

CICS Transaction Server V4.2 – User Experience Panel

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About Southern California Edison



- Second largest investor-owned electric utility in the U.S.
- Subsidiary of Edison International (NYSE = EIX)
- \$12.4 billion revenue in 2010
- 430 cities in our 50,000 square mile service territory
- includes 13 million people
- 5 million meters
- 18,000+ employees

Southern California Edison Technical Details

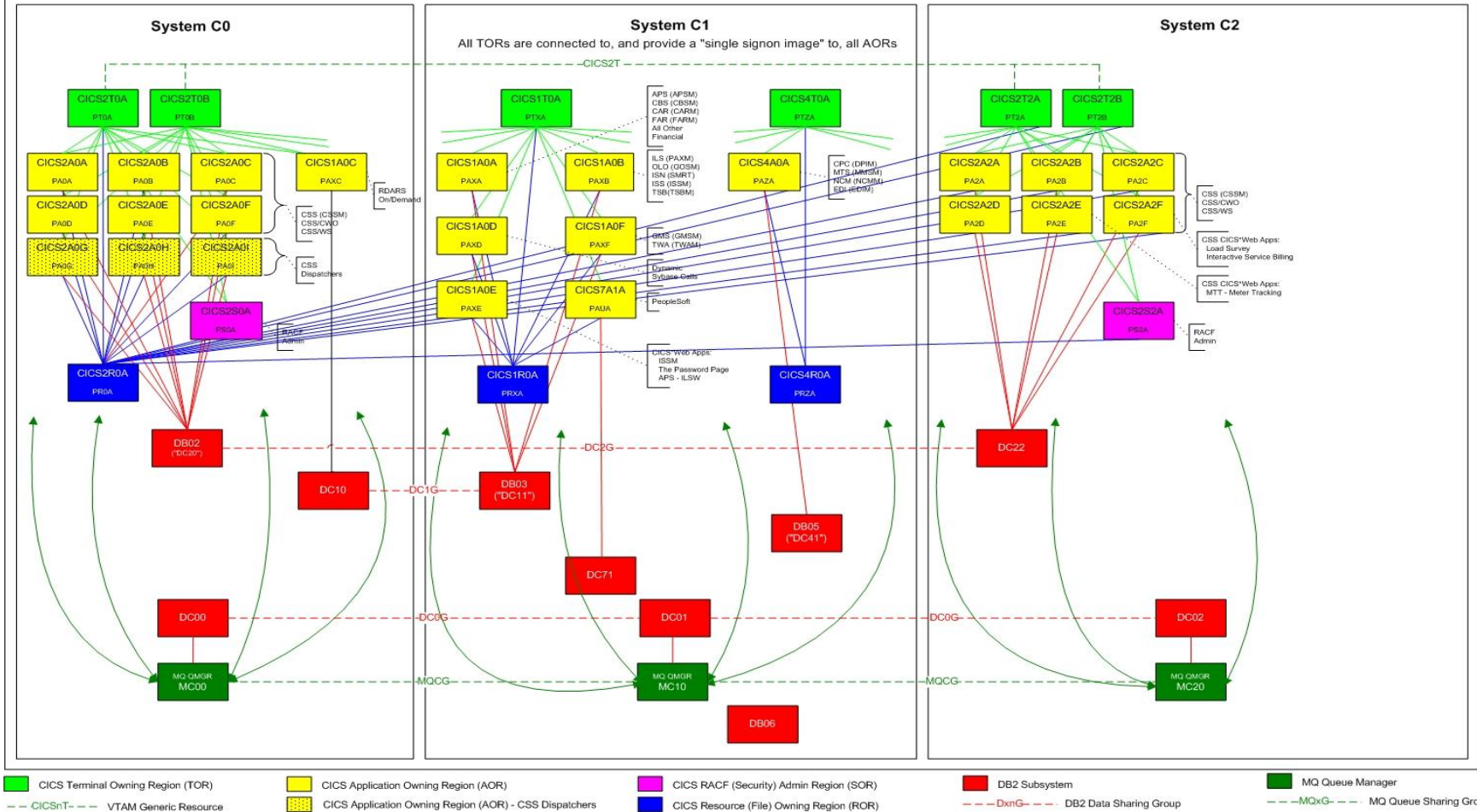


- Two data centers
 - One backs up the other via XRC
- 6,286 z/OS MIPS on two z/196's and one z10 (DR Backup)
 - Expandable to 11,276 MIPS for Disaster Recovery
 - Of course, that implies the other 5,300 MIP machine is down
- 3 Sysplexes – Production, App Development, Sandbox
 - 26 LPARS
 - 5 production, 2 dev, 3 sandbox, 2 comm, 9 DR, 3 XRC, 2 z/VM (mostly Linux)
 - z/OS 1.13, CICS TS 4.2, DB2 V9 everywhere
 - 130 CICS Regions – 67 dev, 40 production, 15 sandbox – in 3 CICSplexes
 - 3 million CICS/DB2/MQ “user” transactions per day in production
- 838 Unix (mostly AIX) Server Images on 125 Servers
- 3,270 “Non-Unix” (mostly Wintel) Server Images on 1,545 Servers
- 192 TB Mainframe DASD, 2 Petabytes non-mainframe DASD

