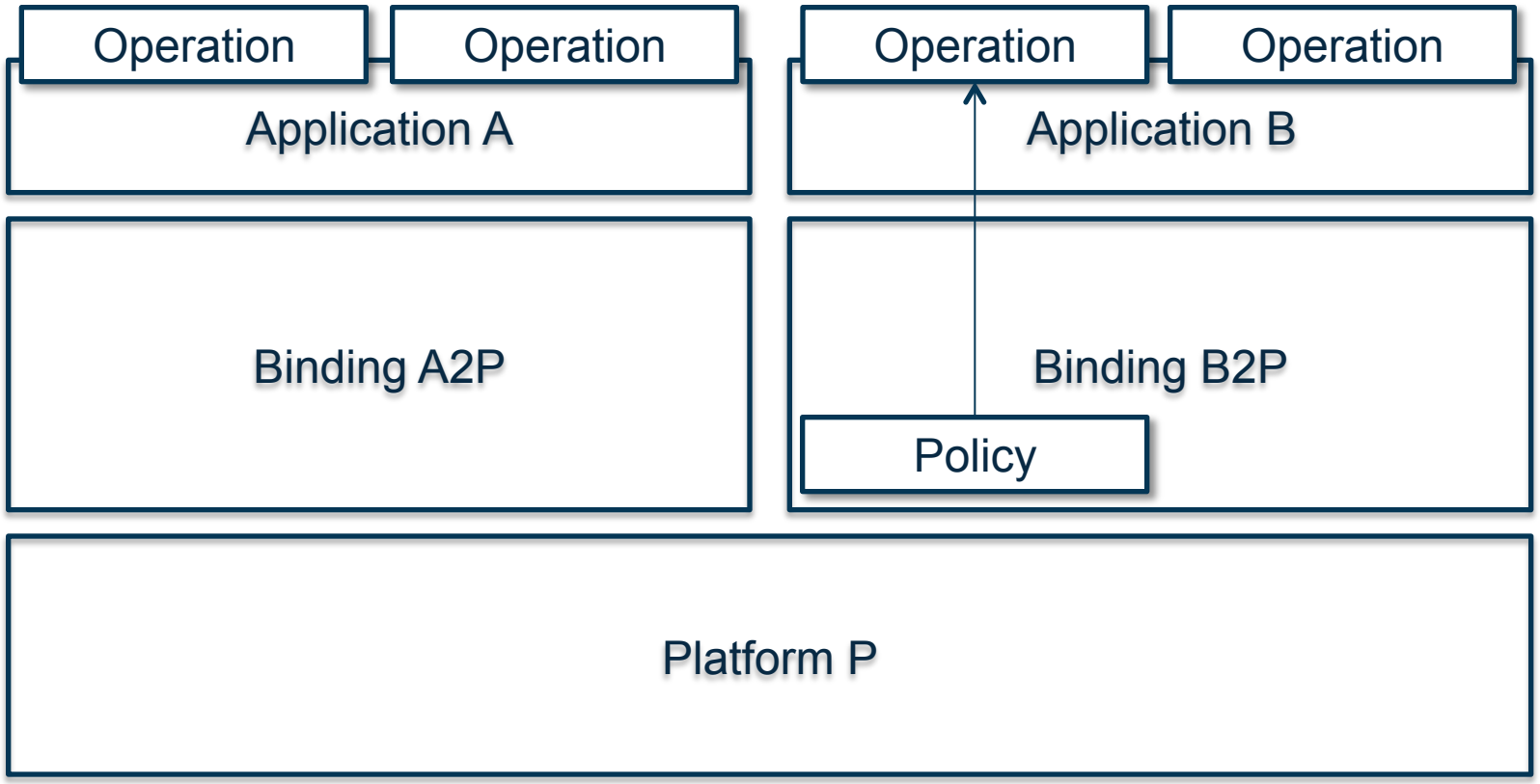
Policy Scoping: Platform



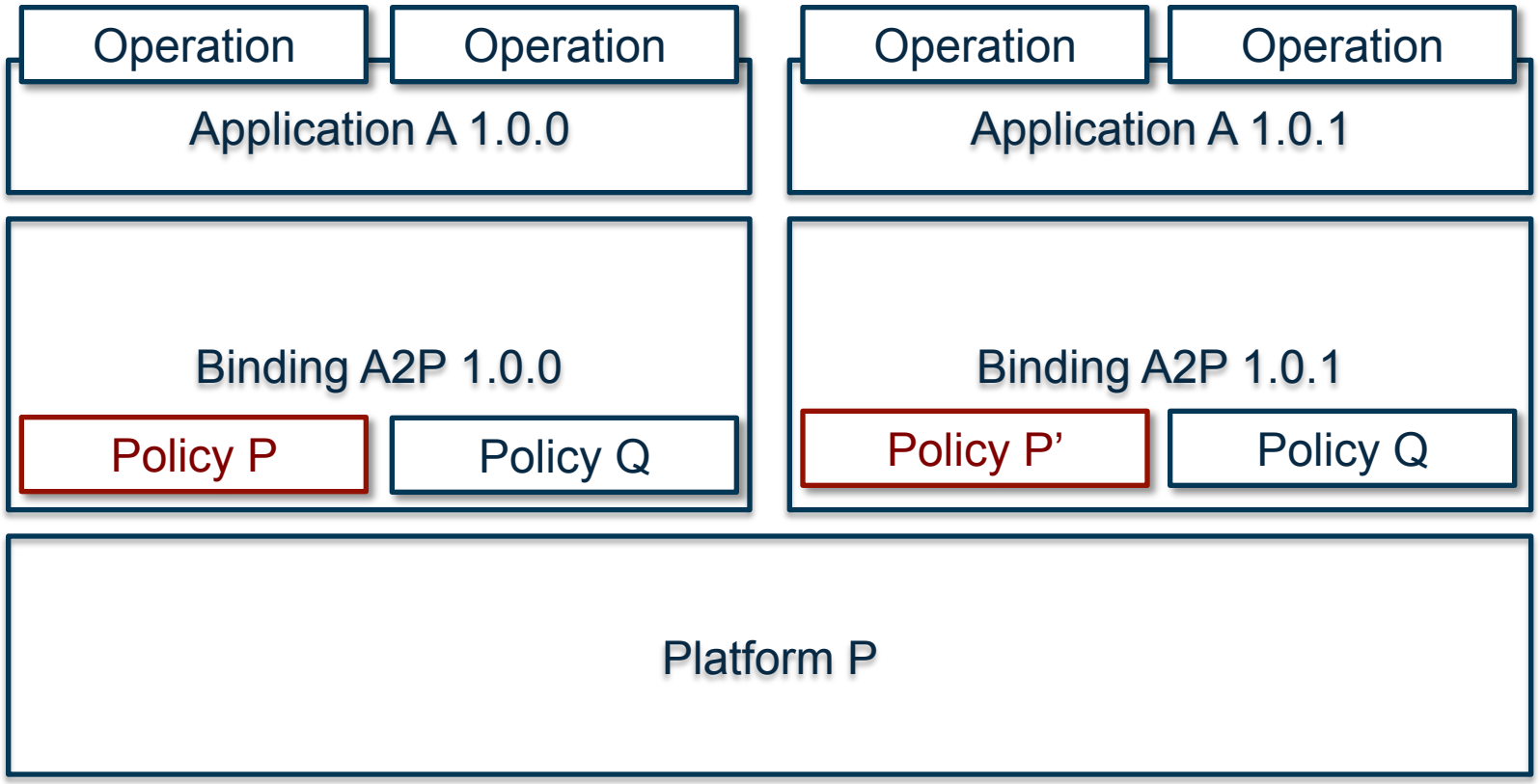
Policy Scoping: Application



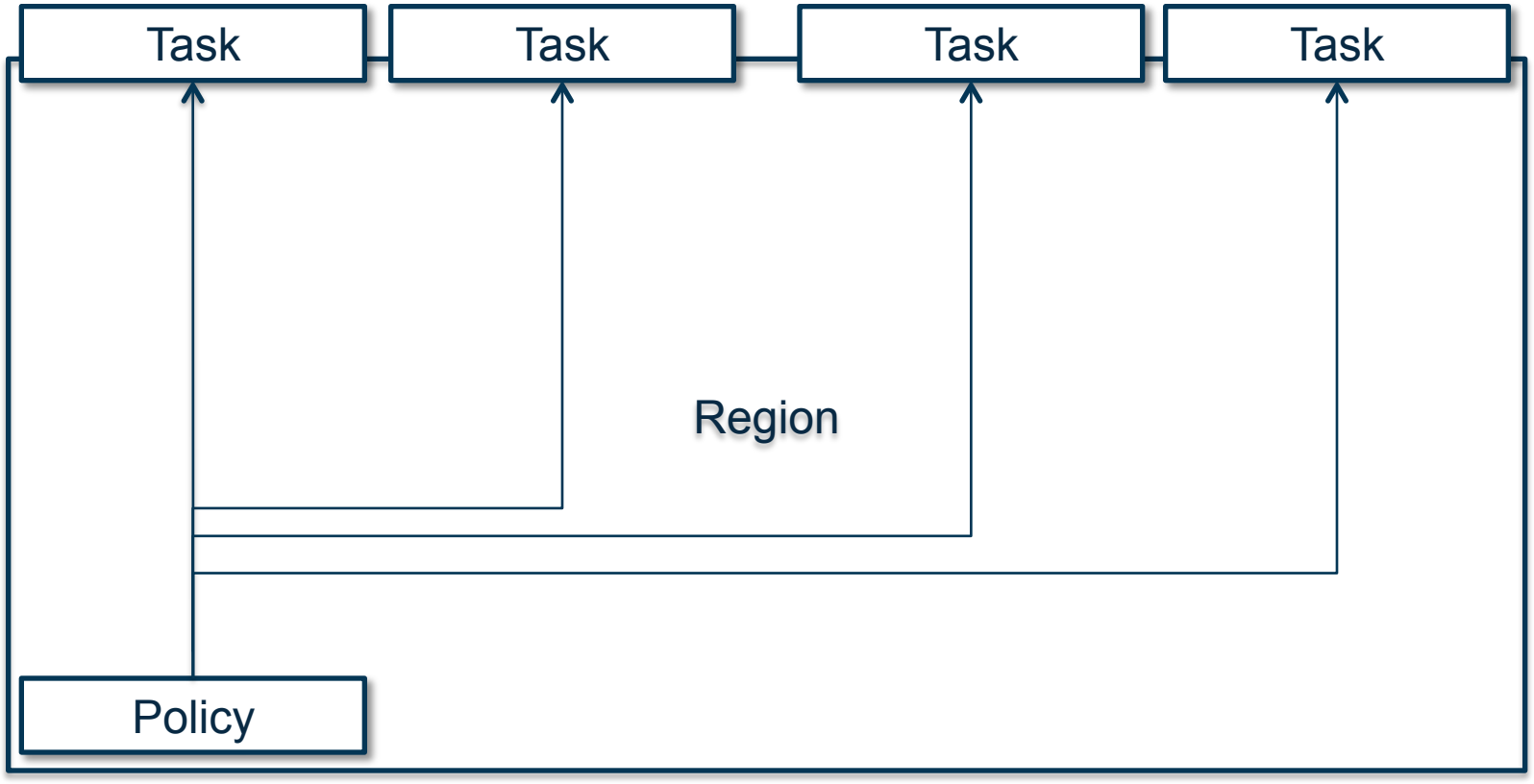
