CICS Explorer: What's new, and what's even newer!

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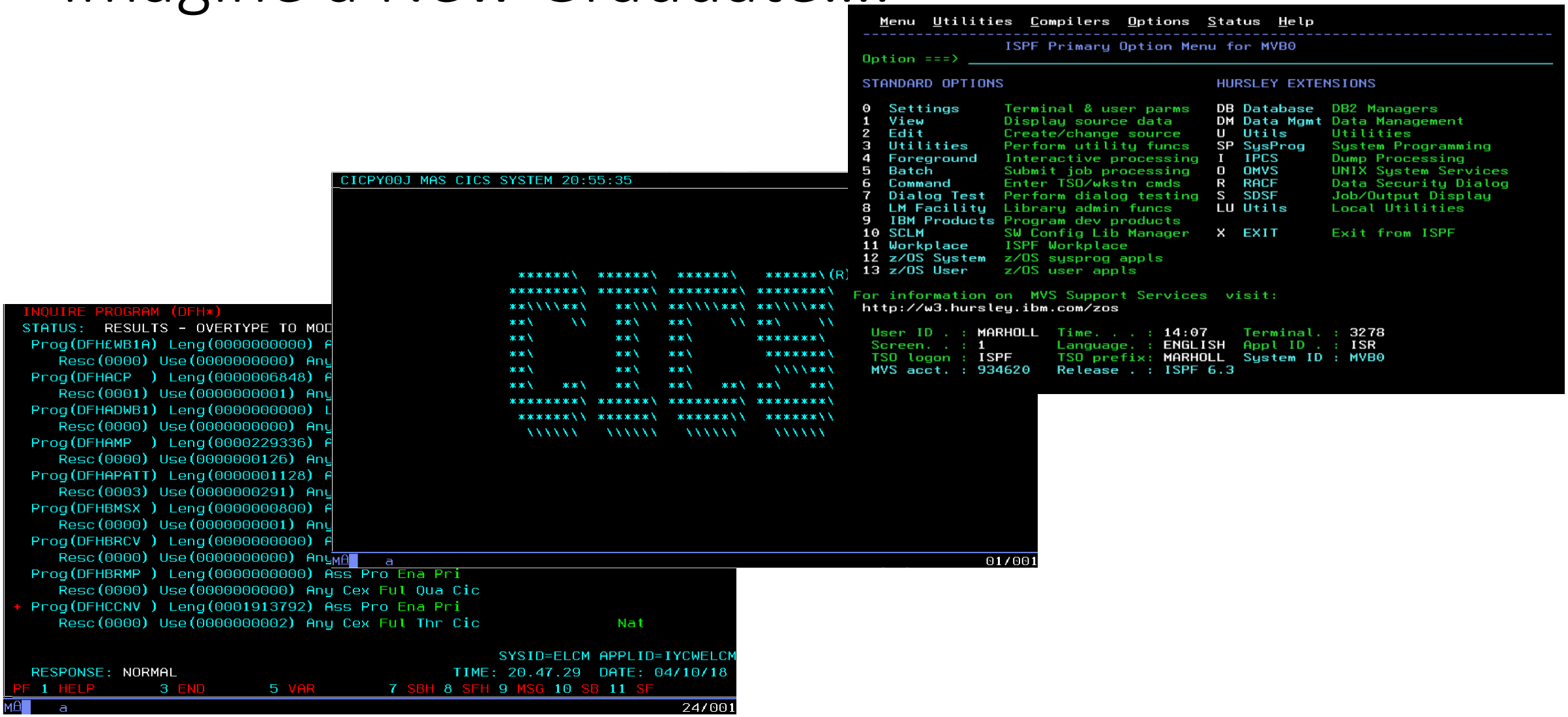
Session GF

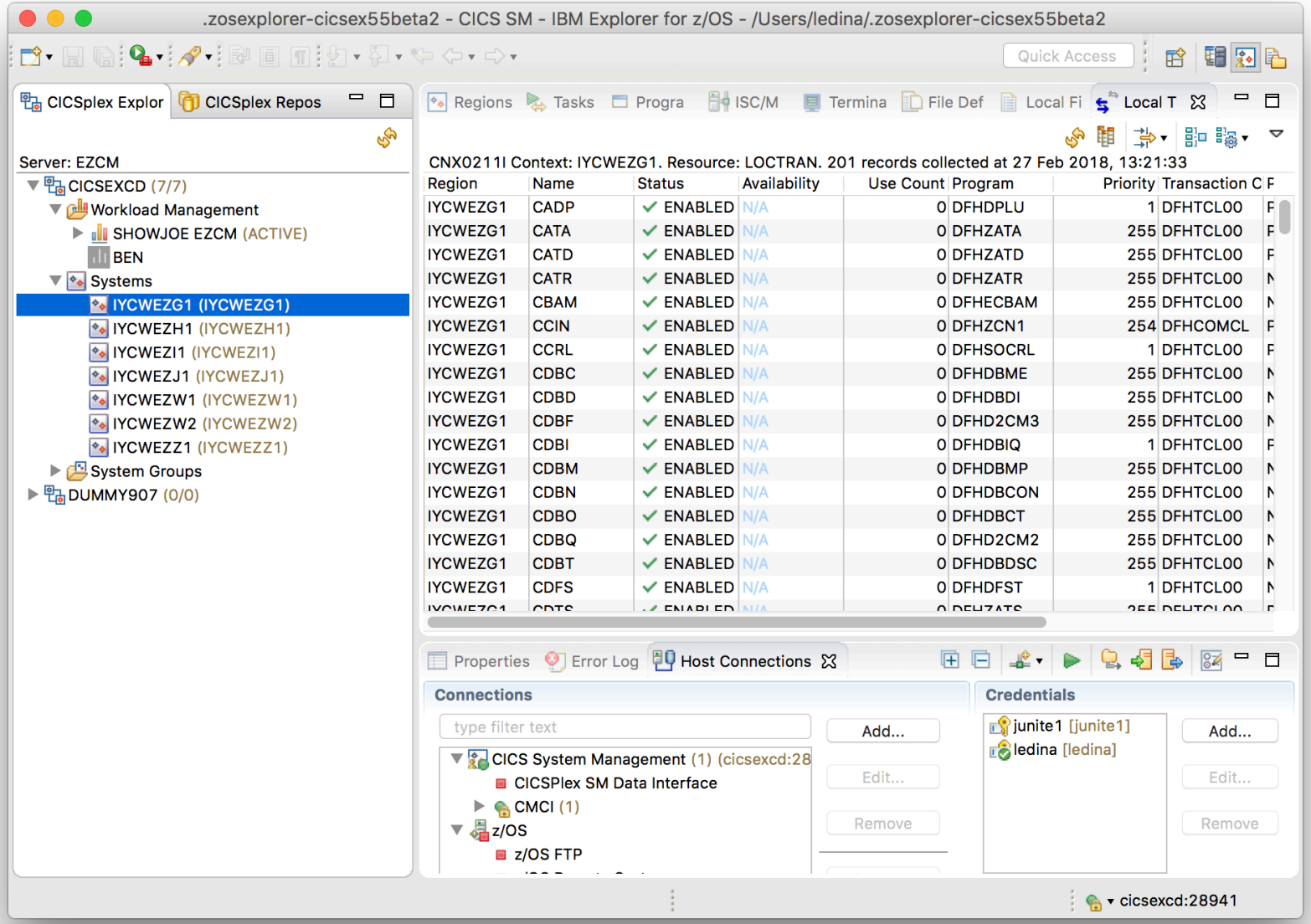
Agenda

- CICS Explorer: What is it?
- What's New in CICS Explorer 5.4 CD
- What's Even Newer: CICS TS 5.5

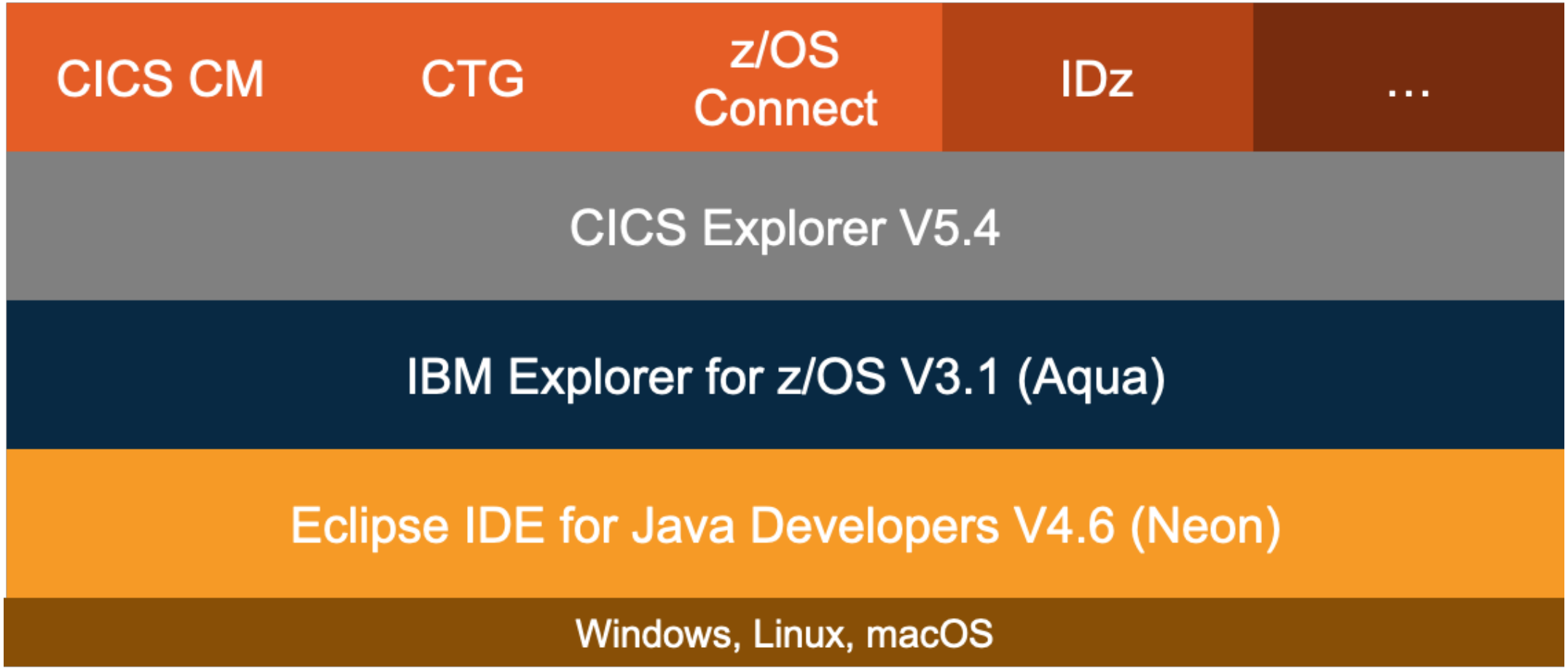
Imagine a New Graduate….



21st Century System Management Tool



Architecture



What Does CICS Explorer do?

- Embeds z/OS Explorer
  - Work with data sets, zFS files and z/OS jobs
- View and manage CICS resources - CEMT function
- Create and modify CICS definitions (CEDA function and BAS/WUI function)
- The only guided way to create bundles and Event Processing artifacts
- The best way to write Java programs to run in CICS or Java EE applications for IBM WebSphere Liberty Profile
- Manage CICSPlex SM and view information about your CICS environment

- … and more!

Get Your Hands Dirty

- CICS Explorer is backwards compatible with older versions of CICS
  - Always use the latest!

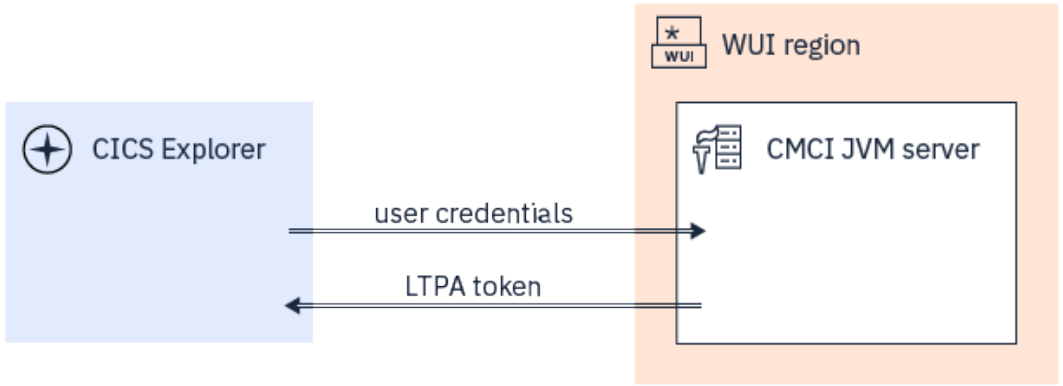
- IBM Explorer for z/OS Aqua website - https://developer.ibm.com/mainframe/products/downloads/eclipse-tools/
  - Download CICS Explorer stand-alone OR
  - Download a IM for IBM Explorer for z/OS and add CICS Explorer to it

- Open Beta website: https://www.ibm.com/it-infrastructure/z/cics/trials

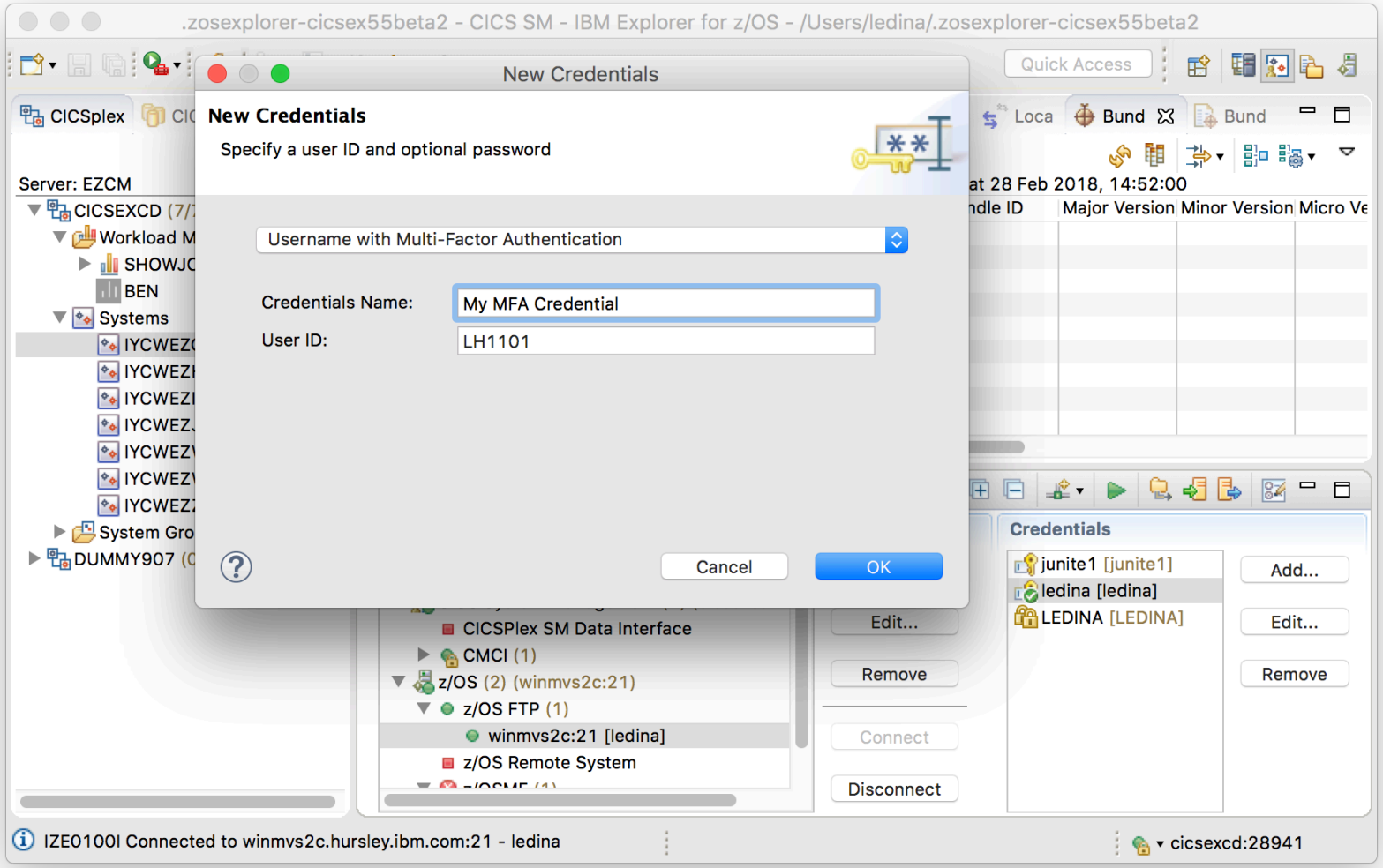
What's New in CICS Explorer 5.4 CD

Security: Multi-Factor Authentication Support

- Multi-Factor Authentication for z/OS or equivalent product configured with RACF
- CICS Explorer Version 5.4.0.4 or later
- CICS TS V5.4 with APAR PI87691 or later: WUI region and CMAS at least
- WUI configured to enable the use of CMCI and accept MFA tokens

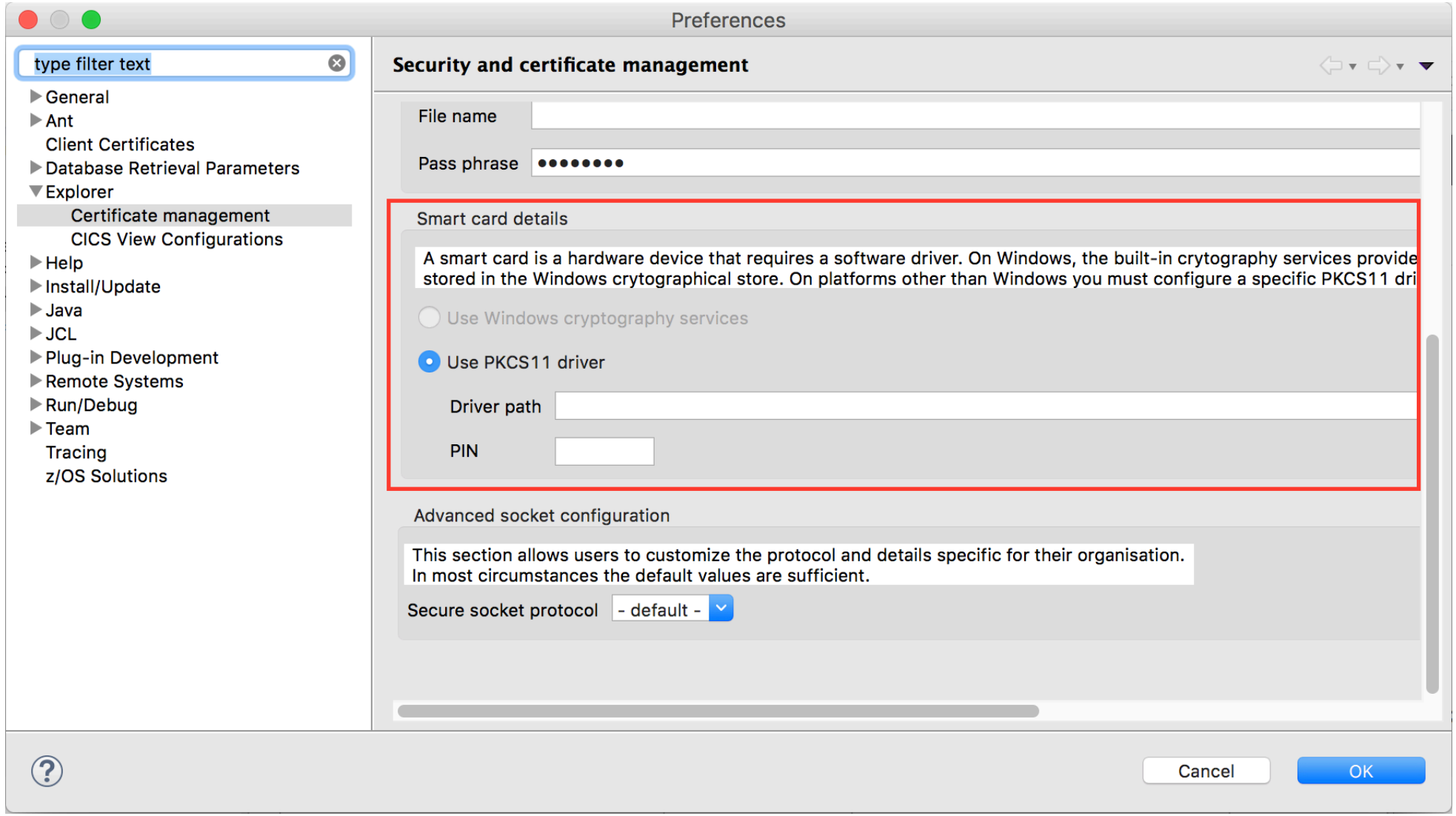


Security: Multi-Factor Authentication Support

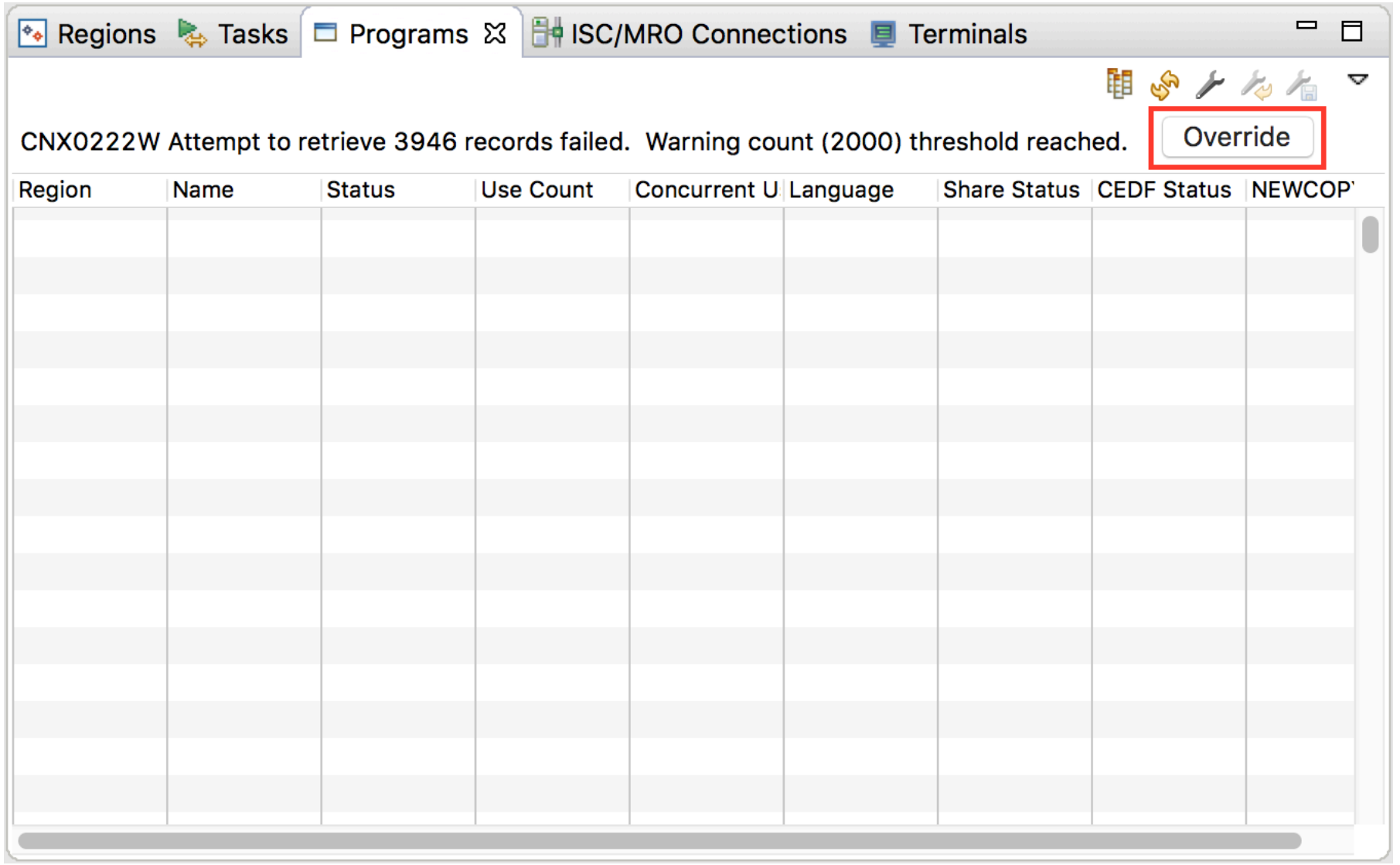


- New MFA credential type
- Password not stored
- No automatic reconnect
- CMCI or z/OS Remote Systems