Production Transaction Processing Config

SCE CICS/DB2/MQ Production Configuration

IBM z10 Model 2097-706 Ser# DCB31



CICS Application Mix at SCE

- CICS is for “legacy” applications in our shop
 - Not a lot of new development going on, hence not much use of new function (Java, Web Services, etc.) in CICS
 - Although there’s suddenly a lot of interest in Web Services
 - And just implemented our first Java program in CICS
- 5 years ago decided to “move everything” to SAP
 - At that time, “The Mainframe is (or will be) dead”
 - Cooler heads prevailed – Customer Service System remains in CICS
- Largest App is Customer Service System (CSS)
 - 3 Million User Transactions a Day
 - PowerBuilder on the Workstation,
 - talks to MQ Client,
 - which sends “request” messages to MQ on the mainframe;
 - long-running “listener” tasks running in 4 TORs,
 - routes transactions to 10 cloned AORs on 2 LPARs
 - Application in AOR sends “response” message back to Powerbuilder via MQ
 - Batch process produces 250,000 Customer Bills each day

What We Tested in the 4.2 Beta

- 64 bit – many control blocks have moved “Above the Bar”
- IPIC – Region connectivity across IP Connections (IPCONN)
- CPSM WLM Enhancements
- Threadsafe Improvements
- CICS Explorer Enhancements
- System Events

What We Didn't Test in the 4.2 Beta

- Like I said earlier,
 - We have no Java (so no JVMSERVER work)
 - No CICS Transaction Gateway or WebSphere Application Server
 - All of our WAS connectivity comes through MQ
 - So very little of the new connectivity options
- No real Web Service applications
 - Although that has suddenly taken off and a lot of development is happening now
- No HTTP 2.0
 - No Atomservices, Dynamic Scripting, etc.
- There's probably a lot more in 4.2 I'm missing

64 Bit – Control Blocks Moved Above the Bar

- 4.2 moves many control blocks “above the bar”
 - CSA, TCA, etc. – not the CWA
 - All have been heavily modified
 - “The TCA has been radically changed”
 - So if you have code that twiddles in those. . .
 - All User Exits that use the XPI must be reassembled
- MEMLIMIT=4G is the minimum for CICS to run
 - We don’t specify it anywhere
 - not in SYS1.PARMLIB, not in Region jobs
 - Our z/OS guys basically told me
 - We let the system manage it
 - It all just depends on how much real storage backs it all up anyway
 - The system is pretty good at managing it itself
- TSMMAINLIMIT can’t be greater than 25% of MEMLIMIT
 - We specify 1024M

IPIC – Region connectivity across IP Connections (IPCONN)

- IP Connections have been around for a while, but in 4.2
 - File Control, Temp Storage and Transient Data all full function now
- Since we don't have WAS or CTG connecting directly to CICS:
 - All we really tested was IPIC between CICS Regions
 - Between an AOR and an FOR
- All functionality that we normally have on MRO and ISC links
 - FC, TS and TD all look good
 - We will probably replace our ISC links with IPIC
 - But still not as fast as MRO and XCF
 - So really only for links to remote connections
- More to come under Threadsafe Mirror, Open TCBs and WLM

