

IBM – CICS Workshop



## **L03 – CICS-Policy**

*Lab Version V0.1*

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## **Overview**

The behavior of CICS can be controlled during run time, based on predefined policies. CICS performs the action that is defined for a policy rule when all the conditions that are specified by the rule are met.

- Policies define the action that CICS is to take when one of the following conditions is met:
- A CICS user task makes excessive use of system resources; for example, a user task consumes too much storage.
- A CICS system or user task changes the state of a system resource; for example, a FILE resource is closed.

The overall system health changes; for example, the number of active tasks exceeds the maximum user tasks in the CICS system (the MXT value).

A condition and action pair make up a policy rule, and one or more policy rules can be defined within a policy. A policy is defined in a CICS bundle and a CICS bundle can consist of one or more policies.

In this lab, you will configure new policy definitions introduced in CICS V6.1. The first one is generic transaction definition for the condition of policy task rule, and the second one is the compound system rule with opening/closing the WLM health.

## **Lab Scenario**

In our scenario, you are a system programmer and define a “all” condition for VSAM access in OD\* transactions in two AOR2. You can see the messages in the CICS region log, MSGUSR.

Then, you will define a policy system rule to be triggered when the Db2 is disconnected in one CICS region. Once it's disconnected, you can check whether the OD\* transactions are routed to that CICS region or not. To recover the workload status, you can connect the Db2 and enable one program at the same time by using the compound policy system rule defined by yourself.

## **Lab Requirements**

Please note that there are often several ways to perform functions in and for CICS. This lab exercise will present one of the ways. If you are familiar with CICS, you will notice that some of the statements are general, and not necessarily true for every situation.

This lab uses the PCOMM and CICS Explorer. If you are not familiar with these, please contact one of the lab instructors for assistance.

The following are other assumptions made in this lab exercise.

- **CICS TS V6.1:** This lab exercise only works in CICS V6.1. You have your own z/OS image you can change all resources in four CICS regions.
- **Login:** A TSO userid is available with the appropriate password provided, and you will also use the same TSO userid with the z/OS Explorer.
- **The CICS Explorer:** In the lab environment we have installed the CICS Explorer to configure CICS resources and the security request recording function.

## **Lab Step Overview**

### **Part 1: Try the CICS bank sample application (hereafter CBSA) in 4 CICS regions**

Logon to the CICS61T1 and run the transaction OMEN. Then, try to browse customer number with “1” and display the account “1” in menus. Make sure no problems happen there. Check the CICSplex workload balancing in the CICS Explorer.

### **Part 2: Create a policy task rule to check OD\* transaction of accessing VSAM resources**

By using the generic transaction definition and “all requests” rule for VSAM files, you will find out transactions accessing any VSAM files.

### **Part 3: Create a policy system rule with a compound condition**

Try to browse the customer number, “1” in the customer inquiry menu and see the application making errors.

### **Part 4: Test the system rule operation with disabling DB2 connection**

Disconnect DB2 in one CICS region to control the incoming workload

### **Part 5: Summary**

This is a recap of the steps performed in this lab exercise and answers for quizzes.

## **Part 0: Check the CICS Explorer Connection to CICS**

In this part of the lab exercise you will configure the connection between the CICS Explorer running on your workstation to CICS running on z/OS.

### **Start the CICS Explorer**

1. From the **desktop**, **double-click** the **CICS Explorer** icon to start the Explorer if it is not already running.

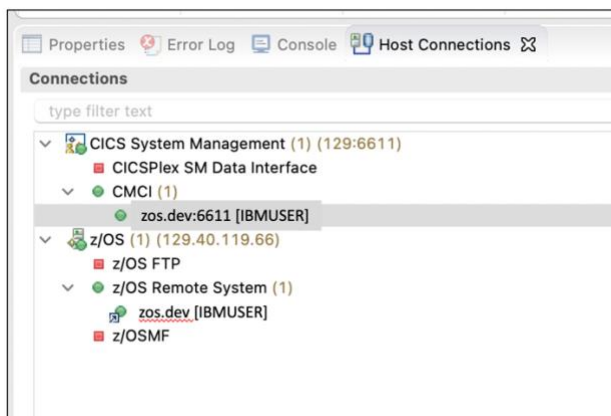


2. When you start the Explorer, if you are prompted for a workspace, click the **OK** button to select the default.

### **Verify that you have an FTP connection to z/OS in your CICS Explorer**

3. If you have not already created connections to the z/OS host system, check the connection as in the screen shot. Both the **Remote System Explorer** and **CMCI** connections should be started and active.

**IP : zos.dev / CMCI port : 6611 / User : IBMUSER / Password : sys1**



## **Part 1: Try the CICS bank sample application (hereafter CBSA) in 4 CICS regions**

In this part of the lab exercise you will try the CICS bank sample application.

### **Try the CICS Bank Sample Application**

- \_\_\_1. Open a session in the PCOMM, and type “L CICS61T1” to logon.
- \_\_\_2. Clear the screen and type “OMEN” to start the main screen.

```
BNK1MA                      CICS Bank Sample Application - Main Menu

Select an option. Then press Enter.

Action . . . . . 1.  Display/Delete/Update CUSTOMER information
                  2.  Display/Delete ACCOUNT information
                  3.  Create CUSTOMER
                  4.  Create ACCOUNT
                  5.  Update ACCOUNT
                  6.  Credit/Debit funds to an ACCOUNT
                  7.  Transfer funds

                  A.  Look up Accounts with Customer Number

F3=Exit  F12=Cancel
```

- \_\_\_3. Try to display the customer number 1 and account number 1. Also, you can create customer and account numbers as you want to test the CICS Bank Sample Application. ( CBSA )
- \_\_\_4. Check the transaction execution status in the CICS explorer.  
ODCS is the customer transaction from a VSAM file and ODAC is the account transaction from a DB2 table.

The screenshot shows the IBM Explorer for z/OS interface. The top menu bar includes 'Operations', 'Definitions', 'Window', and 'Help'. Below the menu, the title bar reads '.zosexplorer - /Users/hanconst/.zosexplorer - IBM Explorer for z/OS'. A toolbar contains icons for 'Local Transactions', 'Security Request Recordings', 'Regions', 'Tasks', 'Programs', and 'ISC/MRO Connections'. A filter bar is set to 'Name = OD\*'. The main display area shows a table of transactions with the following data:

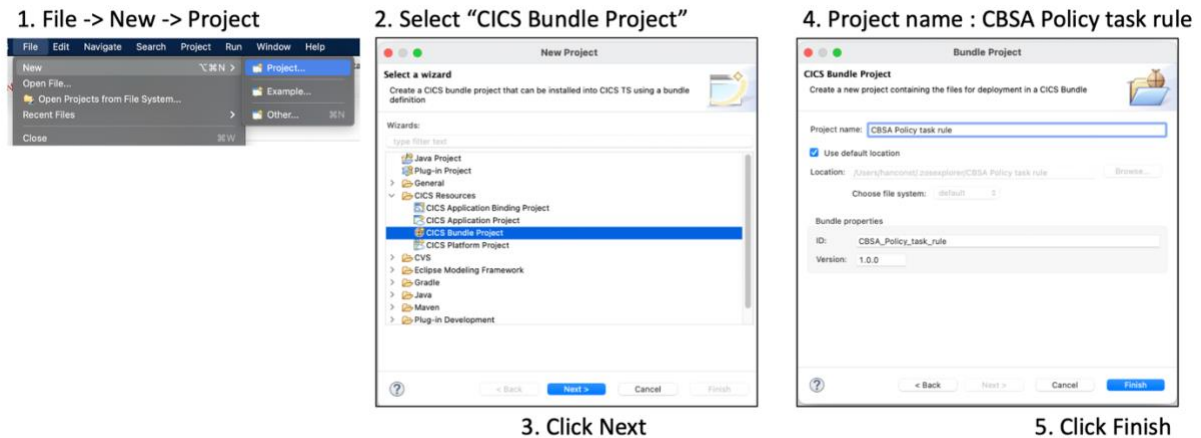
Region	Name	Status	Availability	Use Count	Program
CICS61A1	ODAC	✓ ENABLED	NONE	3	BNK1DAC
CICS61A1	ODCS	✓ ENABLED	NONE	5	BNK1DCS
CICS61A2	ODAC	✓ ENABLED	NONE	3	BNK1DAC
CICS61A2	ODCS	✓ ENABLED	NONE	7	BNK1DCS
CICS61T1	ODAC	✓ ENABLED	NONE	6	BNK1DAC
CICS61T1	ODCS	✓ ENABLED	NONE	12	BNK1DCS

Operation → Local transactions → Filter by the Name, OD\*

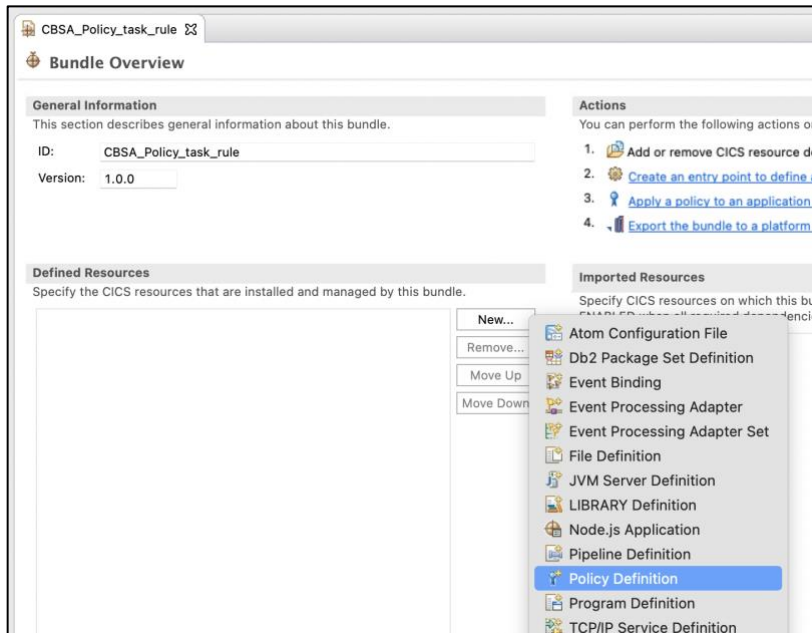
## **Part 2: Create a policy task rule to check OD\* transaction of accessing VSAM resources**

Create a CICS bundle project to define the policy task rule.

- \_\_\_1. From the CICS Explorer, go to MENU, New, Project and create a CICS bundle project, “CBSA Policy task rule”.

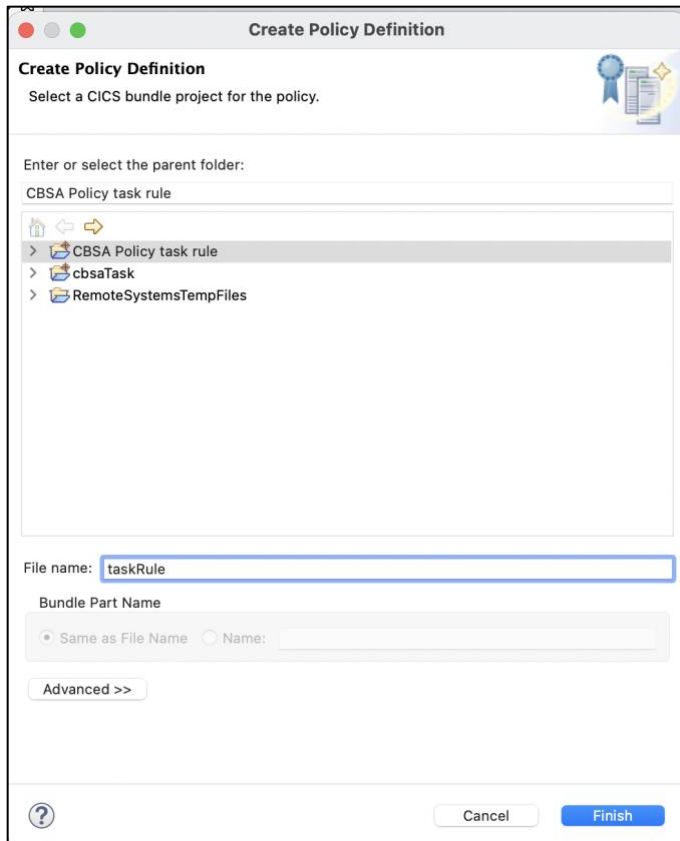


- \_\_\_2. In the defined resources section, click new and select “Policy definition”.



- \_\_\_3. Put “taskRule” in the File name field at the “Create Policy Definition” view. And click Finish.





**Create Policy Definition**

Select a CICS bundle project for the policy.

Enter or select the parent folder:

CBSA Policy task rule

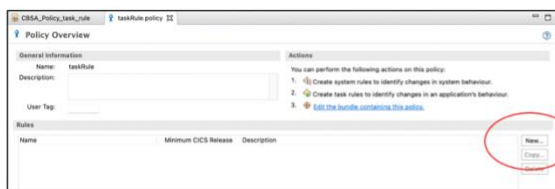
- > CBSA Policy task rule
- > cbsaTask
- > RemoteSystemsTempFiles

File name:

Bundle Part Name

☒ Same as File Name ☐ Name:

4. Click **New** in the policy overview and create the **task\_file** policy for file requests.



**Policy Overview**

General Information

Name: taskRule

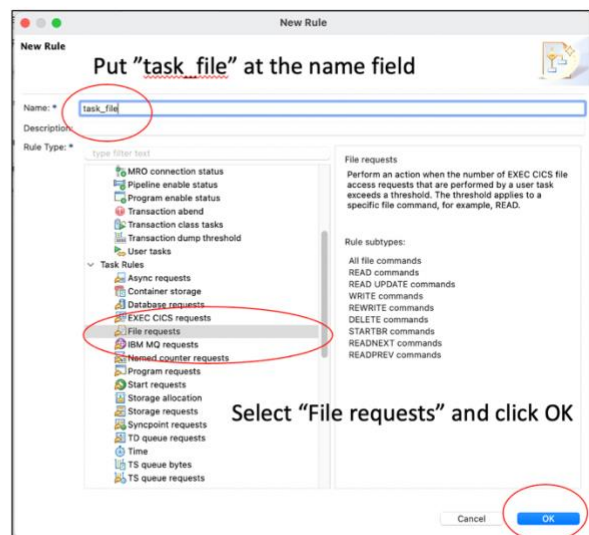
Description:

User Tag:

Rules

Name	Minimum CICS Release	Description

Click New



**New Rule**

Put "task\_file" at the name field

Name:

Description:

Rule Type:

Type filter text

- MRO connection status
- Pipeline enable status
- Program enable status
- Transactionabend
- Transaction class tasks
- Transaction dump threshold
- User tasks
- Task Rules
  - Async requests
  - Container storage
  - Database requests
  - EXEC CICS requests
  - File requests
  - IBM MQ requests
  - Named counter requests
  - Program requests
  - Start requests
  - Storage allocation
  - Storage requests
  - Synpoint requests
  - TD queue requests
  - Time
  - TS queue bytes
  - TS queue requests

File requests

Perform an action when the number of EXEC CICS file access requests that are performed by a user task exceeds a threshold. The threshold applies to a specific file command, for example, READ.

Rule subtypes:

- All file commands
- READ commands
- READ UPDATE commands
- WRITE commands
- REWRITE commands
- DELETE commands
- STARTBR commands
- READNEXT commands
- READPREV commands

Select "File requests" and click OK

5. In the Rule view, setup “**greater than 0 condition for all file commands**” and “**transactions started with OD**”. Then, save the project with Control-S and close the policy definition.

The screenshot displays the 'task\_policy' application window with the 'taskRule.policy' file open. The 'Rules' tab is active, showing a list of rules on the left and the configuration details on the right.

**Rules List:**

- task\_file (File requests)

**General Information:**

- Rule type:** File requests
- Description:** Perform an action when the number of EXEC CICS file access requests that are performed by a user task exceeds a threshold. The threshold applies to a specific file command, for example, READ.

**Condition:**

This rule will trigger when the following condition is met:

All file commands greater than 0 requests

Limit this rule to specific transaction IDs and user IDs:

Transaction ID: all

User ID: all

*This rule requires CICS TS 6.1 or later*

**Action:**

What action should be taken when the threshold is exceeded?

☒ Issue a message

☐ Emit an event:

EP Adapter Choose...

Event name:

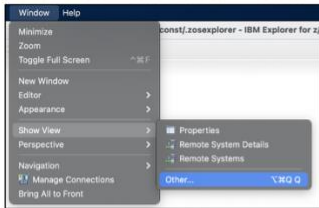
Static Data (0 items)

Export Event Specifications...

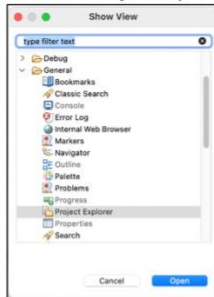
☐ Abend the task with abend code: AMPB

6. Go to the Project Explorer view and export the project to a z/OS USS directory.  
- Parent Directory : **/cics/cics61/bundles**

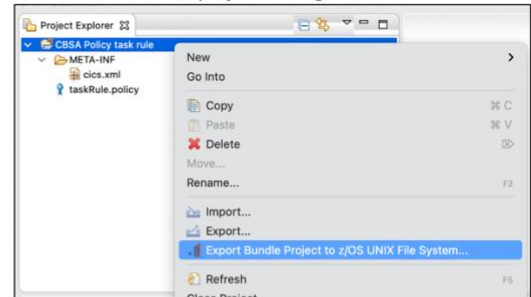
1. Window -&gt; Show View -&gt; Other



2. Select Project Explorer in General

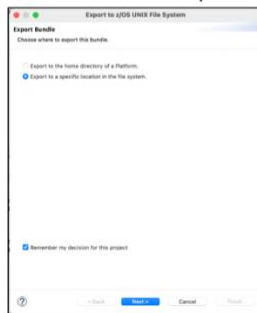
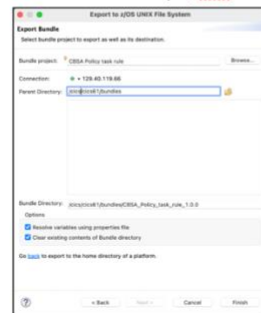


3. Select the created project and right click



4. Click "Export Bundle Project to z/OS UNIX File System..."

5. Select the second option

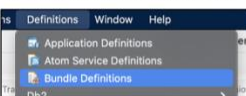
6. Parent Directory : **/cics/cics61/bundles**

7. Click Finish

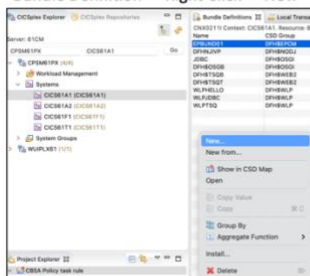
Double check the directory is created : **/cics/cics61/bundles/CBSA\_Policy\_task\_rule\_1.0.0/**

7. Create the CICS bundle definition in the CSD.  
To see the bundle definitions, you have to select one of CICS regions because they are in the shared CSD dataset for all four CICS regions.

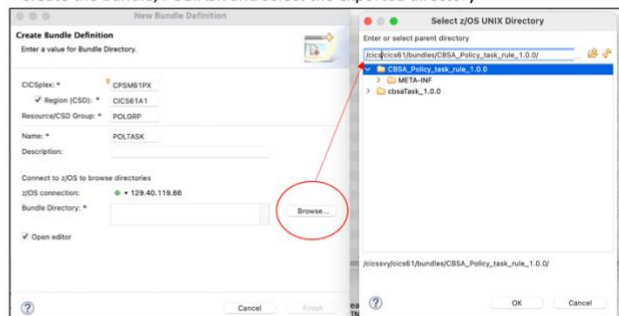
Definition -&gt; Bundle Definition



Bundle Definition -&gt; Right Click -&gt; New



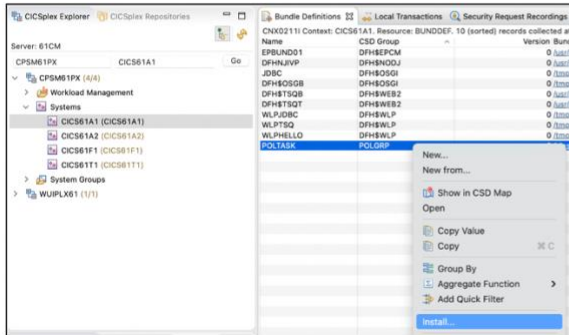
Create the bundle, POLTASK and select the exported directory



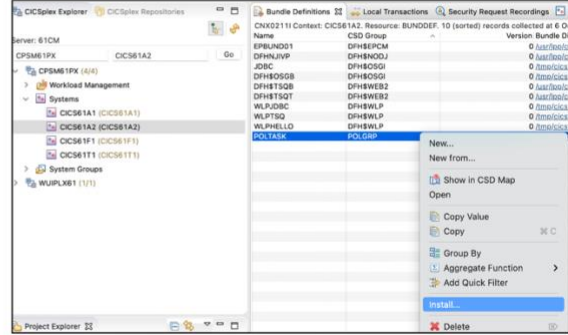
Then click the finish button to create the local bundle definition, POLTASK.