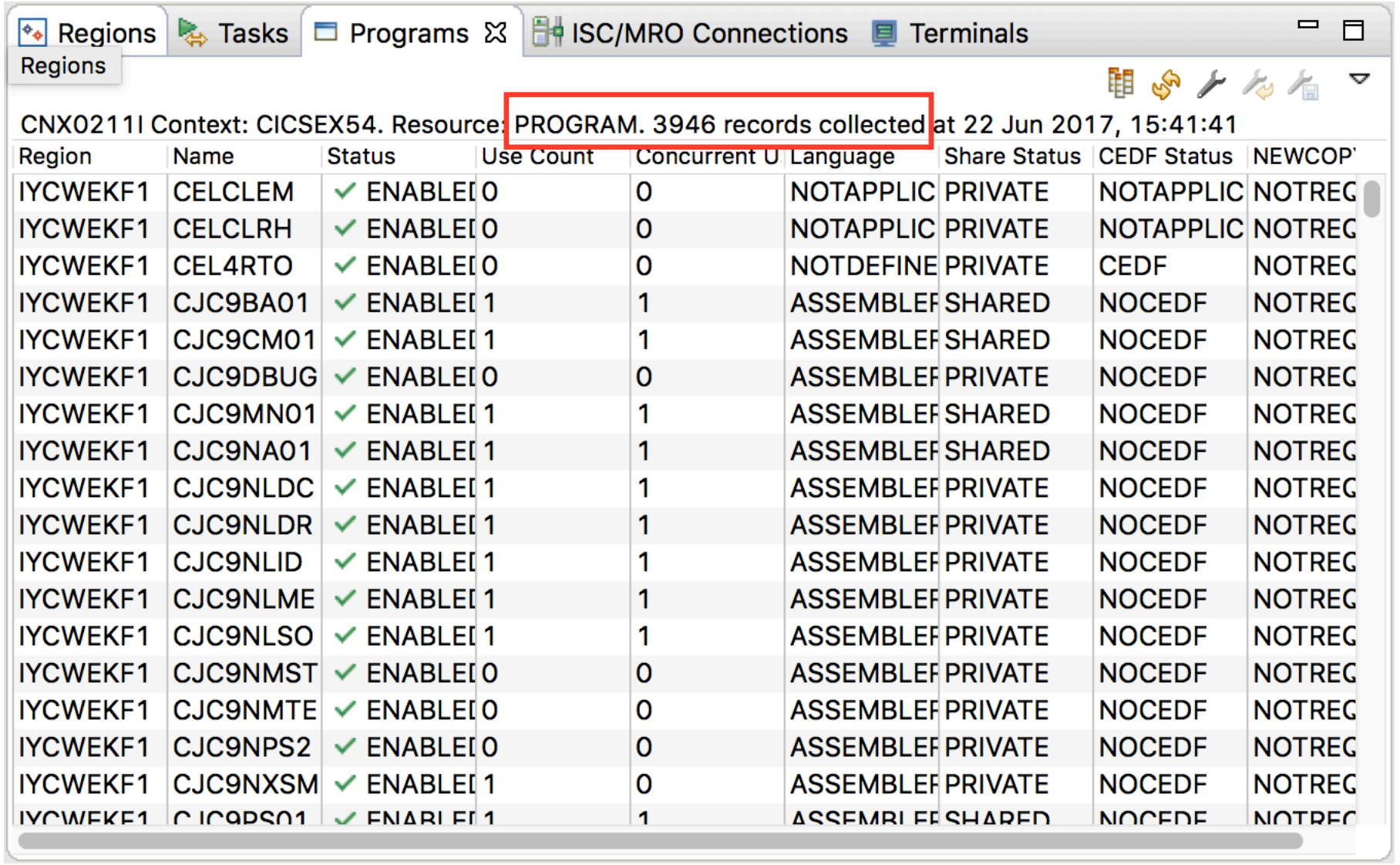
Security: Smart Card Support



Overriding Warning Count



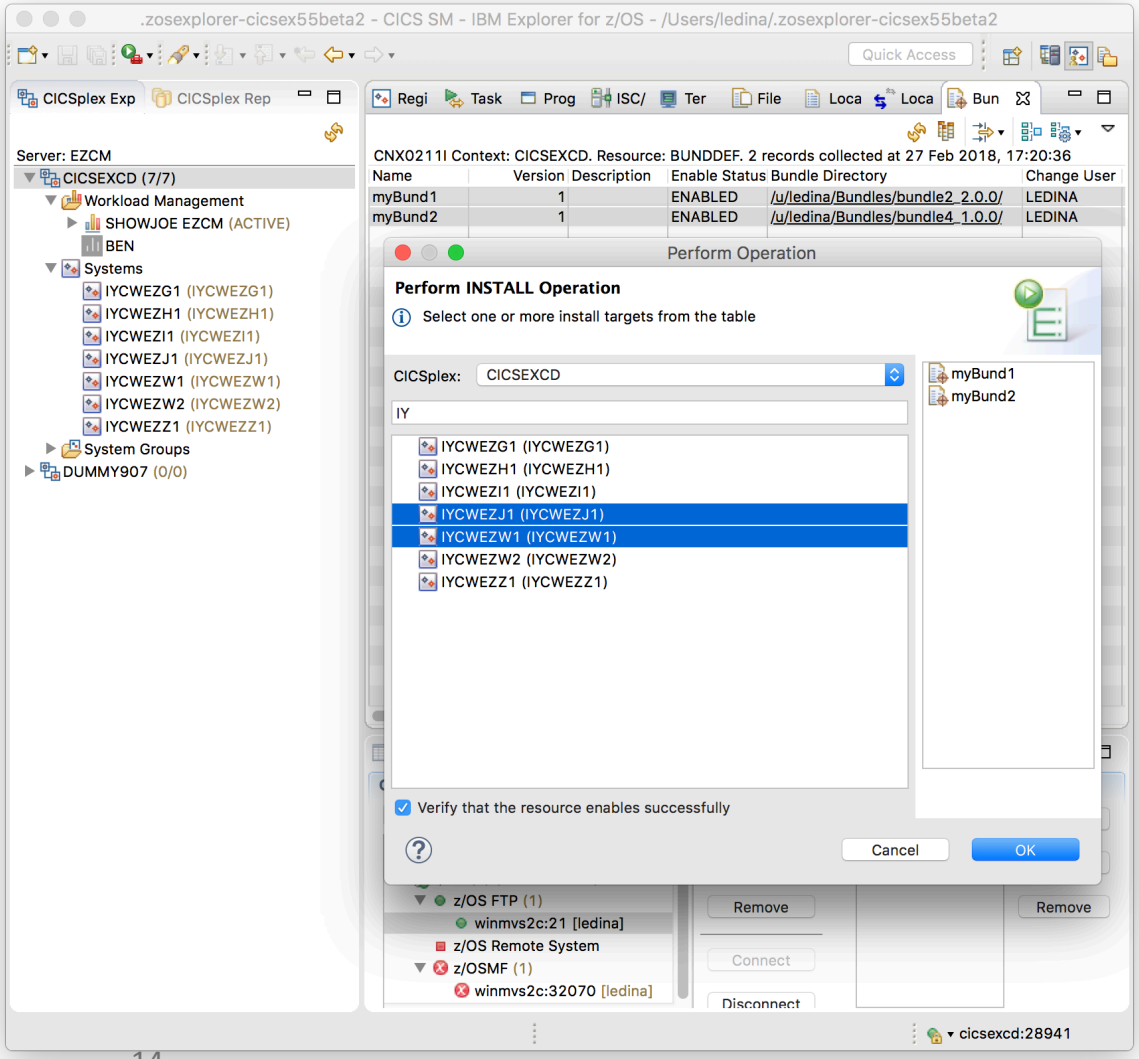
Overriding Warning Count

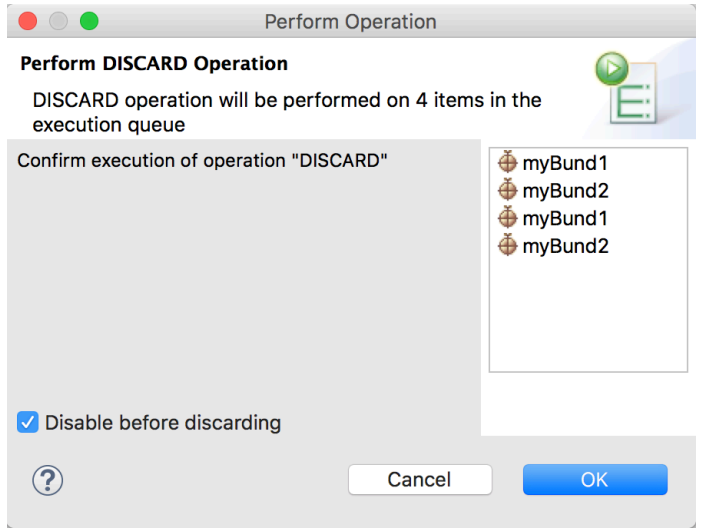


Region	Name	Status	Use Count	Concurrent U	Language	Share Status	CEDF Status	NEWCOP
IYCWEKF1	CELCLEM	ENABLE	0	0	NOTAPPLIC	PRIVATE	NOTAPPLIC	NOTREG
IYCWEKF1	CELCLRH	ENABLE	0	0	NOTAPPLIC	PRIVATE	NOTAPPLIC	NOTREG
IYCWEKF1	CEL4RTO	ENABLE	0	0	NOTDEFINE	PRIVATE	CEDF	NOTREG
IYCWEKF1	CJC9BA01	ENABLE	1	1	ASSEMBLEF	SHARED	NOCEDF	NOTREG
IYCWEKF1	CJC9CM01	ENABLE	1	1	ASSEMBLEF	SHARED	NOCEDF	NOTREG
IYCWEKF1	CJC9DBUG	ENABLE	0	0	ASSEMBLEF	PRIVATE	NOCEDF	NOTREG
IYCWEKF1	CJC9MN01	ENABLE	1	1	ASSEMBLEF	SHARED	NOCEDF	NOTREG
IYCWEKF1	CJC9NA01	ENABLE	1	1	ASSEMBLEF	SHARED	NOCEDF	NOTREG
IYCWEKF1	CJC9NLDC	ENABLE	1	1	ASSEMBLEF	PRIVATE	NOCEDF	NOTREG
IYCWEKF1	CJC9NLDR	ENABLE	1	1	ASSEMBLEF	PRIVATE	NOCEDF	NOTREG
IYCWEKF1	CJC9NLID	ENABLE	1	1	ASSEMBLEF	PRIVATE	NOCEDF	NOTREG
IYCWEKF1	CJC9NLME	ENABLE	1	1	ASSEMBLEF	PRIVATE	NOCEDF	NOTREG
IYCWEKF1	CJC9NLSO	ENABLE	1	1	ASSEMBLEF	PRIVATE	NOCEDF	NOTREG
IYCWEKF1	CJC9NMST	ENABLE	0	0	ASSEMBLEF	PRIVATE	NOCEDF	NOTREG
IYCWEKF1	CJC9NMTE	ENABLE	0	0	ASSEMBLEF	PRIVATE	NOCEDF	NOTREG
IYCWEKF1	CJC9NPS2	ENABLE	0	0	ASSEMBLEF	PRIVATE	NOCEDF	NOTREG
IYCWEKF1	CJC9NXSM	ENABLE	1	0	ASSEMBLEF	PRIVATE	NOCEDF	NOTREG
IYCWEKF1	CJC9PS01	ENABLE	1	1	ASSEMBLEF	SHARED	NOCEDF	NOTREG

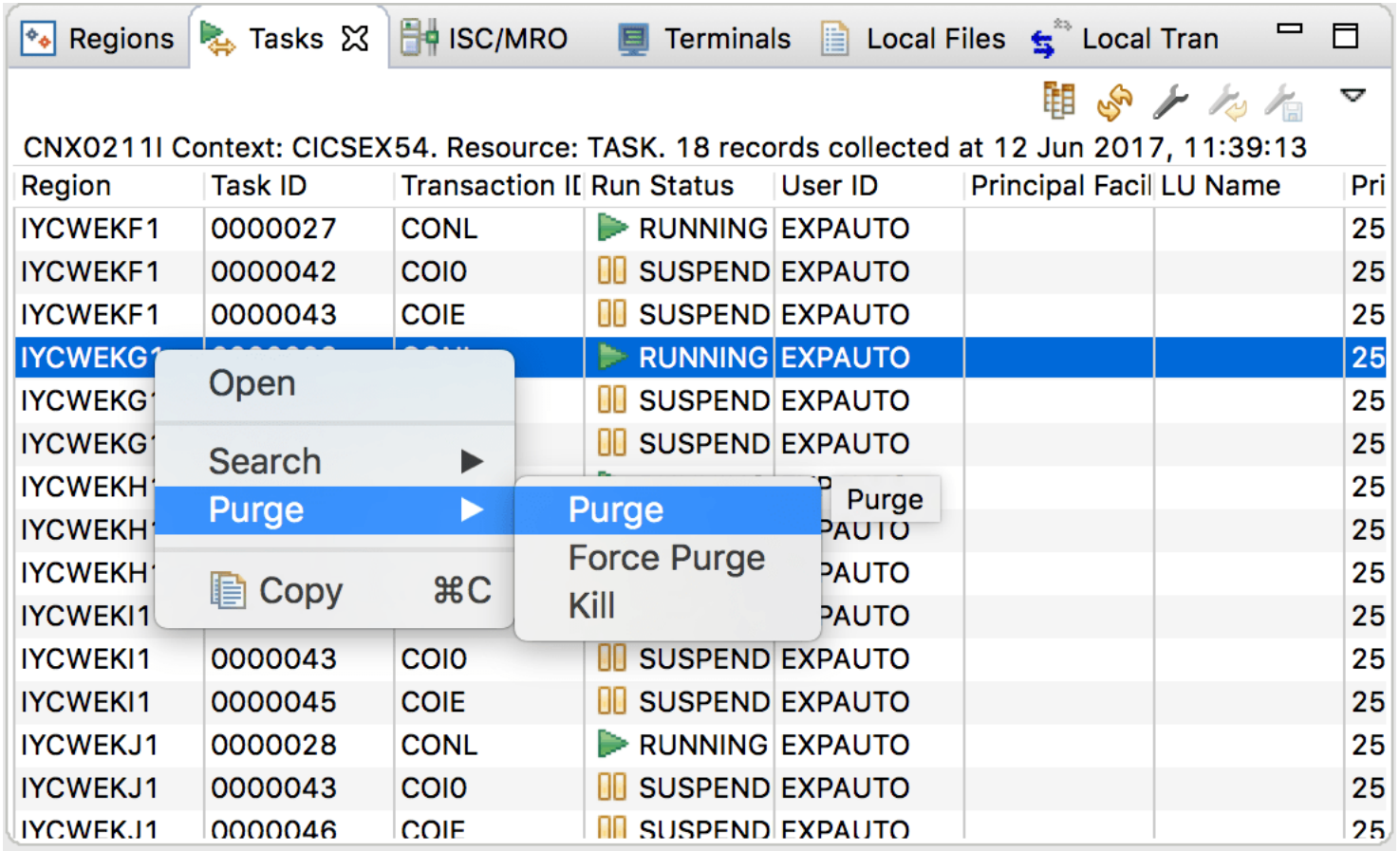
Bundle Life-Cycle Improvements

- Install/Enable and Disable/Discard
- Filtering on install
- Multiple selection
- Hyperlinks





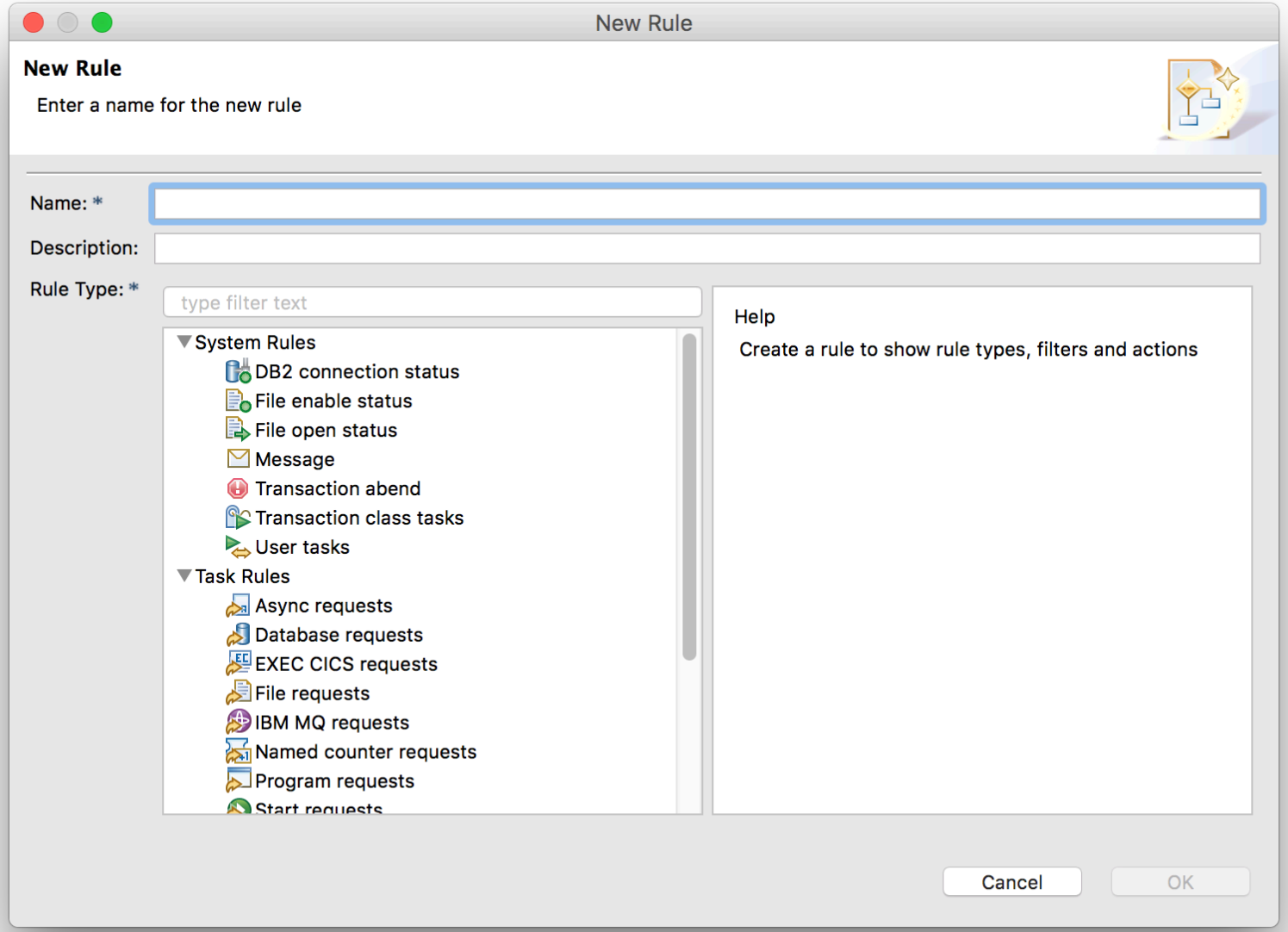
JVM Server and Associated CICS Tasks Improvements



- Remove disruptive tasks from the JVM
- Remove associated threads and tasks in a more orderly sequence when disabling the JVMSERVER.

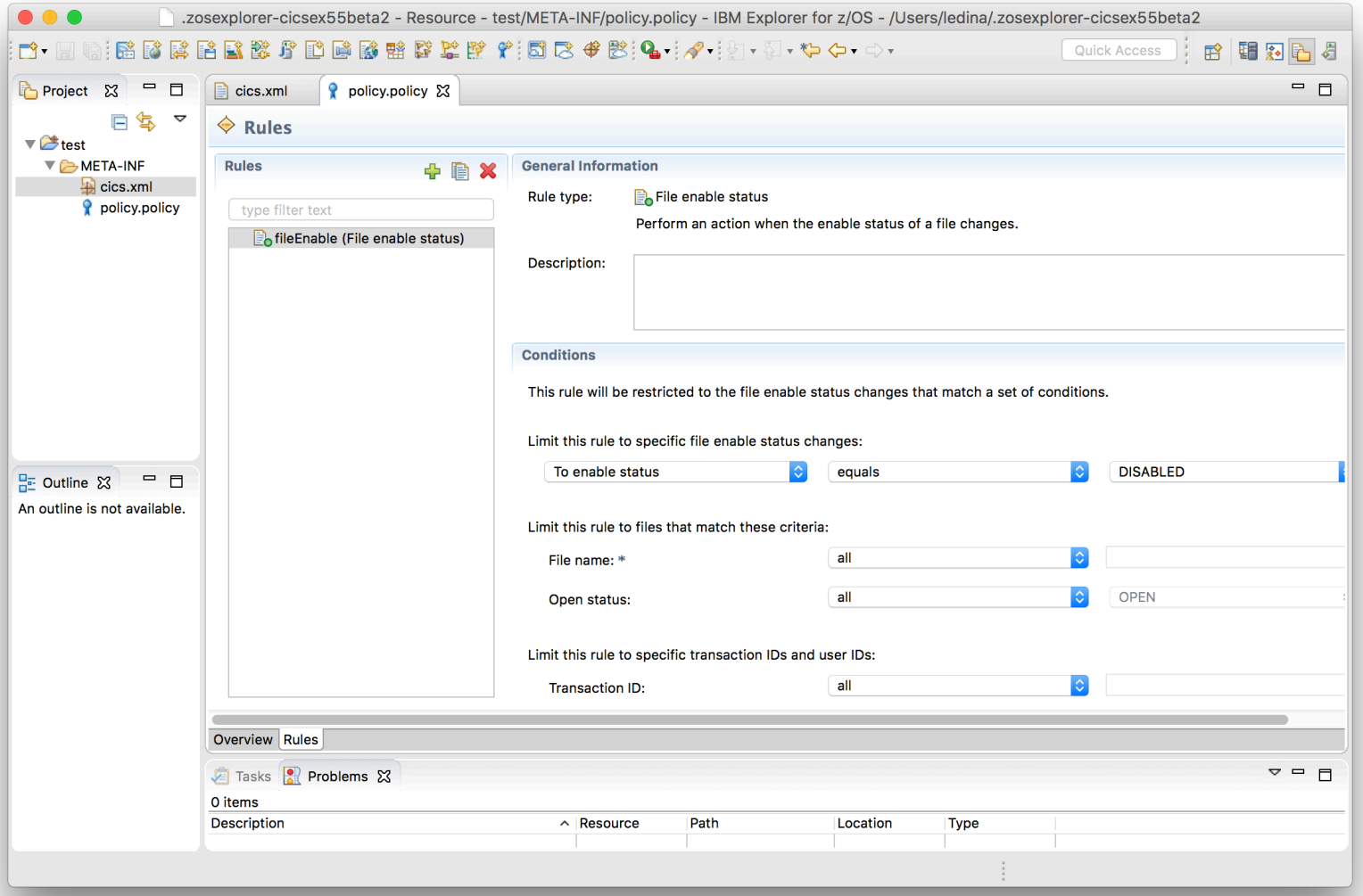
Policy-Based Management: System Rules

- Automated control over critical system resources
- Same capabilities as system events
- Expanded to support a new set of system-based rules