CPSM WLM Enhancements

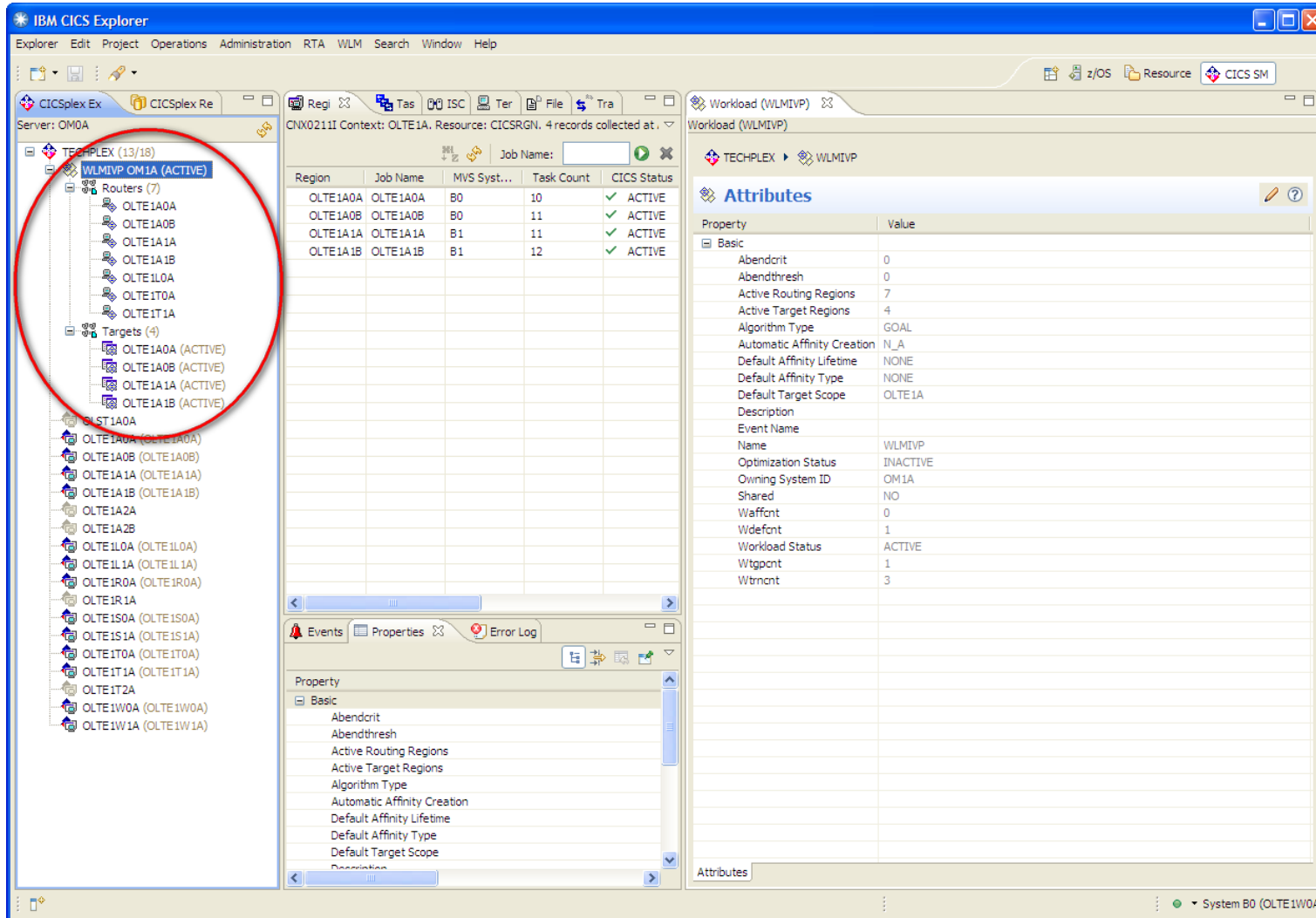
- We use CPSM's WLM to manage our workload balancing
 - across 10 cloned AORs spread over 2 LPARs
- IPIC Connections now weighted higher
 - Between LU6.2 and MRO/XCF
- New Routing Algorithms exclude “Link Weighting”
 - In addition to Queue and Goal,
 - There's now LNQueue and LNGoal (LN = Location Neutral)
 - Disregards the type of connection (MRO, ISC, IPIC, etc.) to the AOR
 - In the past work coming into one LPAR tended to stay on that LPAR
 - With Location Neutral, you can balance that better
 - *If that's what you want to do*

Threadsafe Improvements

- “Threadsafe Mirror” across IPIC Connections
 - Use FCQRONLY=NO in the FOR
- CONCURRENCY(REQUIRED) on Program Definitions
 - Says program MUST run on an Open TCB (L8 with API(CICSAPI))
 - Can get tasks that never used the L8 to run almost entirely on them
 - We defined nearly all our application programs as CONCURRENCY(THREADSAFE) when it became available
 - In testing, changed all of those to CONCURRENCY(REQUIRED)
 - Got a DB2-oriented task that spent about 3% of its time on the L8 to go to 87% on the L8
 - Got a VSAM-oriented task that spent 0% on the L8 to go to 80%
 - Most QR time was Terminal I/O (SEND/RECEIVE MAP, etc.) or CONVERSE across MRO/ISC for FC I/O
 - TCB Switches increased, but such increased usage of L8 should improve throughput (we think – no “real” performance measurement yet)

CICS Explorer Enhancements

Can now view CPSM Workload information in Explorer



The screenshot displays the IBM CICS Explorer interface. On the left, a tree view shows the hierarchy of resources, with 'WLMIVP OM1A (ACTIVE)' highlighted and circled in red. The main pane shows a table of workload information for 'WLMIVP'.