Policy Scoping: Operation



Policy Scoping: Application Multi-Versioning



Policy Scoping: CICS Region

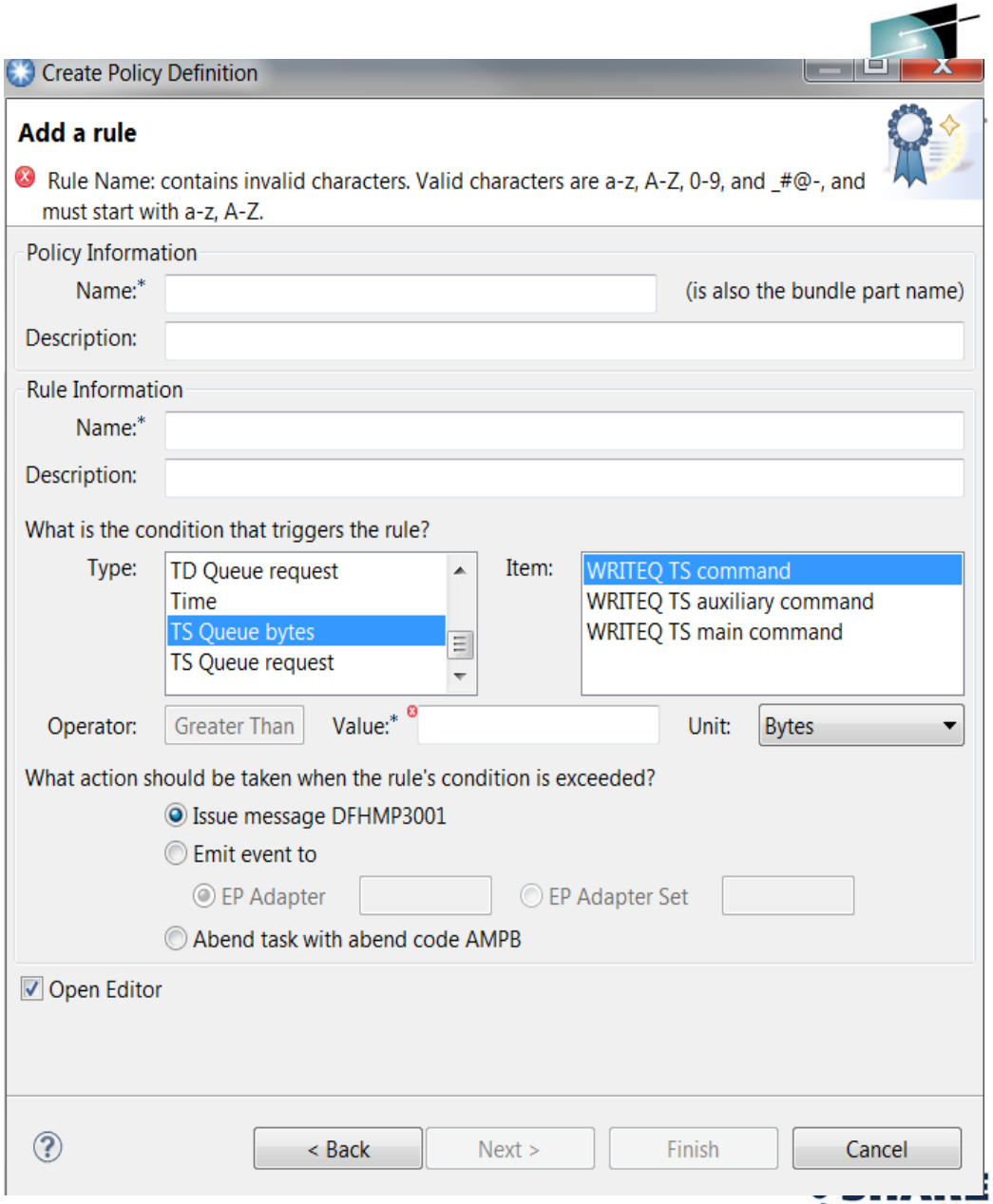