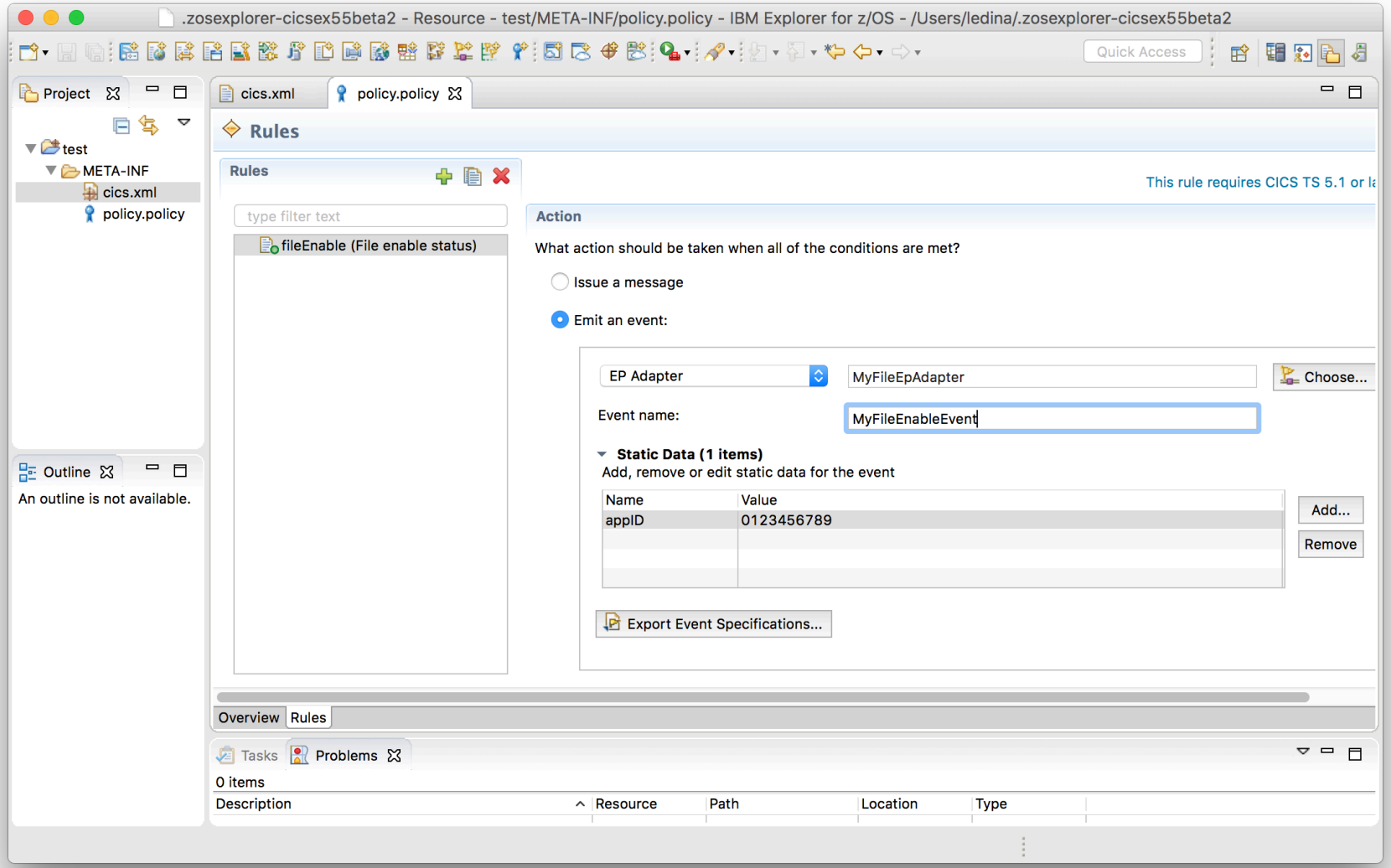
Policy-Based Management: System Rules

- New Policy Rule Editor
- Multiple rules in a policy
- User-defined abend codes



- Each rule specifies:
  - Condition
  - Action

Policy-Based Management: Static Data



- Action section of a policy
- A way of passing information to the event consumer

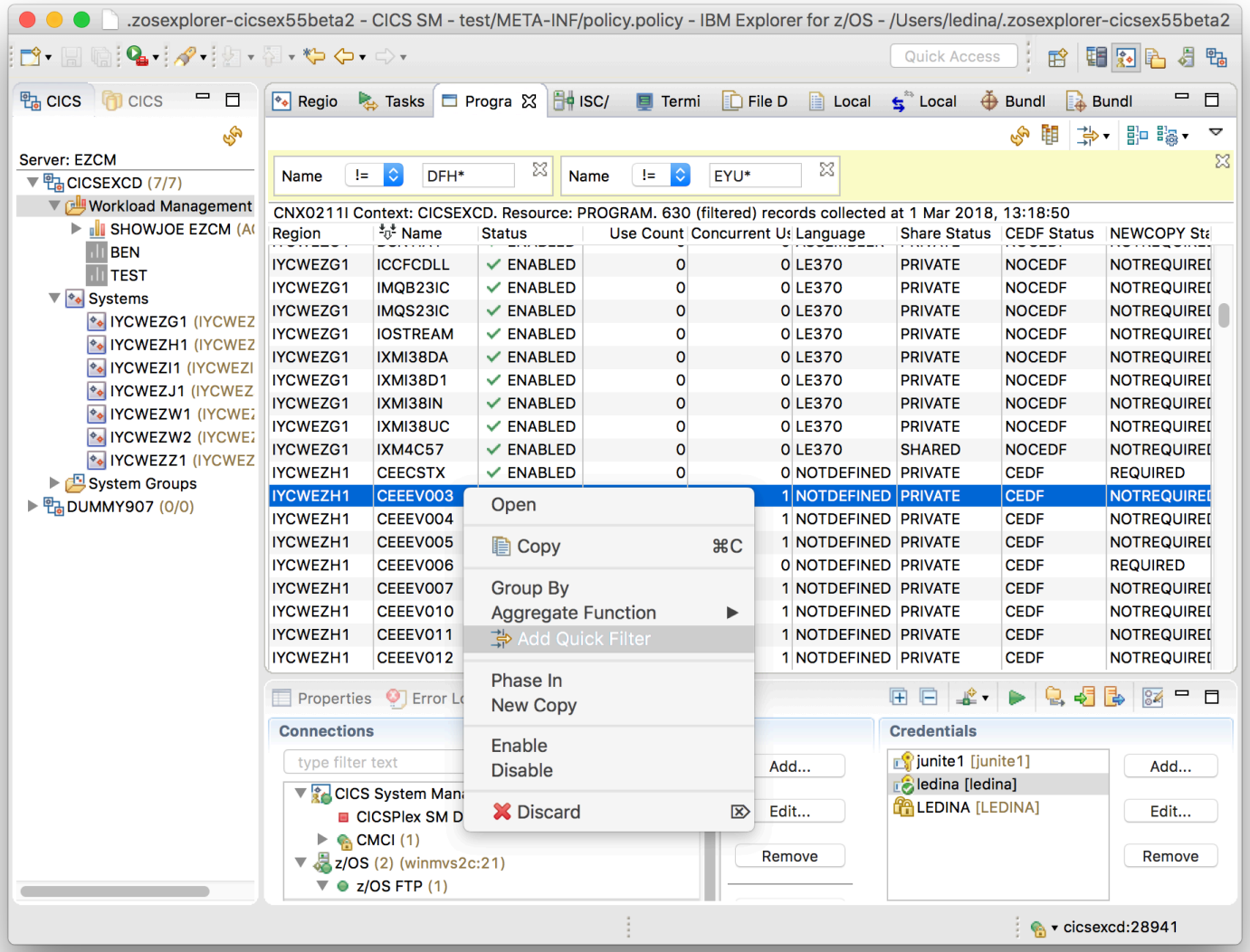
Demo

Scenario 1: File Enable Policy

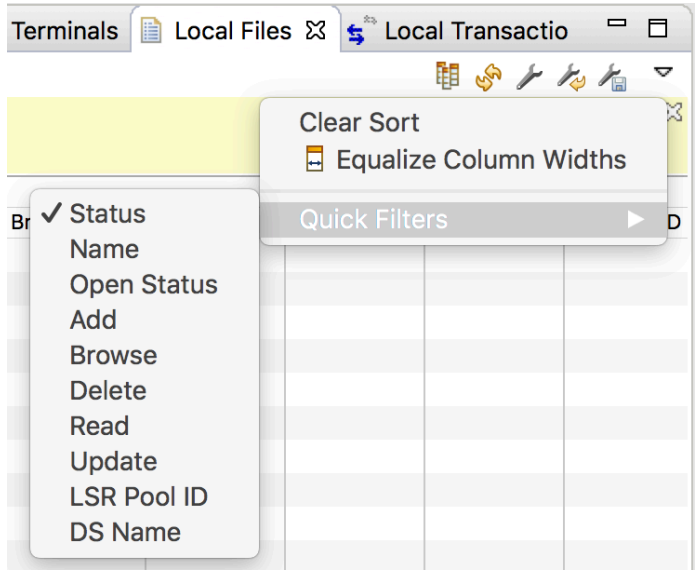
- Stan, the system programer, has identified certain files that are critical to their system.

- He would like to be notified if they ever get DISABLED so he can respond as quickly as possible to fix the issue.

Quick Filters

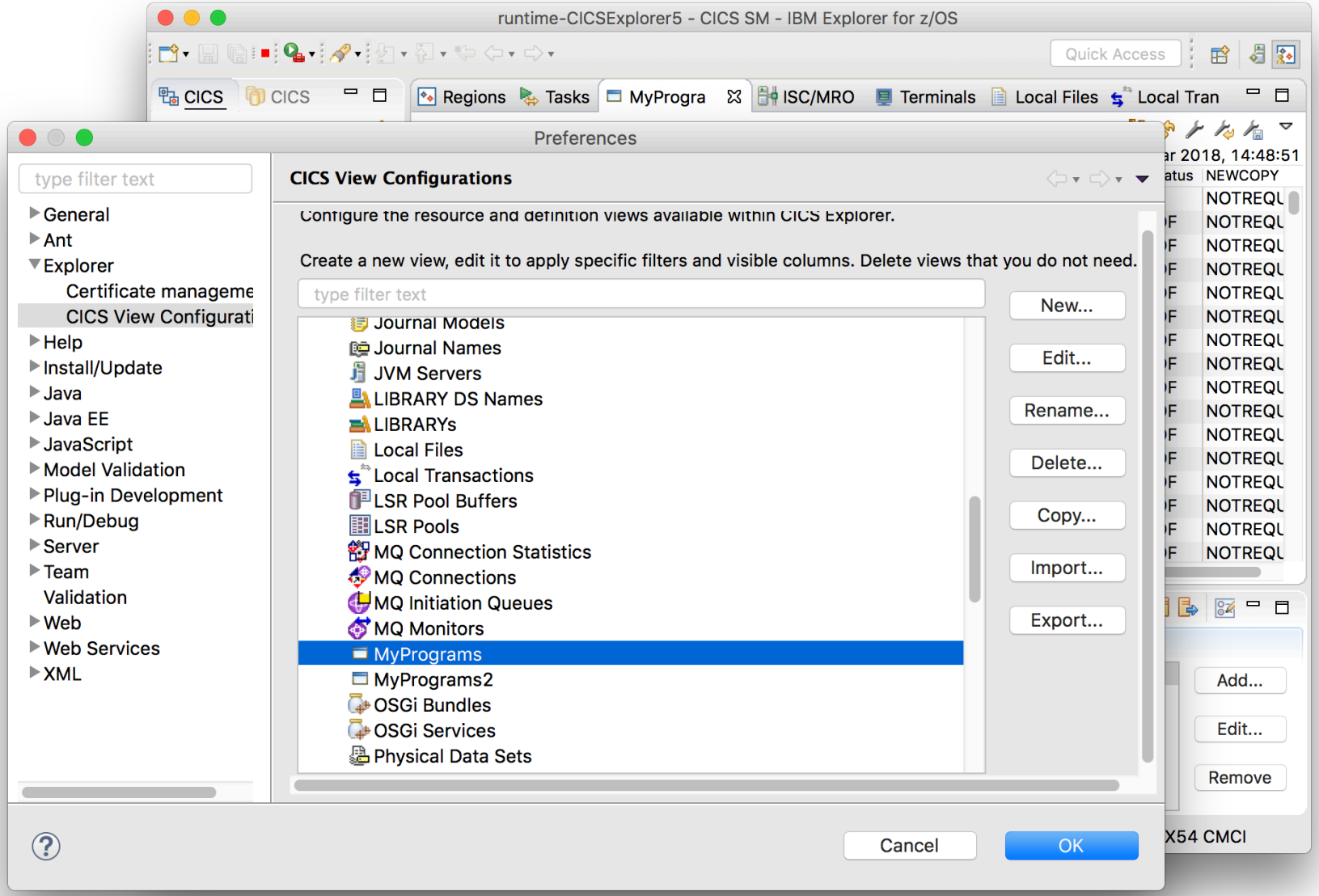


- Drill down to particular data
- Multiple per attribute
- Choice of operators
- Easy to remove



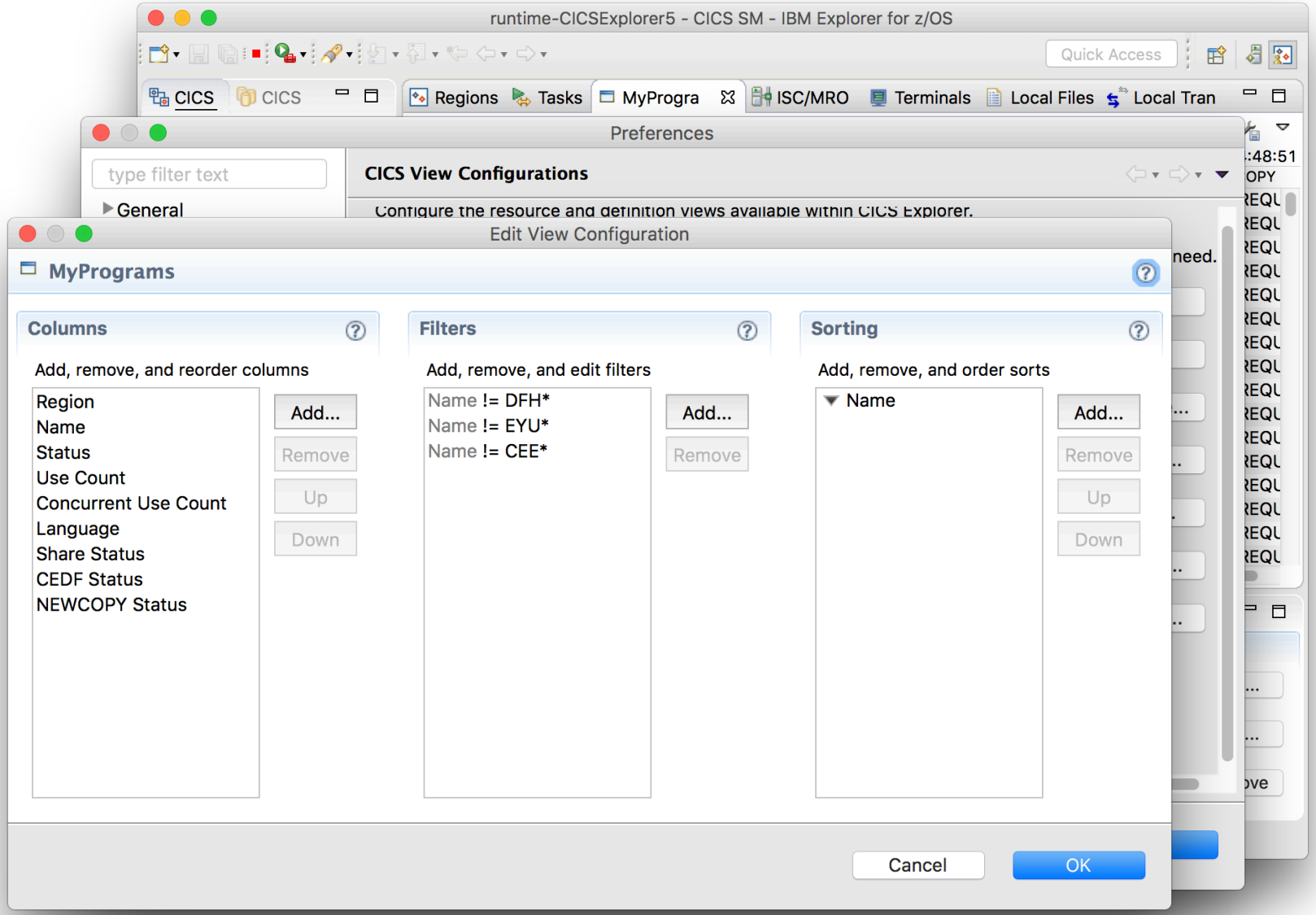
View Customisation

- Create your own
- More than one view per resource type
- Delete views
- Changes applied to menus and quick access also

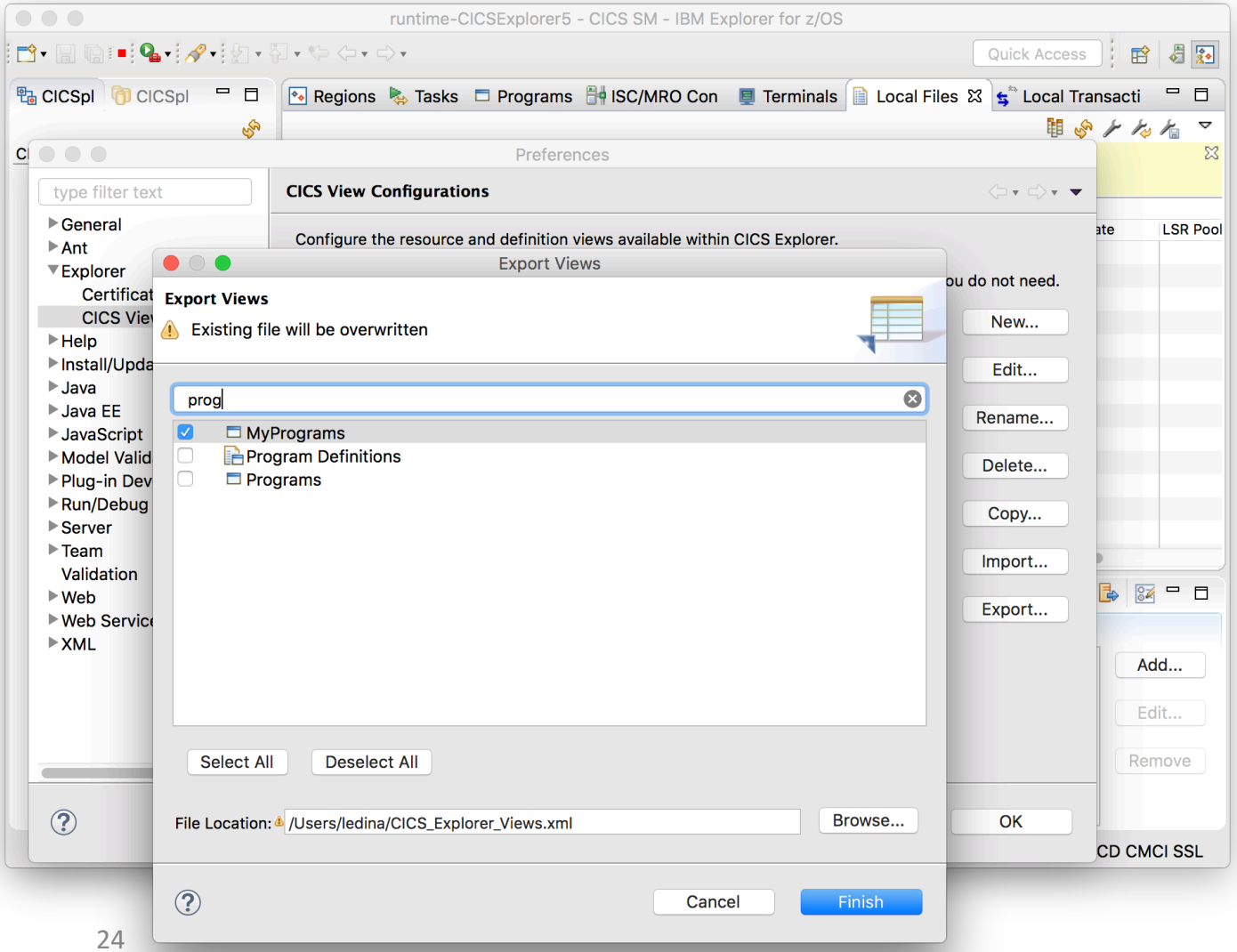


View Customisation

- Customize
  - Columns
  - Filters
  - Sorts
- Choice of operators for filters (not just “equals”)
- Sort directions



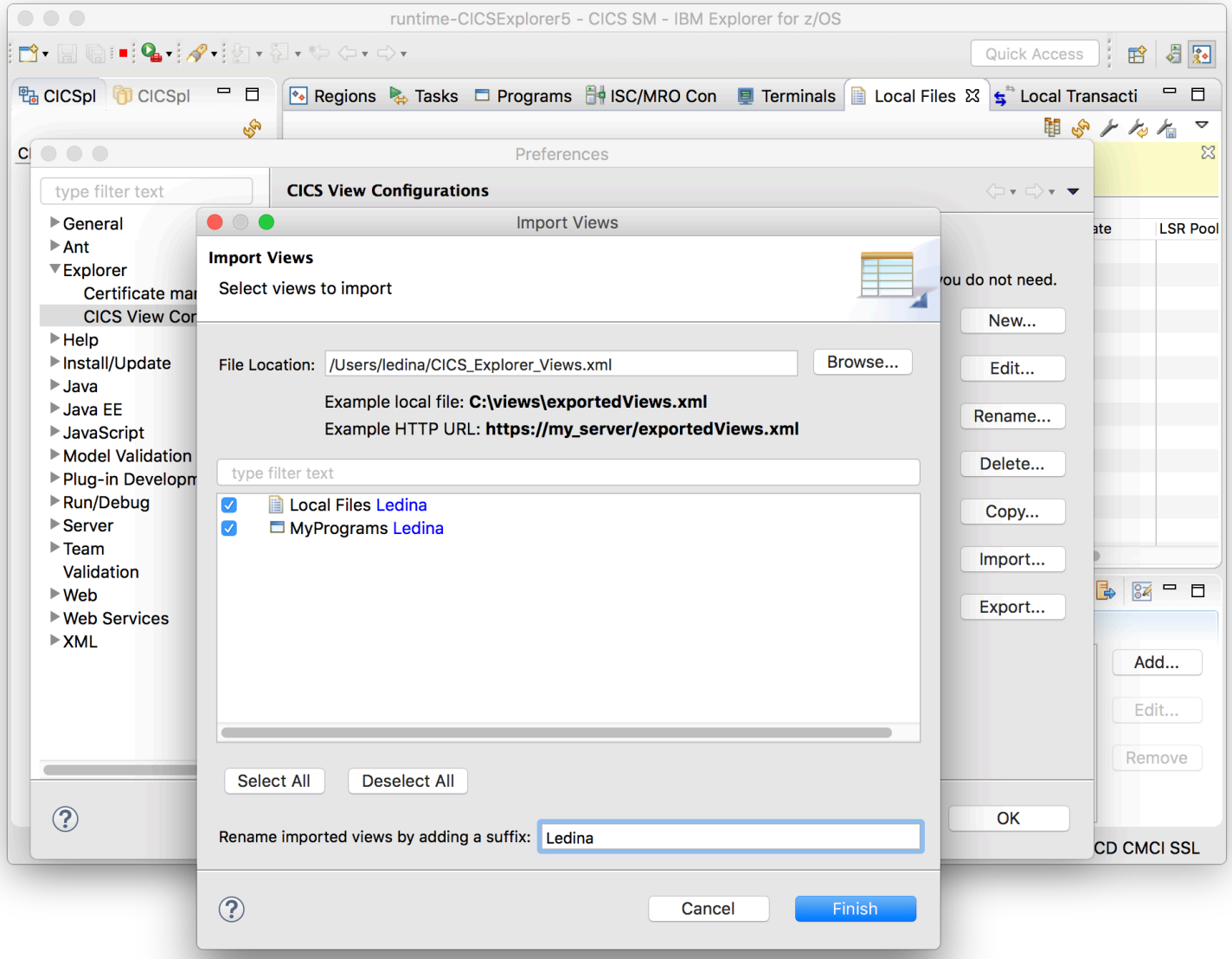
View Sharing: Export



- Enable sharing across teams
- Setting up new starters with views useful for their tasks
- Back-up purposes
- Choose what to export

View Sharing: Import

- Imported into CICS Explorer instances either as:
  - A file OR
  - From a central Web server
- Customise name on import
  - Avoids clashes



Demo

Scenario 1: Customising and Sharing Views

- Stan, the senior system programmer, has noticed there are certain operations on some views he performs over and over again. He wants to save them so he doesn’t have to manually do them each time.

- Julian, joined the team as a junior system programmer. Stan shares his customised views with Julian, so Julian has all he needs to perform his everyday tasks.