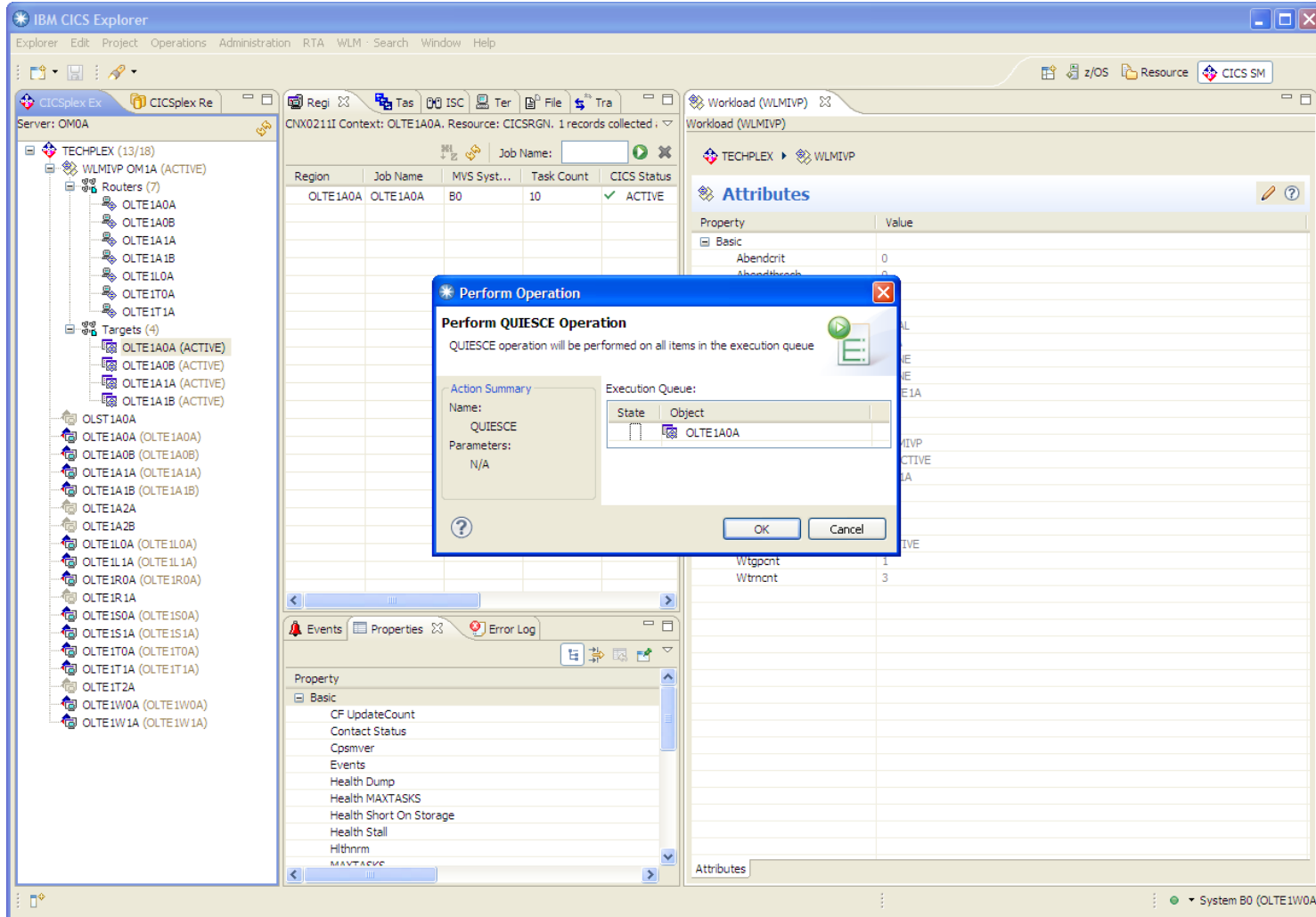
Region	Job Name	MVS Syst...	Task Count	CICS Status
OLTE1A0A	OLTE1A0A	B0	10	ACTIVE
OLTE1A0B	OLTE1A0B	B0	11	ACTIVE
OLTE1A1A	OLTE1A1A	B1	11	ACTIVE
OLTE1A1B	OLTE1A1B	B1	12	ACTIVE

Below the table, the 'Attributes' pane shows the following properties and values:

Property	Value
Abendcrit	0
Abendthresh	0
Active Routing Regions	7
Active Target Regions	4
Algorithm Type	GOAL
Automatic Affinity Creation	N_A
Default Affinity Lifetime	NONE
Default Affinity Type	NONE
Default Target Scope	OLTE1A
Description	
Event Name	
Name	WLMIVP
Optimization Status	INACTIVE
Owning System ID	OM1A
Shared	NO
Waffont	0
Wdefont	1
Workload Status	ACTIVE
Wtgpct	1
Wtrmt	3

CICS Explorer Enhancements (cont.)

