

IBM CICS® Explorer Tools: The Whole Exceeds the Sum of the Parts

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IBM CICS® User Conference 2009

Introduction

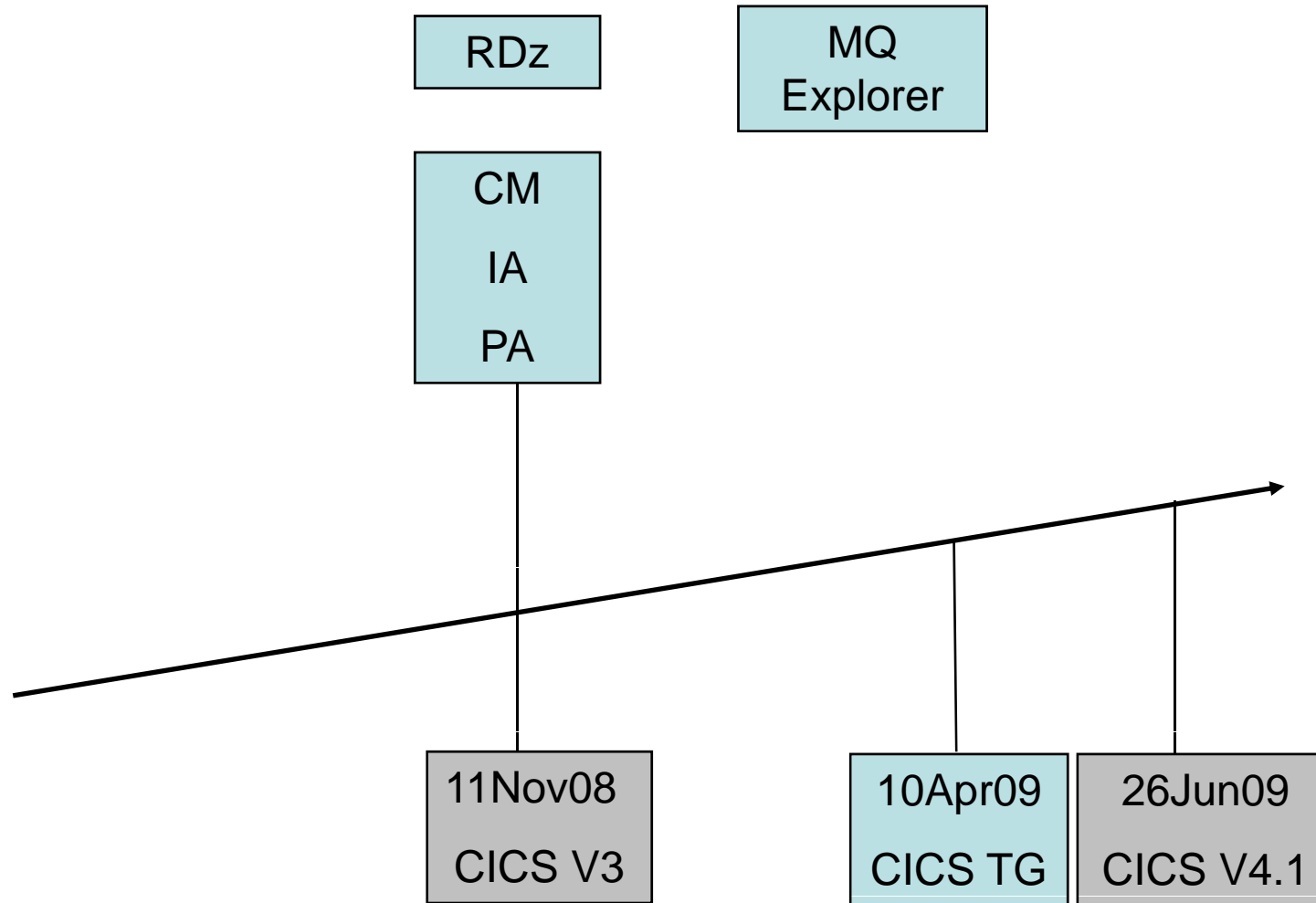
This two part session will look in depth at the CICS Explorer, discussing its architecture, its construction, the state of what's available now, as well as plans and directions for its future.

The session will also cover how IBM's key CICS Tools have been built on top of the Explorer framework, delivering Interdependency Analyzer (IA) Explorer, Configuration Manager (CM) Explorer and Performance Analyzer (PA) Explorer capabilities.

Agenda:

- A (very) brief introduction to Eclipse (part 1)
- Introduction to the CICS Explorer (part 1)
- **Introduction to the CICS Tools Explorer (part 2)**

Explorer Integration



CICS Explorer – Integration Platform

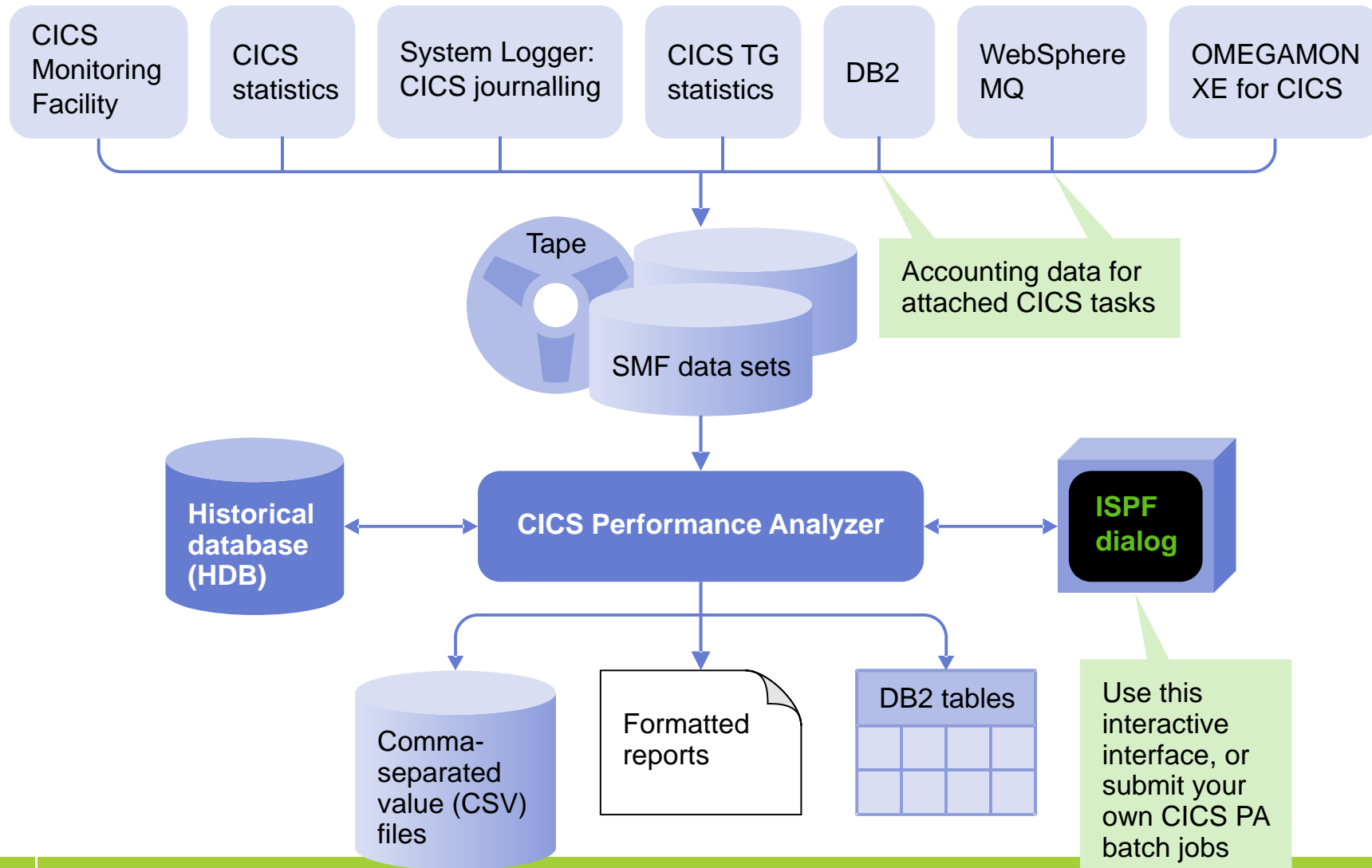
- CICS Tools
 - CICS Interdependency Analyzer (IA)
 - CICS Configuration Manager (CM)
 - CICS Performance Analyzer (PA)
- Rational Developer for System z
- CICS Transaction Gateway
- WebSphere MQ (PoC)
- Tivoli OMEGAMON for CICS (PoC)
- Custom plug-in's

CICS Performance Analyzer

What is CICS Performance Analyzer?

- **Comprehensive Performance Reporting and Analysis for CICS**
 - CICS Monitoring Facility (CMF) data (SMF 110)
 - CICS Statistics data (SMF 110)
 - CICS Server Statistics data (SMF 110)
 - CICS Transaction Gateway Statistics data (SMF 111)
 - DB2 Accounting records (SMF 101)
 - WebSphere MQ Accounting records (SMF 116)
 - OMEGAMON XE for CICS records (SMF 112)
 - z/OS System Logger (SMF 88)
- **Complements ...**
 - IBM Tivoli OMEGAMON XE for CICS on z/OS V4.1.0
 - IBM Tivoli OMEGAMON XE for CICS TG on z/OS V4.1.0

CICS Performance Analyzer Overview



CICS PA Explorer plug-in

- **Provides numerous methods of visualizing historical transaction performance summary data**
- **Access to performance data summaries and reporting scenarios using CICS PA created ...**
 - CSV files from SMF 110 performance data
 - CSV files or database (DB2) from HDB performance data
- **Integrates with the strategic CICS Explorer and other tooling plug-ins**
- **Evolutionary and responsive solution**

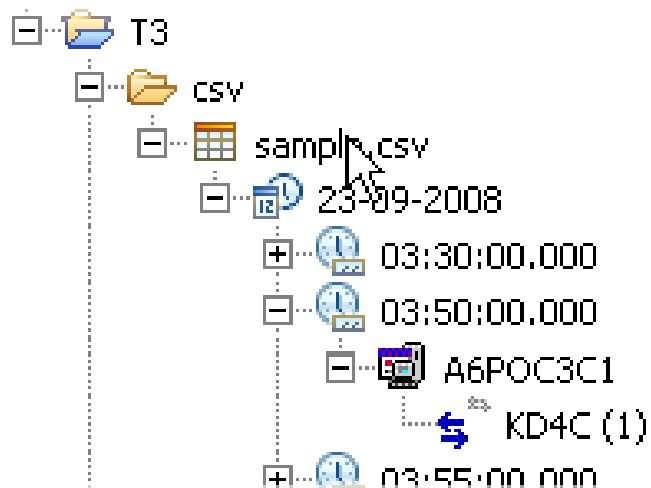
The CICS PA plug-in environment

The screenshot displays the IBM CICS Explorer interface with several key components:

- Tree view of data:** A hierarchical tree on the left showing project structure, including folders for 'T3', 'csv', and 'db'. A callout box points to this view with the text 'Tree view of data'.
- Outline (Taxonomy) view of data:** A second tree view below the first, showing a detailed taxonomy of transactions and resources. A callout box points to it with the text 'Outline (Taxonomy) view of data * csv only'.
- Table:** A central table listing transaction records with columns for 'Start date', 'Start time', 'Applid', 'Transact...', 'Task ter...', 'Respons...', 'User Disp...', 'User Disp...', and 'User CPU...'. A callout box points to the table with the text 'Properties of an individual transaction summary record'.
- Transaction detail view:** A window at the bottom showing details for a specific transaction (CEMT). It includes an 'Overview' section with four charts: 'Threadsafe', 'CPU time', 'Response time', and 'Storage'. Below the charts is a 'CPU time: (averages)' table. A callout box points to this section with the text 'Charts and sheet views'.
- Properties window:** A window on the right side showing a list of properties and their values for the selected transaction.

Using CSV files

- Drag and drop csv files in
- Import csv files
- Expand file into a summary tree structure broken down by date, time, Applid and Transaction Id



Using Database connectivity

The screenshot shows the 'Data sources' configuration window in IBM CICS. The 'Connection' section is set to 'winmvs2e' and is marked as 'Preferred'. The 'Datasource Location' section includes 'Server Address: winmvs2e.hursley.ibm.com (DOMAIN)', 'TCP/IP Port Number: 49001', and 'Database Name: DSN9102E (Location)'. The 'Query qualifier' section has 'Schema: CPAHDB'. The 'Authentication' section has 'User ID: STONECC' and a masked password. A 'Save password' checkbox is checked. A warning message states: 'Saved passwords are stored on your computer in a file that is difficult, but not impossible, for an intruder to read.' The 'Advanced' section is visible at the bottom.

Overlaid on the wizard is a dialog box titled 'CICS Data source definition file'. It contains the following information:

- Container: /X-Files/Test23/Cols Machines/special
- Data source: winmvs2e
- File name: winmvs2e.cpa
- Table name: EXPLORER_SUMMARY

The dialog also includes a 'Browse...' button next to the container field and navigation buttons at the bottom: '< Back', 'Next >', 'Finish', and 'Cancel'.

To the right of the wizard is a file explorer window showing a directory tree under 'T3'. The tree includes folders 'csv', 'db', 'localdb', and 'oak'. Under 'db', there is a file 'winmvs2e.cpa' which is highlighted by the mouse. Below it are folders for dates '2007-01-11' and '2007-01-12', and a folder '00.05.00'. Under '00.05.00', there are files 'IICYZC20', 'IICYZC21', 'CRTP', 'CSOL', and 'IICYZC22'.

Define the data source ...