Threshold Policies

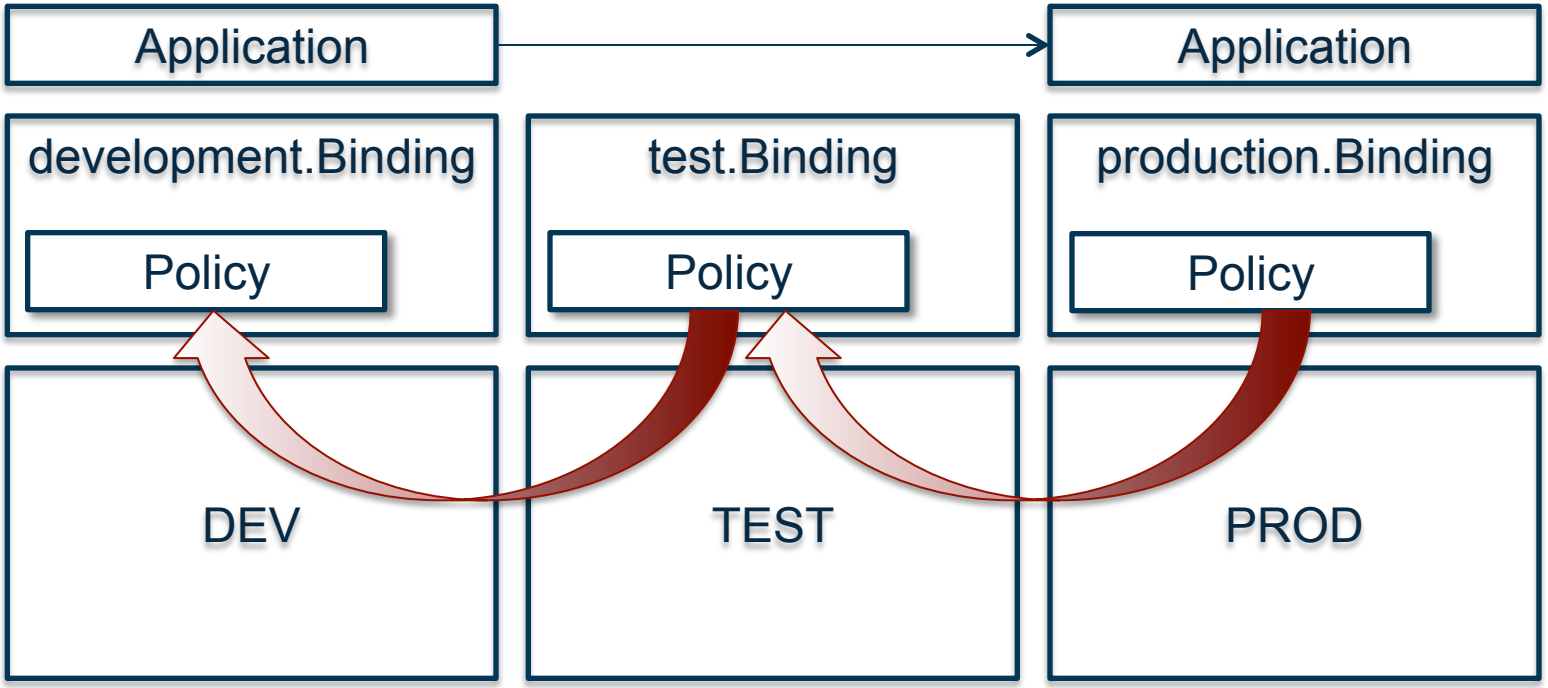
- V5.1
  - CPU time
  - Storage requests & bytes
  - SQL requests
  - LINK requests
  - FILE requests
- **V5.2**
  - **Elapsed time** **(RFE 31868 “**Add elapsed time …**”)**
  - **TDQ requests & bytes**
  - **TSQ requests & bytes**
  - **START requests**
  - **SYNCPOINT requests**