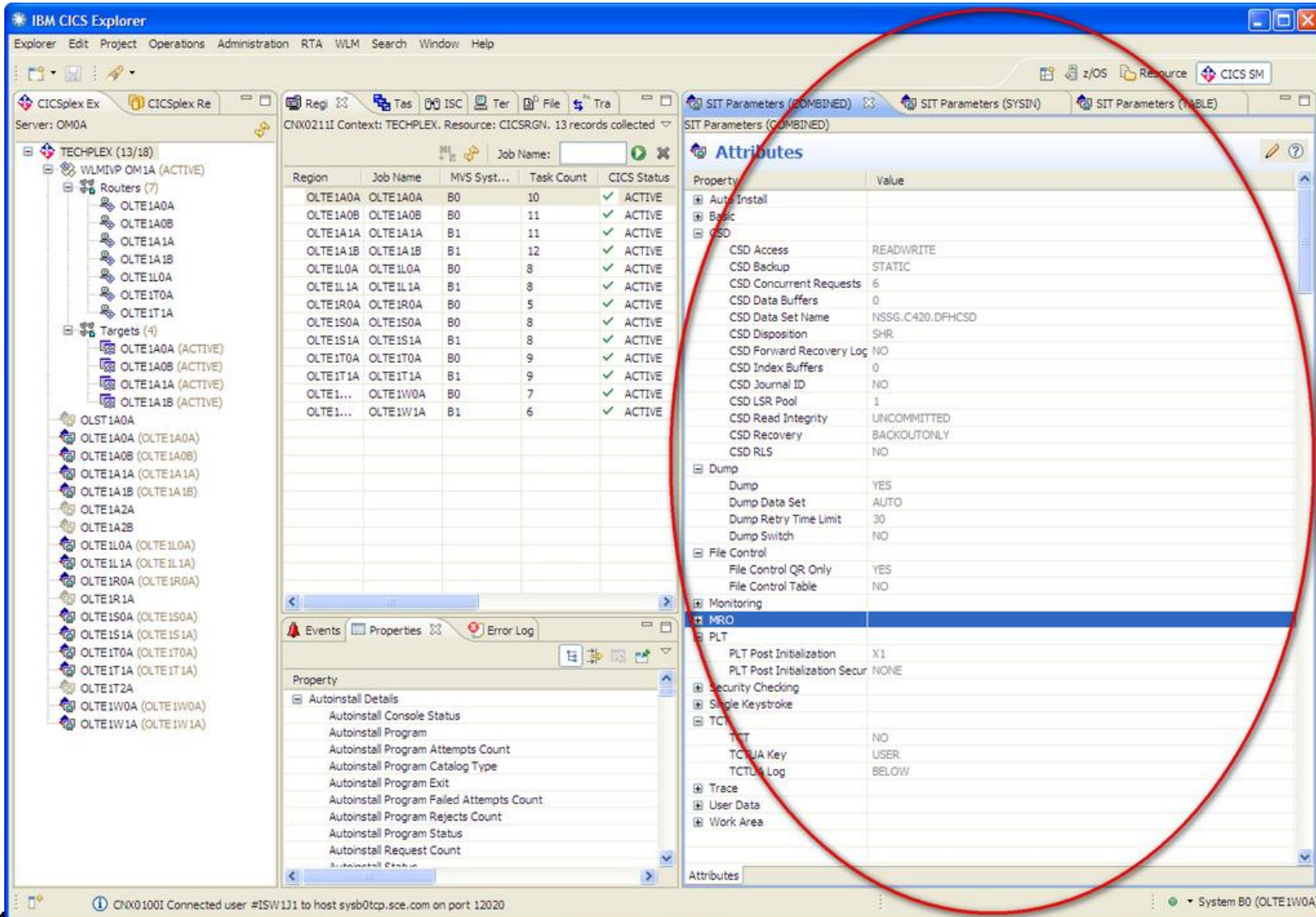
And can Activate/Quiesce Target Regions



The screenshot displays the IBM CICS Explorer interface. On the left, a tree view shows the hierarchy of regions under 'TECHPLEX (13/18)', including 'WLMIVP OM1A (ACTIVE)' and its sub-regions 'OLTE1A0A' through 'OLTE1W1A'. A central table shows the 'CNX0211I Context: OLTE1A0A. Resource: CICSRGN. 1 records collected.' with columns for Region, Job Name, MVS Syst..., Task Count, and CICS Status. A 'Perform Operation' dialog box is open, titled 'Perform QUIESCE Operation', with the message 'QUIESCE operation will be performed on all items in the execution queue'. The dialog includes an 'Action Summary' section with 'Name: QUIESCE' and 'Parameters: N/A', and an 'Execution Queue' table with columns 'State' and 'Object', showing one entry for 'OLTE1A0A'. The dialog has 'OK' and 'Cancel' buttons. Other panels in the background show 'Attributes' and 'Events'.

CICS Explorer Enhancements (cont.)

SIT Parms are viewable



The screenshot displays the IBM CICS Explorer interface. On the left, a tree view shows the system structure under 'TECHPLEX (13/18)', including routers and targets. The main window shows a table of jobs with columns for Region, Job Name, MVS System, Task Count, and CICS Status. Below this is an 'Attributes' table for the selected job, which is circled in red. The 'Attributes' table lists various properties and their values, such as 'CSD Access' (READWRITE) and 'Dump' (YES).

Property	Value
Auto Install	
Basic	
CSD	
CSD Access	READWRITE
CSD Backup	STATIC
CSD Concurrent Requests	6
CSD Data Buffers	0
CSD Data Set Name	NSSG.C420.DFHCSD
CSD Disposition	SHR
CSD Forward Recovery Log	NO
CSD Index Buffers	0
CSD Journal ID	NO
CSD LSR Pool	1
CSD Read Integrity	UNCOMMITTED
CSD Recovery	BACKOUTONLY
CSD RLS	NO
Dump	
Dump	YES
Dump Data Set	AUTO
Dump Retry Time Limit	30
Dump Switch	NO
File Control	
File Control QR Only	YES
File Control Table	NO
Monitoring	
MRO	
PLT	
PLT Post Initialization	X1
PLT Post Initialization Secur	NONE
Security Checking	
Single Keystroke	
TCT	
TCT	NO
TCTUA Key	USER
TCTUA Log	BELOW
Trace	
User Data	
Work Area	

CICS Explorer Enhancements (cont.)