Visualizing the summary performance data

The screenshot displays the IBM CICS Explorer interface with several key components:

- Transaction Table:** A table listing transactions with columns for Start date, Start time, Applid, Transacti..., Task ter..., Respons..., Rcv..., User Disp., User Disp..., User CPU..., Suspend..., and Suspend... The table shows various transactions such as BDL5, ERWZ, ZS3, ZS2, HERN, NRP1, ER02, STROCY, BRFC, HFM, OVSW, OVDA, HMBQ, DTQ, BRUH, HNRQ, ER97, SU95, AKS0, OV72, HSS0, ZFA3, ERM1, QDAZ, RRS2, RSM1, ZDF2, ERGR, ERD0, and ERD0.
- Bar Chart:** A bar chart titled 'CICS Key 8 TCB CPU time average=0.1692700' showing response times in seconds for various transactions. The Y-axis is labeled 'Time (seconds)' and ranges from 0 to 0.2. The X-axis lists transactions like HFM (3), OVSW (2), ZFA3 (1), OV72 (1), ER02 (1), HNRQ (2), RSM1 (1), ERGR (1), Y1GN (1), ZS2 (2), BRRE (1), HCOO (1), ER02 (1), BRFL (1), HSS (1), and OV72 (1).
- Transaction Detail Window:** A window titled 'Transaction detail for: 2007-01-11, 23.50.00, IYCY2C24, CRTP'. It provides an overview of response time and a detailed table of response measurements.

Response measurement	Time (avg)	Count	%Overall	%Relative
Response time	0.002937	-	-	-
User Dispatch time	0.001620	2	55%	55%
User CPU time	0.000612	2	21%	38%
CICS Key 8 TCB CPU time	0	0	-	-
X8 TCB CPU time	0	0	-	-
L8 TCB CPU time	0	0	-	-
S8 TCB CPU time	0	0	-	-
T8 TCB CPU time	0	0	-	-
X8 TCB CPU time	0	0	-	-
CICS Key 9 TCB CPU time	0	0	-	-
X9 TCB CPU time	0	0	-	-
L9 TCB CPU time	0	0	-	-
X9 TCB CPU time	0	0	-	-
Miscellaneous TCB CPU tir	0	0	-	-
RO TCB CPU time	0	0	-	-
QR TCB CPU time	0.000612	2	21%	100%
Suspend time	0.001317	2	45%	45%
Dispatch wait time	0.000238	1	8%	18%

Sheet view of summary performance data

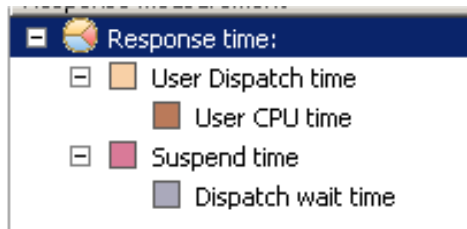
- Presents all of the selected data in tabular form
- Allows sorting, sub-selections, reordering of columns

Start date	Start time	Applid	Transacti...	Task ter...	Response time average	User Disp...	User Disp...
2007-01-12	00.05.00	IYCYZC21	CSOL	0	1,887.437559	2	0.000144
2007-01-12	00.05.00	IYCYZC23	CSOL	0	1,887.437082	2	0.000112
2007-01-12	00.05.00	IYCYZC22	CSOL	0	1,887.437043	2	0.000112
2007-01-12	00.05.00	IYCYZC20	CSOL	0	1,887.436902	2	0.000112
2007-01-12	00.05.00	IYCYZC23	CRTP	2	0.004964	2	0.003784
2007-01-12	00.05.00	IYCYZC22	CRTP	2	0.003180	2	0.001616
2007-01-12	00.05.00	IYCYZC24	CRTP	2	0.003152	2	0.002118
2007-01-12	00.05.00	IYCYZC20	CRTP	3	0.002981	2	0.001941
2007-01-12	00.05.00	IYCYZC21	CRTP	3	0.002973	2	0.001579
2007-01-12	00.05.00	IYCYZC23	CCVC	2	0.002528	2	0.001816
2007-01-12	00.05.00	IYCYZC23	CCVW	2	0.002310	1	0.001744
2007-01-12	00.05.00	IYCYZC22	CMAK	1	0.001016	1	0.000992

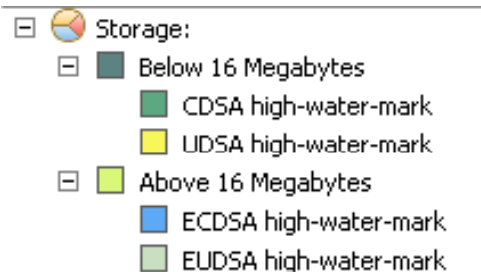
This example shows a sub-selection made for a particular date sorted by Response time average

Report categorisation

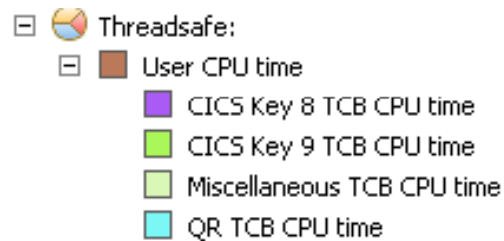
Response time breakdown



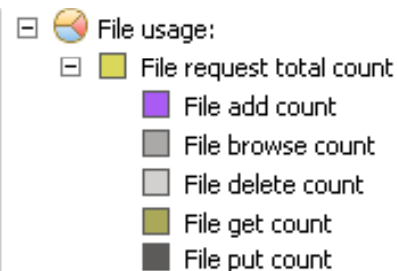
Storage breakdown



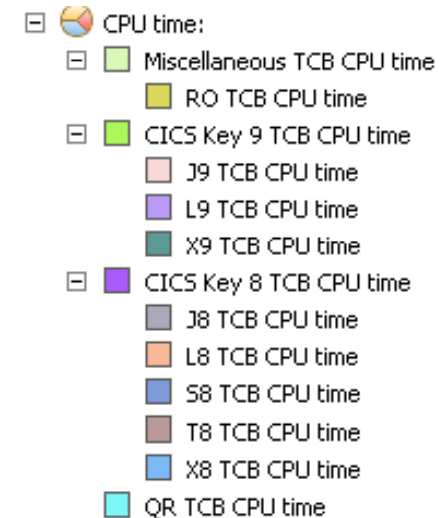
Threadsafe breakdown



File usage breakdown



CPU time breakdown

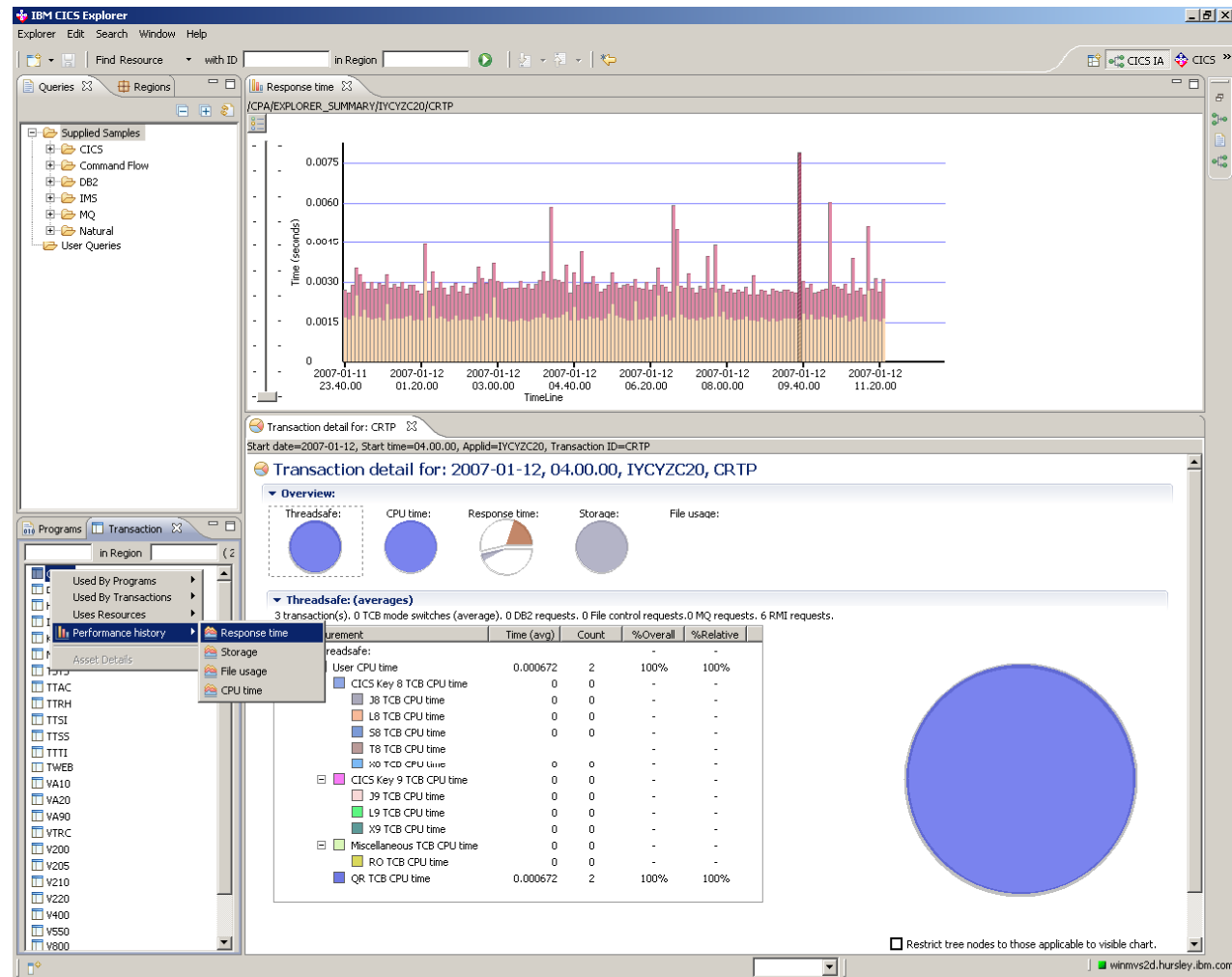


Integration with CICS SM (base explorer)

The screenshot displays the IBM CICS Explorer application window. The left pane shows a tree view of the CICS system structure for server IYCYZC23, including regions like TOOLPLX1, CICS131, and various CICS231 instances. The main pane shows a table of regions with columns for Region, Name, Status, and Use C. The CRTP region is selected, and a context menu is open over it, with 'Performance history' and 'CPU time' options visible. The right pane shows a CPU time graph for the CRTP transaction, with a Y-axis labeled 'Time (seconds)' ranging from 0 to 0.0006 and an X-axis labeled 'TimeLine' showing dates from 2007-01-11 to 2007-01-12. Below the graph, transaction details for CRTP are shown, including start date, start time, and application. An overview section displays four gauges for Threadsafte, CPU time, Response time, and Storage. A table below shows performance metrics for the CRTP transaction.

Region	Name	Status	Use C
CICSC231	CPMI	✓ ENABLED	0
CICSC231	CP55	✓ ENABLED	0
CICSC231	CQPI	✓ ENABLED	0
CICSC231	CQPO	✓ ENABLED	0
CICSC231	CQRY	✓ ENABLED	0
CICSC231	CREA	✓ ENABLED	0
CICSC231	CREC	✓ ENABLED	0
CICSC231	CRMD	✓ ENABLED	0
CICSC231	CRMF	✓ ENABLED	0
CICSC231	CRSQ	✓ ENABLED	1
CICSC231	CRSR	✓ ENABLED	0
CICSC231	CRSY	✓ ENABLED	0
CICSC231	CRTE	✓ ENABLED	0
CICSC231	CRTP	✓ ENABLED	250
CICSC231	CSKP	✓ ENABLED	0
CICSC231	CSMI	✓ ENABLED	0
CICSC231	CSMI	✓ ENABLED	0
CICSC231	CSMI	✓ ENABLED	0

Integration with CICS IA



CICS Interdependency Analyzer

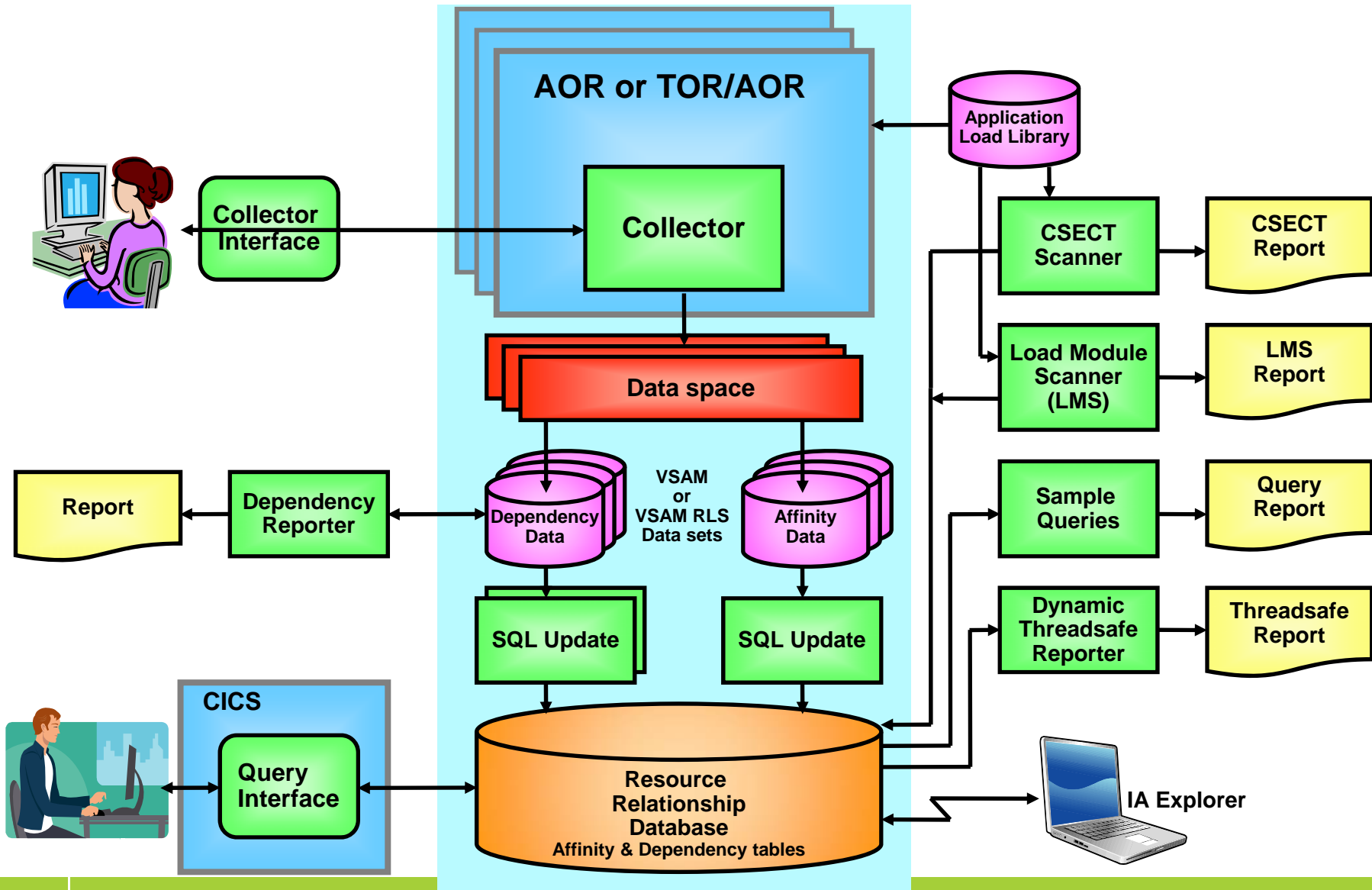
What is CICS Interdependency Analyzer ?

