

## Monitoring CICS® TS Version 5 Application Performance

*Billy Bigelow – BMC Software, Inc.*

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*Session 17265*



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# Agenda

- What is an Application?
- CICS TS Version 5 Application 'Review'
- Application Monitoring Challenges
  - Monitoring Resource Usage
  - Monitoring Performance Problems

# What is an Application?

- ‘Programmatic’ resources
  - Programs (ASM, Java, COBOL, etc.)
  - Displays (BMS maps, document templates)
  - Libraries, transactions, URIMAPs, etc.
- ‘Data’ resources
  - Files
  - Queues
  - Data bases
  - etc.
- ‘Communication’ resources
  - Connections, sessions, TCPIP Services, IPCONNs, etc.

# CICS TS Version 5 Application Review

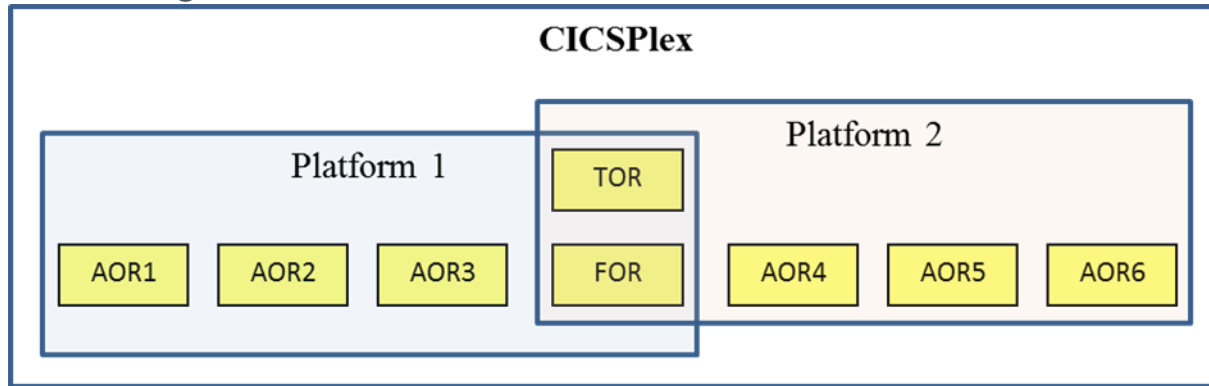
- What is the CICS TS Version 5 Application?
  - A collection of related CICS resources
    - Those directly associated with the Application – the code
    - Those required by the Application – the dependencies
  - Some resources may be ‘versioned’
    - Changes in the Application provide a new version
  - Managed as a single entity (by CPSM)
    - Actions affect Application as a whole
      - Install, Enable, Disable, Discard
  - Deployed (installed) on a pre-defined set of CICS regions (Platform)

# CICS TS Version 5 Application Review

- What are the pieces that make up a CICS Application?
  - Three basic parts
    - The Platform – where is Application is to execute
    - The Bundles – groups of resources needed to execute
      - Created resources (those built by the application)
      - Existing resources (those needed to pre-defined)
    - The Policy – how is the Application supposed to behave

# CICS TS Version 5 Application Review

- Platforms – Regions where an application should be installed
  - Regions may exist in more than one platform
  - Regions within a platform are assigned a type
  - Regions are selected and grouped using System groups
  - Consider the diagram:



- Different resources may be installed in different 'types' of regions

# CICS TS Version 5 Application Review

- Bundles – Defined resources vs. Existing resources
  - A defined resource is one that is to be created as part of the Application
  - A existing resource is one that is provided by the CICS regions (pre-defined)
  - Some combination of both are needed for the Application to execute
- Simple application may be just a collection of existing programs or transactions that are designated entry points
- Complex application may be hundreds of defined resources dynamically created and torn down as needed

# CICS TS Version 5 Application Review

- Bundles – Defined Resources
  - The CICS resources dynamically created when the Application is installed
  - They include the versioned resources
    - PROGRAM and LIBRARY definitions
  - Other resources that can be defined using bundles
    - Transactions, URIMAPs, Files, JVM Servers, OSGi
    - TCPIP Services, Pipelines, WebServices, Events
  - Explorer built XML stream for these resources contains the RDO attributes used to create the resource when installed



# CICS TS Version 5 Application Review

- Bundles – Existing Resources
  - Those CICS resources that must be available to the Platform (pre-defined)
  - These are linked into the Bundle and may be:
    - Required – if they are not present on the Platform, the Application fails
    - Optional – may emit message if resource is unavailable
  - Types of dependent resources:
    - ATOMSERVICE, DB2CONN, DB2ENTRY, DB2TRAN, DOCTEMPLATE, ENQMODEL, EPADAPTER, EPADAPTERSET, EVENTBINDING, FILE, JOURNALMODEL, JVMSERVER, LIBRARY, MAPSET, MQCONN, PARTITIONSET, PIPELINE, PROCESSTYPE, PROGRAM, SCACOMPOSITE, TCPIPService, TDQUEUE, TRANSACTION, TSQMODEL, URIMAP, WEBSERVICE, XMLTRANSFORM
    - (Note that this includes resources that may also be created)