TS Queue bytes

- Trigger on amount of data written
- Selection for
  - Main and AUX
- Request is counted whether the request is successful or not
- Both local and remote requests are counted

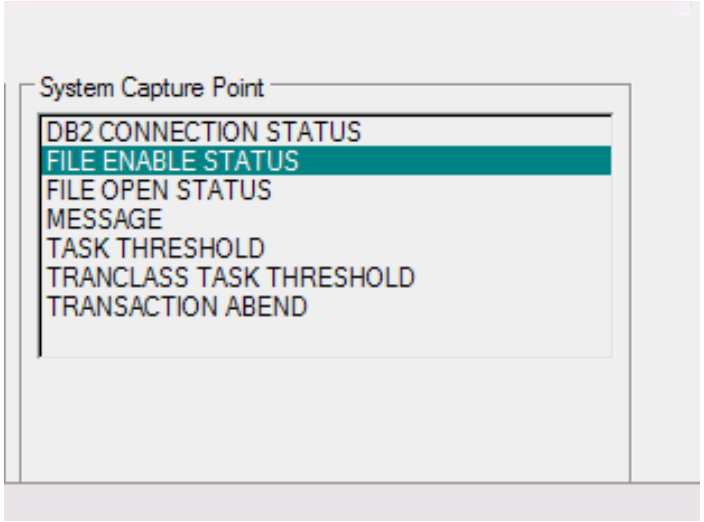


DevOps: Using Policy Throughout the Application Life-cycle



System Events

- Capture events when:
  - DB2 connection status changes
  - FILE enable status changes
  - FILE open status changes
  - CICS message is issued
  - Unhandled transaction abends
  - Current active tasks for a TRANCLASS goes above or below a certain percentage of MAXACTIVE
  - Current active task in a region goes above or below a certain percentage of MAXTASKs



System Event Examples

- Generate an alert whenever a connection from CICS to DB2 is no longer in Connected status
- Emit events for all transaction classes when the number of transactions in the tranclass goes below 50%, to understand which tranclasses are least used (write the events to a TS queue, or monitor by sending to IBM business monitor)
- Collect events about any changes in the open status of the ‘CUSTOMER’ file, to ensure these happen within the approved batch windows