- Run-time tool for use with CICS TS for z/OS
- Identifies the sets of resources used by CICS transactions, and their relationships to other resources
- Consists of,
 - run-time collector
 - query interface
 - batch reporter
 - load module scanner
 - CSECT scanner
 - IA Explorer

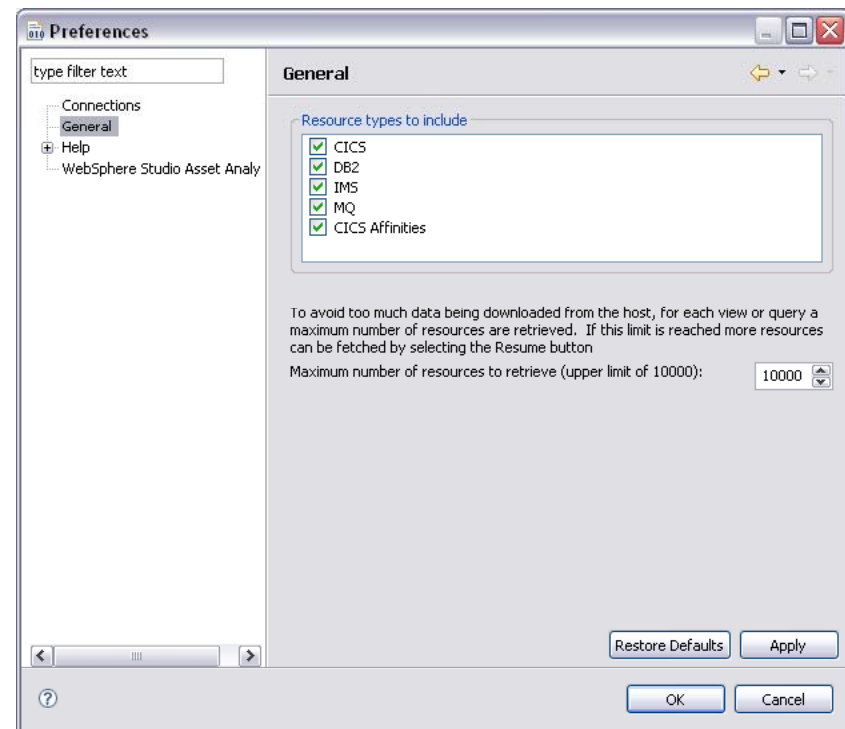
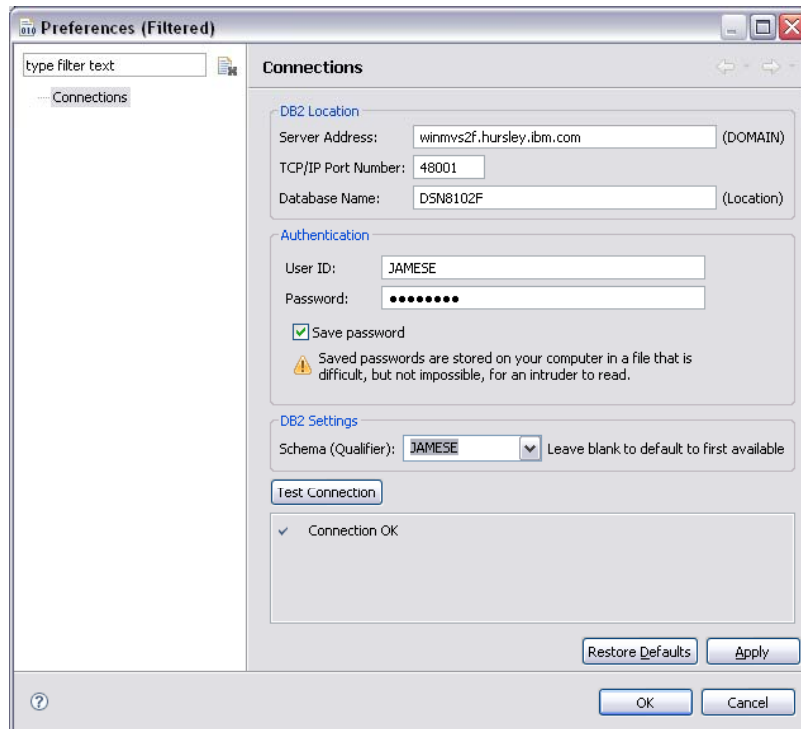
CICS IA Benefits

- Enables you to understand the relationships between resources used by CICS and its applications.
- You can see
 - what resources a CICS region uses
 - what resources a transaction needs in order to run
 - which programs use which resources
 - which resources are no longer used
 - And much more
- The ability to maintain, enhance, modify or redistribute your applications is much improved

CICS IA Architecture

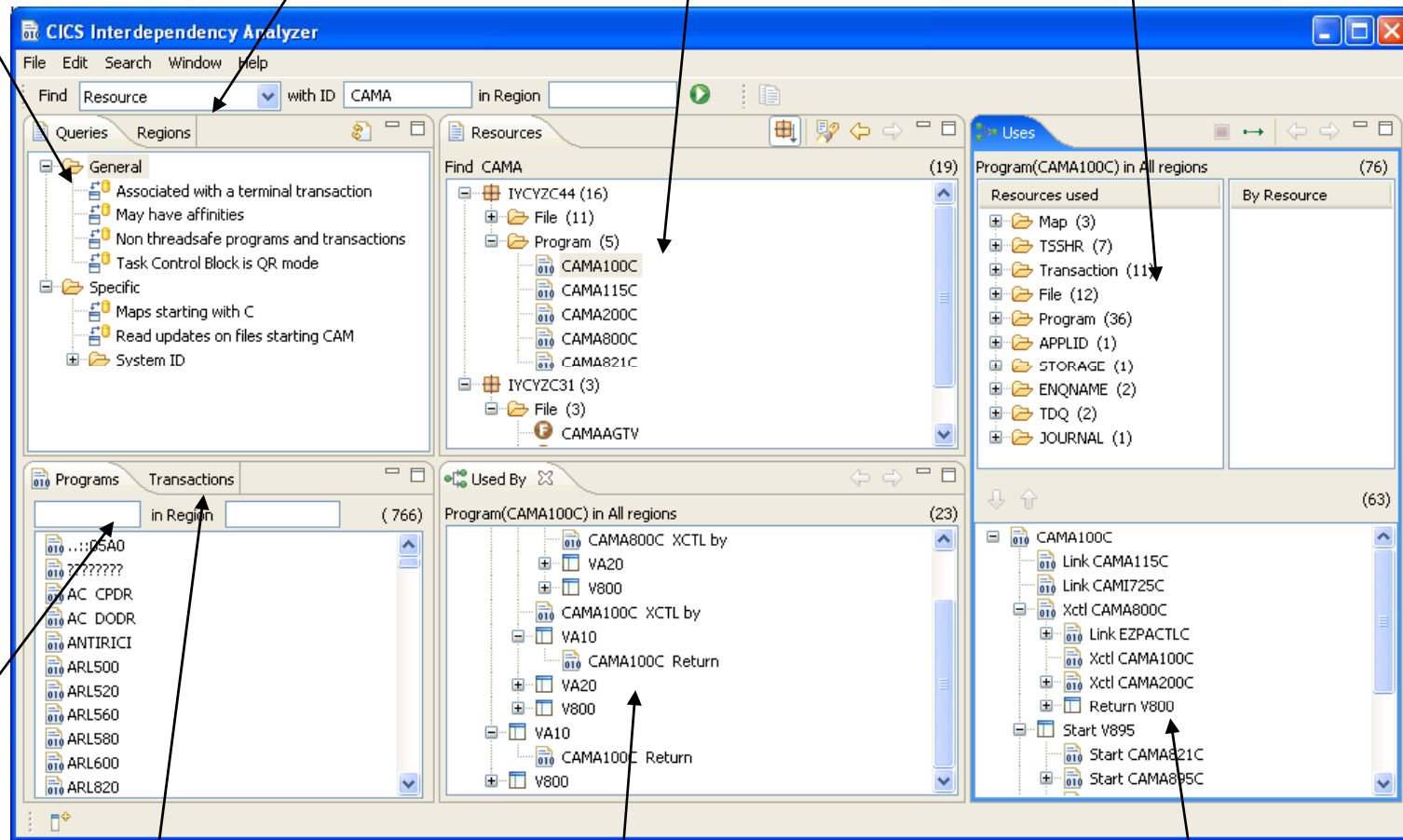


CICS IA Explorer plugin - connection



CICS IA Explorer – main view

Saved query definitions List of all Regions Results of queries Breakdown of resources used



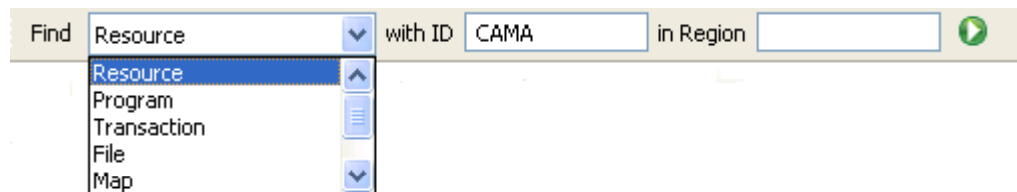
List of all Programs

List of all Transactions

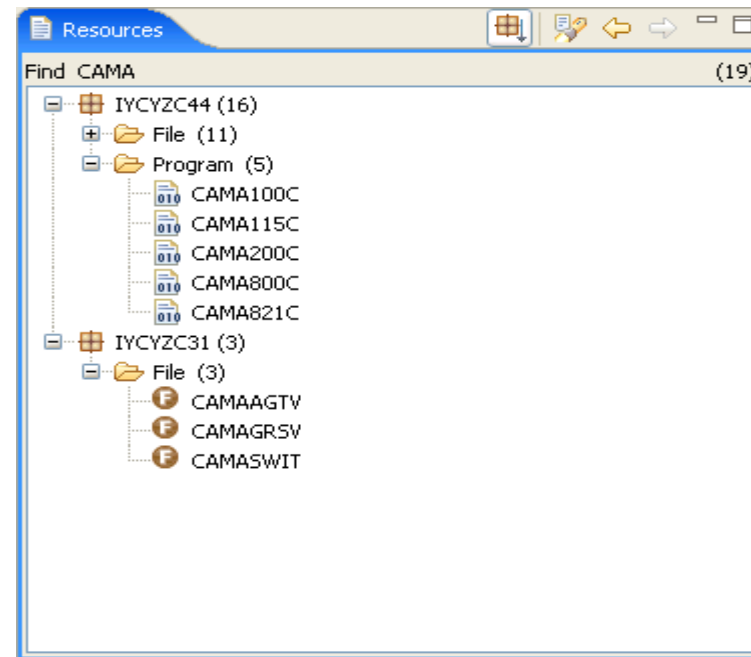
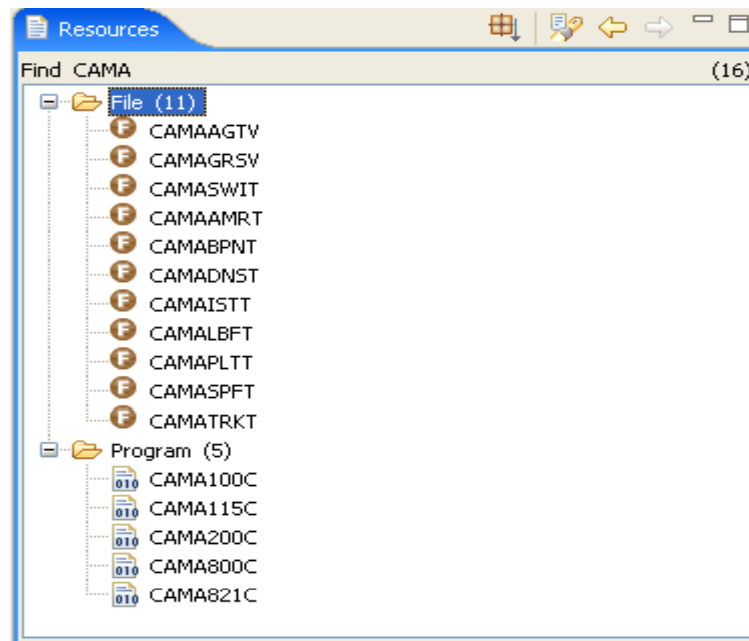
Where is resource used? Call tree of program execution