\_\_\_8. Install the created bundle definition to two CICS AOR regions.

Select **CICS61A1** in the **CICSplex Explorer**  
Right click at the **POLTASK**  
Click **Install**



Select **CICS61A2** in the **CICSplex Explorer**  
Right click at the **POLTASK**  
Click **Install**



\_\_\_9. If you meet “Auth” error, please issue the RACF commands in ISPF menu 6 as follows and do the step 8 again.

```
RDEF CPSMOBJ ** UACC(NONE) OWNER(IBMUSER) NOTIFY(IBMUSER)
```

```
PERMIT ** CLASS(CPSMOBJ) ID(IBMUSER) ACCESS(ALTER)
```

```
SETROPTS RACLIST(CPSMOBJ) REFRESH
```

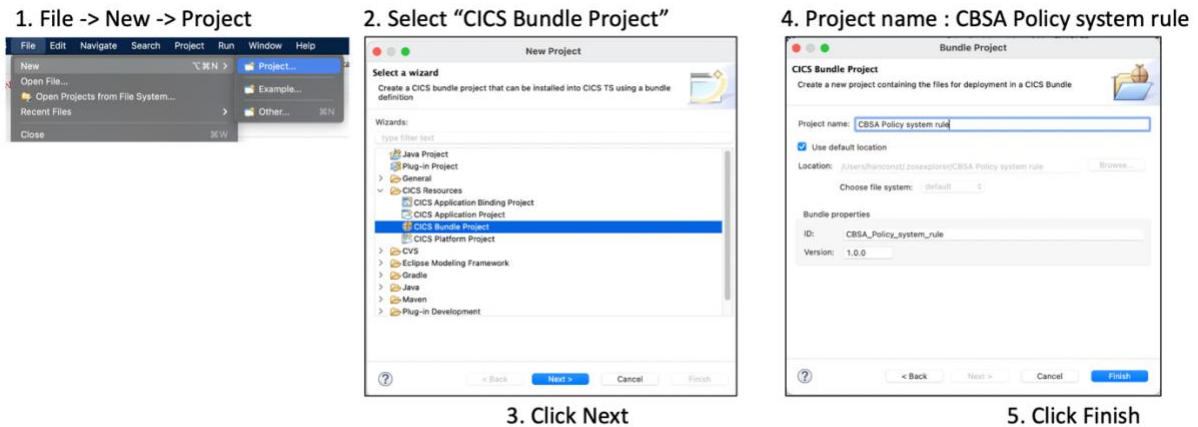
\_\_\_10. Run CBSA transactions to browse the customer number, “1”, multiple times and check the messages in the CICS MSGUSR logs of CICS61A1 and CICS61A2.

```
DFHMP3001 10/06/2022 23:38:20 CICS61A1 Task 00372(ODCS) exceeded a policy threshold. BundleId=CBSA_Policy_task_rule,
PolicyName=taskRule, RuleName=task_file, RuleType=filerequest, Category=all, Threshold=0 (Value=0, Unit=),
CurrentCount=1.
DFHMP3001 10/06/2022 23:38:23 CICS61A1 Task 00375(ODCS) exceeded a policy threshold. BundleId=CBSA_Policy_task_rule,
PolicyName=taskRule, RuleName=task_file, RuleType=filerequest, Category=all, Threshold=0 (Value=0, Unit=),
CurrentCount=1.
```

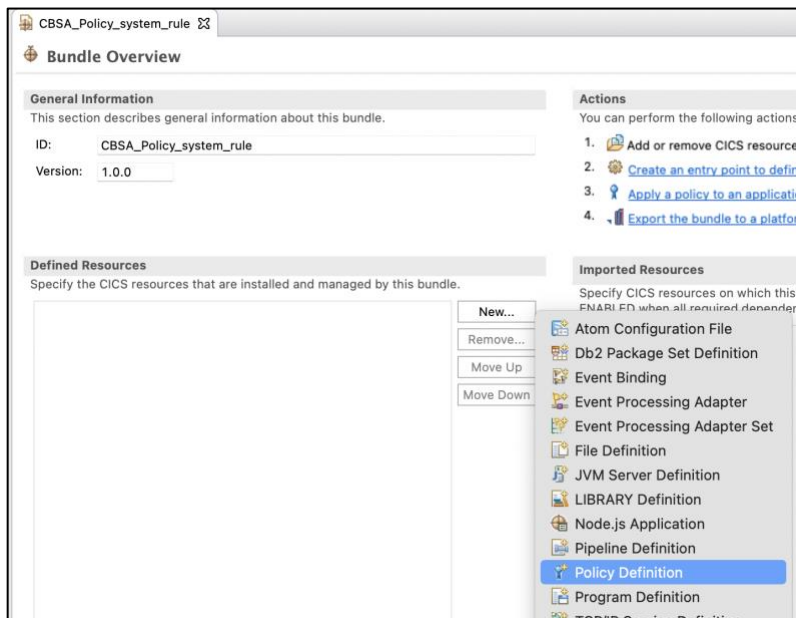
## **Part 3: Create a policy system rule with a compound condition**

Create a CICS bundle project to define the policy system rule.

- \_\_\_1. From the CICS Explorer, go to MENU, New, Project and create a CICS bundle project, “CBSA Policy system rule”.



- \_\_\_2. In the defined resources section, click new and select “Policy definition”.



- \_\_\_3. Put “systemRule” in the File name field at the “Create Policy Definition” view. And click Finish.

Create Policy Definition

Create Policy Definition

Select a CICS bundle project for the policy.