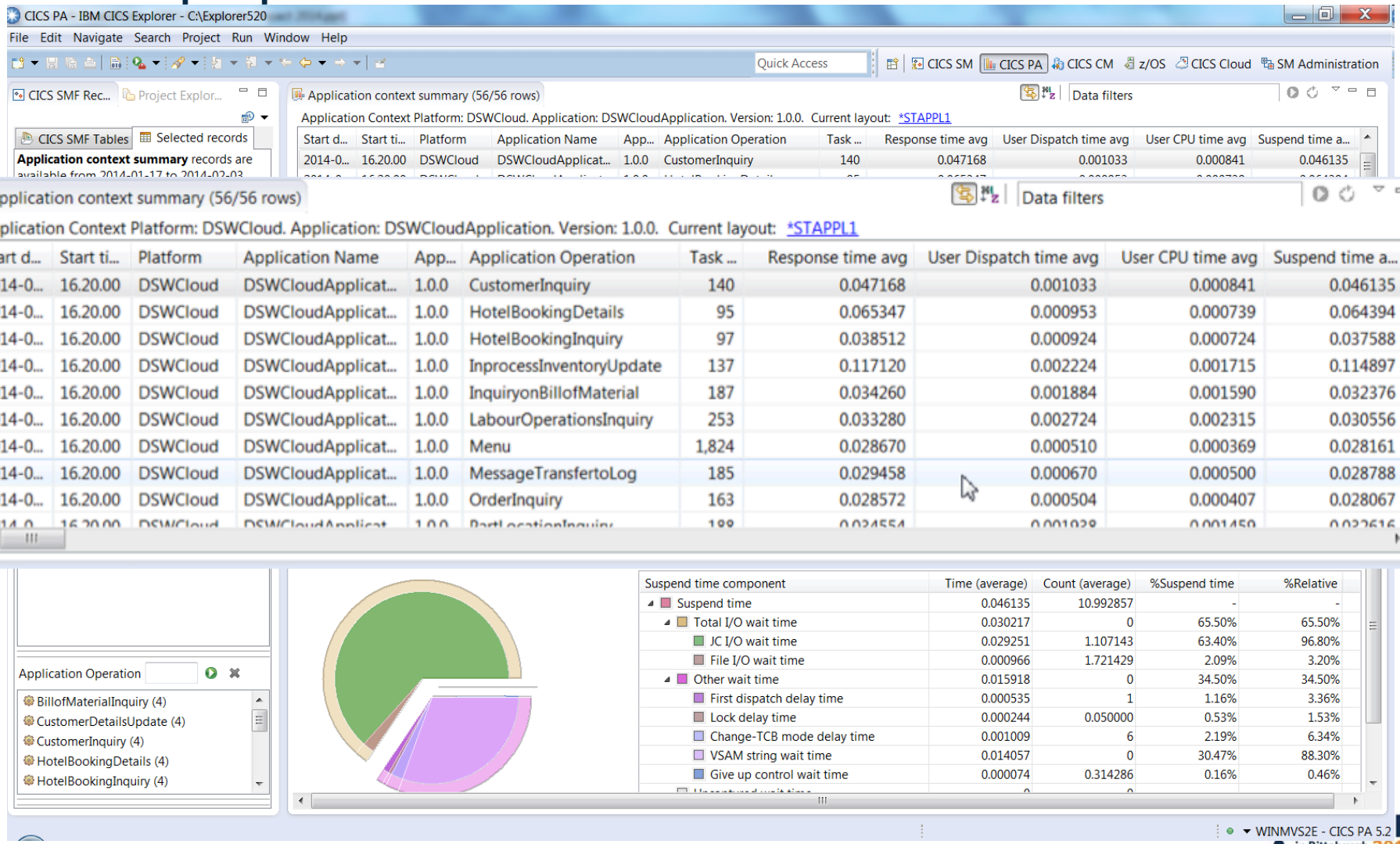
Summary

- V4.2
  - System events
- V5.1
  - Application, Platform, Policy
  - 1 Entry Point: PROGRAM
  - 5 Thresholds: CPU time, Storage requests & bytes, ...
- V5.2
  - Platform resources: JVMSERVER, PIPELINE, TCPIPSERVICE,
  - 2 Entry Points: PROGRAM, URIMAP
  - 10 Thresholds: Elapsed time, TDQ requests & bytes, …
  - Dynamic routing by application context