# CICS TS Version 5 Application Review

- Policy – How should an application behave
  - CICS provides Policy to automatically perform an action against an application task based upon performance criteria
  - Actions are:
    - Issue a message
    - Emit an Event
    - ABEND the task

# CICS TS Version 5 Application Review

- Application Policy criteria
  - There are 35 ‘choices’ across . . .
    - Time (CPU and elapsed)
    - Storage (size/requests for task and shared areas)
    - TD requests
    - TS (size/requests for aux and main)
    - Database (SQL) and file requests (browse, read, write, etc.)
    - Program LINKs
    - Transaction STARTs

# CICS TS Version 5 Application Review

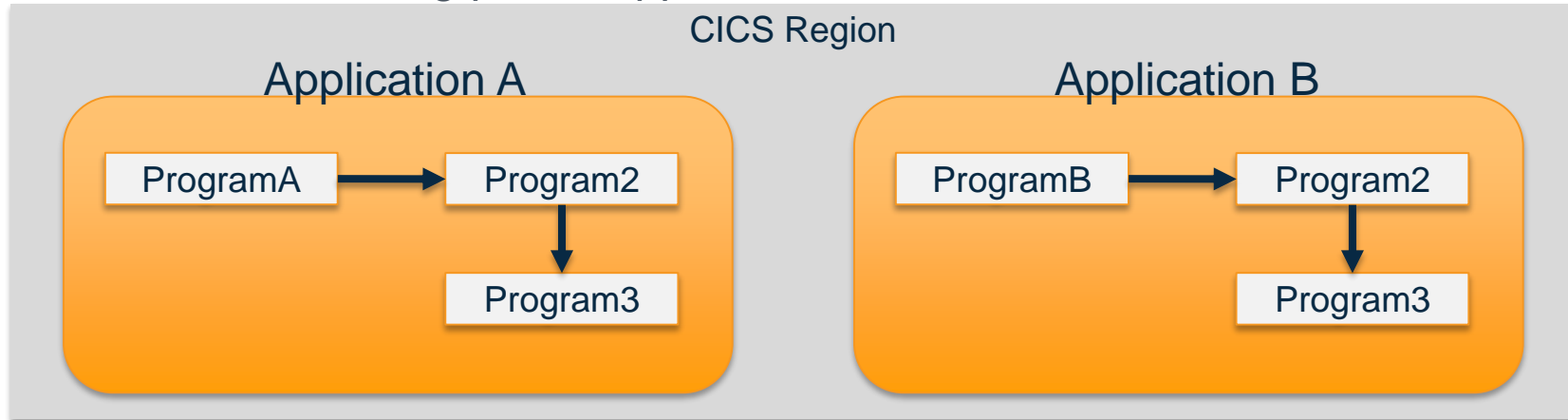
- Accessing an Application
  - Access to a CICS Application is through an Entry Point (Operation)
    - Availability of Entry Points determines if an application can be executed
    - May be a program, a URIMAP, or a TRAN ID (TS53 Open Beta)
  - An Application may also be invoked programmatically using the CICS API
    - EXEC CICS LINK PROGRAM() to program defined as an entry point
      - Always gets the highest version of the program available
    - EXEC CICS INVOKE APPLICATION() OPERATION()
      - Operation is effectively the name of the entry point
      - Can also specify a version to run (and whether it must match or be 'at least')
        - » MAJORVERSION(), MINORVERSION(), MATCH | MINIMUM
      - Gets same 'input' as a link (COMMAREA/CHANNEL)

# Application Monitoring Challenges

- Entry to an application isn't necessarily through transaction IDs anymore
  - CICS Application Entry Points
    - TRAN IDs (new with CICS TS53 Open Beta)
    - Programs
      - LINK/XCTL from other CICS programs
      - EXEC CICS INVOKE APPLICATION() OPERATION()
    - URIMAPs (WEBSERVICES)
  - If you relied on reviewing usage or performance data based upon transaction IDs, it might not be available (if you don't use the transaction ID entry method)

# Application Resource Monitoring Challenges

- CICS Applications contain “Private” resources
  - Running multiple versions of applications requires greater ‘privacy’
  - Private resources belong to an application (not to the public)
- Consider the following pair of applications . . .