What's Even Newer: CICS TS 5.5

- We want CICS Explorer 5.5 to be your go-to interface for CICS system management instead of the Web UI

- Find the bits that are missing, and bring them to Explorer in a way that's natural for a rich desktop product

Our Goal

"A system programmer no longer needs to configure and deploy the WUI, because the capabilities he needs are better in CICS Explorer "

Aggregation

- Take a set of data and perform some analysis on it to make it easier to spot discrepancies
- Divide records into groups where the values of certain attributes match
- Within a group, perform analysis on the values of attributes that don’t match

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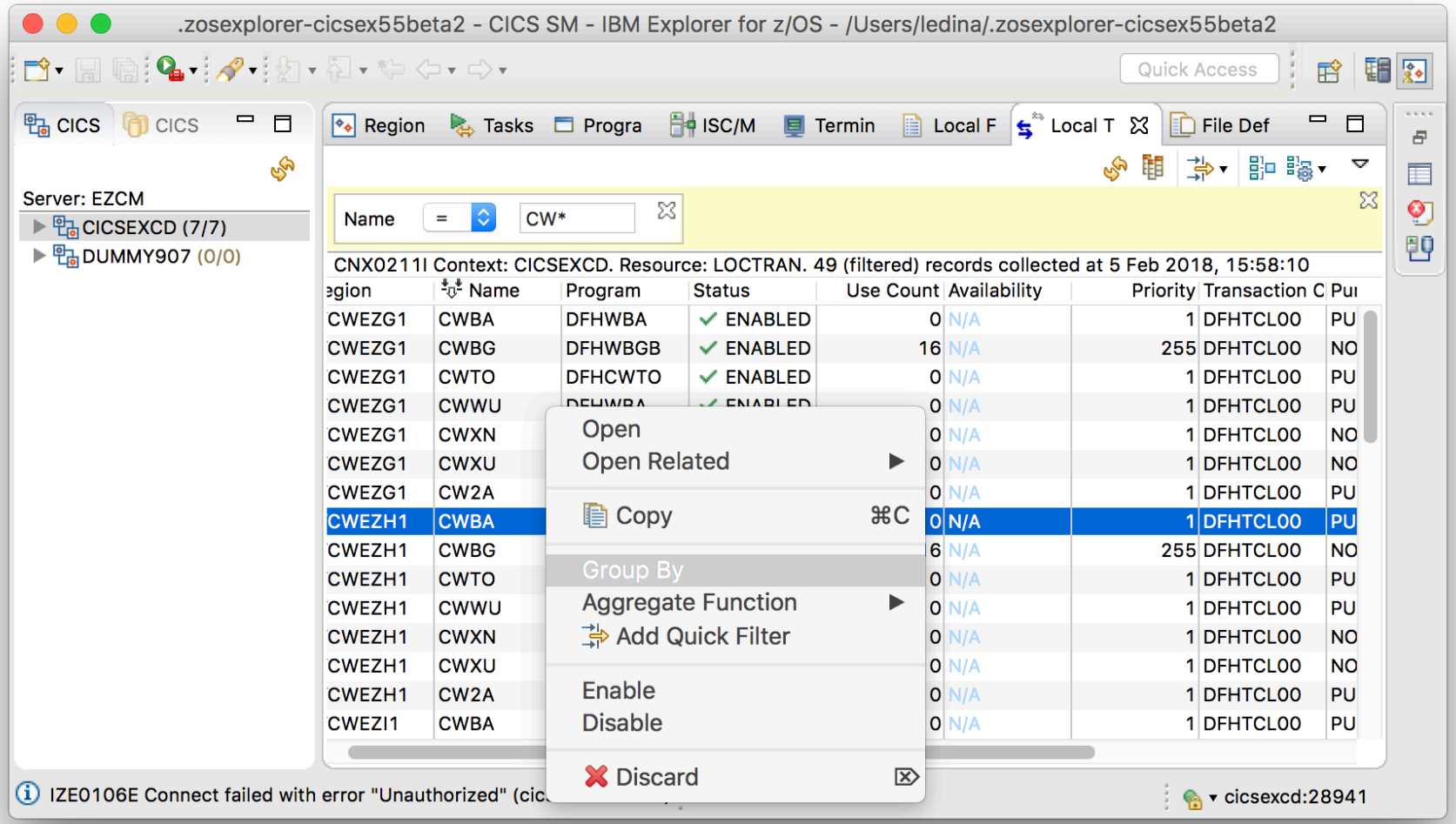
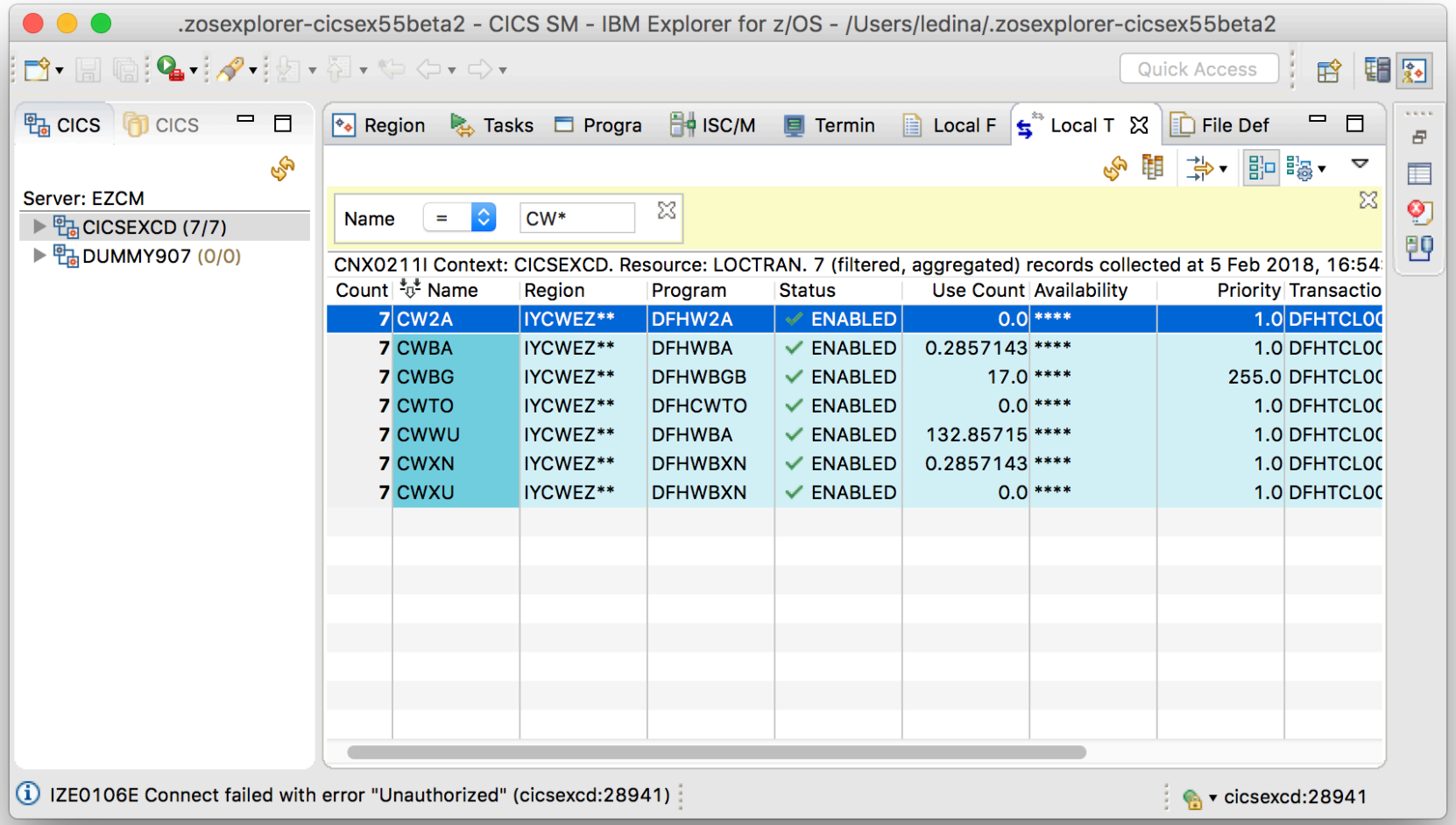
Grouping



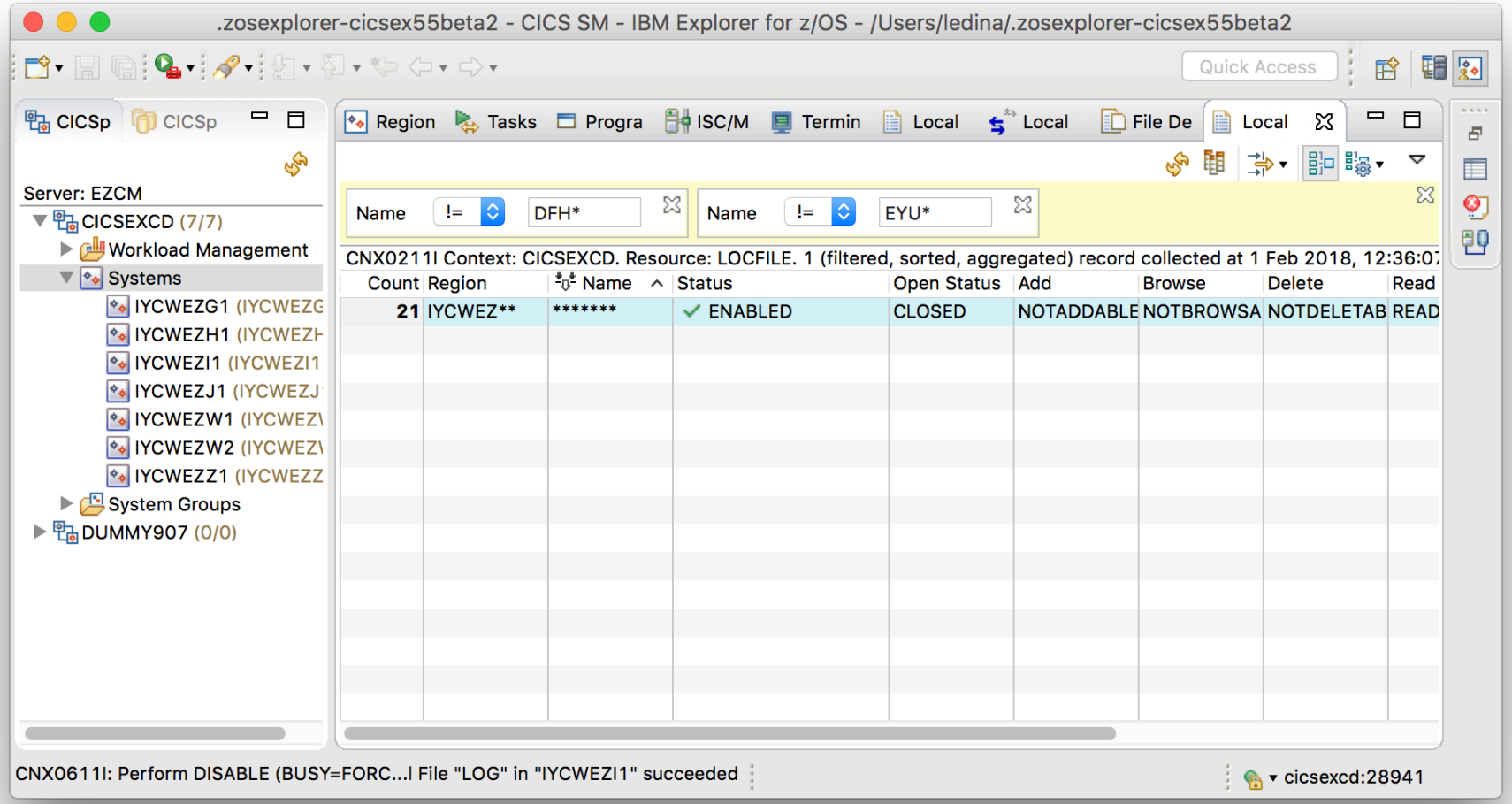
- Similar to summarise in WUI
- More powerful

Grouping



- Grouped columns in darker shade
- Other columns aggregated
- Stars (*) show differences
- Count column shows number of resources aggregated in each row

Aggregation



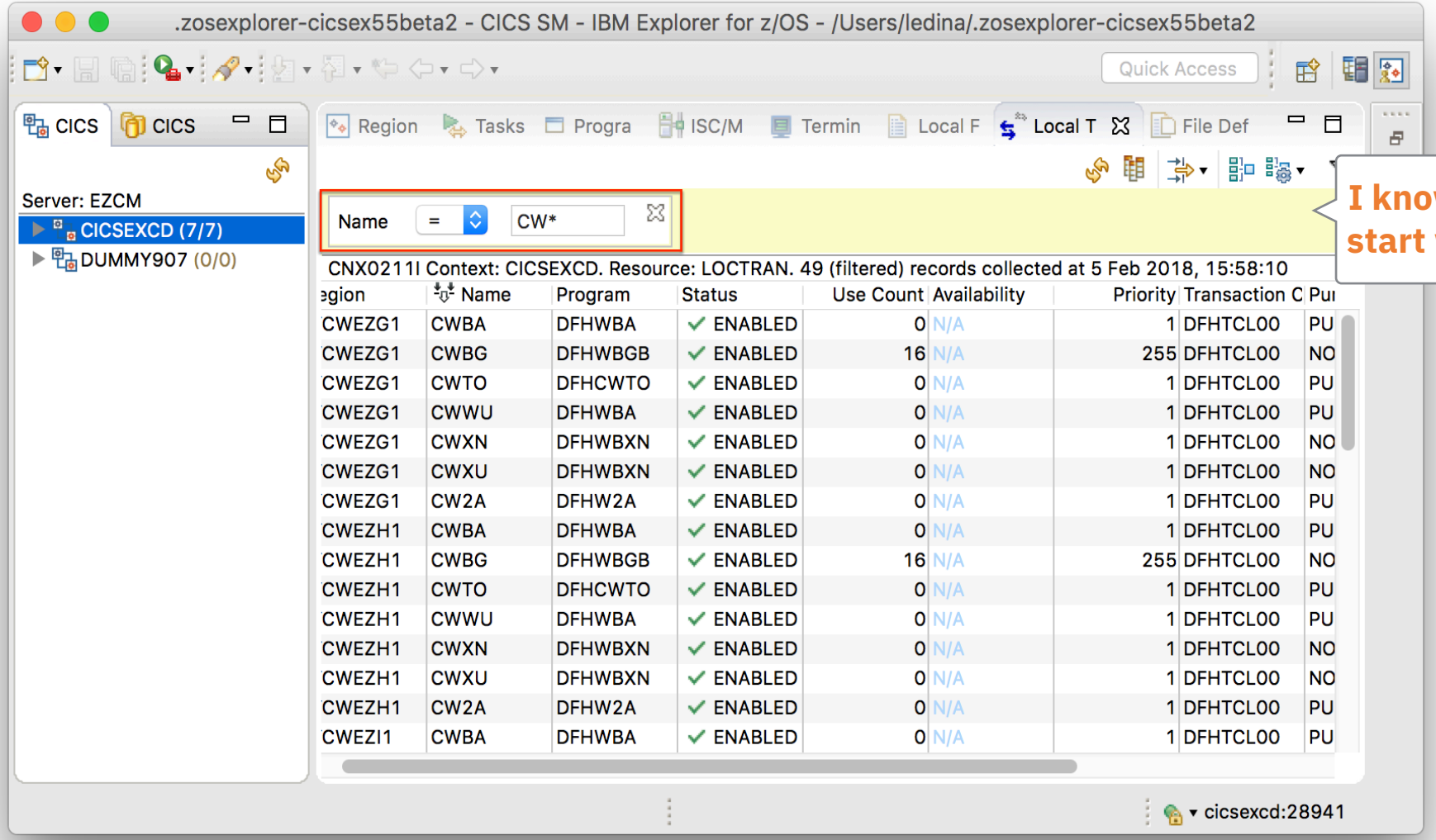
- No group
- All fields are aggregated
- Good for spotting anomalies

DEMO

Scenario 2: Something Wrong With a Transaction

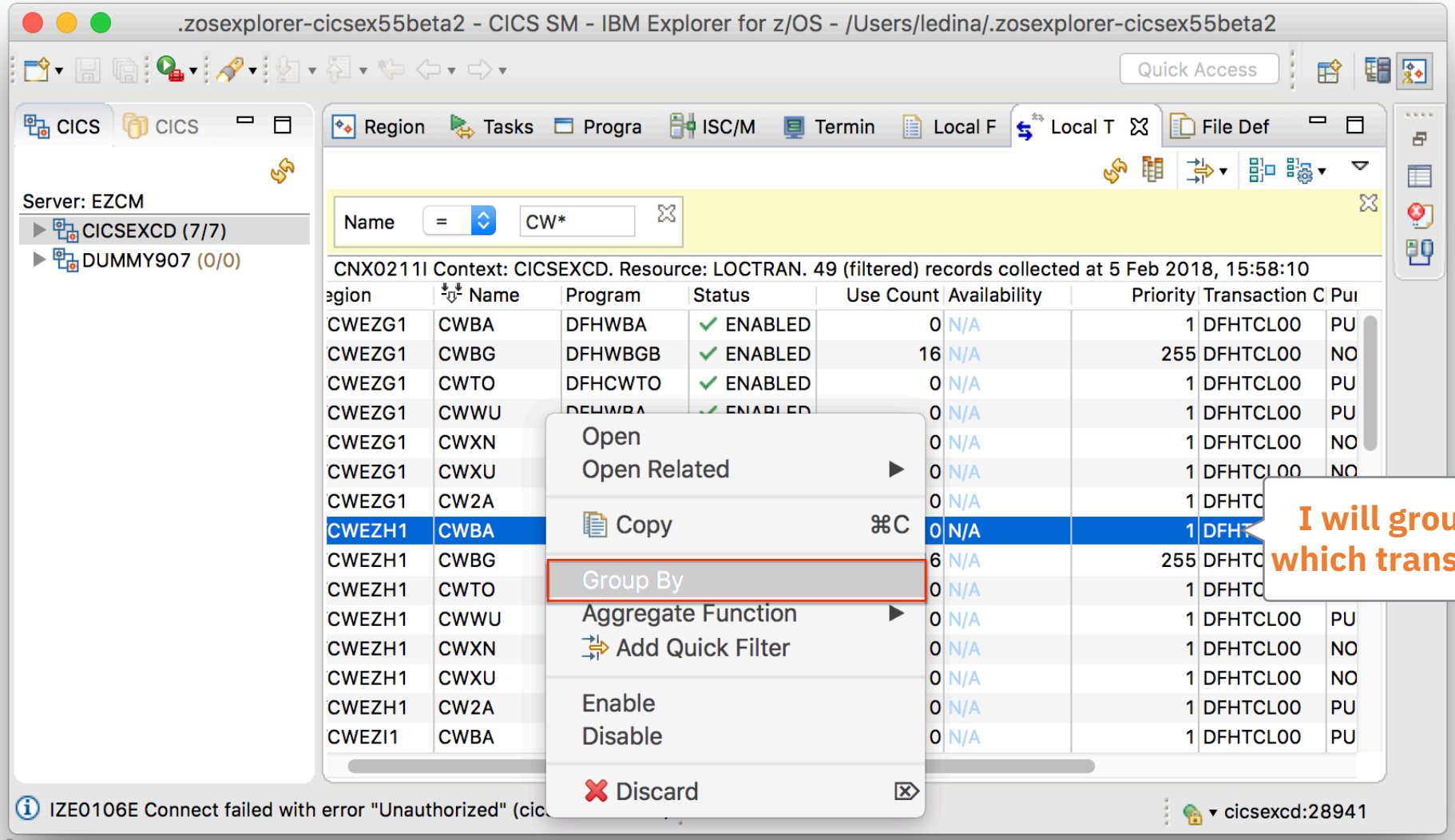
- Annette, the operations analyst, has seen some anomalies and performance issues with an application running in the system.
- The error message suggests there is an issue with a transaction.
- Annette contacts Stan, the system programmer, and informs him of the problem

Scenario 3: Something Wrong With a Transaction



I know the transactions for that app start with CW so lets see add a filter

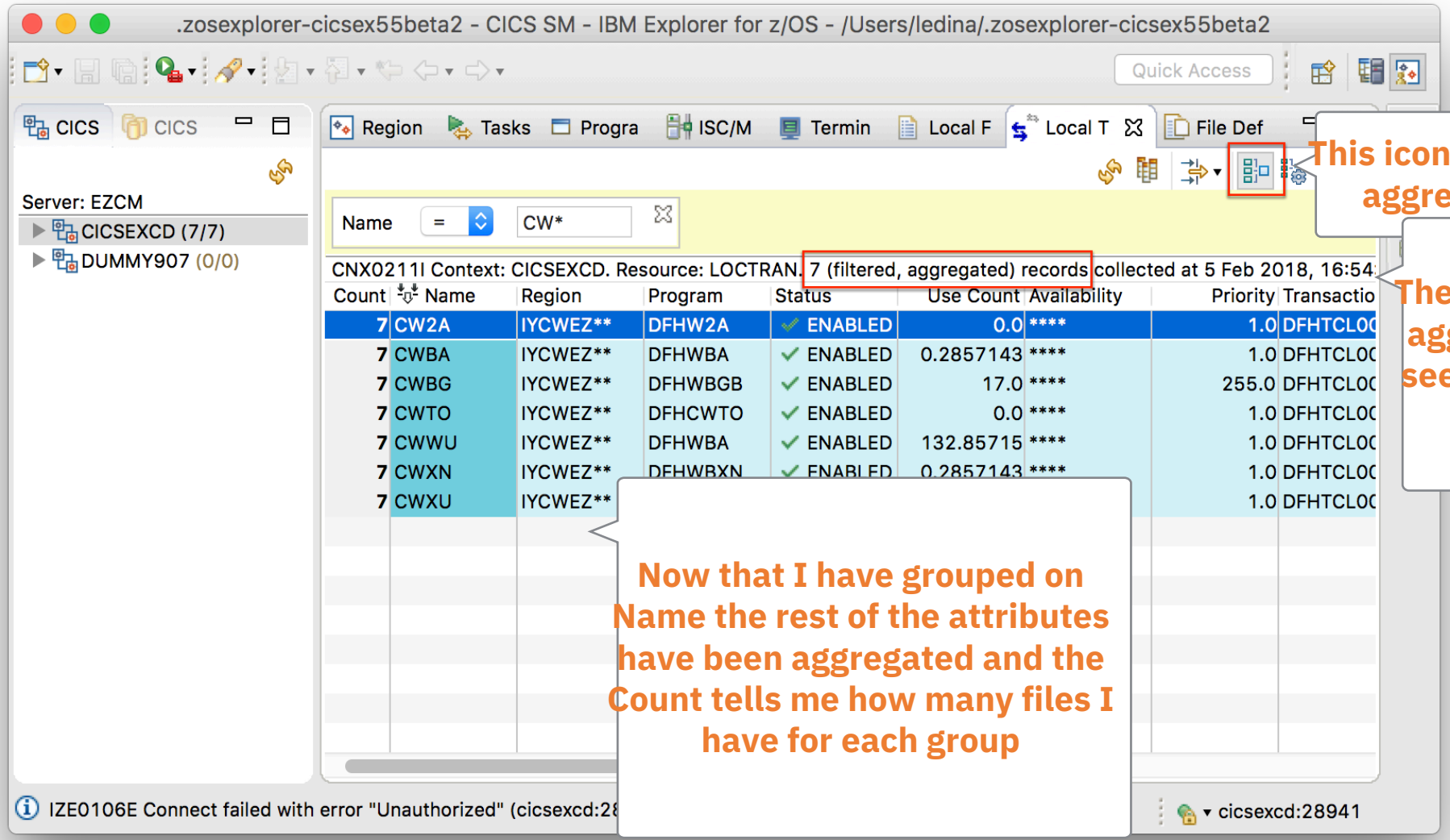
Scenario 3: Something Wrong With a Transaction



Region	Name	Program	Status	Use Count	Availability	Priority	Transaction C	Pu
CWEZG1	CWBA	DFHWBA	ENABLED	0	N/A	1	DFHTCL00	PU
CWEZG1	CWBG	DFHWBGB	ENABLED	16	N/A	255	DFHTCL00	NO
CWEZG1	CWTO	DFHCWTO	ENABLED	0	N/A	1	DFHTCL00	PU
CWEZG1	CWWU			0	N/A	1	DFHTCL00	PU
CWEZG1	CWXN			0	N/A	1	DFHTCL00	NO
CWEZG1	CWXU			0	N/A	1	DFHTCL00	NO
CWEZG1	CW2A			0	N/A	1	DFHTC	
CWEZH1	CWBA			0	N/A	1	DFHT	
CWEZH1	CWBG			6	N/A	255	DFHTC	
CWEZH1	CWTO			0	N/A	1	DFHTC	
CWEZH1	CWWU			0	N/A	1	DFHTCL00	PU
CWEZH1	CWXN			0	N/A	1	DFHTCL00	NO
CWEZH1	CWXU			0	N/A	1	DFHTCL00	NO
CWEZH1	CW2A			0	N/A	1	DFHTCL00	PU
CWEZI1	CWBA			0	N/A	1	DFHTCL00	PU