Enter or select the parent folder:

CBSA Policy system rule

> CBSA Policy system rule

> CBSA Policy task rule

> RemoteSystemsTempFiles

File name:

systemRule

Bundle Part Name

☒ Same as File Name

☐ Name:

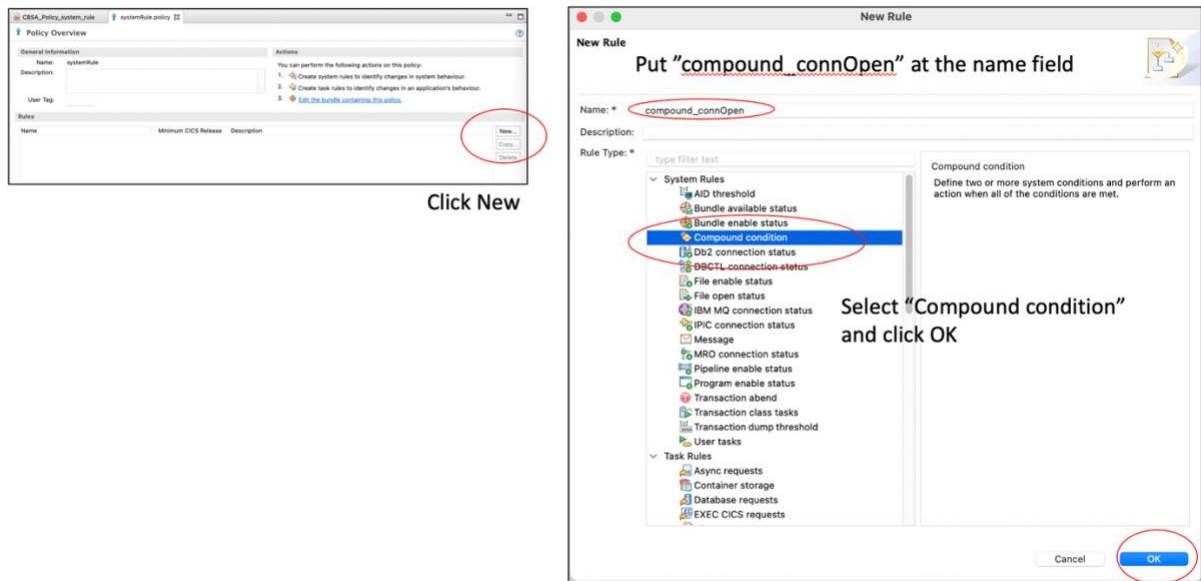
Advanced >>

?

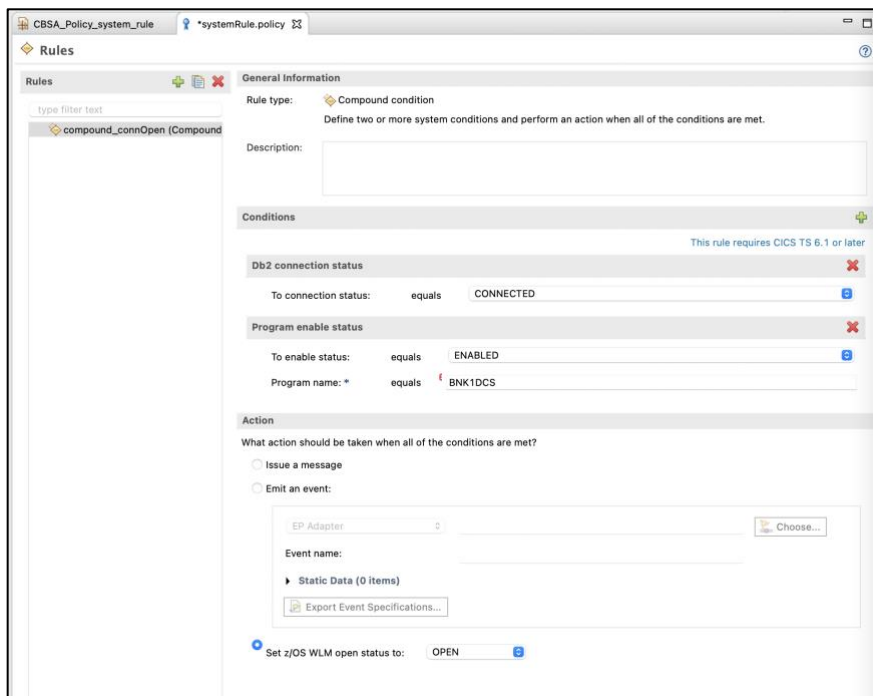
Cancel

Finish

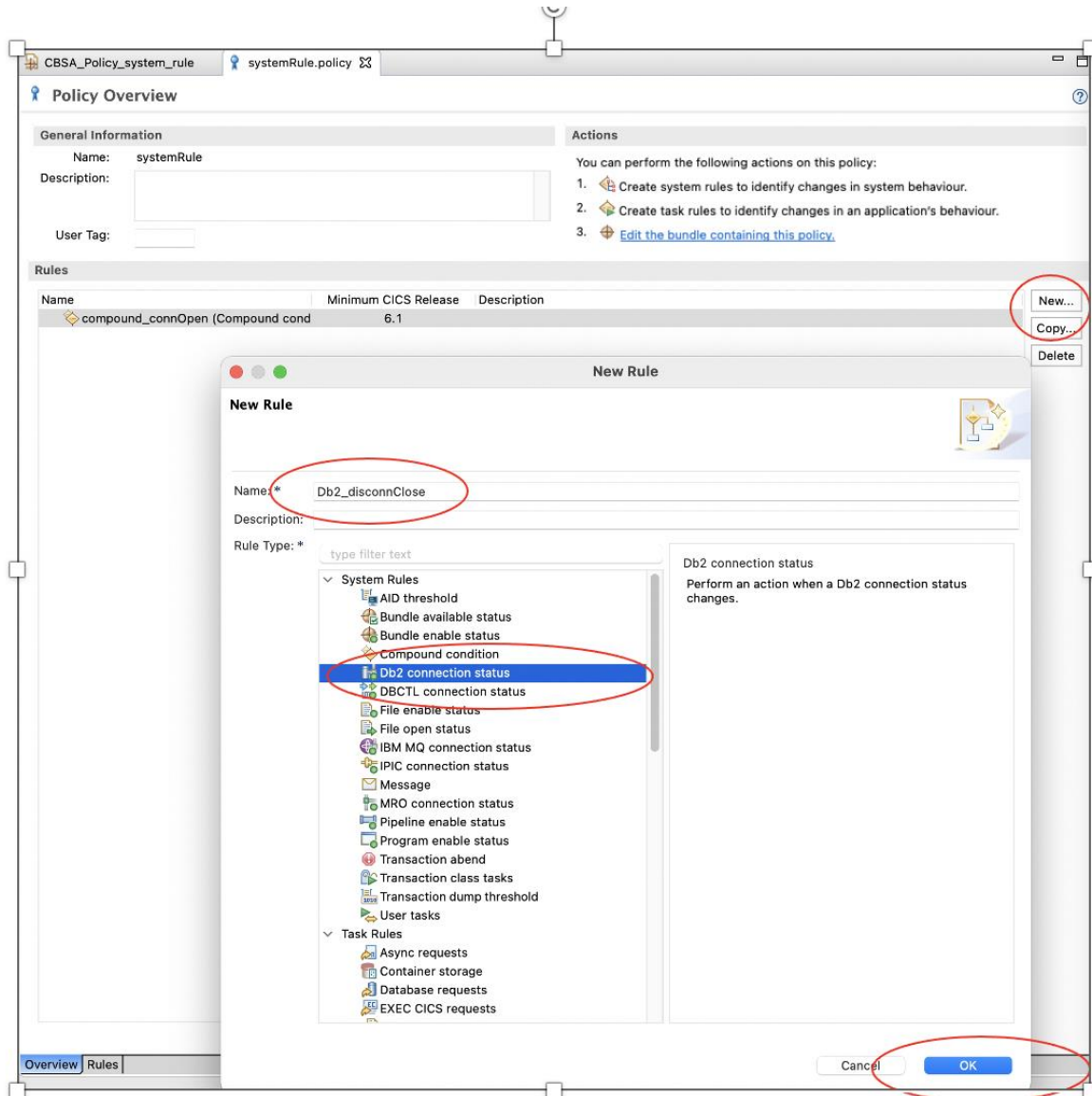
\_\_\_4. Click **New** in the policy overview and create the **compound\_connOpen** rule.