CICS IA Explorer plugin- Resource Toolbar

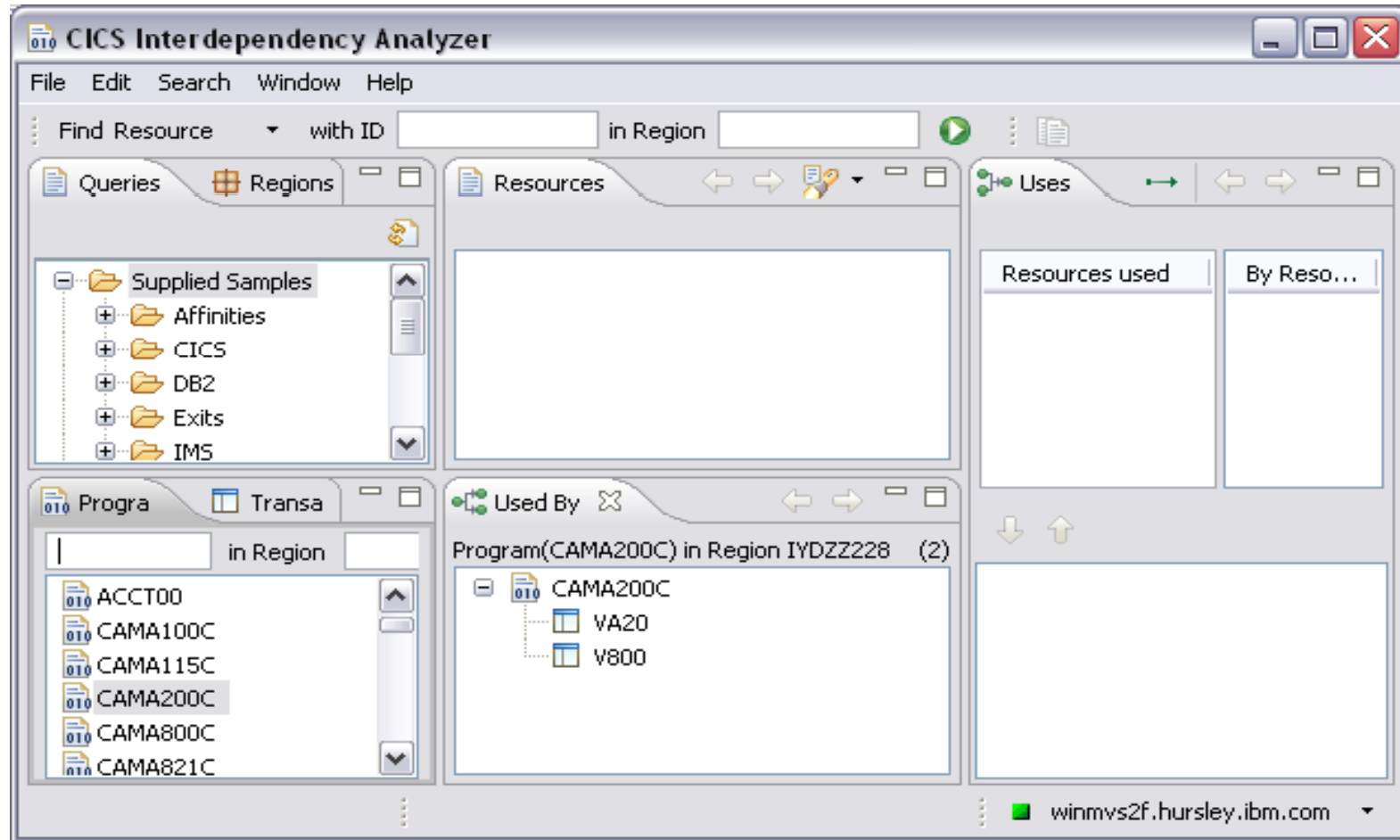
Quickly find resource(s) by type, name and region



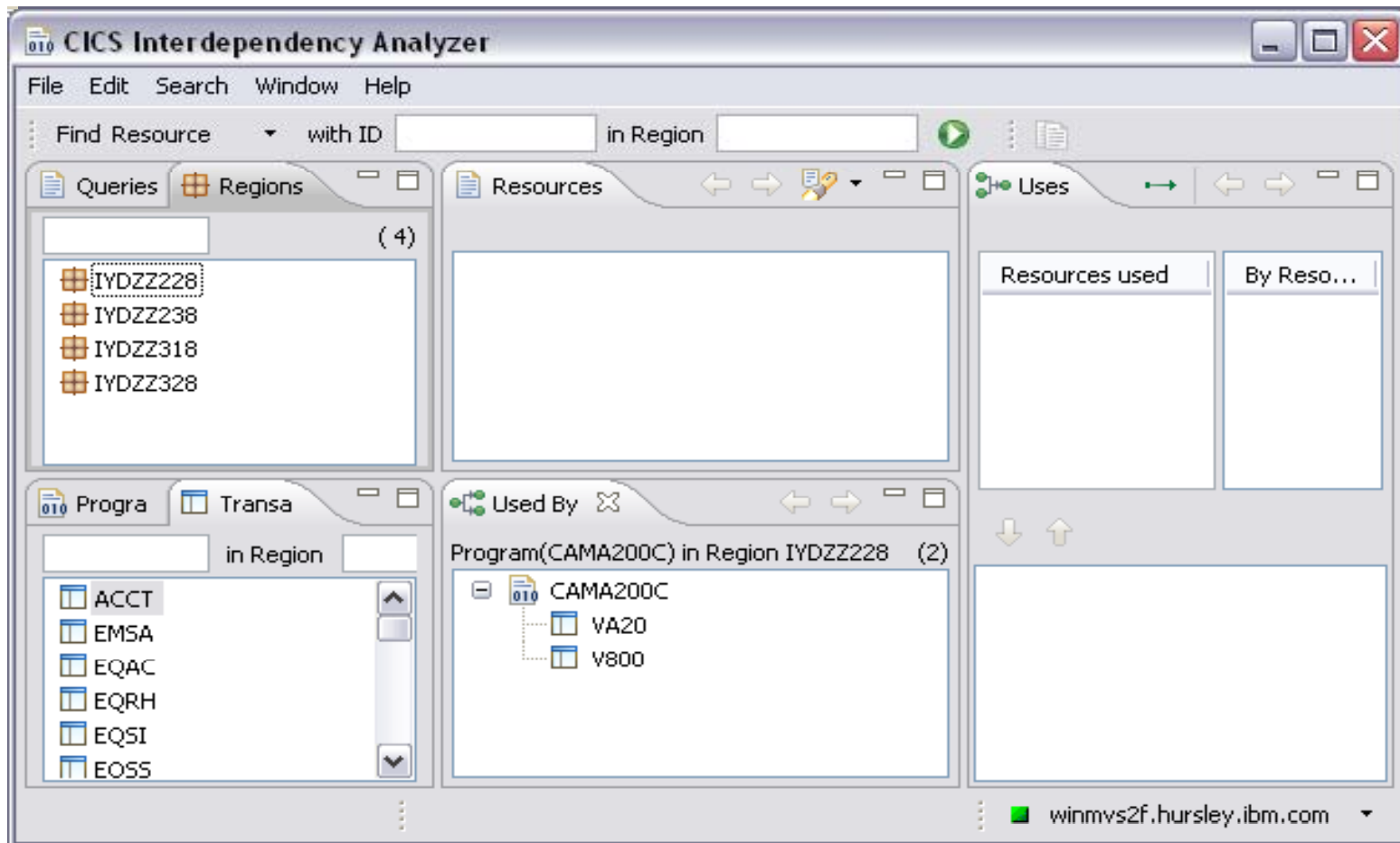
Any set of results can be broken down by Region



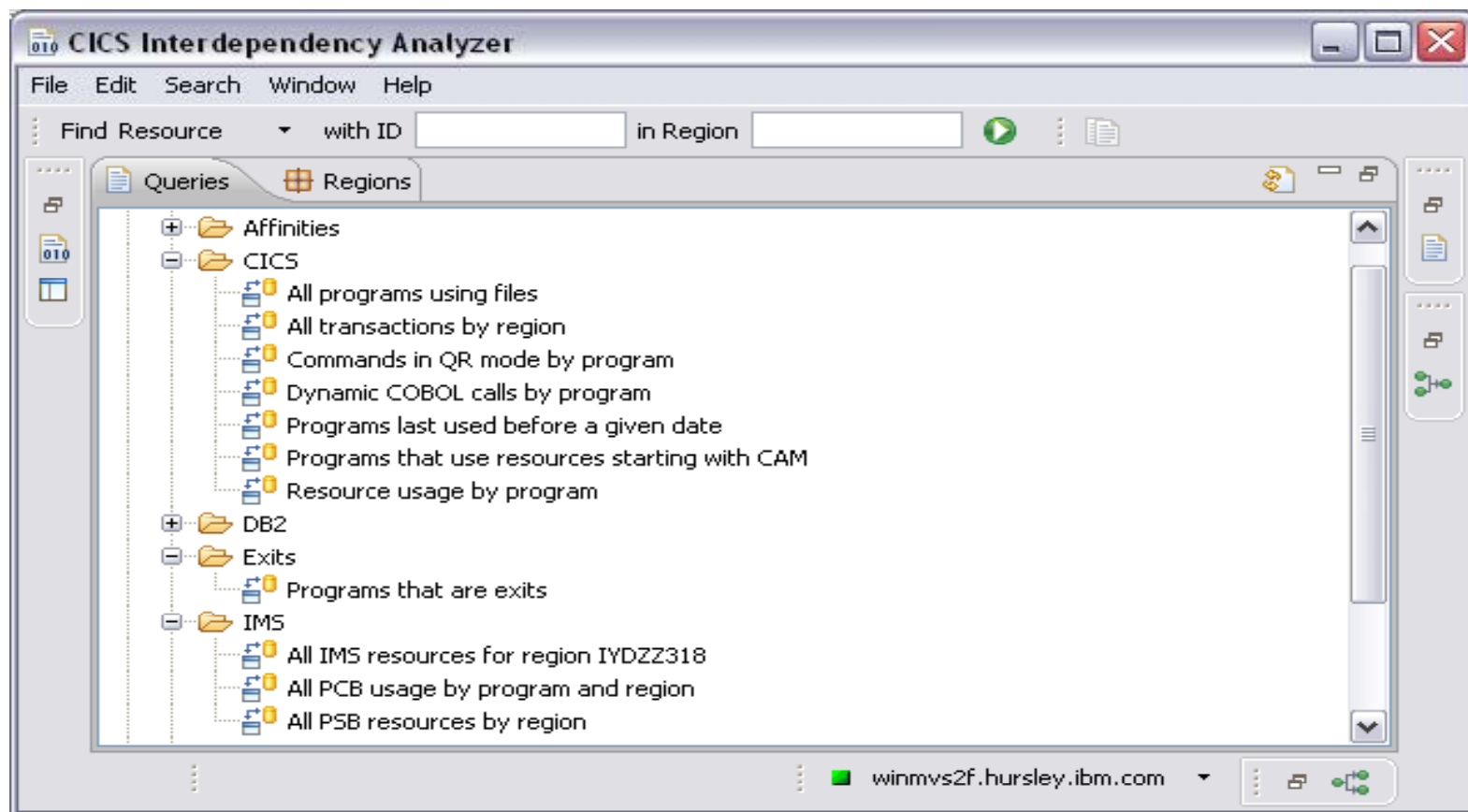
CICS IA Explorer plugin – queries and programs



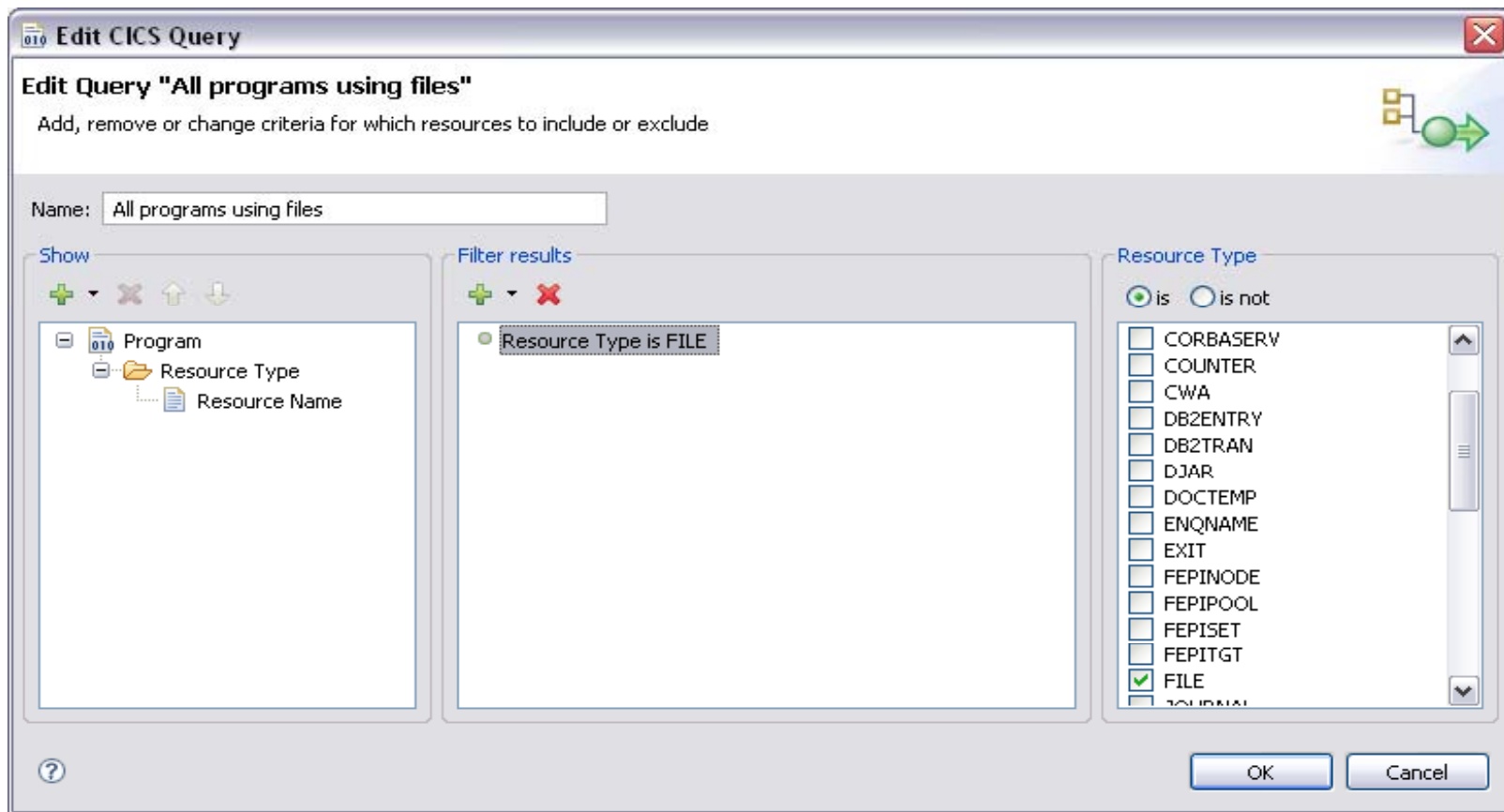
CICS IA Explorer plugin – regions and transactions