I will group by the Name so I can see which transaction might have a problem

Scenario 3: Something Wrong With a Transaction

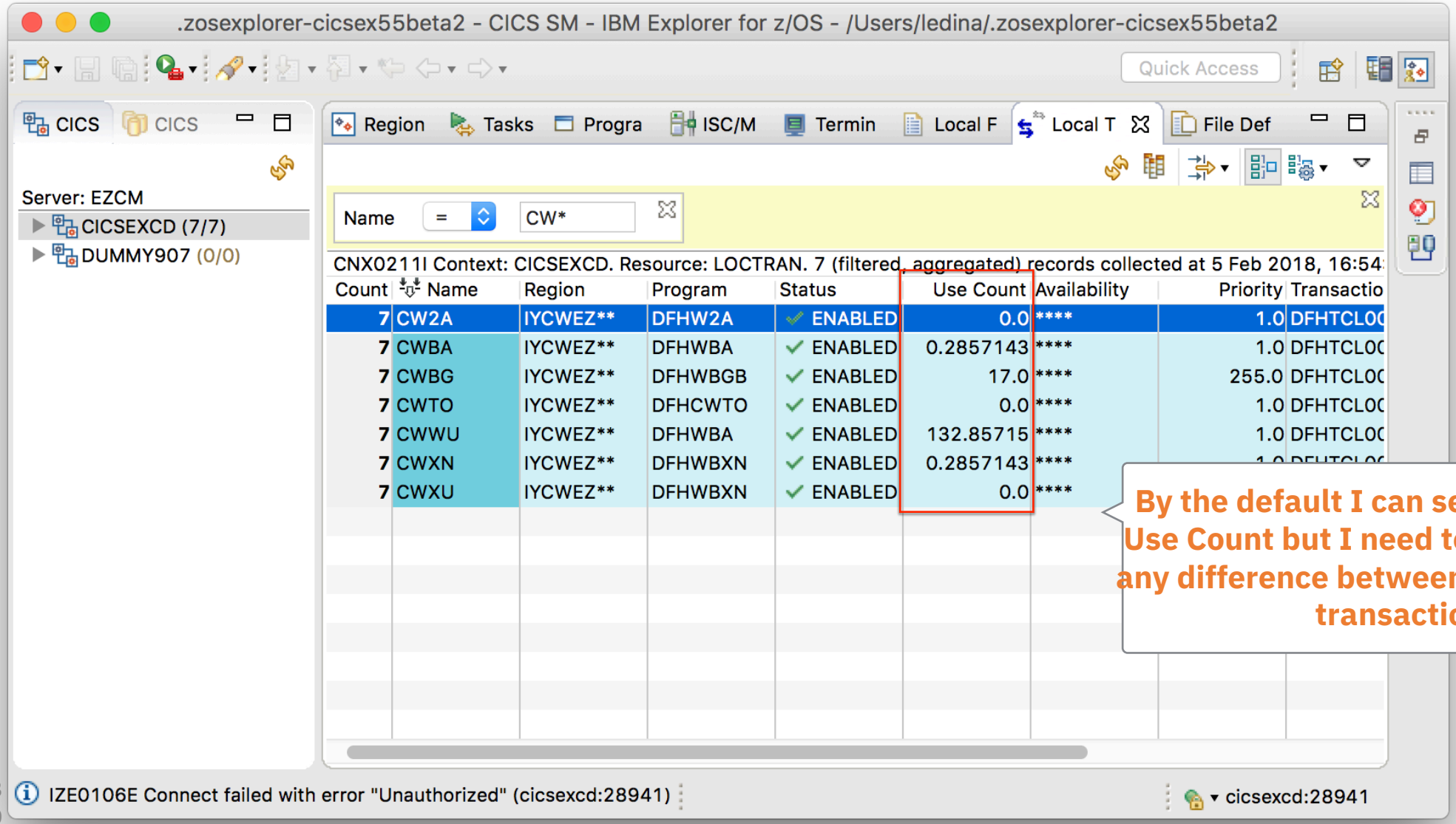


This icon tells me I am in aggregation mode

The status bar also tells me that I am aggregated and if I hover on it I can see what I am grouped on as well as my filters and sorts

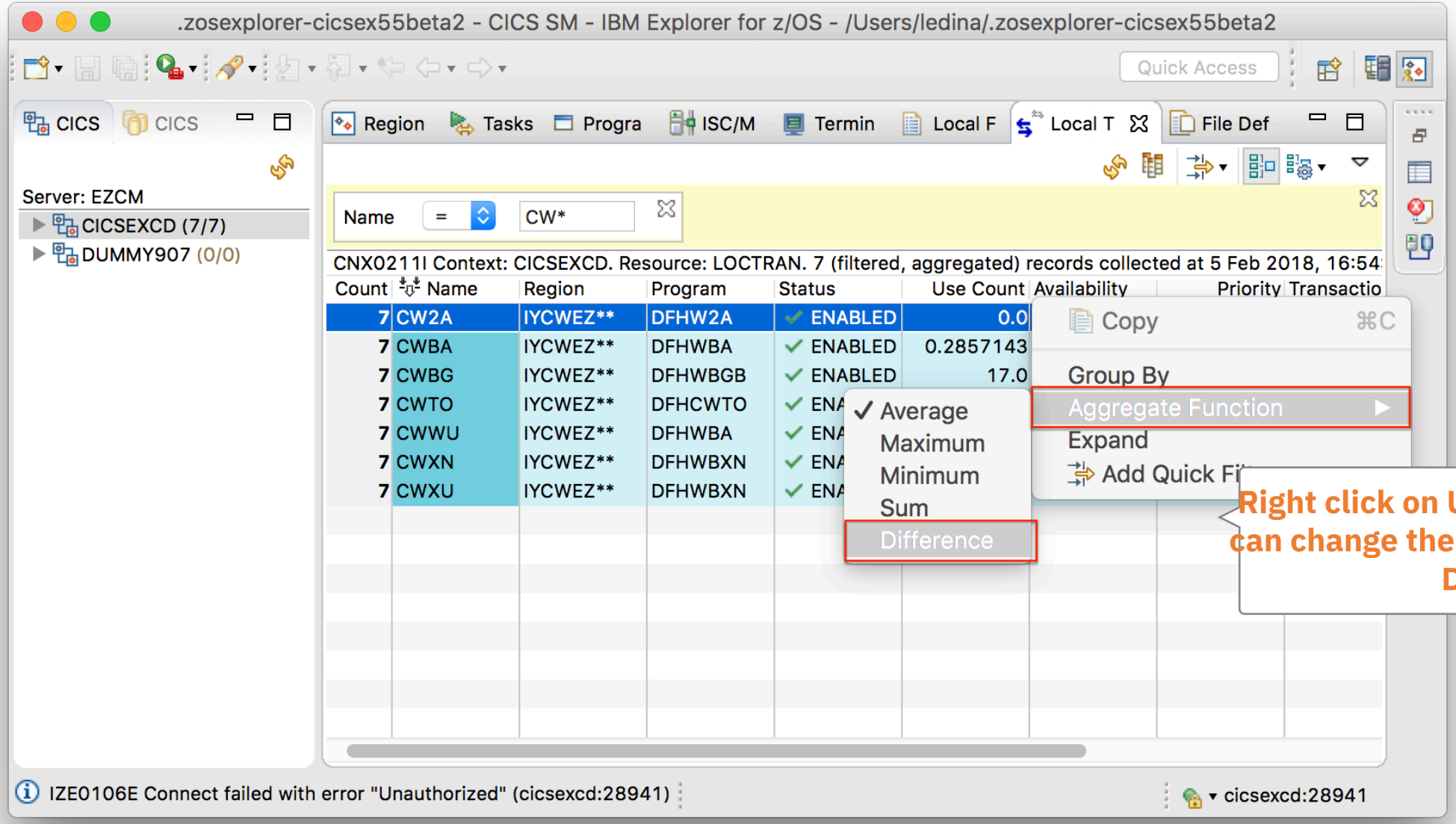
Now that I have grouped on Name the rest of the attributes have been aggregated and the Count tells me how many files I have for each group

Scenario 3: Something Wrong With a Transaction



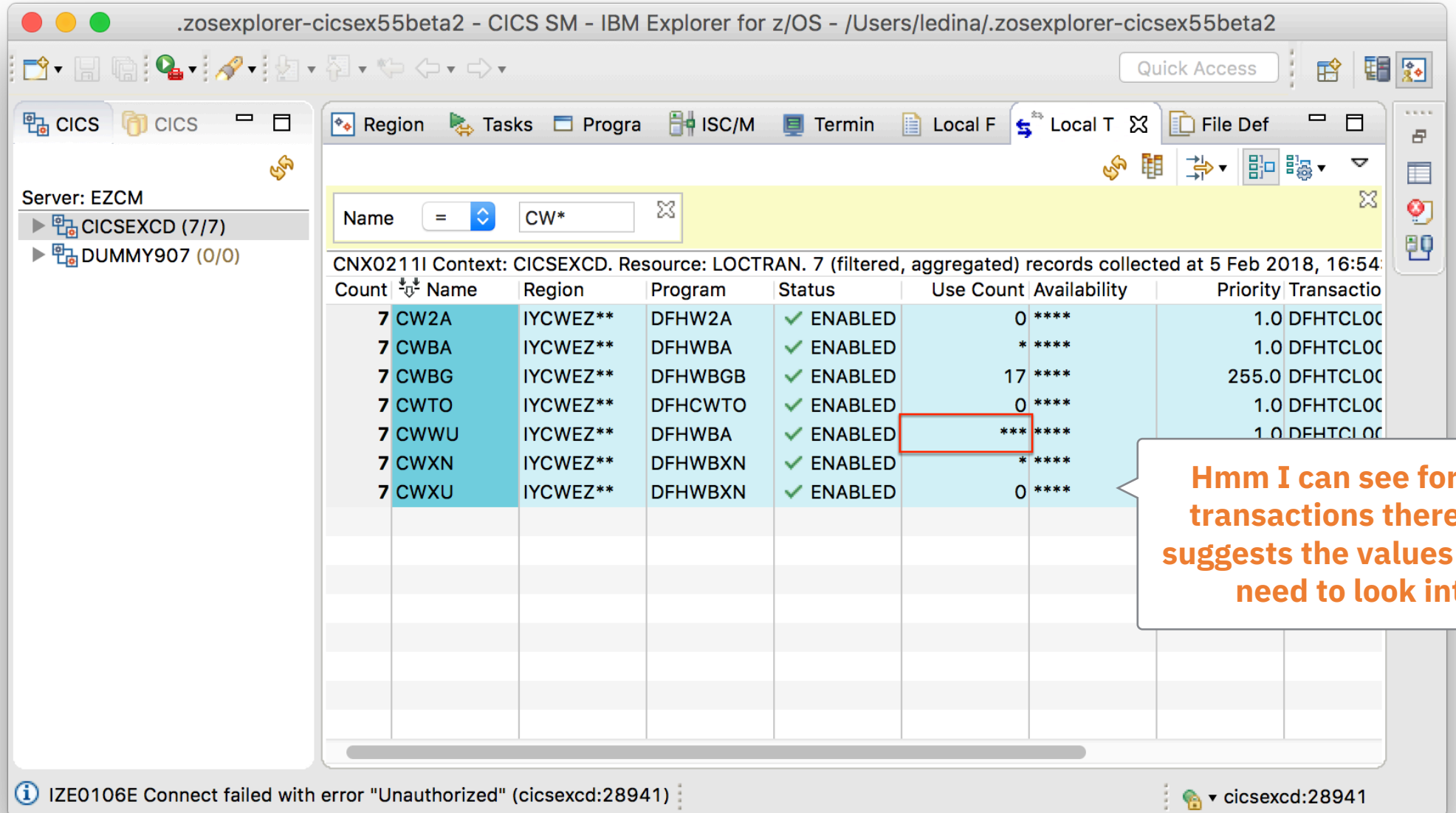
By the default I can see the average Use Count but I need to see if there is any difference between the values per transaction

Scenario 3: Something Wrong With a Transaction



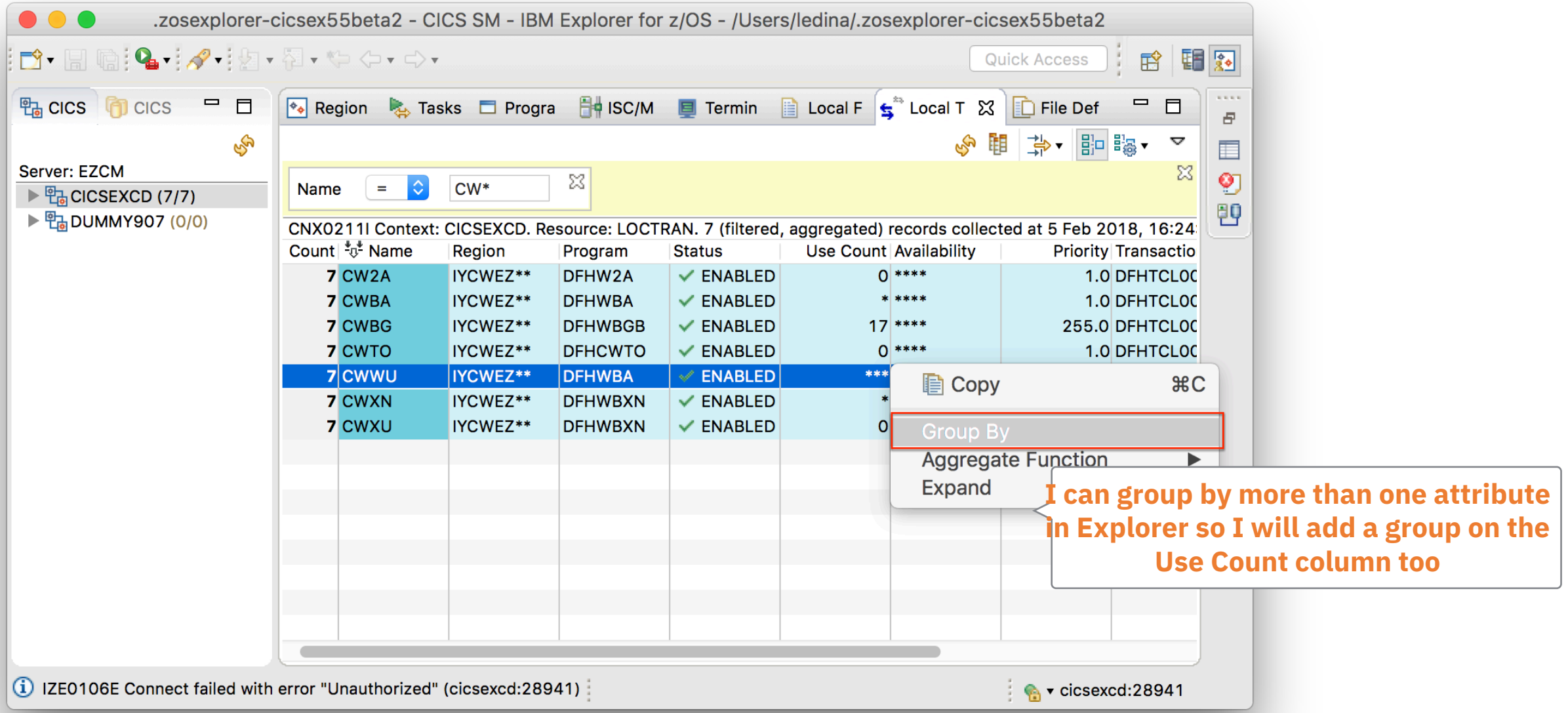
Right click on Use Count column and I can change the aggregation function to Difference

Scenario 3: Something Wrong With a Transaction

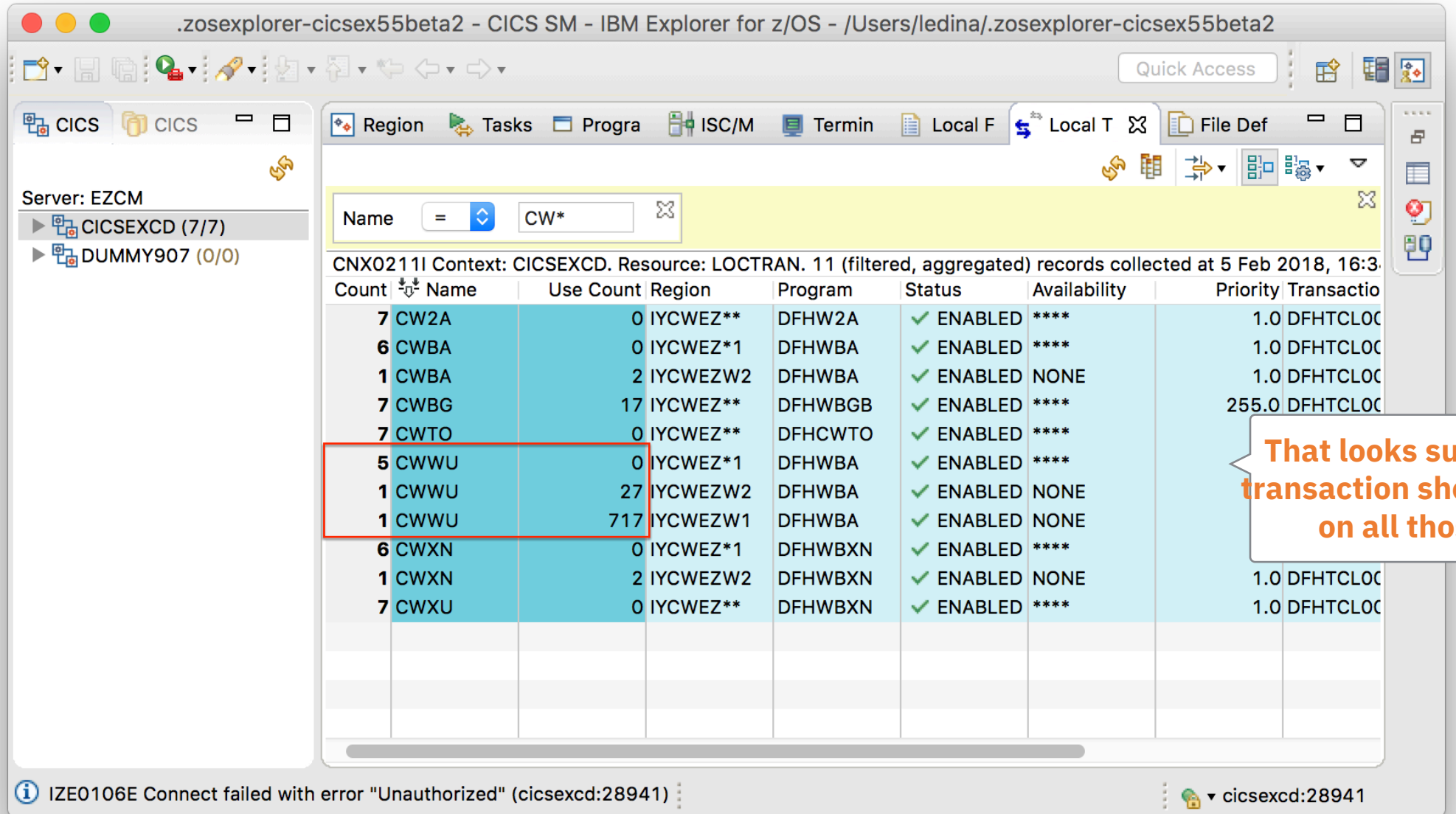


Hmm I can see for some of the transactions there are * which suggests the values are different - need to look into it more

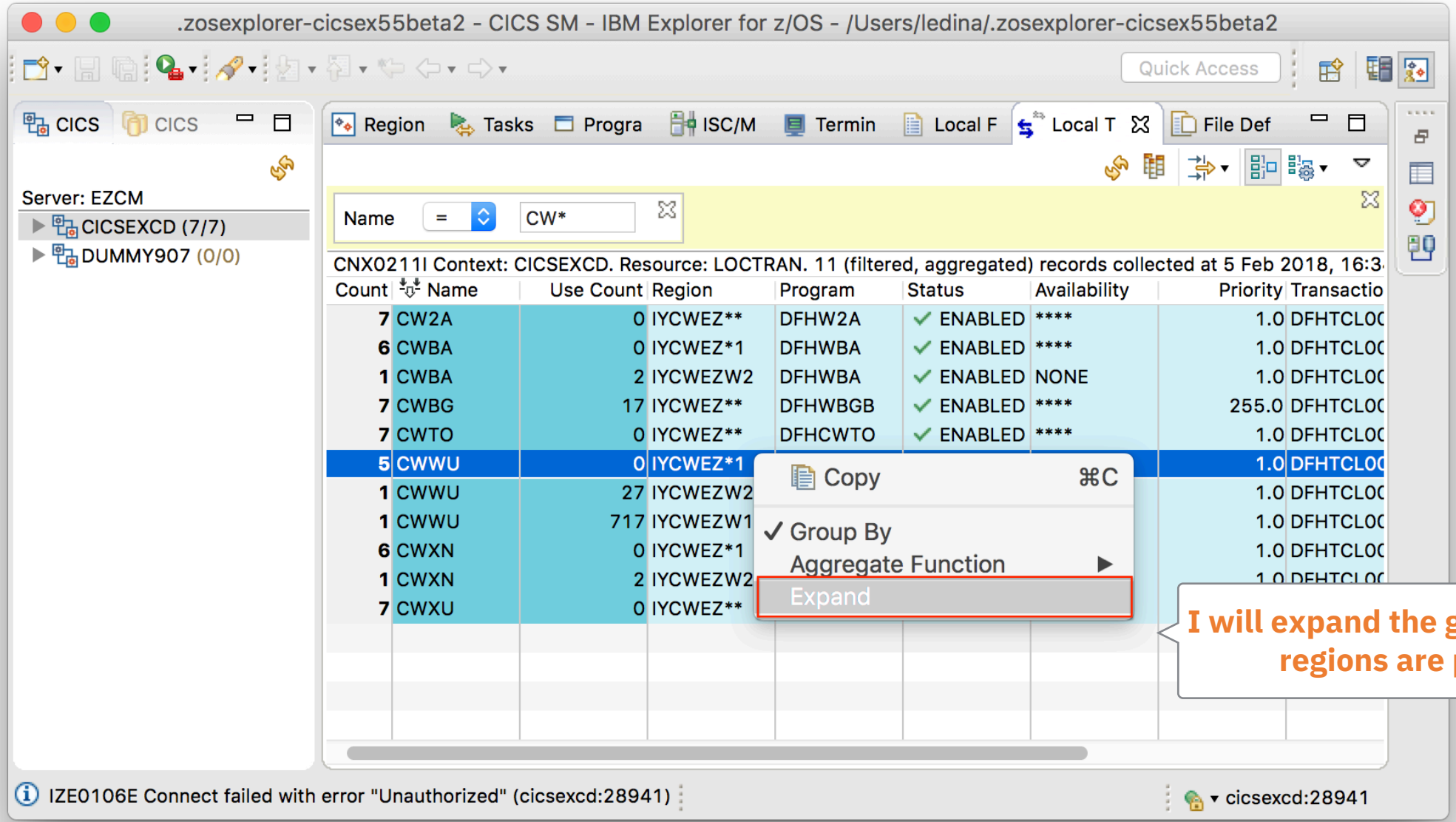
Scenario 3: Something Wrong With a Transaction