\_\_\_5. In the Rule view, add "Db2 connection status" as "CONNECTED" and "Program enable status" as "ENABLED" and "BNK1DCS". And select "Set z/OS WLM open status to: Open" in the Action section. Then, save and close the Rules view.



- \_\_\_6. Click **New** in the policy overview one more time and create the **Db2\_disconnClose** rule. It's to create one more rule when the Db2 is disconnected.





7. In the Rule view, set “To connection status” “equals” “NOTCONNECTED” and select “Set z/OS WLM open status to: Close” in the Action section. Then, save and close the Rules view.

The screenshot shows the IBM Rules configuration interface. The left pane displays a list of rules, including 'compound\_connOpen' and 'Db2\_disconnClose'. The right pane shows the configuration for the selected rule, 'Db2\_disconnClose'.

**General Information**

- Rule type: Db2 connection status
- Description: Perform an action when a Db2 connection status changes.

**Conditions**

This rule will be restricted to the Db2 connection status changes that match a set of conditions.

Limit this rule to specific Db2 connection status changes:

To connection status: equals NOTCONNECTED

Limit this rule to specific transaction IDs and user IDs:

Transaction ID: all

User ID: all

**Action**

What action should be taken when all of the conditions are met?

☐ Issue a message

☐ Emit an event:

EP Adapter: Choose...

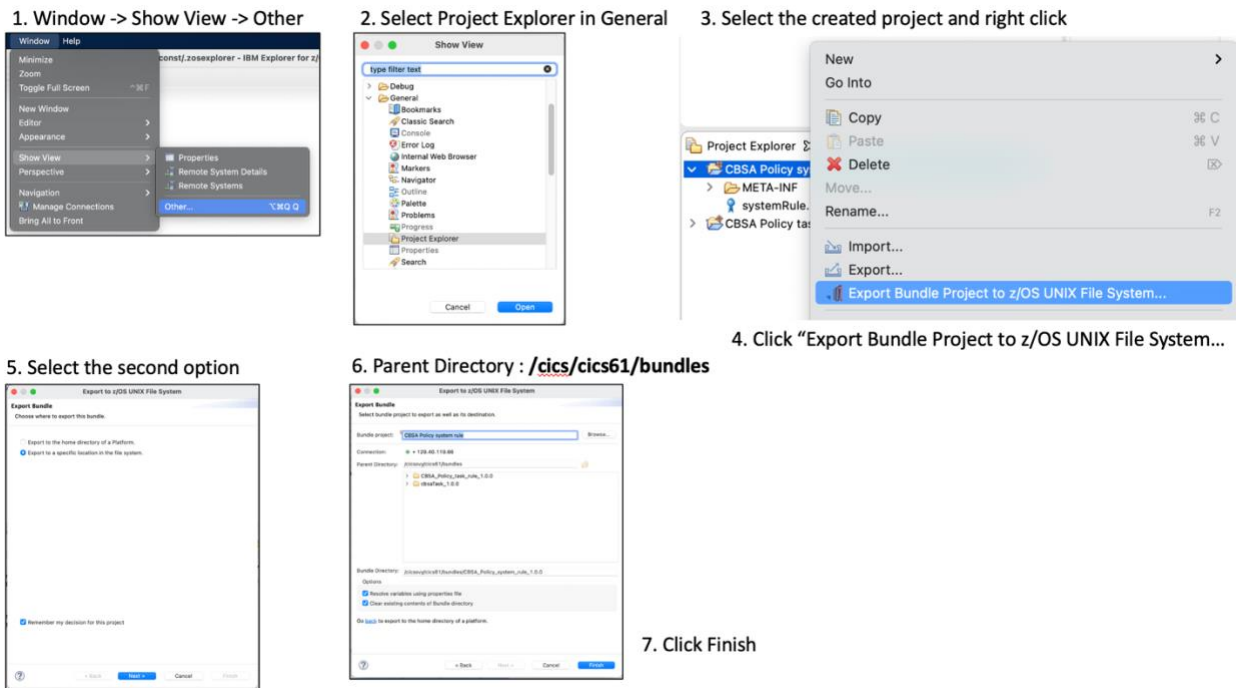
Event name:

Static Data (0 items)

Export Event Specifications...

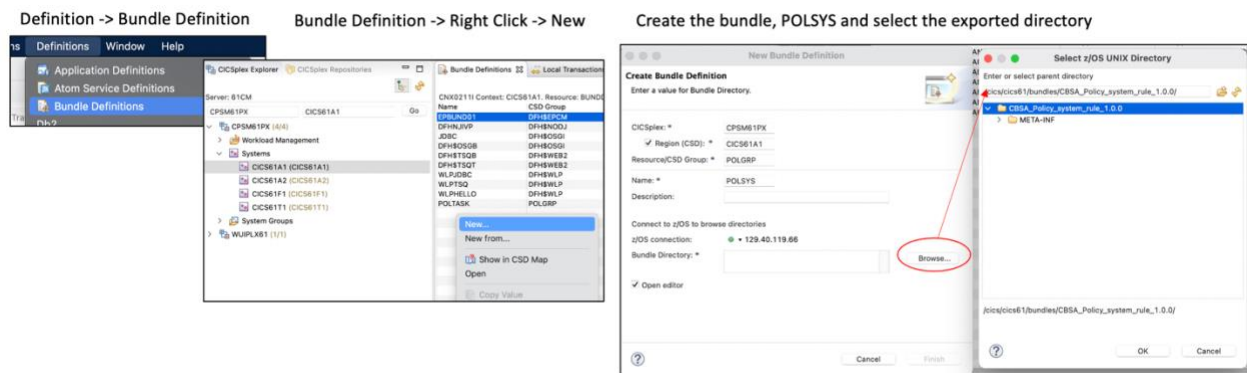
Set z/OS WLM open status to: CLOSED

8. Go to the Project Explorer view and export the project to a z/OS USS directory.  
- Parent Directory : **/cics/cics61/bundles**



Double check the directory is created : **/cics/cics61/bundles/CBSA\_Policy\_system\_rule\_1.0.0/**

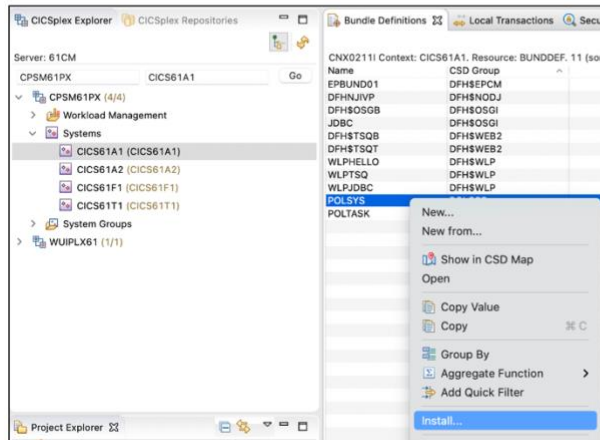
9. Create the CICS bundle definition in the CSD.  
To see the bundle definitions, you have to select one of CICS regions because they are in the shared CSD dataset for all four CICS regions.