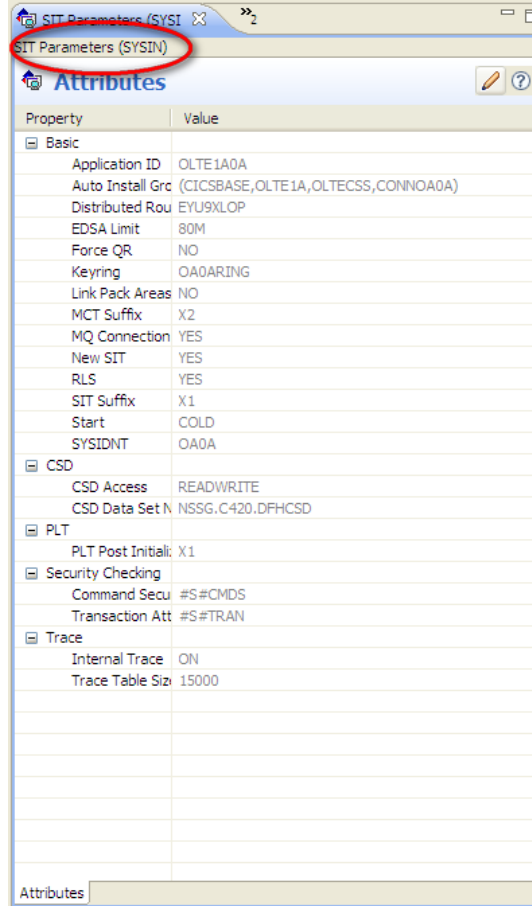
SIT Parms are viewable – with overrides (also JCL and Console)

Table



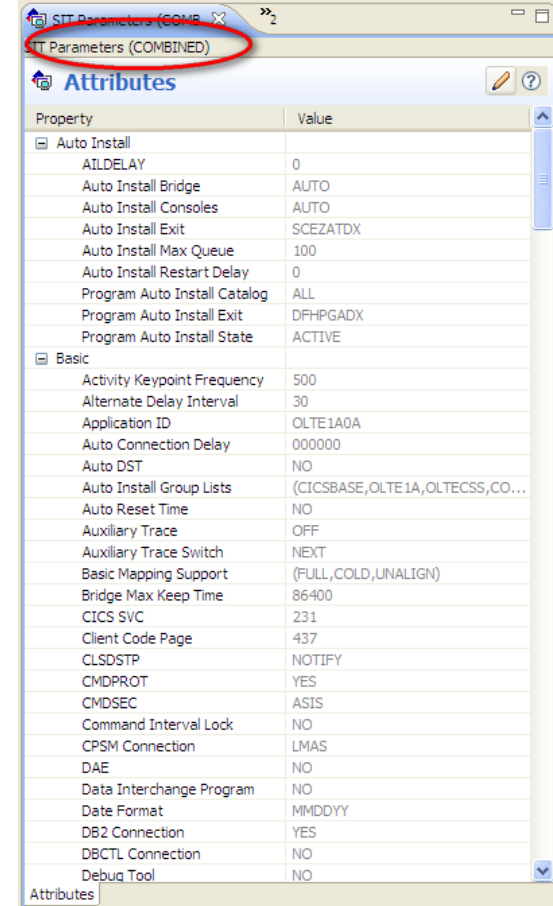
Property	Value
Auto Install	
AILDELAY	0
Auto Install Br	AUTO
Auto Install Cc	AUTO
Auto Install Ex	SCEZATDX
Auto Install Mq	100
Auto Install Re	0
Program Auto	ALL
Program Auto	DFHPGADX
Program Auto	ACTIVE
Basic	
Activity Keypo	500
Alternate Dela	30
Application ID	DBDCCICS
Auto Connecti	000000
Auto DST	NO
Auto Install Gr	(DFHLIST,,)
Auto Reset Tir	NO
Auxiliary Trace	OFF
Auxiliary Trace	NEXT
Basic Mapping	(FULL,COLD,UNALIGN)
Bridge Max Ke	86400
CICS SVC	231
Client Code Pe	437
CLSDSTP	NOTIFY
CMDPROT	YES
CMDSEC	ASIS
Command Inte	NO
CPSM Connect	LMAS
DAE	NO
Data Intercha	NO
Date Format	MMDDYY
DB2 Connectio	YES
DBCTL Connec	NO
Debug Tool	NO

Sysin



Property	Value
Basic	
Application ID	OLTE1A0A
Auto Install Gr	(CICSBASE,OLTE1A,OLTECSS,CONNOA0A)
Distributed Rou	EYU9XLOP
EDSA Limit	80M
Force QR	NO
Keyring	OADARING
Link Pack Areas	NO
MCT Suffix	X2
MQ Connection	YES
New SIT	YES
RLS	YES
SIT Suffix	X1
Start	COLD
SYSIDNT	OA0A
CSD	
CSD Access	READWRITE
CSD Data Set N	NSSG.C420.DFHCS
PLT	
PLT Post Initial	X1
Security Checking	
Command Secu	#S#CMDS
Transaction Att	#S#TRAN
Trace	
Internal Trace	ON
Trace Table Siz	15000

Combined



Property	Value
Auto Install	
AILDELAY	0
Auto Install Bridge	AUTO
Auto Install Consoles	AUTO
Auto Install Exit	SCEZATDX
Auto Install Max Queue	100
Auto Install Restart Delay	0
Program Auto Install Catalog	ALL
Program Auto Install Exit	DFHPGADX
Program Auto Install State	ACTIVE
Basic	
Activity Keypoint Frequency	500
Alternate Delay Interval	30
Application ID	OLTE1A0A
Auto Connection Delay	000000
Auto DST	NO
Auto Install Group Lists	(CICSBASE,OLTE1A,OLTECSS,CO...
Auto Reset Time	NO
Auxiliary Trace	OFF
Auxiliary Trace Switch	NEXT
Basic Mapping Support	(FULL,COLD,UNALIGN)
Bridge Max Keep Time	86400
CICS SVC	231
Client Code Page	437
CLSDSTP	NOTIFY
CMDPROT	YES
CMDSEC	ASIS
Command Interval Lock	NO
CPSM Connection	LMAS
DAE	NO
Data Interchange Program	NO
Date Format	MMDDYY
DB2 Connection	YES
DBCTL Connection	NO
Debug Tool	NO

CICS Explorer Enhancements (cont.)