CICS PERFORMANCE ANALYZER

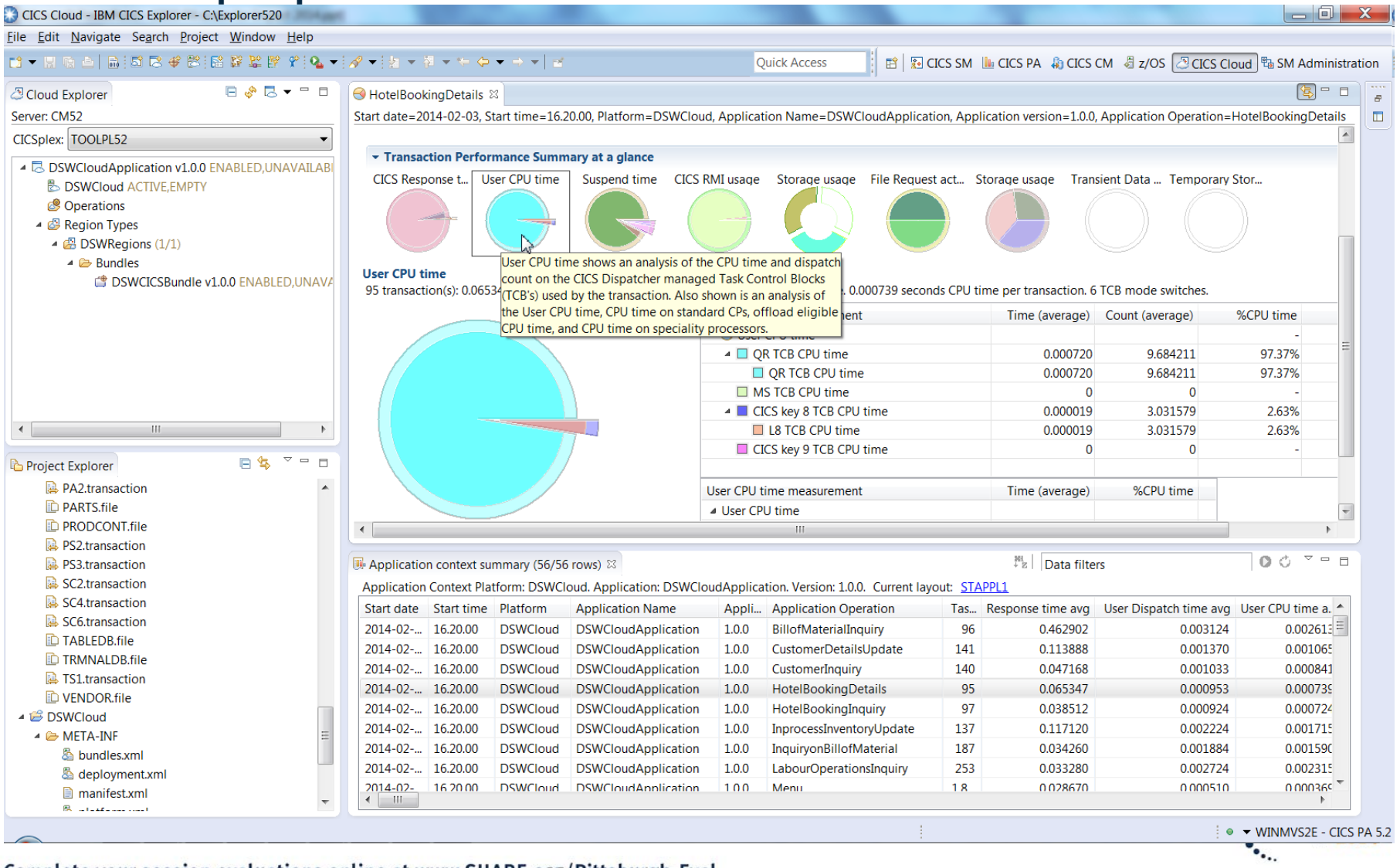
Application Context performance summary

CICS PA perspective



Application Context performance summary

CICS Cloud perspective



Report forms to help with definition of policy

Delivered in CICS PA 5.1

Name	Type	Description
MPFCRQ	SUMMARY	Platform - File Request Summary
MPMISC	SUMMARY	Platform - CPU/LINKs/DB2 Summary
MPSHRSTG	SUMMARY	Platform - Shared Stg Summary
MPT24STG	SUMMARY	Platform - 24-bit Stg Summary
MPT31STG	SUMMARY	Platform - 31-bit Stg Summary
MPT64STG	SUMMARY	Platform - 64-bit Stg Summary
MPTXCLST	LIST	Platform - Threshold Exceeded
MPTABND	LIST	Platform policy - Transaction Abend

New in CICS PA 5.2

Name	Type	Description
MPMISC1	SUMMARY	Platform - Response/CPU Summary
MPMISC2	SUMMARY	Platform - Misc Requests Summary
MPTDRQ	SUMMARY	Platform - TD Request Summary
MPTSRQ	SUMMARY	Platform - TS Request Summary