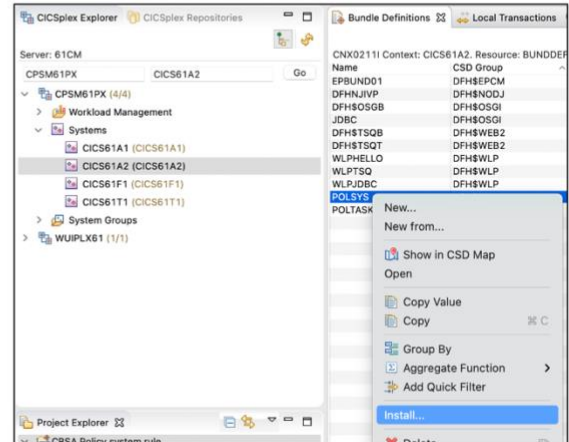
Then click the finish button to create the local bundle definition, POLSYS.

## 10. Install the created bundle definition to two CICS AOR regions.

Select **CICS61A1** in the **CICSplex Explorer**  
Right click at the POLSYS  
Click Install



Select **CICS61A2** in the **CICSplex Explorer**  
Right click at the POLSYS  
Click Install



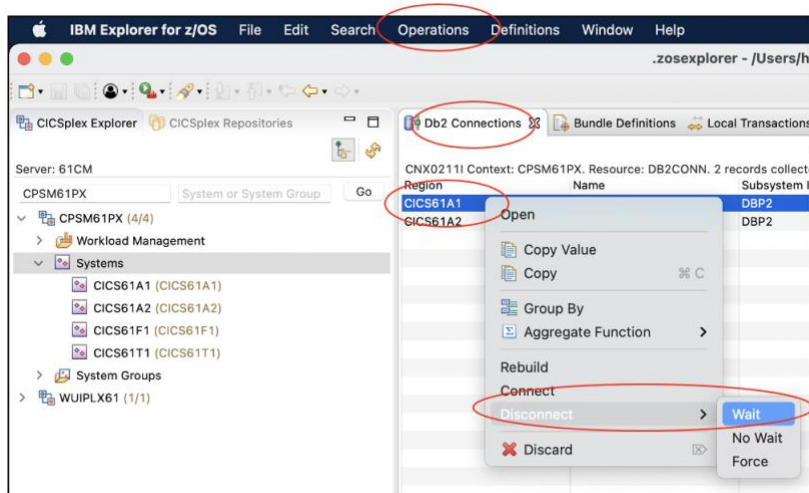
## 11. Run CBSA transactions to browse the account number, “1”, multiple times and check the use count in the local transaction operation view. Double check ODAC transaction’s use counts in two AORs are increased at the same time.

Region	Name	Status	Availability	Use Count	Program
CICS61A1	ODAC	✓ ENABLED	NONE	4	BNK1DAC
CICS61A1	ODCS	✓ ENABLED	NONE	0	BNK1DCS
CICS61A2	ODAC	✓ ENABLED	NONE	4	BNK1DAC
CICS61A2	ODCS	✓ ENABLED	NONE	0	BNK1DCS
CICS61T1	ODAC	✓ ENABLED	NONE	8	BNK1DAC
CICS61T1	ODCS	✓ ENABLED	NONE	0	BNK1DCS

## **Part 4: Test the system rule operation with disabling DB2 connection**

### **Db2 disconnection test to check the WLM close action in the system policy**

\_\_\_1. In the CICS61A1, disconnect the Db2 connection.

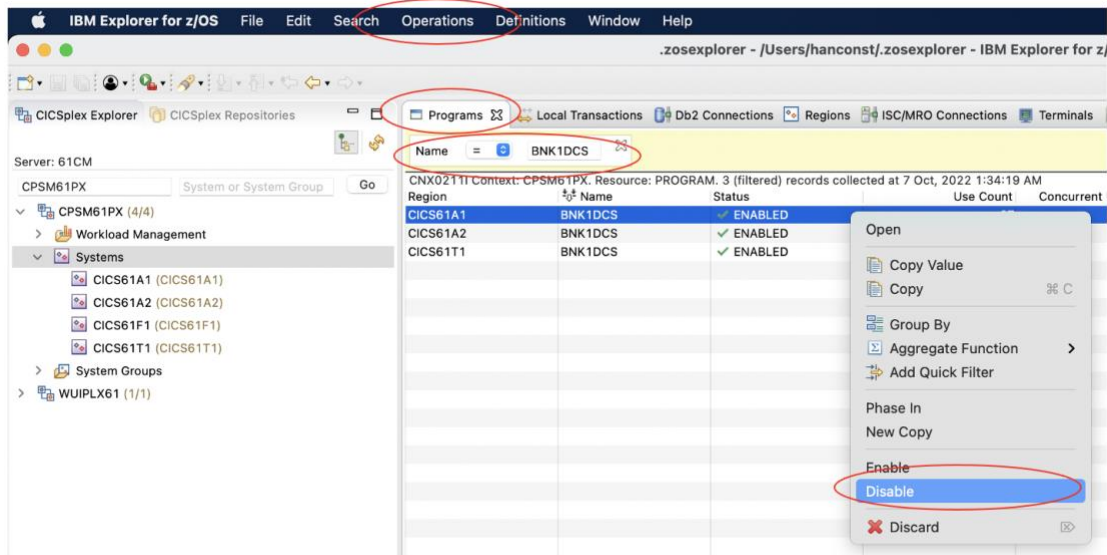


\_\_\_2. Check the use counts of ODAC transactions in CICS61A1. It must be 0.