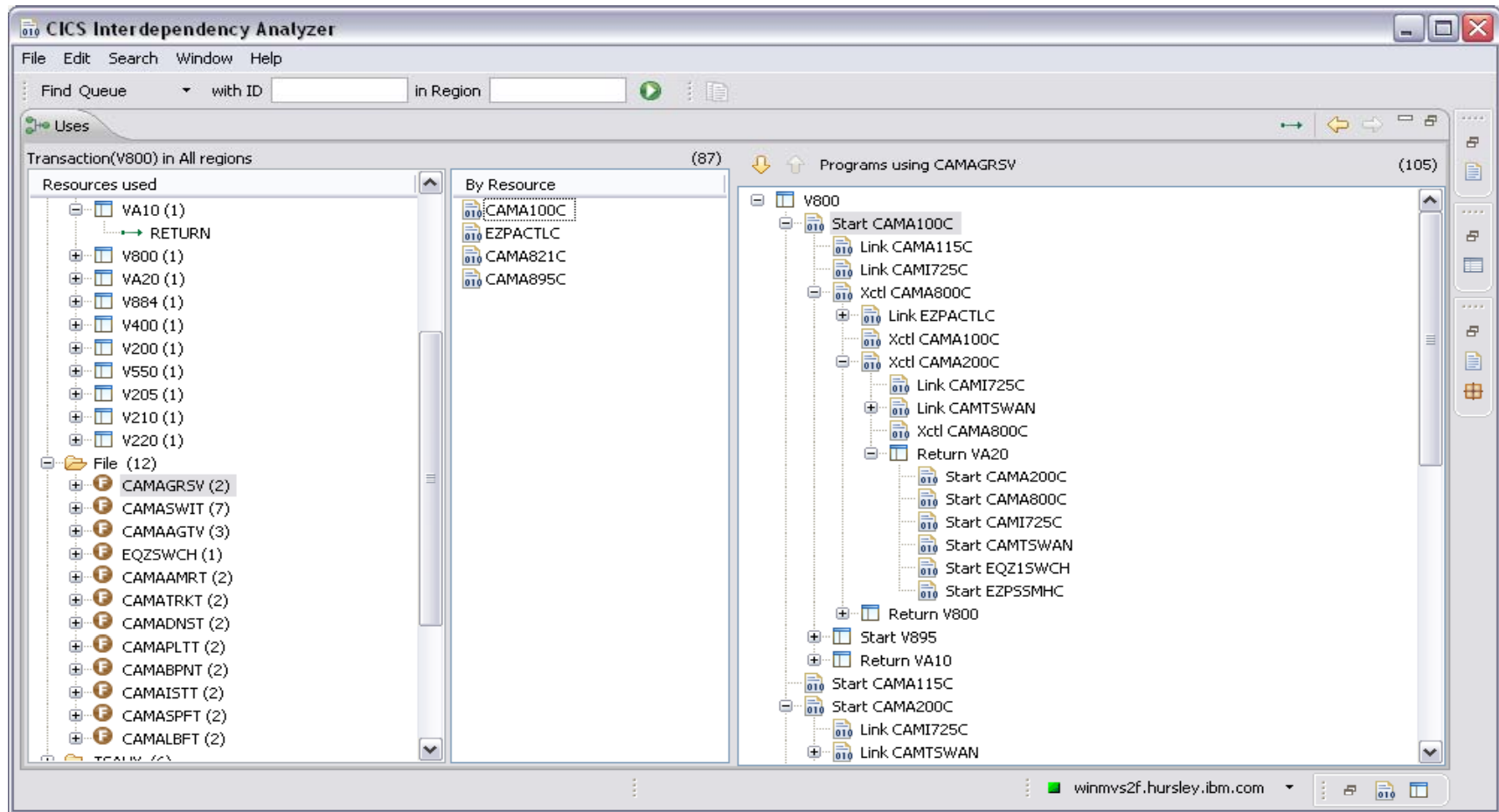
CICS IA Explorer plugin – queries folder



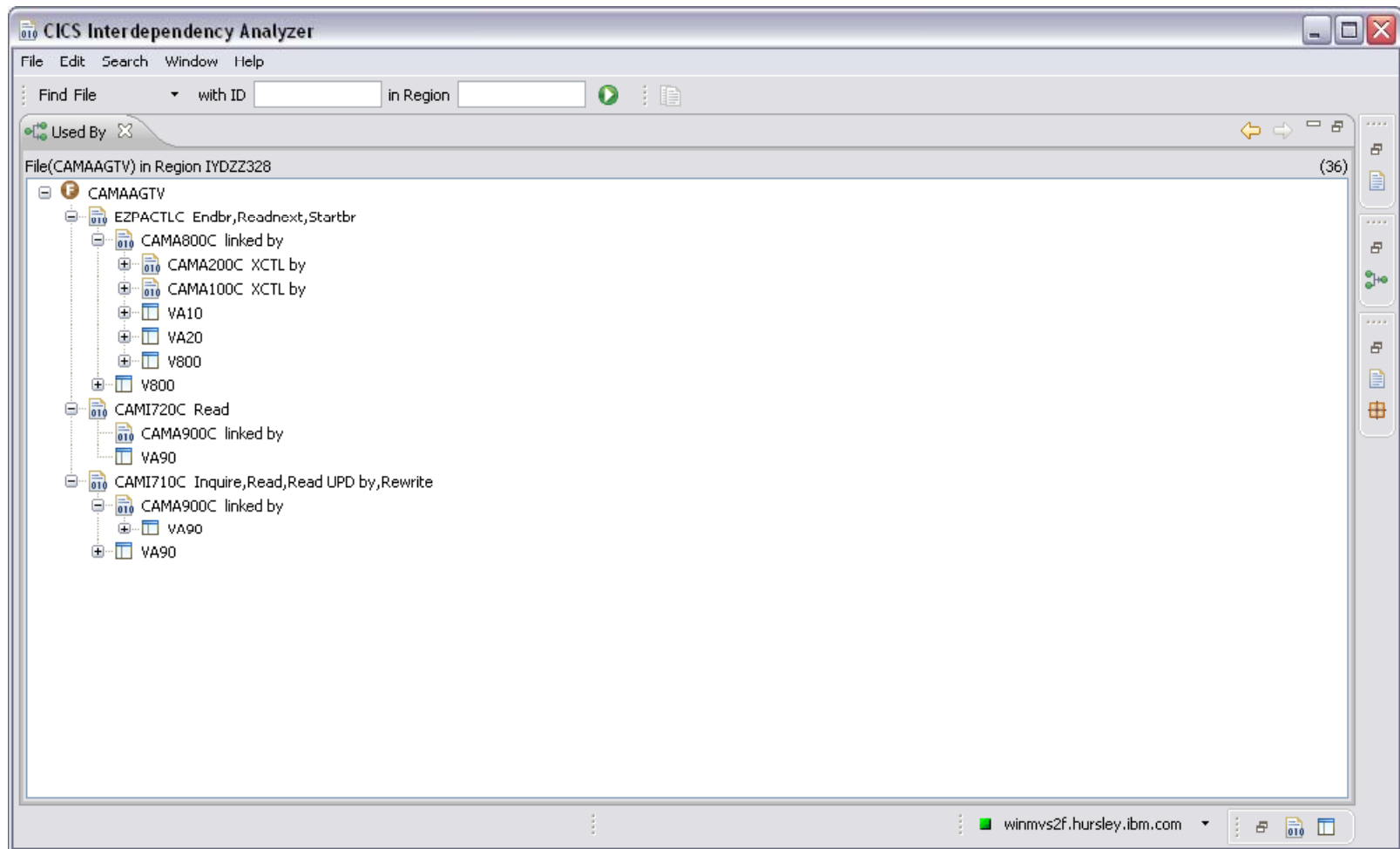
CICS IA Explorer plugin – editing queries



CICS IA Explorer plugin – uses folder

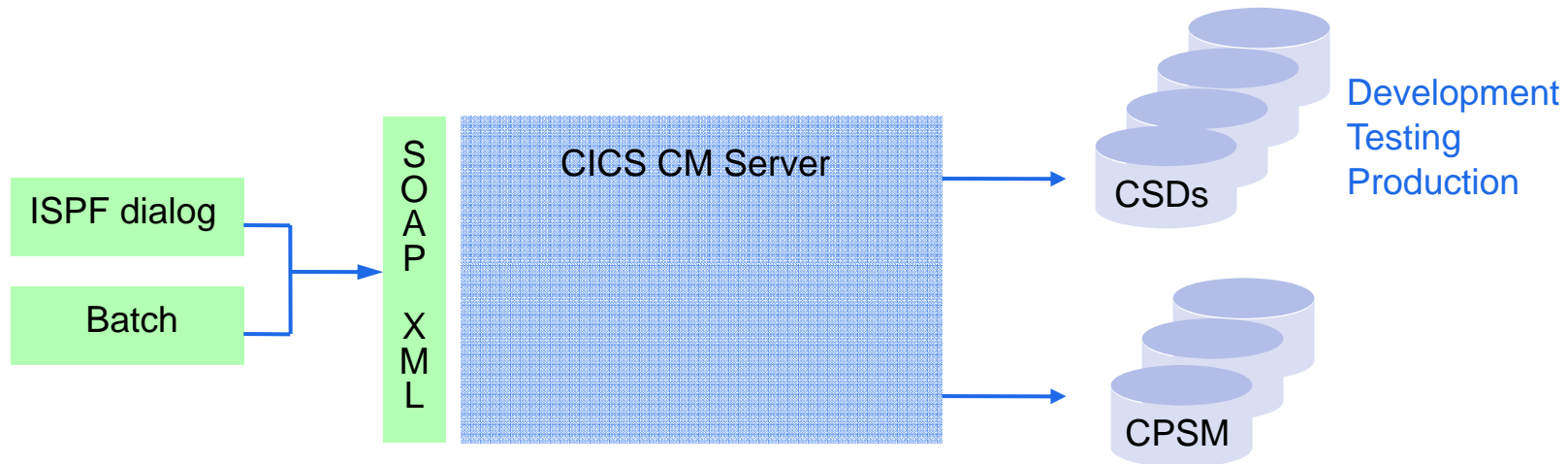


CICS IA Explorer plugin – used by folder



CICS Configuration Manager

CICS Configuration Manager



Goals

- Governance, regulatory compliance, accountability
- Responsiveness, business agility
- Automated repeatable processes