Scenario 3: Something Wrong With a Transaction

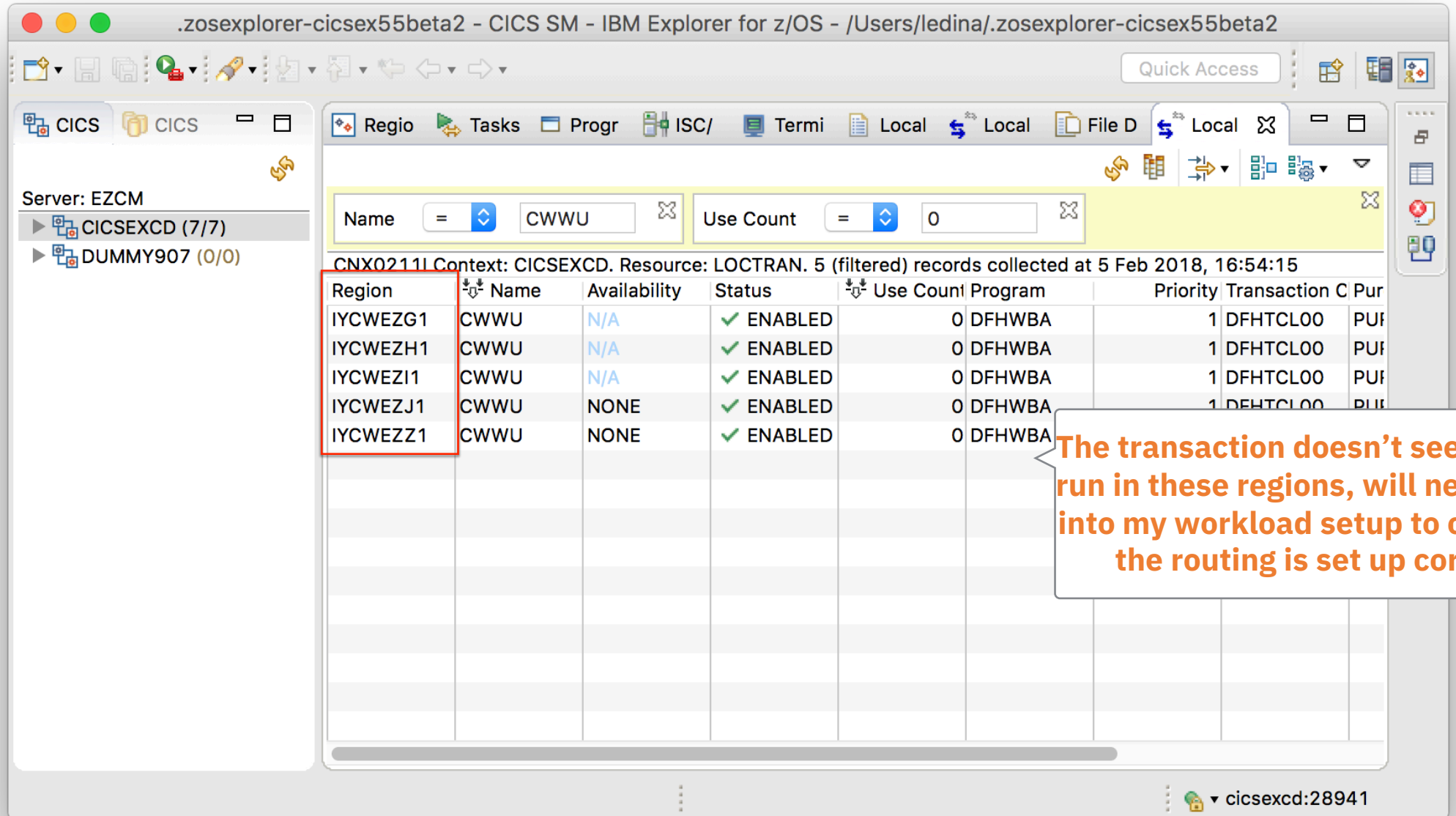


Scenario 3: Something Wrong With a Transaction

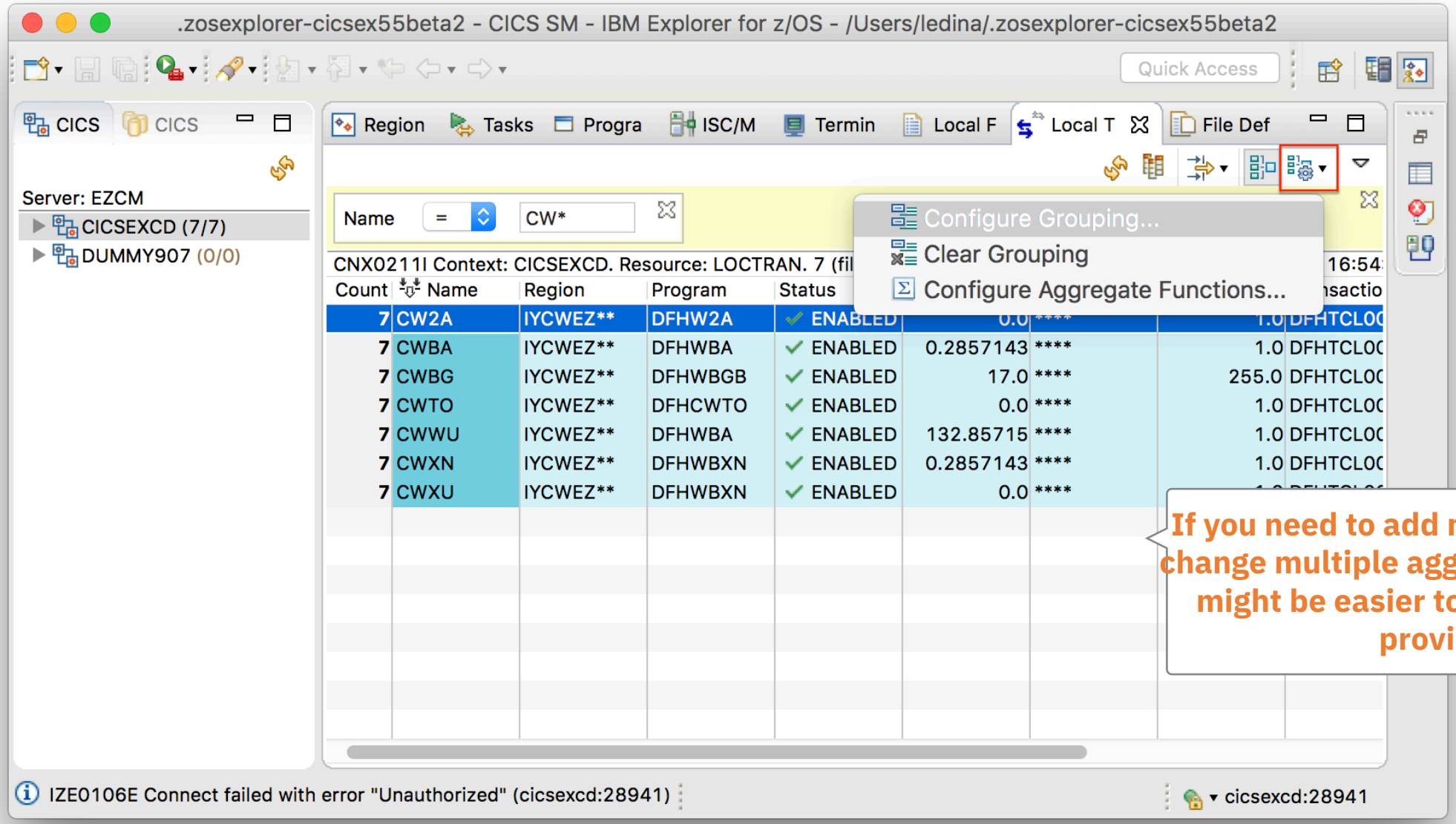


I will expand the group to see which regions are problematic

Scenario 3: Something Wrong With a Transaction

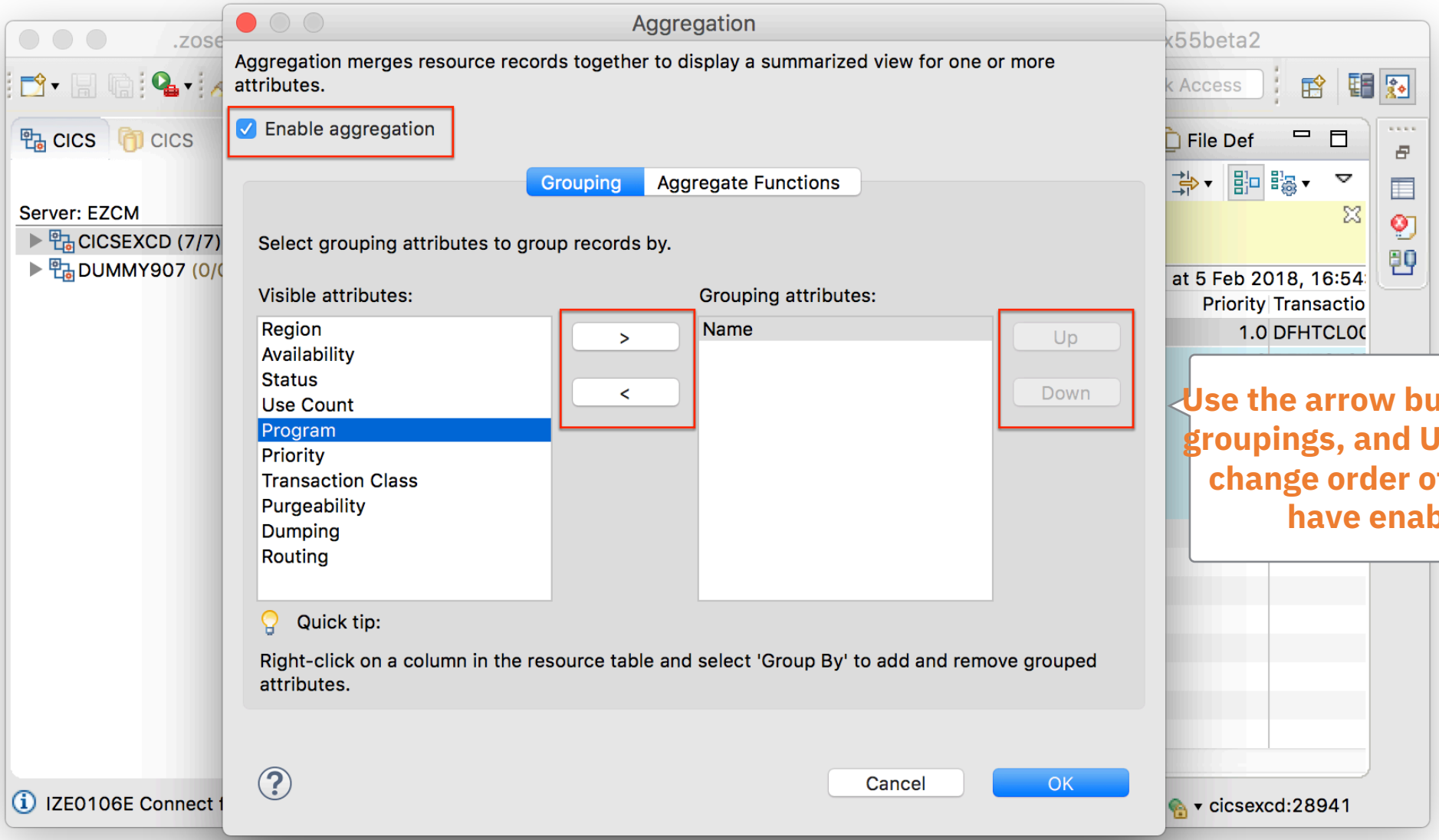


Making Multiple Changes



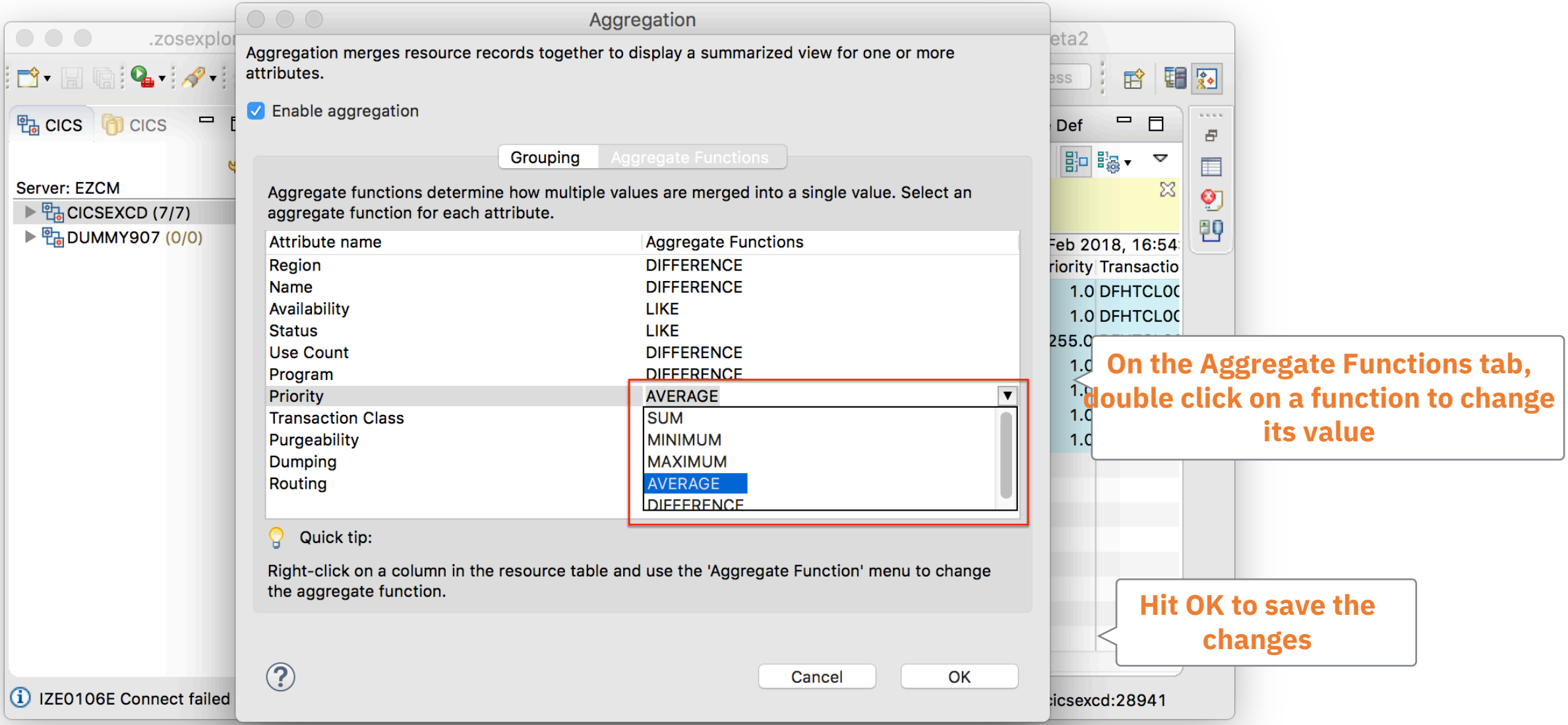
If you need to add multiple groups or change multiple aggregate functions it might be easier to use the dialogs provided

Making Multiple Changes

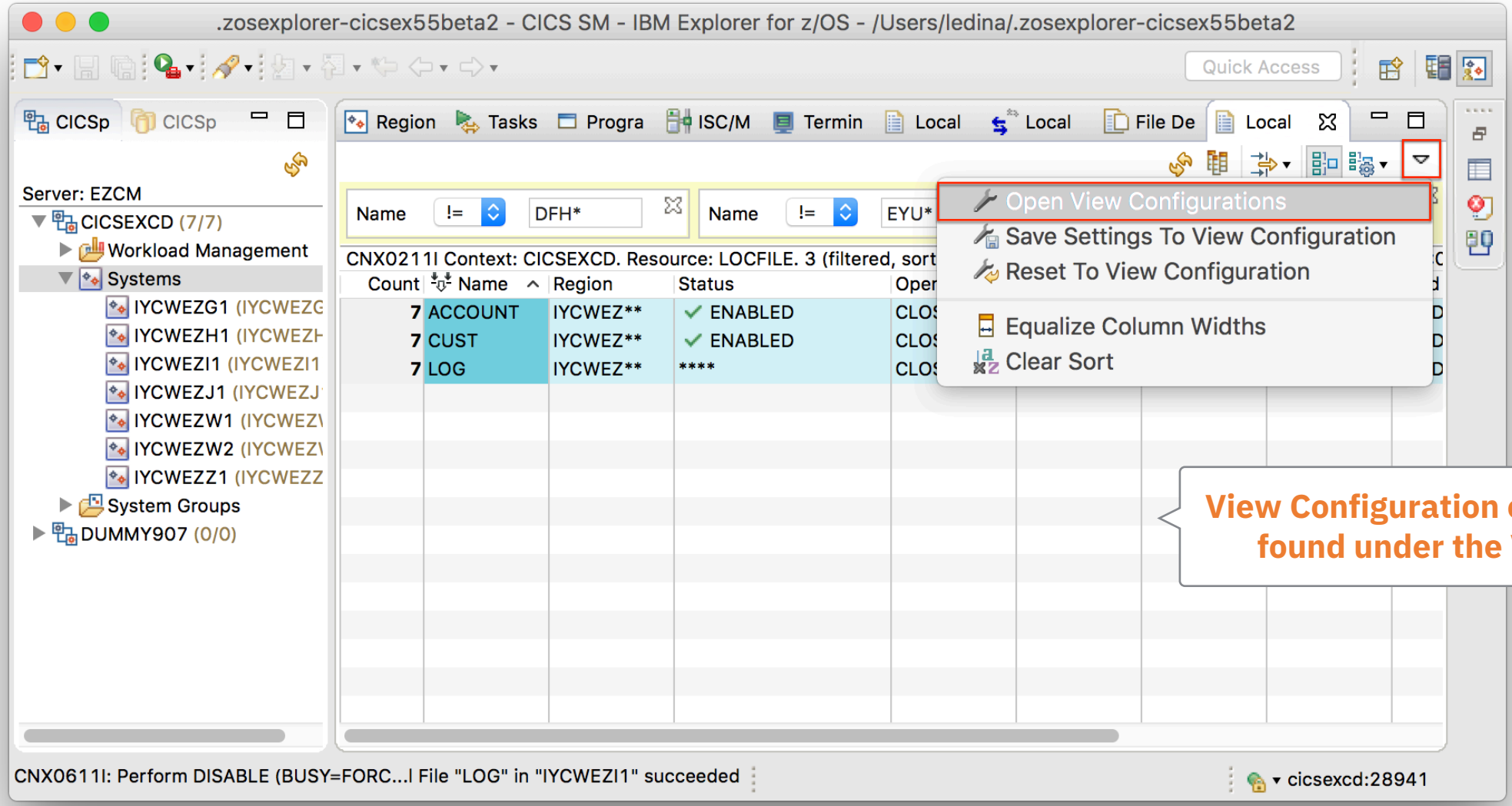


Use the arrow buttons to add or remove groupings, and Up and Down buttons to change order of groupings, once you have enabled aggregation

Making Multiple Changes

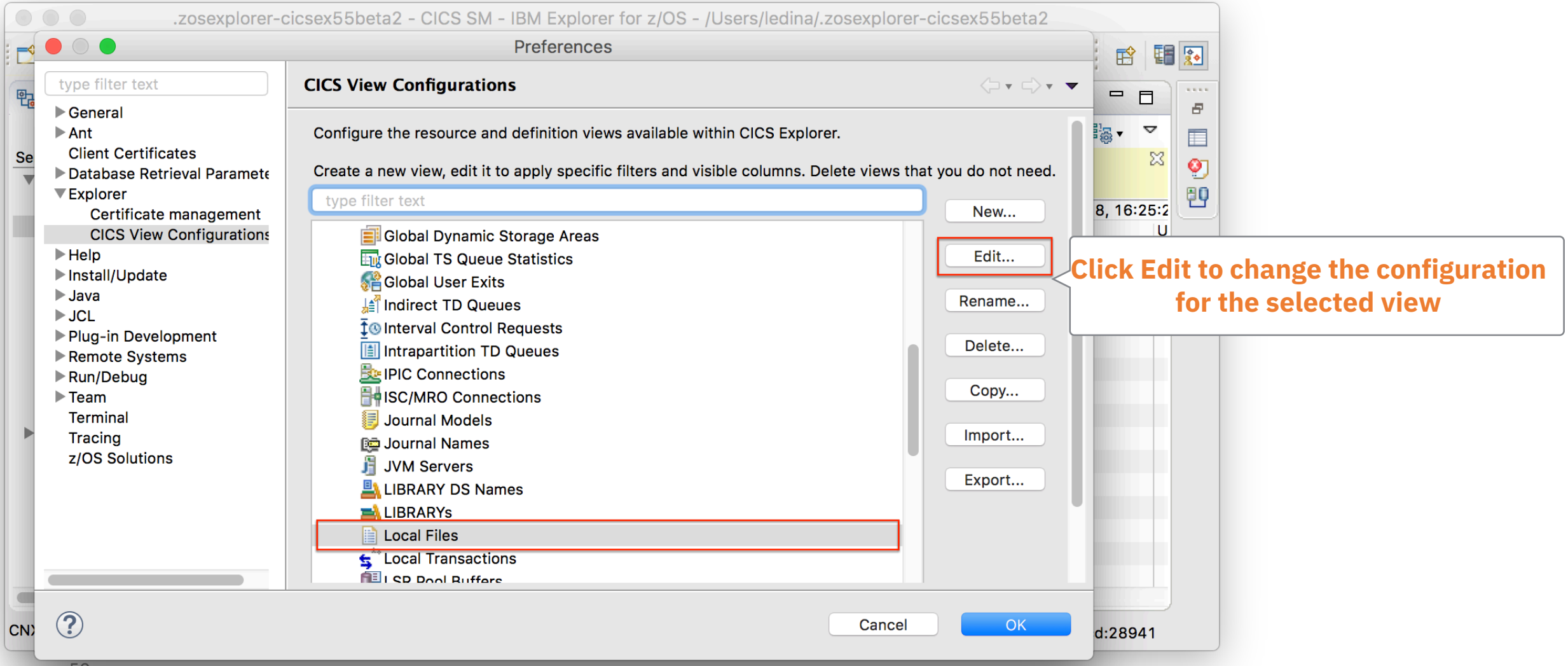


View Configuration - Aggregation Support

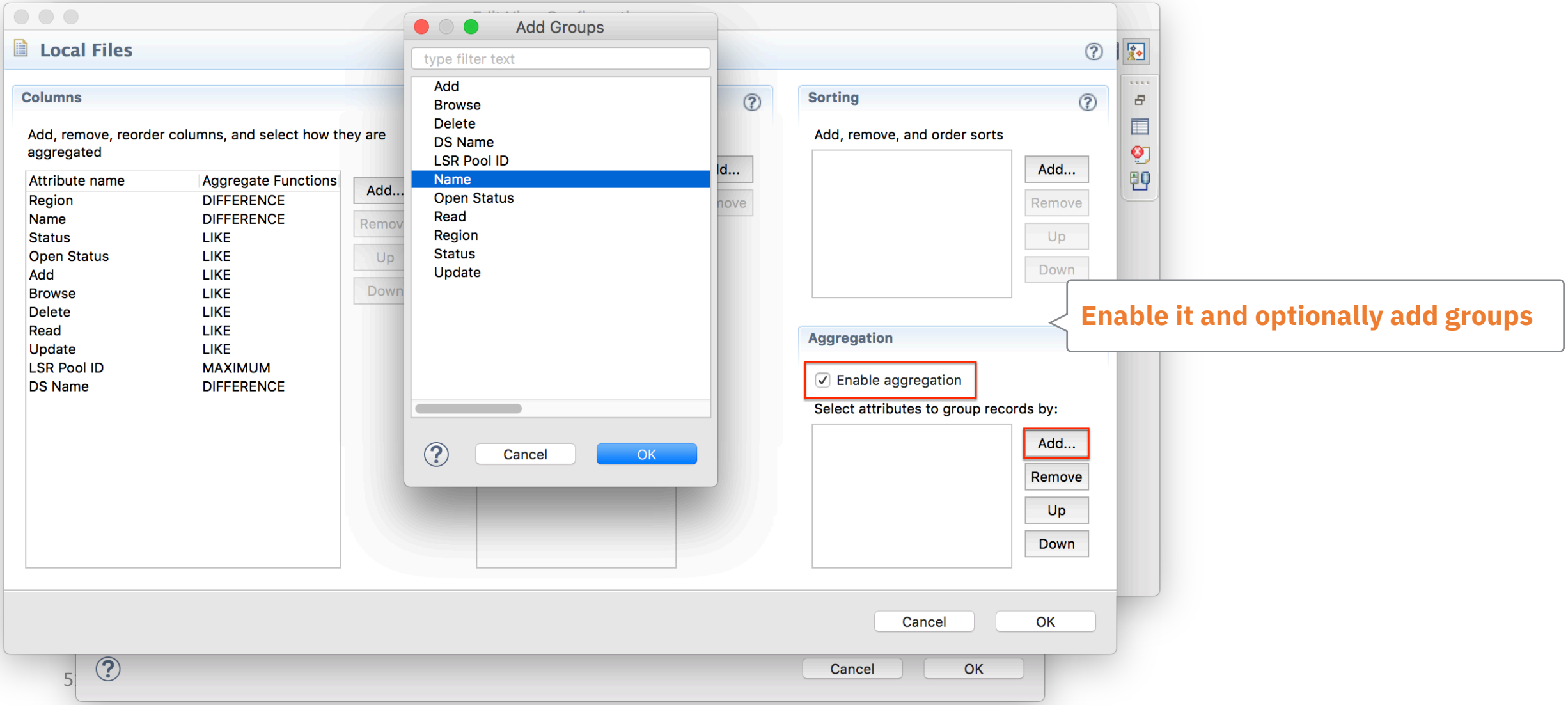


View Configuration options can be found under the View Menu

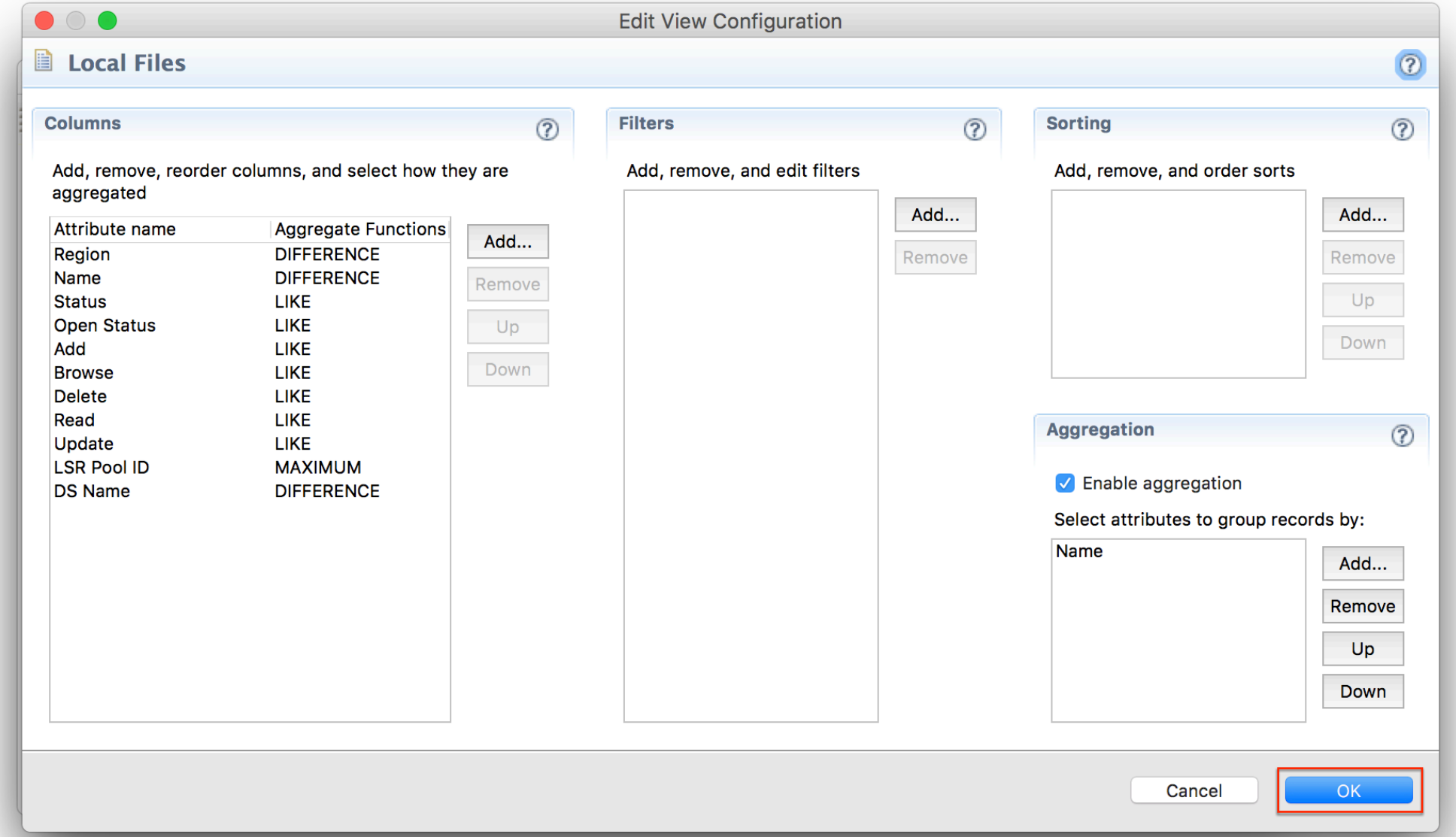
View Configuration - Aggregation Support