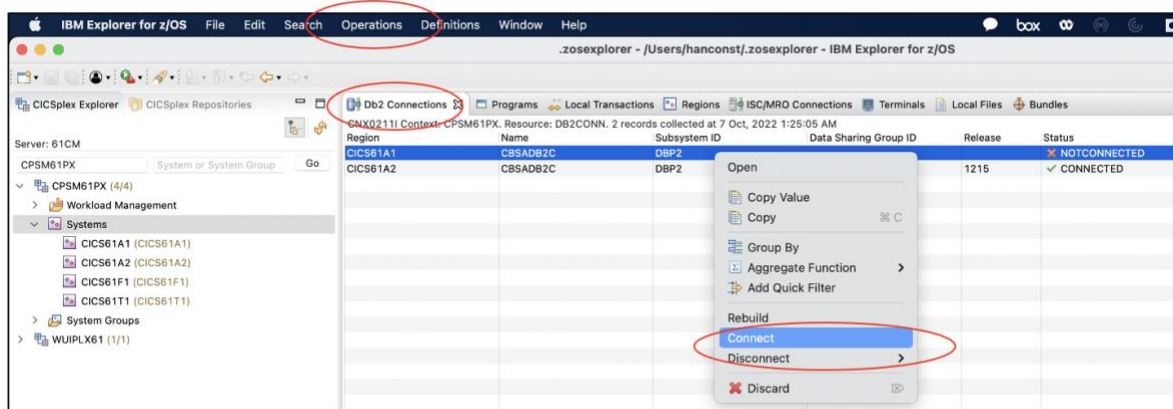
CNX0211I Context: CPSM61PX. Resource: LOCTRAN. 6 (filtered) records collected at 7 Oct, 2022 1:28:01 AM					
Region	Name	Status	Availability	Use Count	Prod
CICS61A1	ODAC	✓ ENABLED	NONE	0 BN	
CICS61A1	ODCS	✓ ENABLED	NONE	0 BN	
CICS61A2	ODAC	✓ ENABLED	NONE	10 BN	
CICS61A2	ODCS	✓ ENABLED	NONE	0 BN	
CICS61T1	ODAC	✓ ENABLED	NONE	10 BN	
CICS61T1	ODCS	✓ ENABLED	NONE	0 BN	

## Test the compound rule to route transactions back to CICS61A1

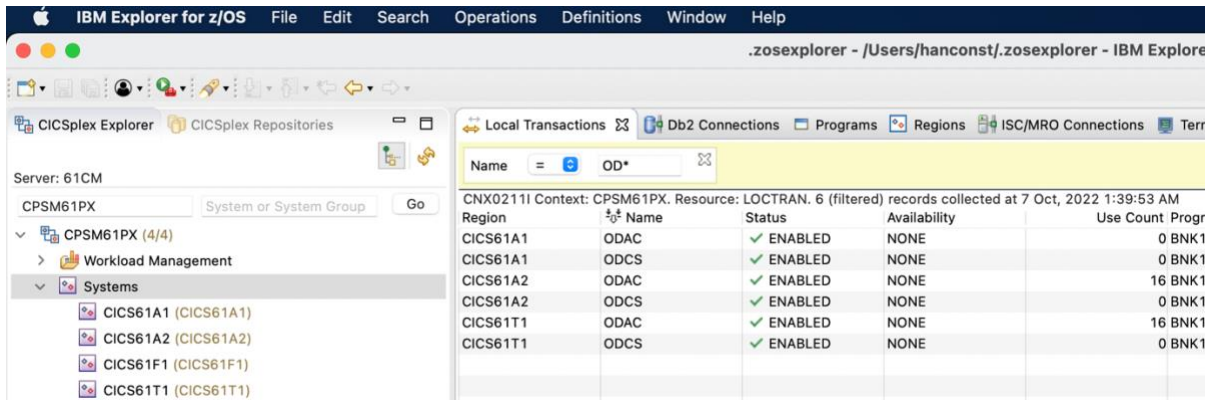
\_\_\_3. Disable the program BNK1DCS.



\_\_\_4. Reconnect Db2 in CICS61A1 and run the account inquiry transactions to check.



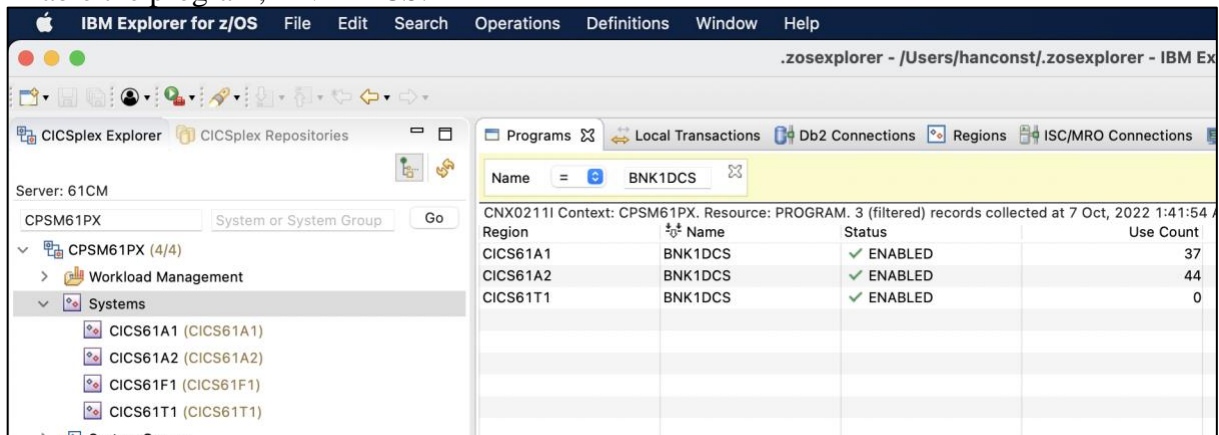




The transaction, ODAC is not routed to CICS61A1 yet.

- \_\_\_5. Enable the program, BNK1DCS, run the account inquiry transaction, and check the transaction use counts.

Enable the program, BNK1DCS.



Run the account inquiry transaction.

```
BNK1DA CICS Bank Sample Application - Display Account.
Provide an ACCOUNT number. Then press Enter.
ACCOUNT NUMBER 00000001

Customer Number: 0000000001
Sort Code      : 987654
Account Number : 00000001
Account Type   : ISA
Interest Rate  : 0099.10
Account Opened : 14 / 04 / 1954
Overdraft limit: 00000000
Last statement : 01 / 07 / 2021
Next statement : 01 / 08 / 2021
Available Bal  : +0000848151.11
Actual Balance : +0000848151.11
```

Check the ODAC use count in CICS61A1 is increased.

The screenshot shows the IBM Explorer for z/OS interface. On the left, the 'Systems' tree is expanded, showing 'CICS61A1 (CICS61A1)'. The main pane displays a table of CICS regions. The table has columns: Region, Name, Status, Availability, and Use Count. The data shows that CICS61A1 ODAC has a use count of 9 BN. The table is filtered for 'OD\*' and shows 6 records.

Region	Name	Status	Availability	Use Count
CICS61A1	ODAC	✓ ENABLED	NONE	9 BN
CICS61A1	ODCS	✓ ENABLED	NONE	0 BN
CICS61A2	ODAC	✓ ENABLED	NONE	19 BN
CICS61A2	ODCS	✓ ENABLED	NONE	0 BN
CICS61T1	ODAC	✓ ENABLED	NONE	28 BN
CICS61T1	ODCS	✓ ENABLED	NONE	0 BN

The compound condition works if the Db2 is connected and the program, BNK1DCS is enabled!

## **Part 5: Summary**

**Congratulations**, you have successfully implemented CICS policies by using new enhancements in CICS V6.1.

In this lab you performed the following steps:

- Configuring a policy task rule to use transaction prefix and all request count for a VSAM file.
- Configuring a policy system rule to use the new WLM open/close action with the new compound rule.
- Test it with the CBSA application.