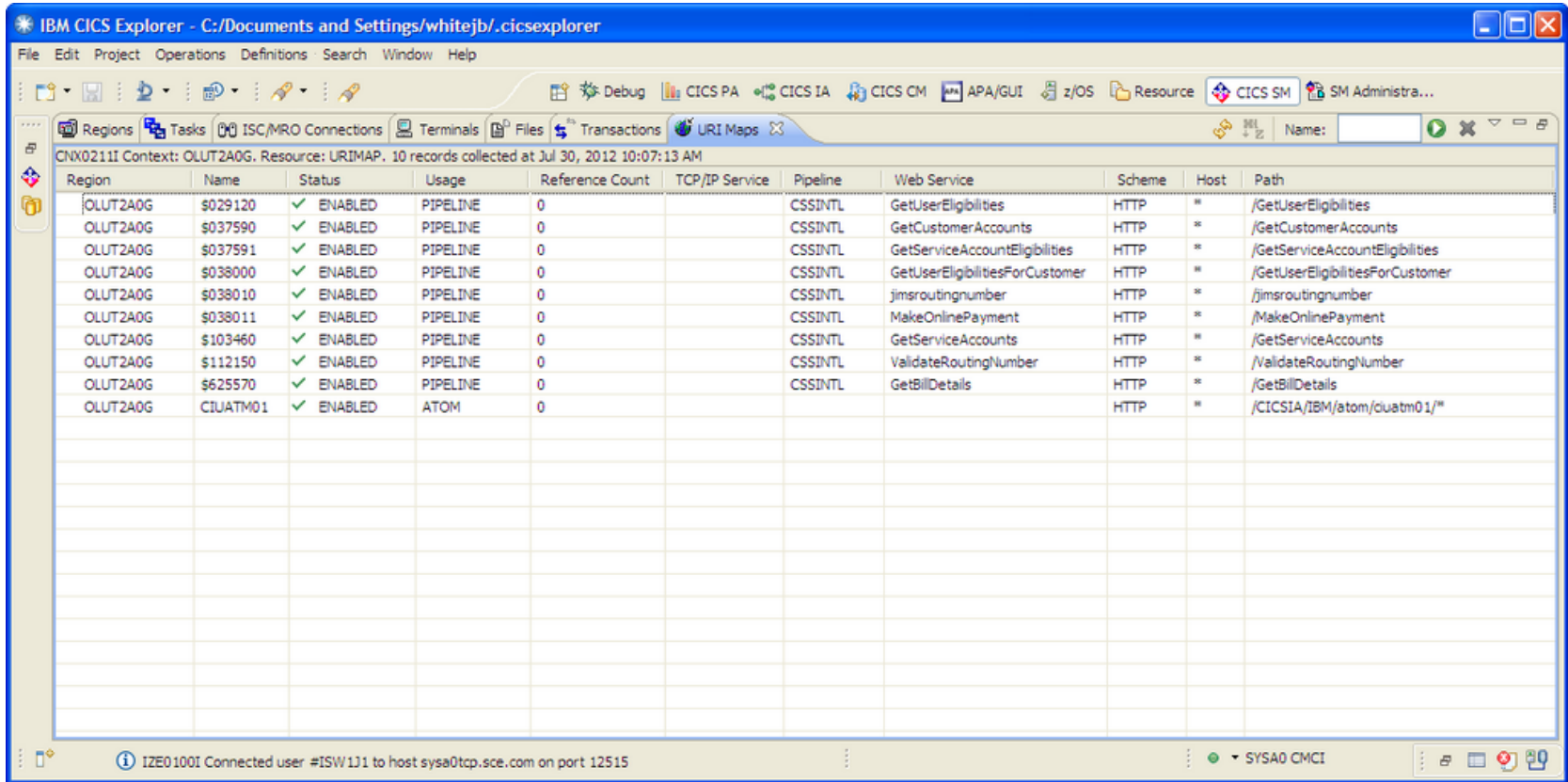
- Many other new views
 - Operations
 - CICSPLEXes
 - CMAS Details
 - Journal Models
 - Journal names
 - Stream names
 - Administration
 - CICSPLEX Definitions
 - System Definitions
 - System Group Definitions

CICS Explorer vs 3270

```
INQ URIM
STATUS: RESULTS - OVERTYPE TO MODIFY
  Uri($029120 ) Pip Ena      Http
    Host(*)                ) Path(/GetUserEligibilities )
  Uri($037590 ) Pip Ena      Http
    Host(*)                ) Path(/GetCustomerAccounts )
  Uri($037591 ) Pip Ena      Http
    Host(*)                ) Path(/GetServiceAccountEligibilities )
  Uri($038000 ) Pip Ena      Http
    Host(*)                ) Path(/GetUserEligibilitiesForCustomer )
  Uri($038010 ) Pip Ena      Http
    Host(*)                ) Path(/jimsroutingnumber )
  Uri($038011 ) Pip Ena      Http
    Host(*)                ) Path(/MakeOnlinePayment )
  Uri($103460 ) Pip Ena      Http
    Host(*)                ) Path(/GetServiceAccounts )
  Uri($112150 ) Pip Ena      Http
    Host(*)                ) Path(/ValidateRoutingNumber )
+ Uri($625570 ) Pip Ena      Http
  Host(*)                ) Path(/GetBillDetails )

                                SYSID=UA0G APPLID=OLUT2A0G
RESPONSE: NORMAL                TIME: 09.37.46 DATE: 07/30/12
PF 1 HELP      3 END      5 VAR      7 SBH 8 SFH 9 MSG 10 SB 11 SF
```