View Configuration - Aggregation Support



View Configuration - Aggregation Support



Hit OK to save the changes

Aggregate Functions

- Strings
  - DIFFERENCE: Show analysis of common characters
- Enumerations (CVDA / EYUDA values)
  - LIKE: Show whether all of the enumeration values match
- Numbers
  - MINIMUM: Show the minimum value
  - MAXIMUM: Show the maximum value
  - AVERAGE: Show the mean average
  - SUM: Show the total of all values
  - DIFFERENCE

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Aggregation vs WUI

- More flexibility around configuring
- Saveable as part of view configuration
- Group by multiple columns

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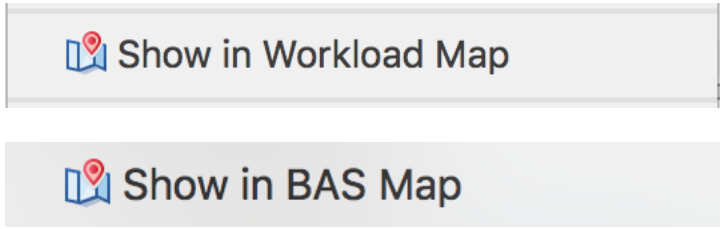
Map

- Show the relationship between resources
- Eligible resources get an extra right click menu option



- Open beta has support for Map operations on workload management ‘definition’ resources, and BAS resources

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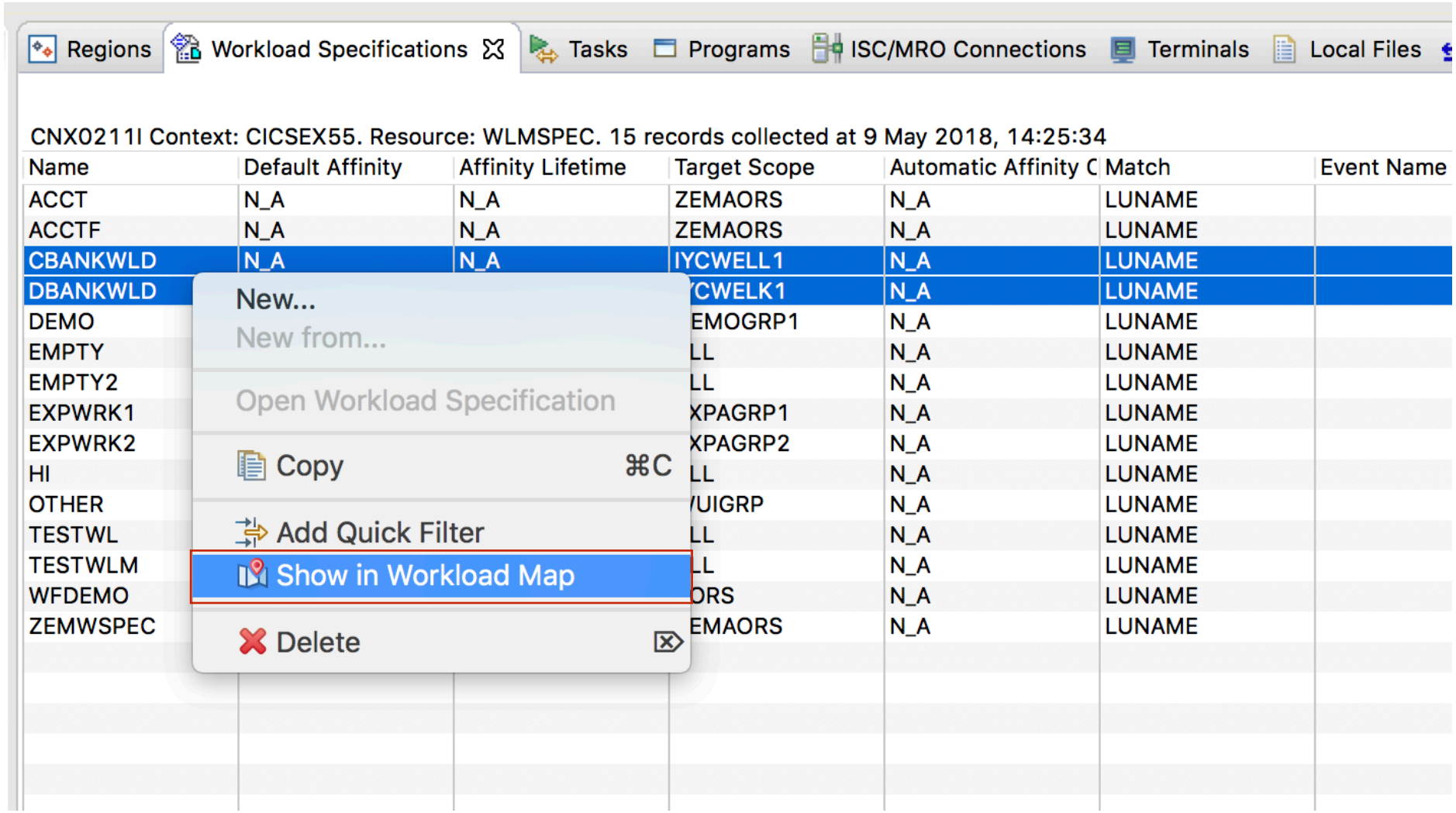
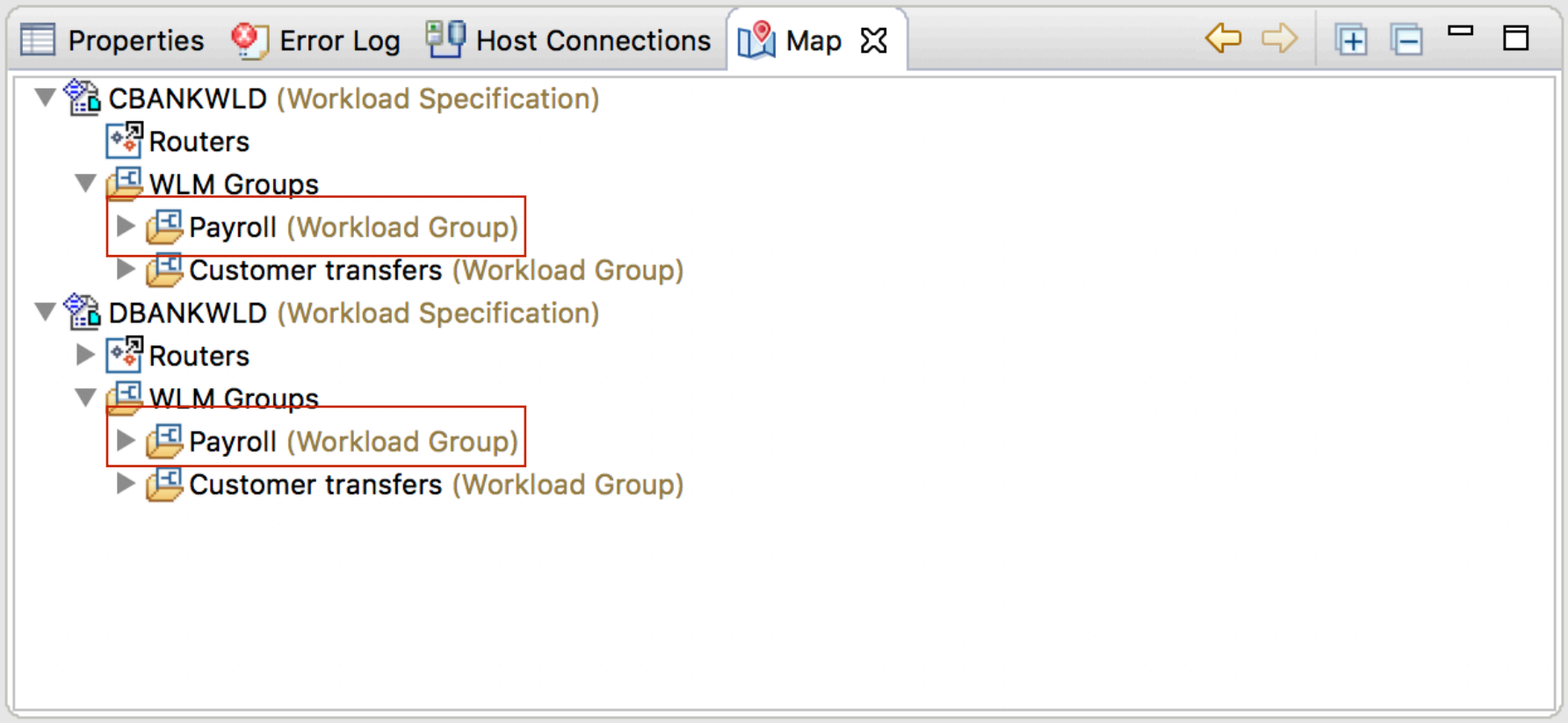
Scenario 3: Something wrong with a specification

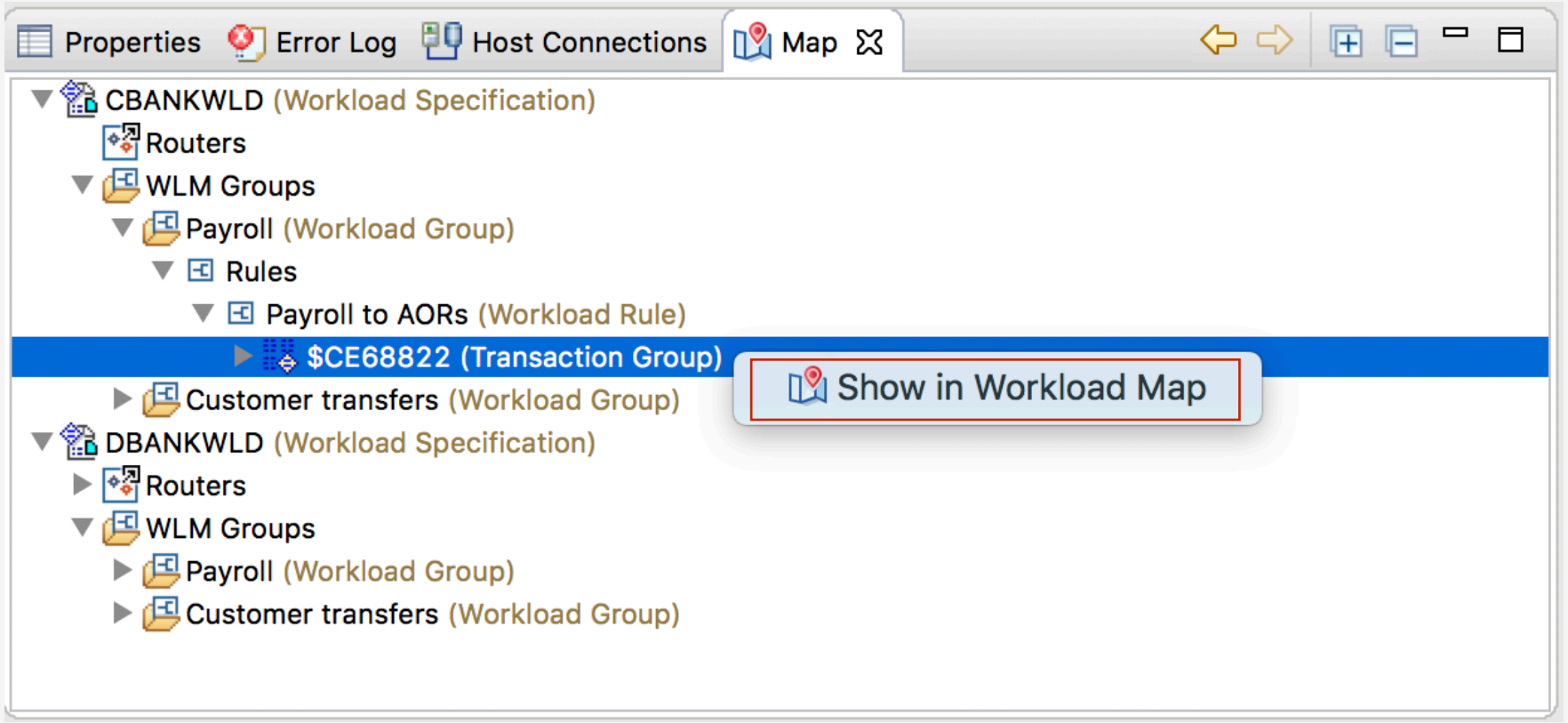
- Annette, the operations analyst, has identified performance issues with the payroll application running in the system.
- She contacts Stan, the system programmer, and informs him of the problem.
- Stan knows the WLM specification associated with that application so decides to take a look.



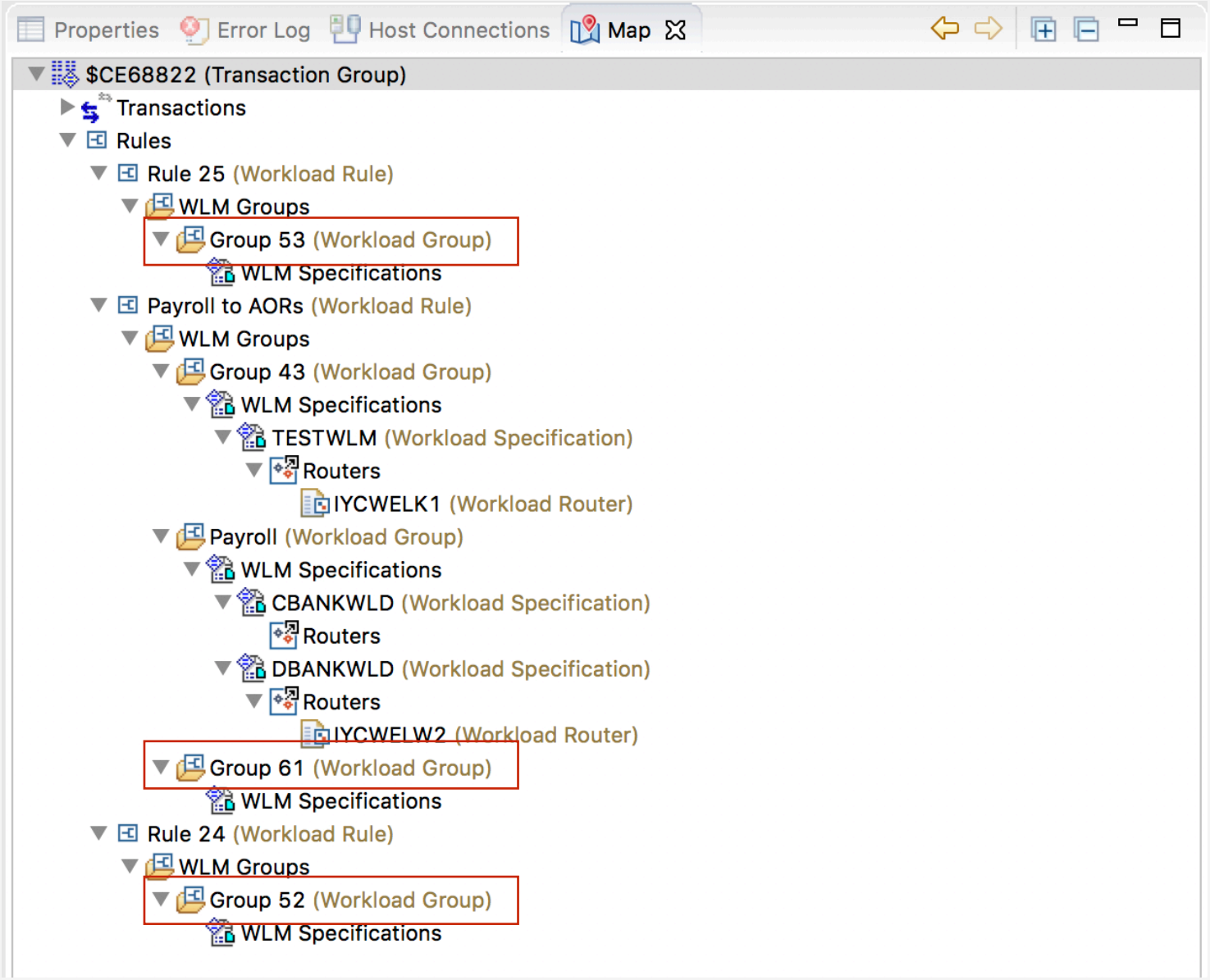
Map on 2 Workload Specifications



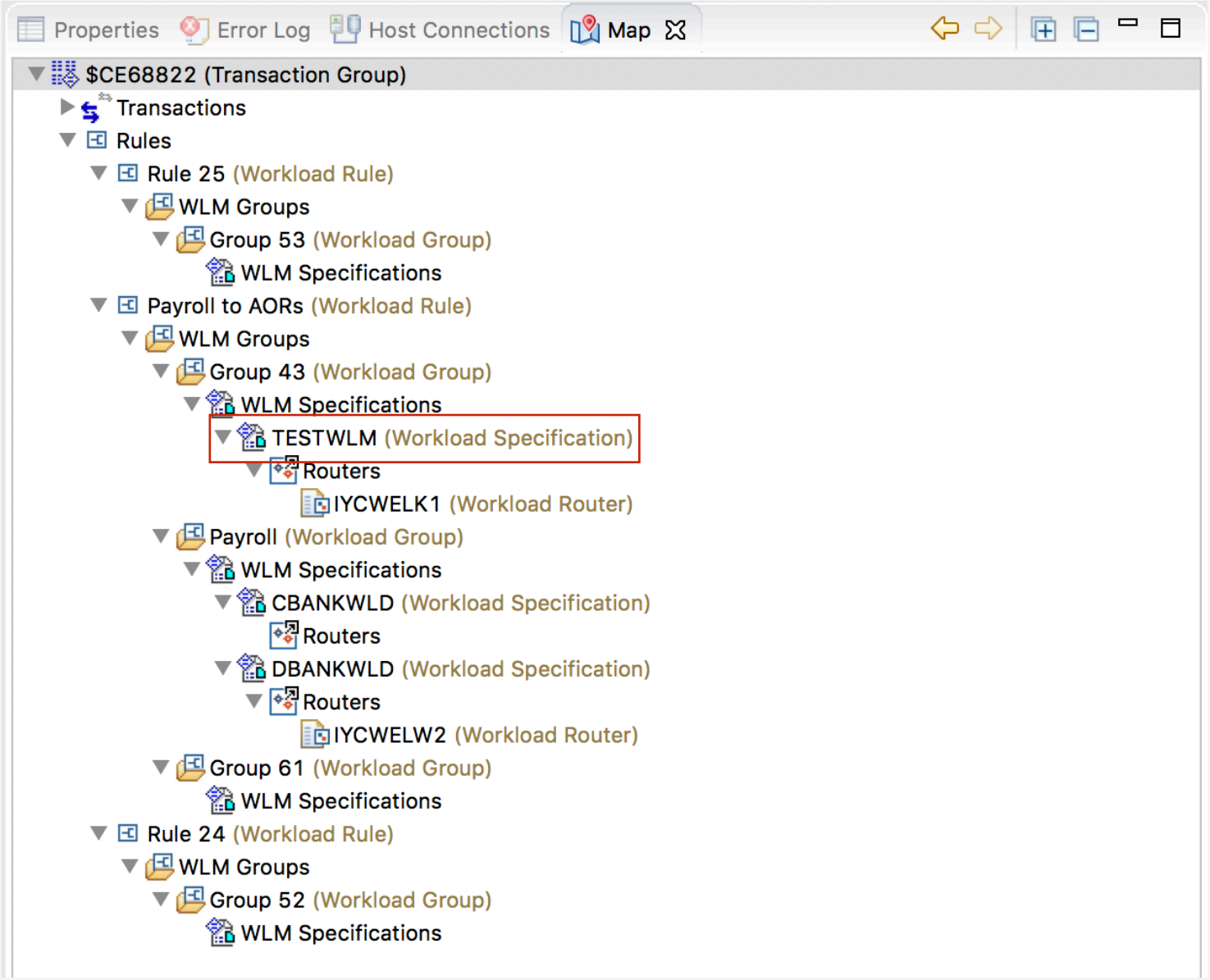
The new Map view has opened with our 2 Workload Specifications as the root. Expanding WLM Groups shows the groups in each spec, and both contain the Payroll group.



Expanding the Map to show further relationships shows the Transaction Group associated with this Workload Group. Remapping on the Transaction Group $CE68822 can show where else it is used.



Expanding the map shows all Specifications that this Transaction Group is used in. We can identify Workload Groups that are orphaned, and should be cleaned up as they aren't used in any Specifications.



We can also see from the map that the Transaction Group is being used in another Workload Specification (TESTWLM) that isn't our intended CBANKWLD and DBANKWLD. This is likely the cause of our performance issues.