Usage Examples

Function

Switching CSDs

Copying resources

Security/standards

History

Side-by-side compare

Compare Groups

Multiple configurations

Show exceptions

Search

Audit reporting

Migrate with transform

Clean-up reports

Wow

No routing, logging on and off

So easy, and it even does CPSM to CSD

I can finally delegate work and do important stuff

Tells me who, what, when, how

See resource differences on the screen

TEST is different to PROD, not what I expected

Great, I can see n-ways at the same time

Reduce clutter so I can easily see the problem

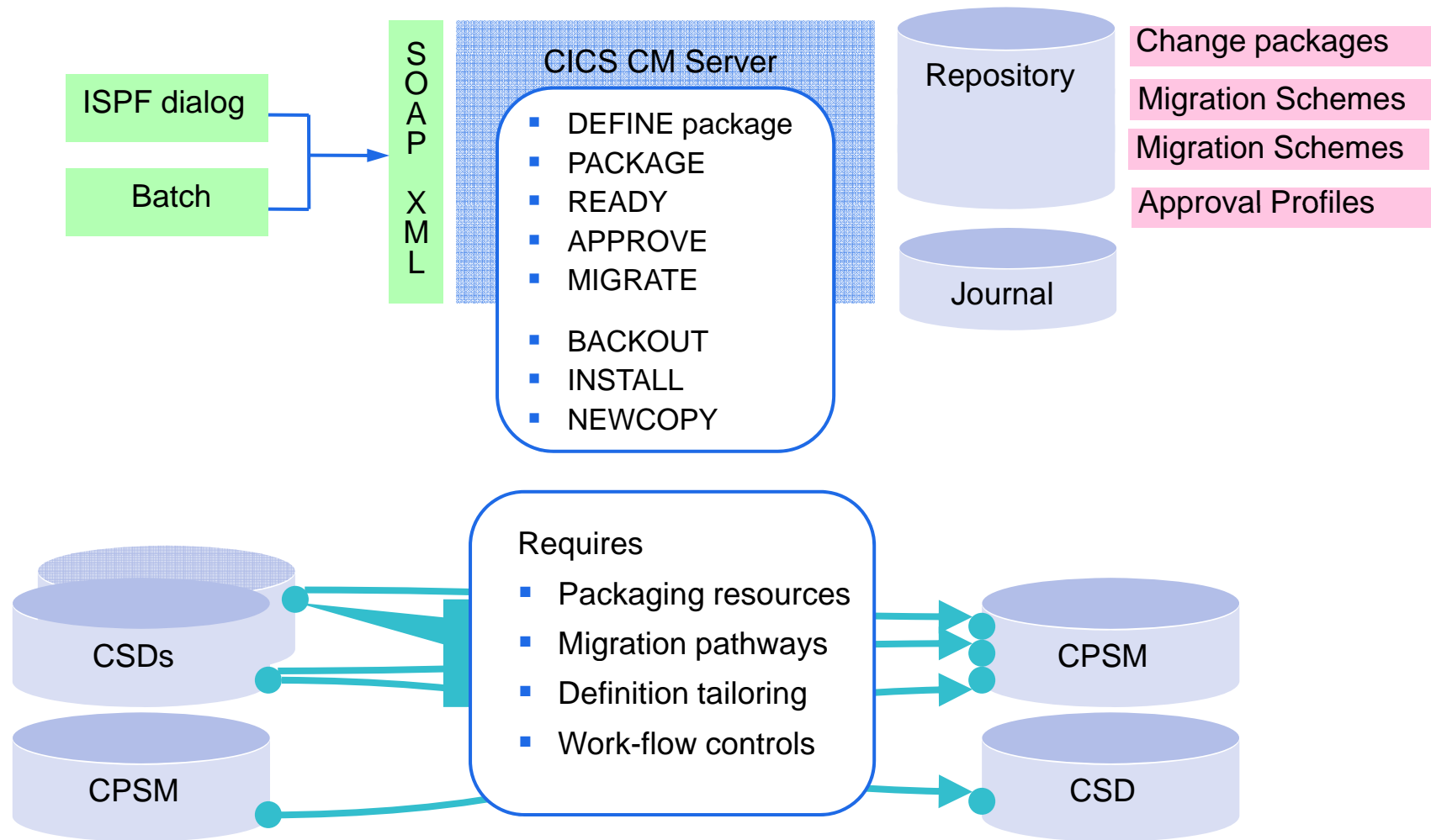
Just like Google - I can keep digging

That'll keep the Auditors happy

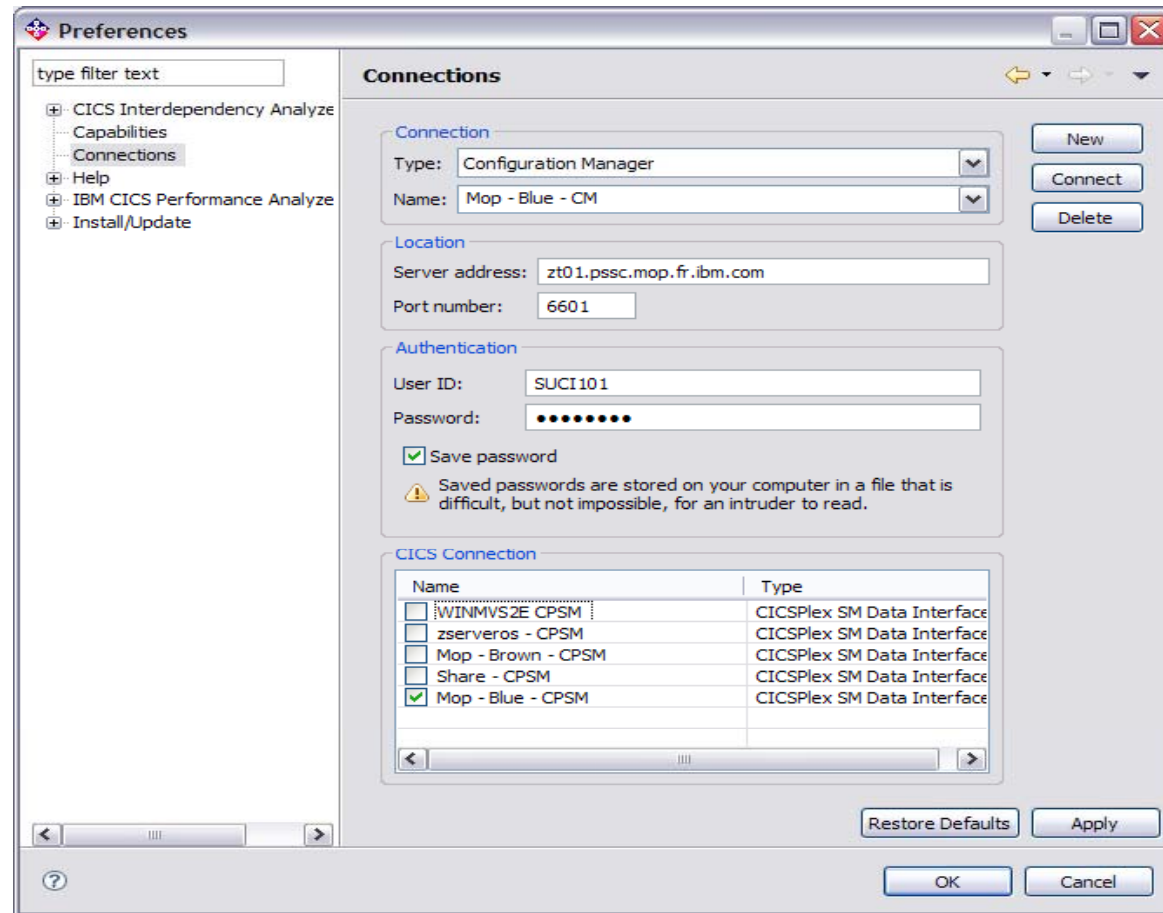
This will save heaps of time

My CSD files are in a mess

Promoting Definition Changes



CICS CM Explorer plugin - connection



CICS CM Explorer plugin – smart editor and history view

The screenshot displays the IBM CICS Explorer interface. The main window is titled "Transaction Definition (D8CS)" and shows the "Overview" tab. The "Basic" section includes fields for Name (D8CS), Description, Version, Created, and Changed. The "Details" section shows the Initial Program (DSN8CC0) and Profile (DFHCICST). The "Storage" section has checkboxes for "Clear task-lifetime storage on release to protect sensitive data", "Task life-time storage can be located above 16MB Line", "Isolate user-key task-lifetime storage from other tasks' user-key programs" (checked), and "Obtain task storage in CICS-key". The "User Data" section has three input fields labeled 1, 2, and 3.

The "History" tab is also visible, showing the "Resource History For D8CS". The history table is as follows:

Revision Time	User Name/After	Before
2009/05/07 10:10:28	SUCI101(UPDATE)	
	twasize	0
2009/05/07 10:09:35	SUCI101(UPDATE)	54
	twasize	54

The left sidebar shows a tree view of configurations, lists, and groups. The "Groups" section is expanded to show a list of groups including AUTOTYPE, CANDLE, CEE, CICS0ADT, COMPGRP1, COMPGRP2, COMPGRP3, CSQCAT1, DB2V8, DB2610, DEMOGRP, DFH\$ACCT, DFH\$AFLA, DFH\$BABR, and DFH\$BARF.

CICS CM Explorer plugin – search and history

The screenshot displays the IBM CICS Explorer application window. The main area shows a search results table for transaction D8CS. The table has columns for Name, Version, Program Name, Created, Changed, Description, and Status. The results show several records for D8CS, all with a status of 'ENABLED'.

Name	Version	Program Name	Created	Changed	Description	Status
D8CS	N/A	DSN8CC0	N/A	07-May-2009 1...		✓ ENABLED
D8PP	N/A	DSN8CP6	N/A	03-Apr-2009 0...		✓ ENABLED
D8PS	N/A	DSN8CP0	N/A	03-Apr-2009 0...		✓ ENABLED
D8PT	N/A	DSN8CP3	N/A	07-May-2009 1...		✓ ENABLED
D8PU	N/A	DSN8CP3	N/A	03-Apr-2009 0...		✓ ENABLED

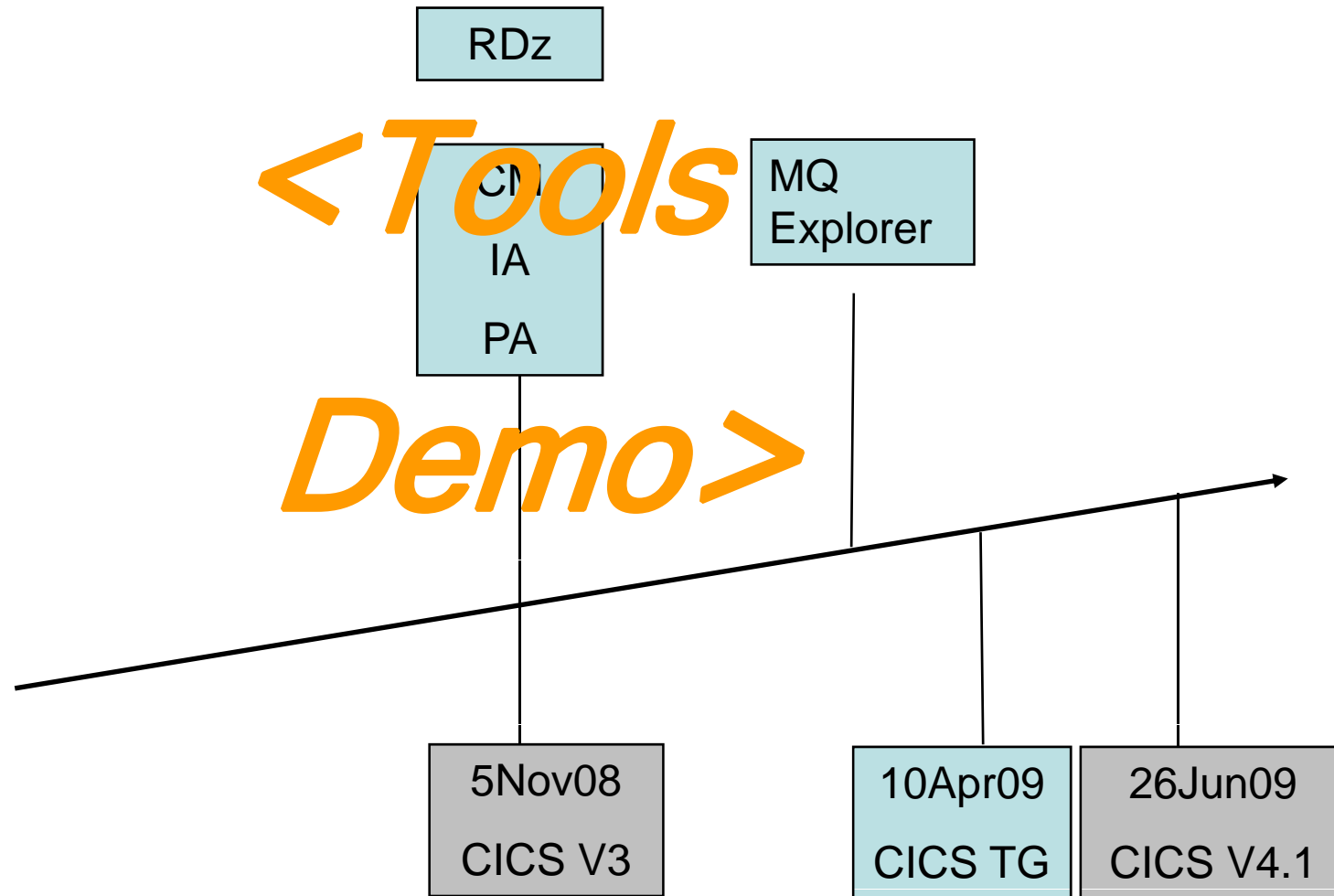
Below the search results, there is a 'Search Results' pane showing 'Orphaned groups for DM01CSD1, DM01CSD2' with a total of 168 items. The groups are listed in a tree view, including DM01CSD1 (84) and DM01CSD2 (84), with various sub-groups like DFH\$ACCT, DFH\$AFLA, etc.

On the right side, there is a 'Properties' pane showing 'Resource History For D8CS'. This pane contains a table with columns for Revision Time, User Name/After, and Before. The history shows several updates performed by SUCI101 on 2009/05/07.

Revision Time	User Name/After	Before
2009/05/07 10:38:33	SUCI101(UPDATE)	
2009/05/07 10:35:28	SUCI101(UPDATE)	
2009/05/07 10:34:51	SUCI101(UPDATE)	
2009/05/07 10:20:55	SUCI101(UPDATE)	
2009/05/07 10:10:28	SUCI101(UPDATE)	
2009/05/07 10:09:35	SUCI101(UPDATE)	

The interface also includes a 'Configurations' pane on the left showing a list of CSD/Context entries, and a 'Groups' pane showing a list of groups for DM01CSD2.