CICS Explorer vs 3270



IBM CICS Explorer - C:/Documents and Settings/whitejb/.cicsexplorer

File Edit Project Operations Definitions Search Window Help

Debug CICS PA CICS IA CICS CM APA/GUI z/OS Resource CICS SM SM Administra...

Regions Tasks ISC/MRO Connections Terminals Files Transactions URI Maps Name: []

CNX0211I Context: OLU2A0G. Resource: URIMAP. 10 records collected at Jul 30, 2012 10:07:13 AM

Region	Name	Status	Usage	Reference Count	TCP/IP Service	Pipeline	Web Service	Scheme	Host	Path
OLUT2A0G	\$029120	✓ ENABLED	PIPELINE	0		CSSINTL	GetUserEligibilities	HTTP	**	/GetUserEligibilities
OLUT2A0G	\$037590	✓ ENABLED	PIPELINE	0		CSSINTL	GetCustomerAccounts	HTTP	**	/GetCustomerAccounts
OLUT2A0G	\$037591	✓ ENABLED	PIPELINE	0		CSSINTL	GetServiceAccountEligibilities	HTTP	**	/GetServiceAccountEligibilities
OLUT2A0G	\$038000	✓ ENABLED	PIPELINE	0		CSSINTL	GetUserEligibilitiesForCustomer	HTTP	**	/GetUserEligibilitiesForCustomer
OLUT2A0G	\$038010	✓ ENABLED	PIPELINE	0		CSSINTL	jimsroutingnumber	HTTP	**	/jimsroutingnumber
OLUT2A0G	\$038011	✓ ENABLED	PIPELINE	0		CSSINTL	MakeOnlinePayment	HTTP	**	/MakeOnlinePayment
OLUT2A0G	\$103460	✓ ENABLED	PIPELINE	0		CSSINTL	GetServiceAccounts	HTTP	**	/GetServiceAccounts
OLUT2A0G	\$112150	✓ ENABLED	PIPELINE	0		CSSINTL	ValidateRoutingNumber	HTTP	**	/ValidateRoutingNumber
OLUT2A0G	\$625570	✓ ENABLED	PIPELINE	0		CSSINTL	GetBillDetails	HTTP	**	/GetBillDetails
OLUT2A0G	CIUATM01	✓ ENABLED	ATOM	0				HTTP	**	/CICSIA/IBM/atom/ciuatm01/**

IZE0100I Connected user #ISW131 to host sysa0tcp.sce.com on port 12515

SYSA0 CMCI

System Events

- Really, just a new “canned” flavor of Business Events
- New System Events allow capture of changes in system status
 - File Open/Close, Enable/Disable
 - DB2 Connection Status
 - Transaction Abends
 - System Maxtasks Thresholds (50%, 60%, 70%, 80%, 90%, 100%)
 - Tranclas Maxtasks Thresholds (50%, 60%, 70%, 80%, 90%, 100%)
- Can emit the event to all the standard places
 - MQ Queue
 - TS Queue
 - Start a Transaction
 - HTTP
 - Custom (User Written)

System Events Sample

```
TPX - TSOB0
File Edit Font Transfer Macro Options Window Help
[Toolbar icons]
BROWSE QU QUEUE-SCÉ.CICS.SYSTEM.EVENTS ----- Line 00000293 Col 225 304
COMMAND ==>
SCROLL ==> CSR
CEMT#ISW1J1 E1EMRFN CLOSED
CEMT#ISW1J1 E1PAXMN CLOSED
CEDA#ISW1J1 DFHCSD OPEN          UNENABLING  NSSG.C420.DFHCSD
CEMT#ISW1J1 E1EMRFN OPEN          UNENABLING  NSSG.E1EMRFN.CLUSTER
CEMT#ISW1J1 E1PAXMN OPEN          UNENABLING  NSSG.E1PAXMN.CLUSTER
***** Bottom of Data *****

PF 1=HELP      2=SPLIT      3=END        4=RETURN     5=RFIND      6=RCHANGE
PF 7=UP        8=DOWN       9=SWAP      10=LEFT      11=RIGHT     12=RETRIEVE

Ma 0.2 04/08/11.098 12:12PM tnioc.sce.com a 3,15
```


So Why Get Involved in a Beta?

- Pros:
 - Gives us early access to new function/features
 - Find problems
 - Learn about your own environment (i.e., uncover “surprises”)
 - Develop relationships with Hursley’s development community
 - Sometimes the ability to influence the direction of the product
 - Learn how other customers treat similar issues
- Con:
 - Not a trivial investment of human resource (time)
- Overall:
 - Worth it!