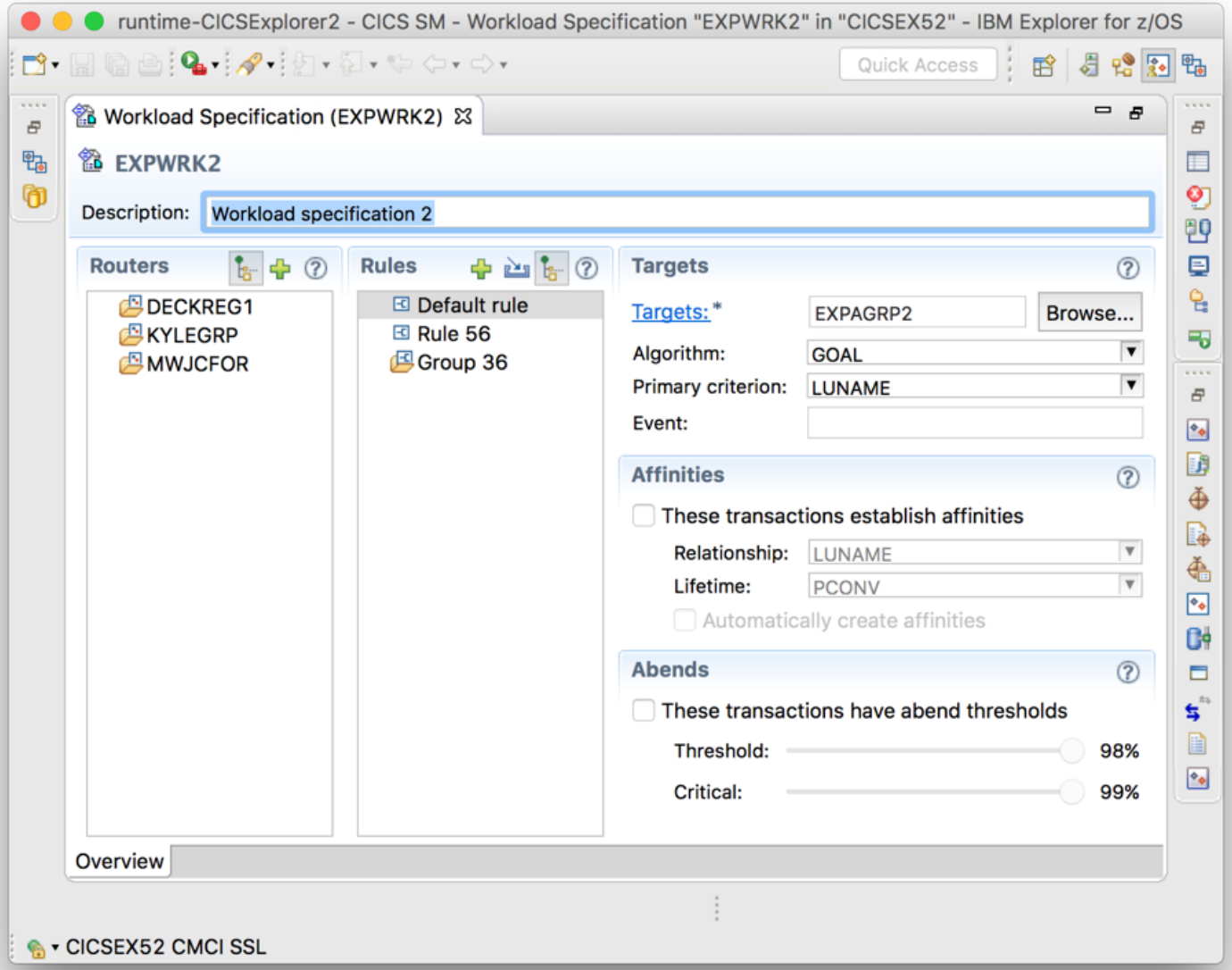
The GraphQL API server

- Aggregation in CICS Explorer relies on the new GraphQL API for CICS system management

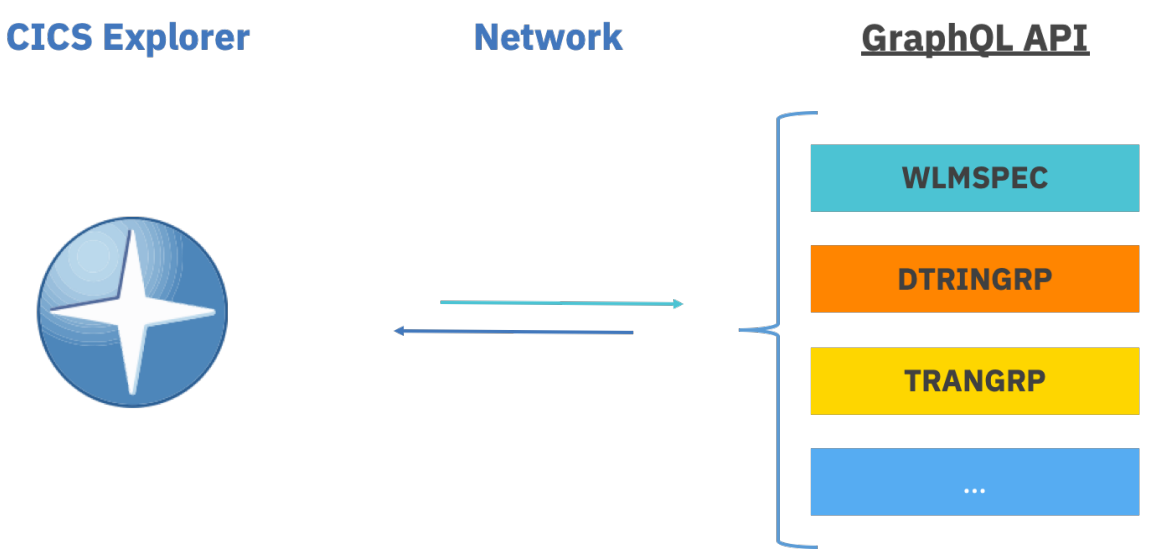
- Query many types of CICS resources across CICSplexes in a single request.
- Can specify exactly what data it needs
- Explicitly expressed inherent relationships between CICS resources

- Must use CMCI JVM server

REST vs GraphQL: WLM Editor

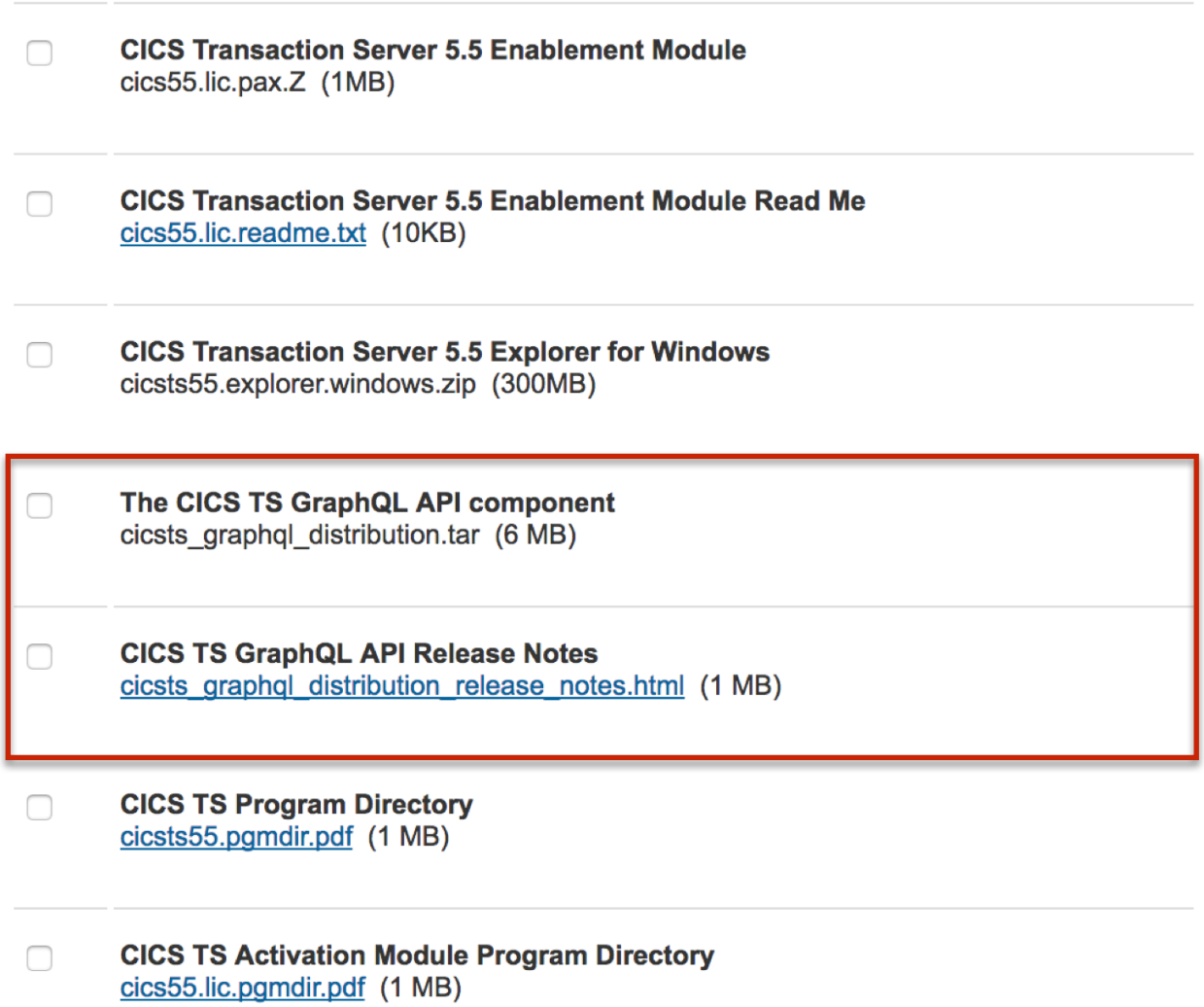


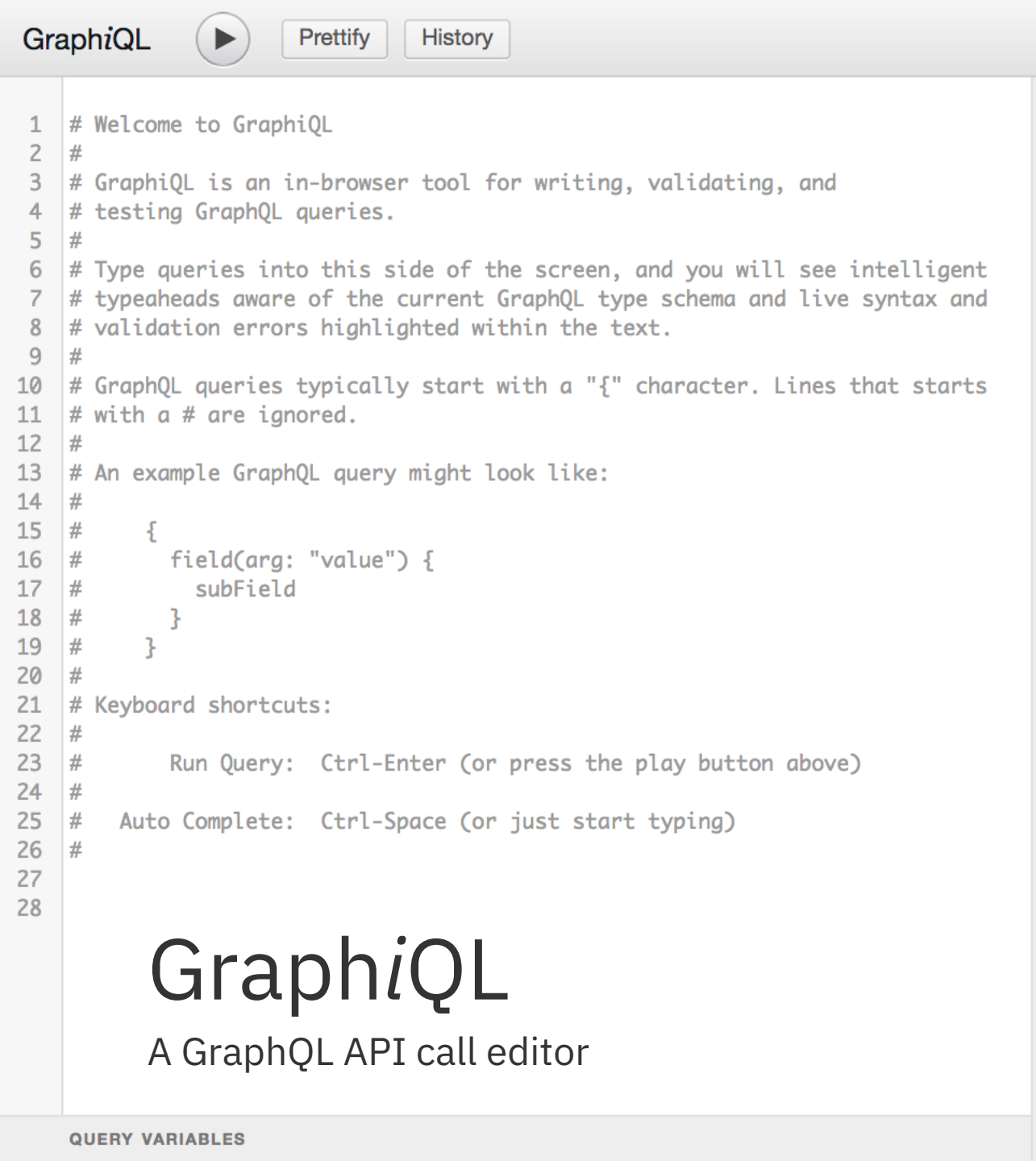
REST vs GraphQL: WLM Editor



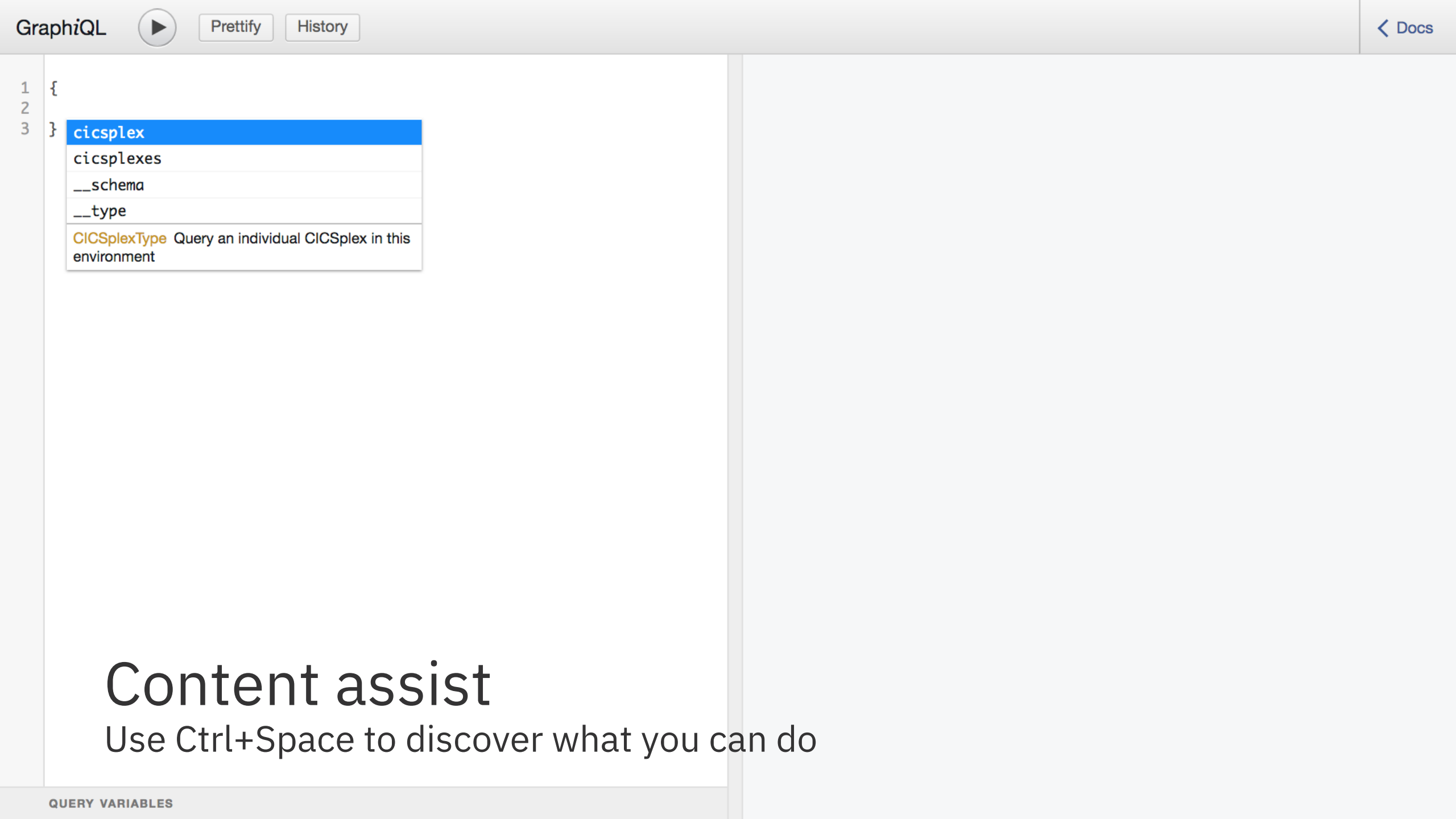
The GraphQL API server

- This API is served by a component that is (currently) a separate install
- You can try this API out for yourself from the Open Beta site!
- Incorporate into your automation



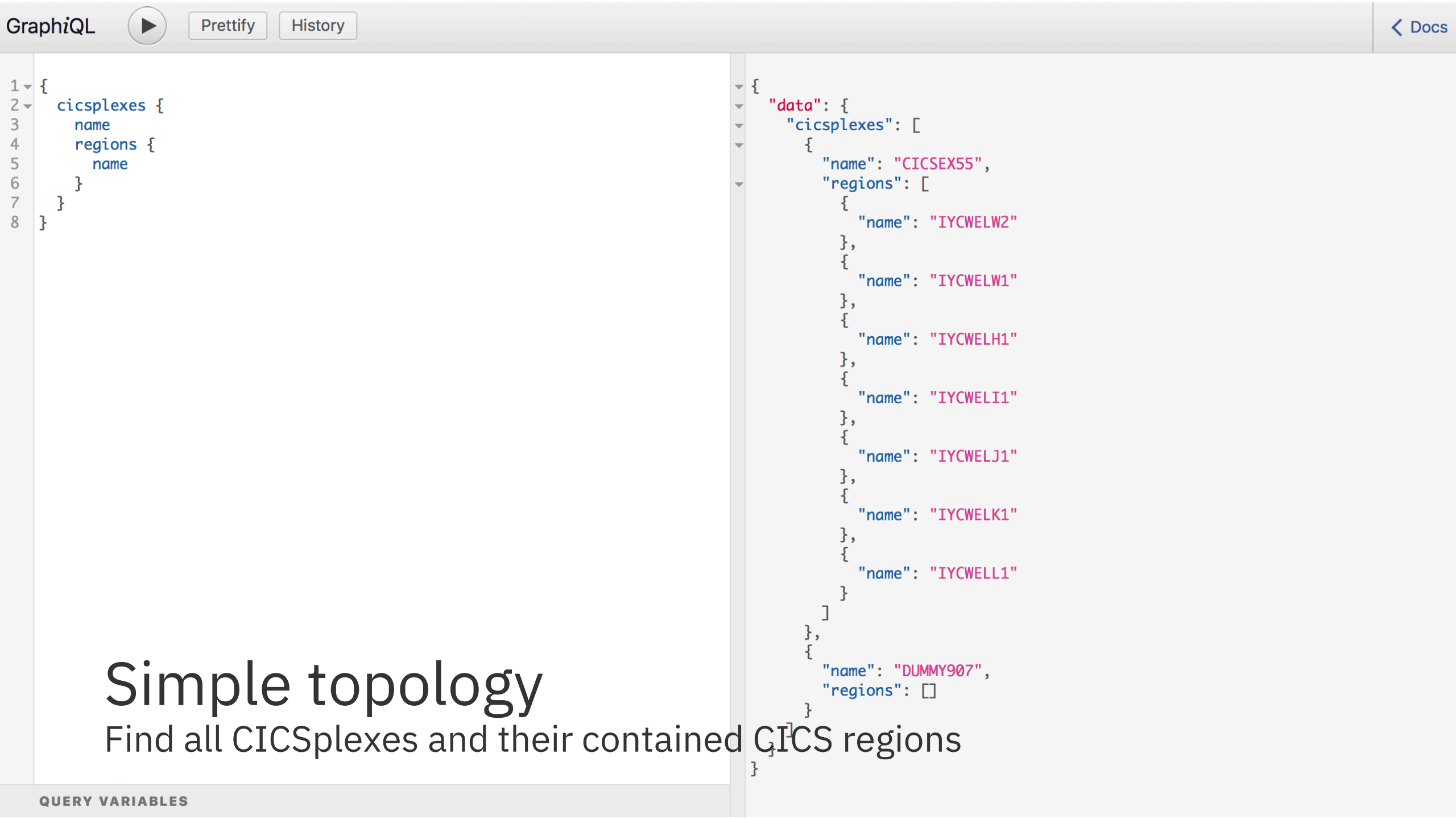


You can use it too! Easiest way is via the Graph*i*QL API Explorer:
https://host:port/graphiql



Content assist

Use Ctrl+Space to discover what you can do


GraphiQL
Prettify
History
Docs
{
cicsplexes {
name
regions {
name
}
}
}
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{
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},
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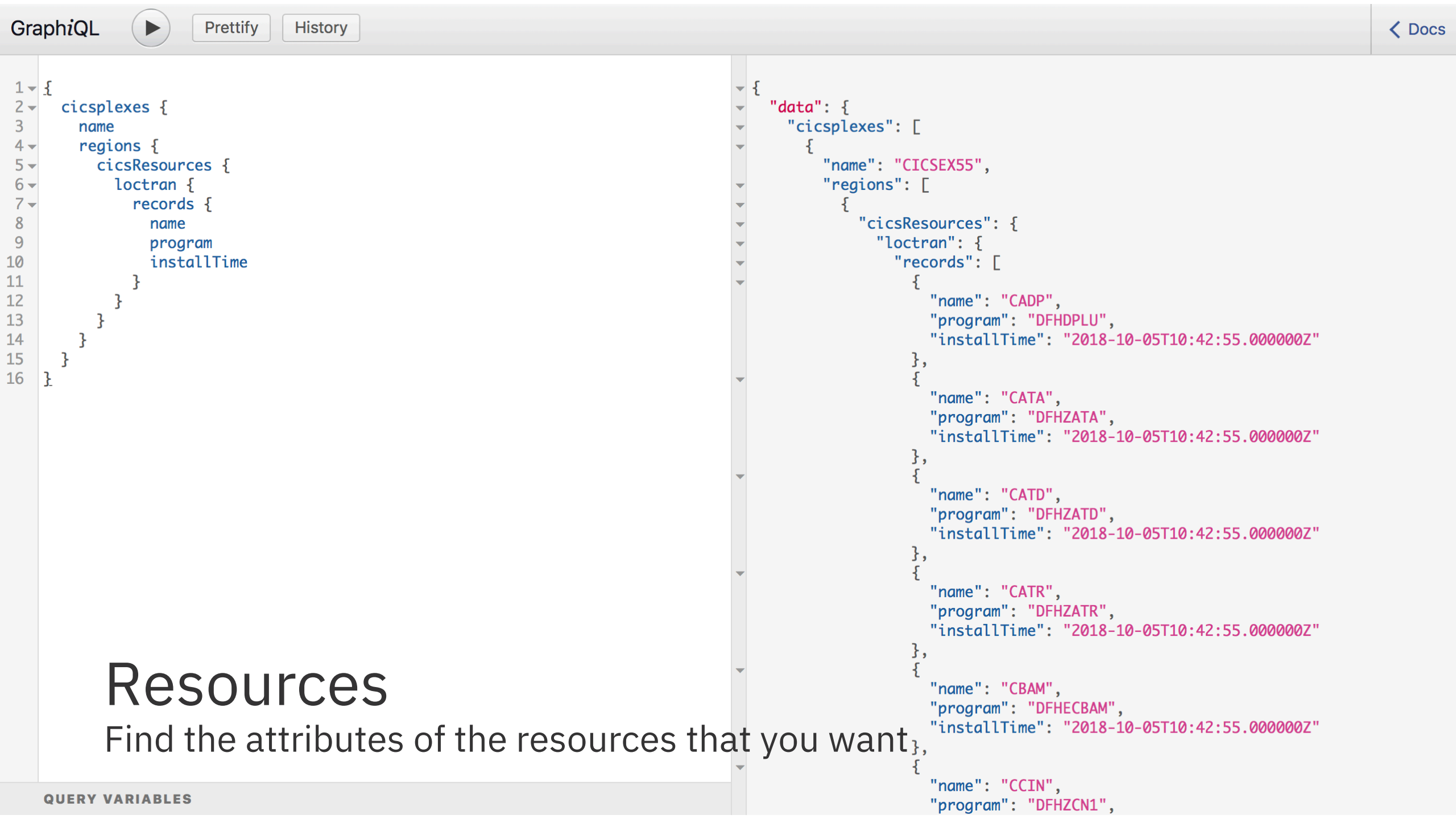
}
}
QUERY VARIABLES
Simple topology
Find all CICSplexes and their contained CICS regions


GraphiQL
Prettify
History
Docs
{
cicsplexes {
name
regions {
cicsResources {
loctran {
records {
name
program
installTime
}
}
}
}
}
}
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},
{
"name": "CCIN",
"program": "DFHZCN1",
Resources
Find the attributes of the resources that you want
QUERY VARIABLES

GraphiQL ▶ Prettify History Docs

```
{
  cicsplexes {
    name
    regions {
      cicsResources {
        loctran (filter: {
          name: {
            value: "D*"
          }
        }) {
          records {
            name
            program
            installTime
          }
        }
      }
    }
  }
}
```

Filtering

Filter by any attribute

QUERY VARIABLES


```
{
  "data": {
    "cicsplexes": [
      {
        "name": "CICSEX55",
        "regions": [
          {
            "cicsResources": {
              "loctran": {
                "records": [
                  {
                    "name": "DSNC",
                    "program": "DFHD2CM1",
                    "installTime": "2018-10-05T10:42:55.000000Z"
                  }
                ]
              }
            }
          },
          {
            "cicsResources": {
              "loctran": {
                "records": [
                  {
                    "name": "DSNC",
                    "program": "DFHD2CM1",
                    "installTime": "2018-10-05T10:43:01.000000Z"
                  }
                ]
              }
            }
          },
          {
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              "loctran": {
                "records": [
                  {
                    "name": "DSNC",
```

DEMO

Summary

- CICS Explorer: What is it?
- What's New in CICS Explorer 5.4 CD
  - Security: smart card and MFA support
  - Quick filters
  - Customising and sharing views
  - And more!
- What's Even Newer: CICS Explorer 5.5
  - Aggregation and grouping
  - GraphQL API server
  - Mapping

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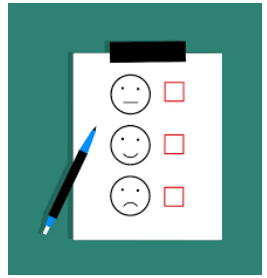
- Please submit your feedback online at ….
  - ➢http://conferences.gse.org.uk/2018/feedback/GF

- Paper feedback forms are also available from the Chair person

- This session is GF