CICS CM Explorer Integration – Demo

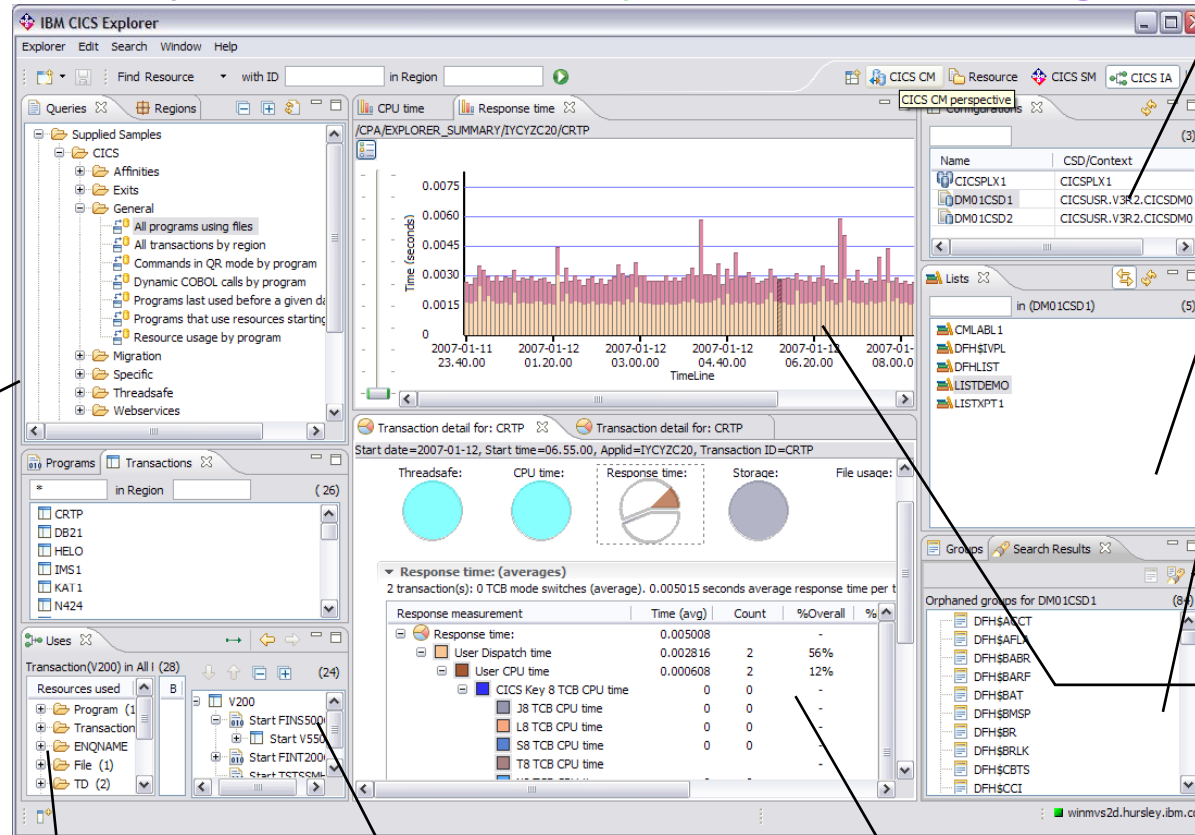


CICS Explorer & CICS Tools: Putting it all Together

Interdependency Analyzer

Performance Analyzer

Configuration Manager



Single point of control for CSDs and DREPs

Lists and ResDescs

Search for Orphaned groups

Timeline of response times

Shipped Sample Queries

View tree of resources used

Resources used by a transaction

Drilldown into transaction

Rational Developer for System z

The screenshot displays the IBM Rational Developer for System z interface. The main window is the Resource Definition Editor for a CICS region named NQA17C01. It shows a list of resources with columns for Selection, Resource Name, Resource Type, Description, and State. Below this, there are sections for Installation and Export Definition. A separate window, CICS TS Explorer, is open, showing a tree view of the region's resources. A third window, also titled CICS TS Explorer, displays a detailed list of programs and their status.

CICS TS Explorer Region tree

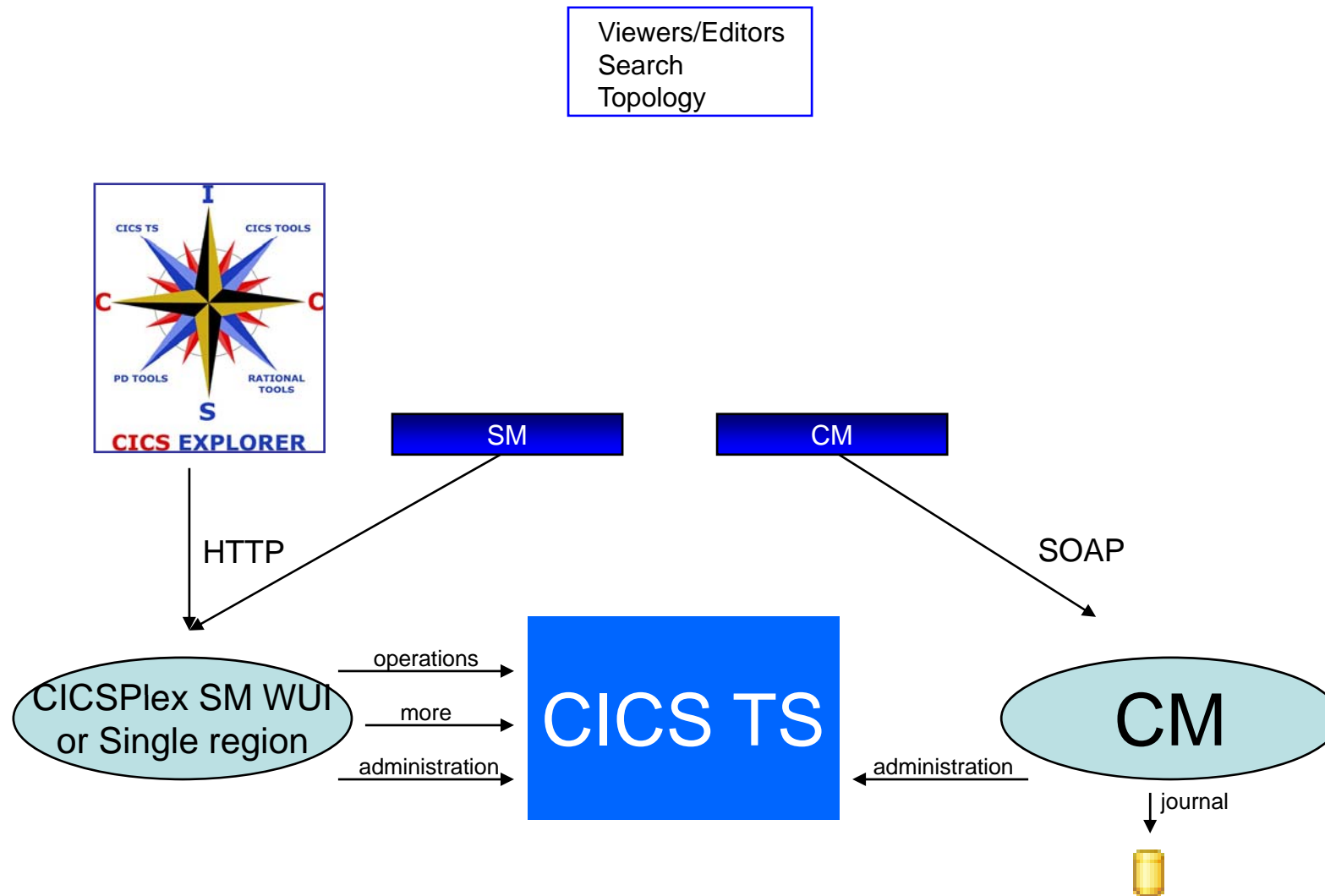
CICS TS Explorer Resource types

- programs
- transactions
- files
- RPL list

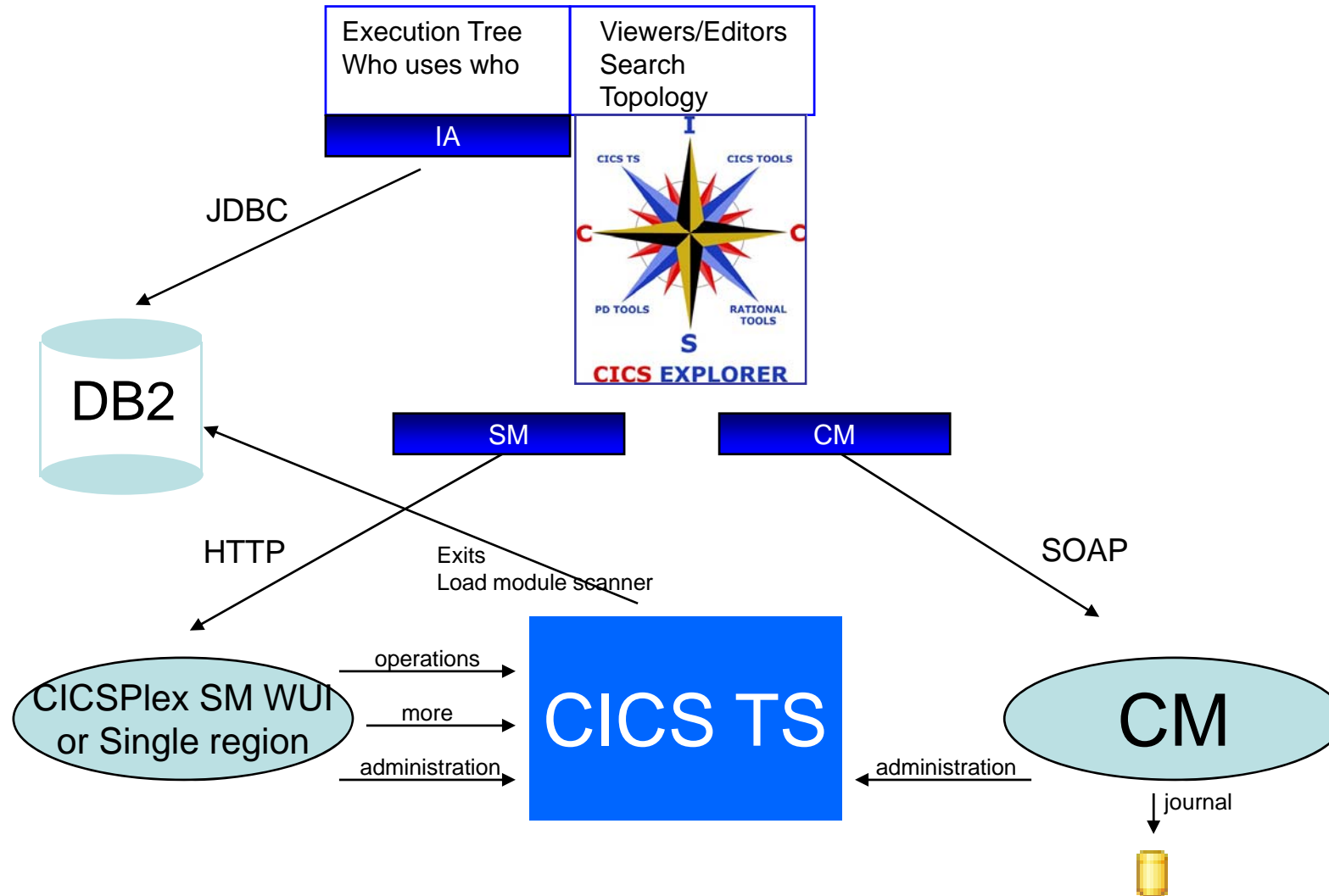
CICS TS Explorer program list

Name	Status
ACCTCHAN	✓ ENABLED
ACCTTEST	✓ ENABLED
ADNCHKUR	✓ ENABLED
ADNCRDS	✓ ENABLED
ADNTMSGH	✓ ENABLED
BACEDALP	✓ ENABLED
BACEDAP	✓ ENABLED
BALABSP	✓ ENABLED
BAWYMQ	✓ ENABLED
BAWYMQP	✓ ENABLED
BA1DPLP	✓ ENABLED
CBCDEBUG	✓ ENABLED
CHANELLE	✓ ENABLED

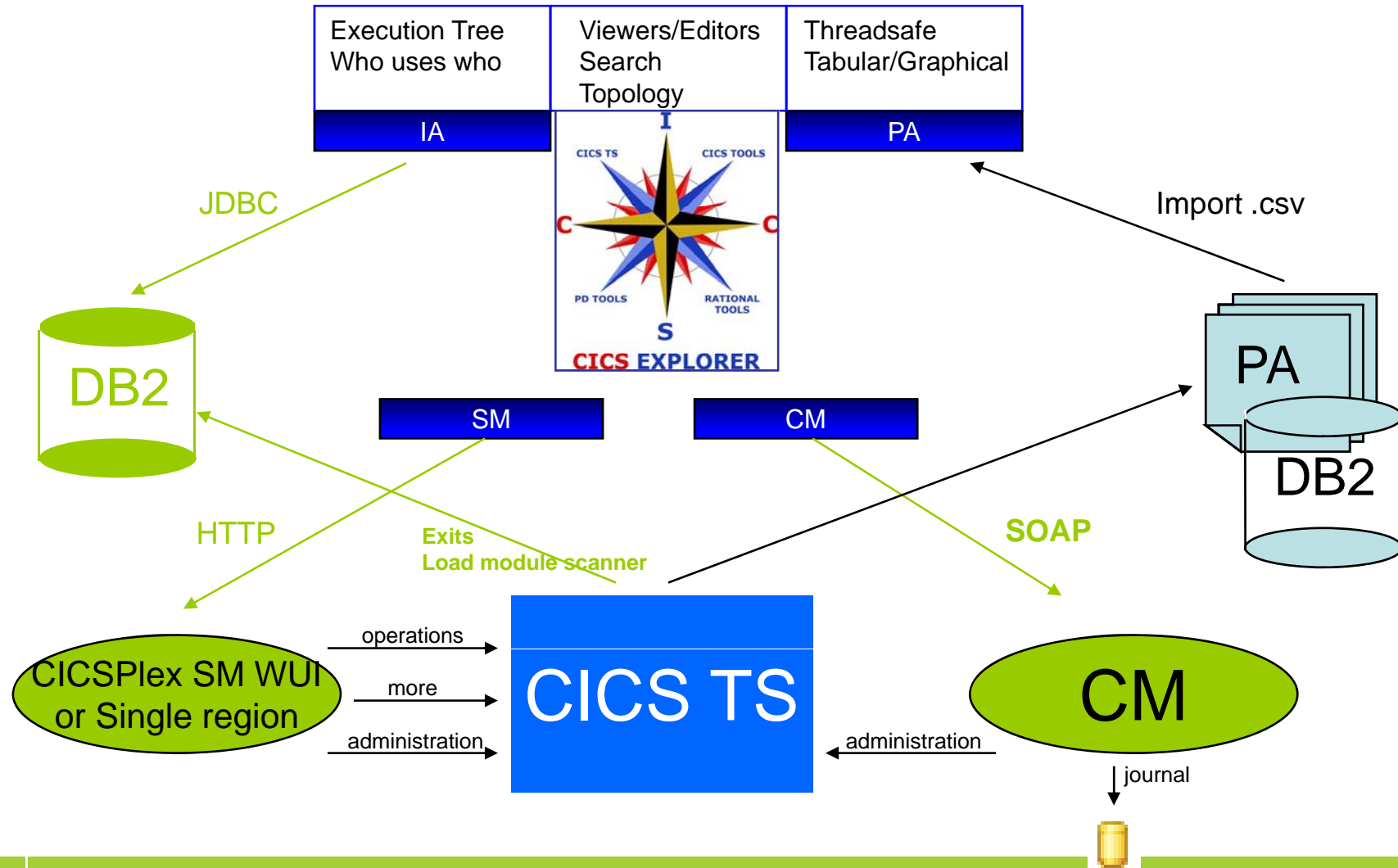
The whole exceeds the sum of the parts – CICS & CICS CM