New Summary report tiered format

- New tiered report summarizes activity based on two level keys
  - Used for Summary report for Platforms and Applications
    - Using new sample form MPAPPSUM

```
1 V5R2M0                                          CICS Performance Analyzer
                                                    Performance Summary
+
0SUMM0002 Printed at 15:05:19  3/18/2014     Data from 16:24:07  2/03/2014 to 16:37:57  2/03/2014
Page       1
 Platform Application - Summary

 ACPlatNm: DSWCloud
 ACApplNm: DSWCloudApplication                                          ACApplVr: 1.0.0
                                    Avg      Max      Avg      Avg      Avg      Max      Avg      Avg
 ACOperNm                     #Tasks Response Response Dispatch User CPU  Suspend  Suspend DispWait  FC
Wait
                                     Time     Time     Time     Time     Time     Time     Time     Time
 BillofMaterialInquiry          1316   .4004  2.2716   .0028    .0025    .3976  2.2660   .0099    .0123
 CustomerDetailsUpdate          2233   .1093   .4219   .0013    .0011    .1080   .4203   .0031    .0025
 CustomerInquiry                2233   .0435   .1800   .0010    .0008    .0425   .1787   .0015    .0009
 HotelBookingDetails            1342   .0650   .1647   .0009    .0008    .0641   .1638   .0020    .0021
 HotelBookingInquiry            1342   .0340   .1559   .0009    .0007    .0331   .1549   .0012    .0011
 InprocessInventoryUpdate       2220   .1102   .5251   .0019    .0017    .1082   .5230   .0038    .0059
 InquiryonBillofMaterial        3104   .0331   .0966   .0018    .0016    .0313   .0948   .0016    .0016
 LabourOperationsInquiry        4024   .0333   .1075   .0025    .0023    .0307   .1018   .0017    .0016
 Menu                          28727   .0278   .1217   .0005    .0004    .0273   .1211   .0008    .0000
 MessageTransfertoLog           2601   .0286   .1121   .0006    .0005    .0280   .1115   .0009    .0000
 OrderInquiry                   2655   .0279   .0761   .0005    .0004    .0274   .0755   .0009    .0000
 PartLocationInquiry            2655   .0329   .2390   .0017    .0015    .0311   .2369   .0015    .0013
 PartNumberDelete               4431   .1113   .4668   .0011    .0010    .1102   .4657   .0030    .0026
 ReceiveData                    7009   .0549   .2366   .0011    .0010    .0538   .2352   .0020    .0020
                               65892   .0515  2.2716   .0010    .0008    .0505  2.2660   .0016    .0012
```

Summary

- V5.1
  - Application, Platform, Policy
  - 1 Entry Point: PROGRAM
  - 5 Thresholds: CPU time, Storage requests & bytes, ...
- V5.2
  - Platform resources: JVMSERVER, PIPELINE, TCPIPSERVICE,
  - 2 Entry Points: PROGRAM, URIMAP
  - 10 Thresholds: Elapsed time, TDQ requests & bytes, …
  - Dynamic routing by application context

QUESTIONS?

More Information

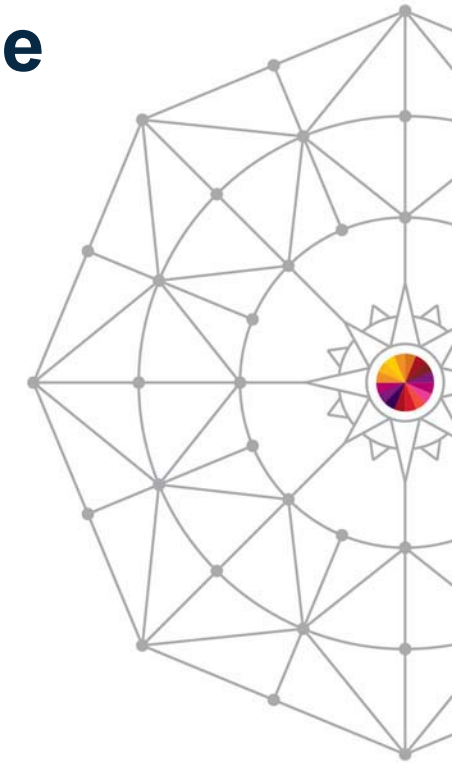
- **Blog**
  https://www.ibm.com/developerworks/mydeveloperworks/blogs/cicsdev/tags/blog?lang=en
  - *Meet Abigail and Simon*
  - *What is CICS Application Multi-versioning?*

- **Podcasts**
  http://www.ibm.com/software/os/systemz/podcasts/websphereonz/
  - *Coming soon!*

- **Scenarios**
  https://www-01.ibm.com/support/knowledgecenter/#!/SSGMCP_5.1.0/com.ibm.cics.ts.scenarios.doc/topics/Scenarios.html
  - *Scenario: Creating and deploying policies*

15884: Using Policies to Manage Critical CICS Resources

Matthew Webster, IBM



#SHAREorg

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

SHARE in Pittsburgh 2014