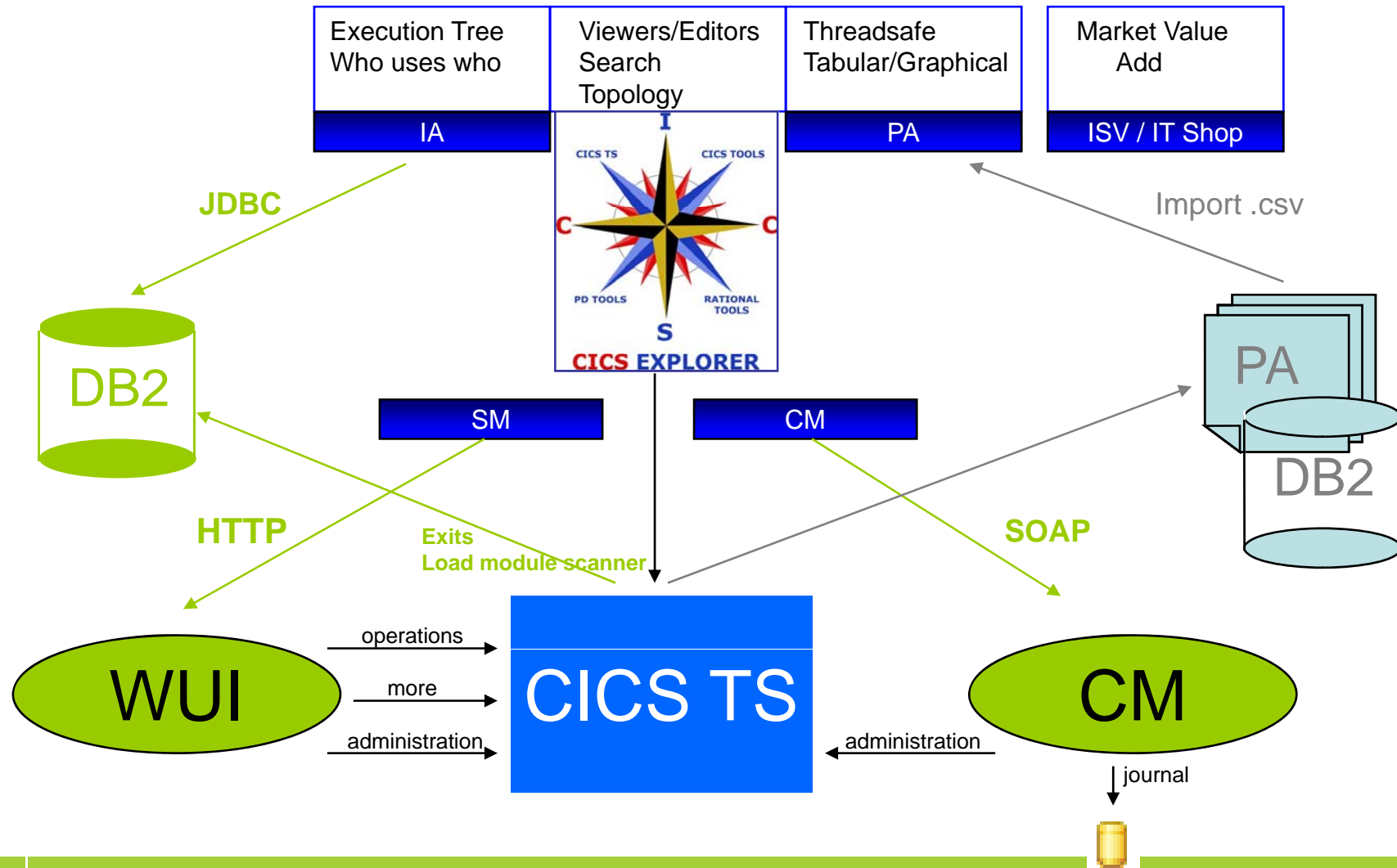
The “single new face of CICS” – with CICS IA



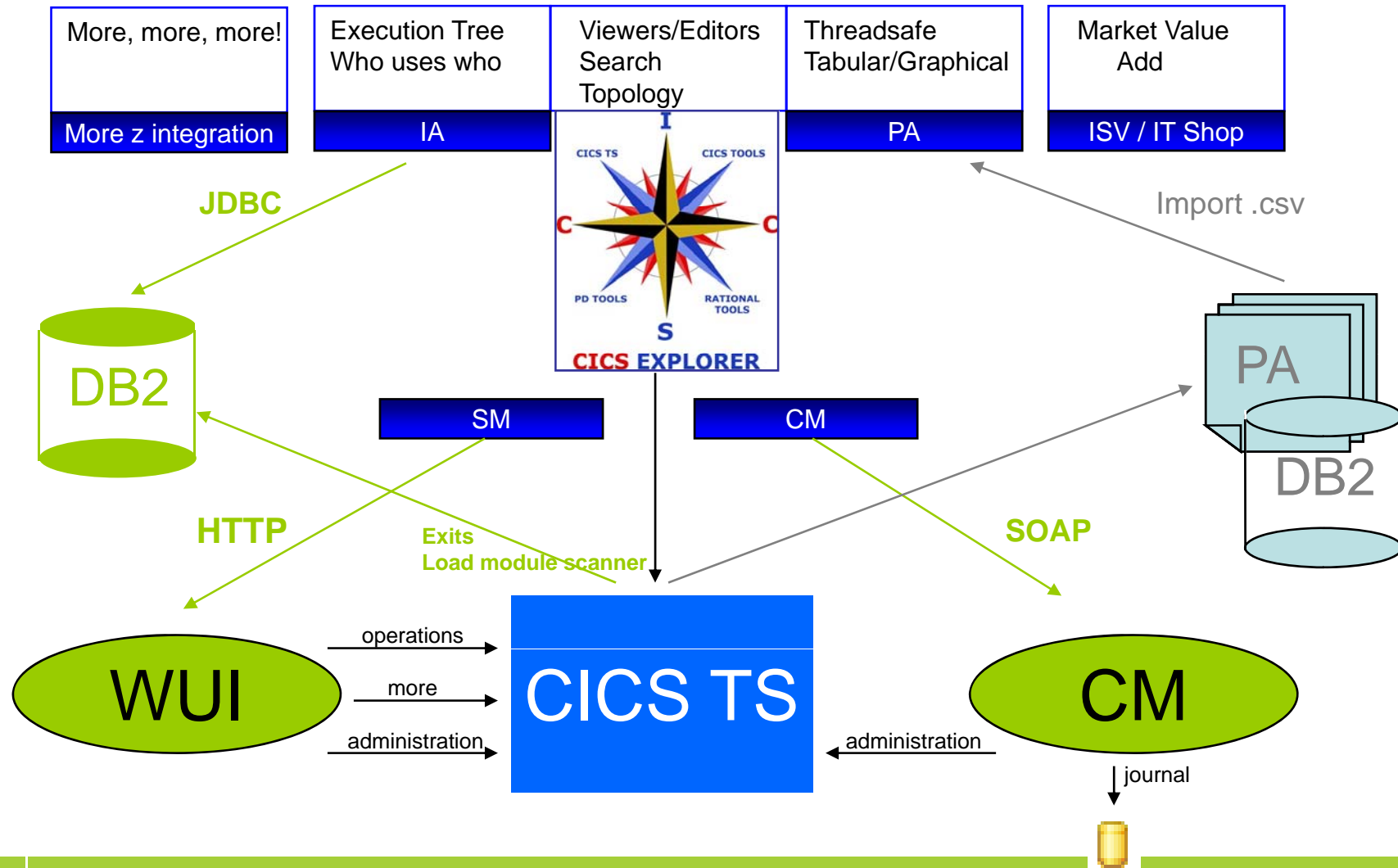
CICS PA completes the story (for now)



CICS Explorer SDK



What is next???



CICS Transaction Gateway

The screenshot displays the IBM CICS Explorer interface with several key panels:

- Regions Panel:** Lists various CICS regions such as YCWJJK1, YCWJTX1, YCWJTX2, YCOCC1, YCOCCW, YCXDD1, YCXDDW, YCXJEE1, YCXJEW, YCXJFC1, YCXJFD1, YCXJFE1, YCXJFW, YK2Z32A, YK2Z32B, YK3ZGCL, and YK3ZOCX. Columns include Job Name, MVS System, Task Count, CICS Status, Release, Total CPU, Page In Count, Page Out Count, and I/O Count.
- Gateway daemons Panel:** Shows details for GATEWAYS, including Name, Status, Version, Gateway ID, Netname, Up time, TCP Port, Clients, Max pipes, and Allocated pipes.
- CICS Connections Panel:** Lists connections like CTGPW3, CTGPW4, and EXCI, showing Server, Protocol, Target, Default, Comms fails, Completed, Response, Active req, Allocated, and Allocate pi.
- Properties Panel:** Displays connection properties for EXCI and IPIC, including Comms fails, Default, Name, Protocol, Server, Target, Allocated pipes, Allocate pipe fails, Connect fails, Idle timeouts, Lost, Max sessions, and Requested sessions.

CTG Gateway daemons
 Name, status, version, ID, netname, TCP port, clients, pipes, etc

CTG Connections
 Name, server, protocol, target, etc

CICS TS Explorer
CTG Connection Properties

Tivoli OMEGAMON for CICS

Currently a Proof-of-concept of CICS Explorer integration with OMEGAMON for CICS

The screenshot displays the Eclipse IDE with the CICS Explorer plugin. The left-hand pane shows a hierarchical tree view of the CICS environment, including regions like MV2C.WUIJT4A and transaction gateways. The main workspace is divided into two panes. The top pane shows a table of CICS transactions with the following columns: Origin_Node, System_ID, CICS_Name, Transaction_ID, Task_Number, Termid, CICS_SYSIDNT, and User_ID. The bottom pane shows a table of system events with columns: HSITNAME, HNODE, ATOMIZE, HGLTMTSTMP, HLCLTMTSTMP, HORIGINNODE, PATHNAME, TYPE, and HC.

Origin_Node	System_ID	CICS_Name	Transaction_ID	Task_Number	Termid	CICS_SYSIDNT	User_ID
MV2C.WUIJT4A	MV2C	WUIJT4A	CSOL	00004	n/a	JT4A	n/a
MV2C.WUIJT4A	MV2C	WUIJT4A	CSSY	00005	n/a	JT4A	n/a
MV2C.WUIJT4A	MV2C	WUIJT4A	CSSY	00006	n/a	JT4A	n/a
MV2C.WUIJT4A	MV2C	WUIJT4A	CSTP	00008	n/a	JT4A	n/a
MV2C.WUIJT4A	MV2C	WUIJT4A	CONL	00019	n/a	JT4A	JT1
MV2C.WUIJT4A	MV2C	WUIJT4A	CSSY	00020	n/a	JT4A	n/a
MV2C.WUIJT4A	MV2C	WUIJT4A	CSHQ	00022	n/a	JT4A	n/a
MV2C.WUIJT4A	MV2C	WUIJT4A	CSNE	00024	n/a	JT4A	n/a
MV2C.WUIJT4A	MV2C	WUIJT4A	CISR	00025	n/a	JT4A	n/a
MV2C.WUIJT4A	MV2C	WUIJT4A	CISE	00026	n/a	JT4A	n/a
MV2C.WUIJT4A	MV2C	WUIJT4A	COVG	00028	n/a	JT4A	JT1
MV2C.WUIJT4A	MV2C	WUIJT4A	COIO	00181	n/a	JT4A	JT1
MV2C.WUIJT4A	MV2C	WUIJT4A	COIE	00182	n/a	JT4A	JT1
MV2C.WUIJT4A	MV2C	WUIJT4A	COVA	00273	n/a	JT4A	JT1

HSITNAME	HNODE	ATOMIZE	HGLTMTSTMP	HLCLTMTSTMP	HORIGINNODE	PATHNAME	TYPE	HC
Crypto_Service...	WALKER:CMS		109022016002...	109022016002...	MVSAA:MVA...		0	
Crypto_Internal...	WALKER:CMS		109022016002...	109022016002...	MVSAA:MVA...		0	
Sysplex_DASD...	WALKER:CMS		109022016095...	109022016095...	MVSAA:MVS:SY...		0	

Available on Opal Library

Summary

- Easy-to-use, Eclipse-based interface
- Rich edit and view capabilities
- Productivity for experienced and new CICS users
- View CICS V3, view and update CICS V4
- Tools integration



Thank You

Any Questions?



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