- ProgramA and ProgramB are public, Program2 and Program3 are private

# Application Resource Monitoring Challenges

- Private resources belonging to an application
  - LIBRARIES associated with CICS Applications are unavailable outside the application
  - Programs that are not application entry points cannot be the target of LINK/XCTL from outside the application
  - These are unavailable from the CICS Explorer, CEMT INQUIRE or EXEC CICS INQUIRE
  - Only available in statistics report (DFHSTUP)

# Application Resource Monitoring

- Statistics Data for Private Programs and Libraries
  - Contains same data as Public resources . . . plus . . .
    - Platform Name
    - Application Name
    - Application Major, Minor and Micro Versions
    - Operation (entry points only)



# Application Resource Monitoring

- Application Program Statistics
  - DFHSTUP Report (TYPE=PROGRAM)

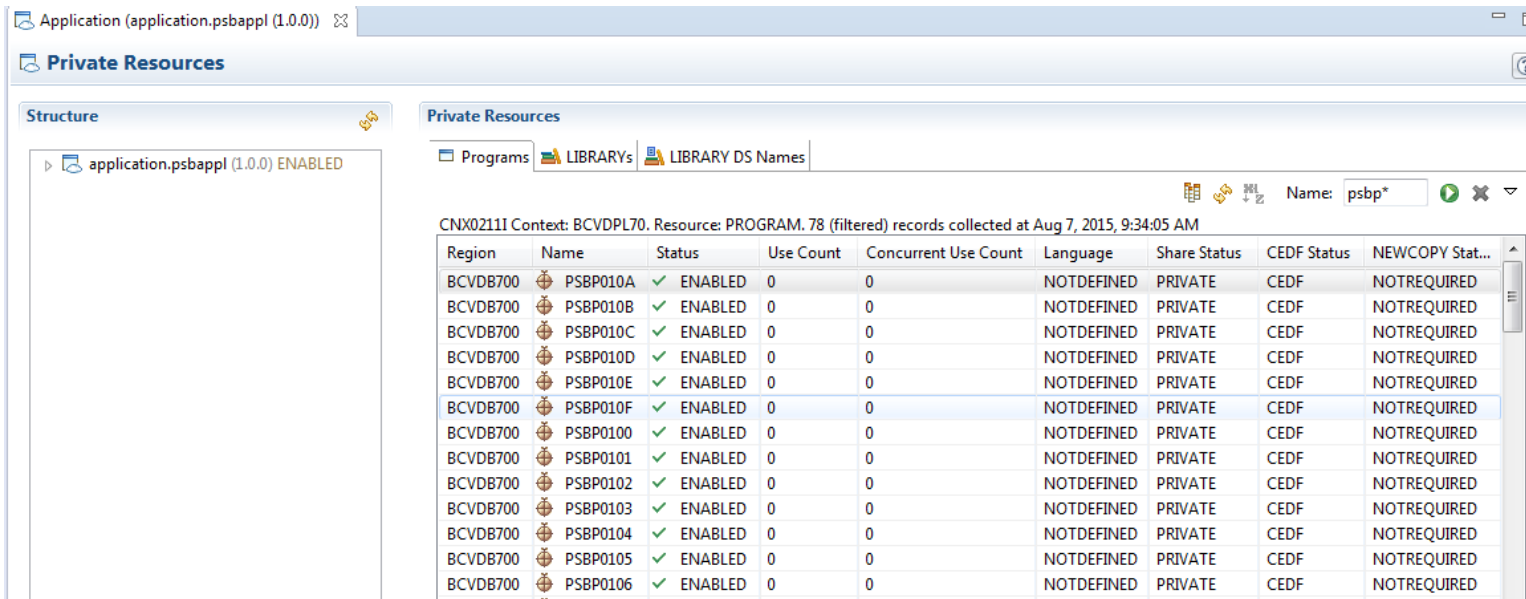
```

Platform      : Platform_DEV69PF_CTS52
Application   : application.psbappl
Major version:      1
Minor version:      0
Micro version:      0
    
```

Program Name	Times Used	Fetch Count	Average Fetch Time	Lbry Ofst	Newcopy Count	Program Size	Times Removed	Current Location	LIBRARY Name	LIBRARY Data Set Name
PSBP010A	0	0	0:00.00000	0	0	0	0	None		
Operation: bcvm.psbappl.enqueue										
PSBP010B	5334	1	0:00.00112	1	0	1120	0	ERDSA	PSBAPPLD BCVM.PSBAPPL.LOAD	
Operation: bcvm.psbappl.ts.process										
PSBP010C	5208	1	0:00.01320	1	0	992	0	ERDSA	PSBAPPLD BCVM.PSBAPPL.LOAD	
Operation: bcvm.psbappl.file.process										
PSBP010D	206881	1	0:00.00243	1	0	888	0	ERDSA	PSBAPPLD BCVM.PSBAPPL.LOAD	
Operation: bcvm.psbappl.null										
PSBP010E	2021	1	0:00.00153	1	0	992	0	ERDSA	PSBAPPLD BCVM.PSBAPPL.LOAD	
Operation: bcvm.psbappl.null.linker										
PSBP010F	4106	1	0:00.00174	1	0	1152	0	ERDSA	PSBAPPLD BCVM.PSBAPPL.LOAD	
Operation: bcvm.psbappl.worker										
PSBP0100	1	1	0:00.00528	1	0	5536	0	ERDSA	PSBAPPLD BCVM.PSBAPPL.LOAD	
Operation: bcvm.psbappl.main										
PSBP0101	1	1	0:00.00145	1	0	2648	0	ERDSA	PSBAPPLD BCVM.PSBAPPL.LOAD	
Operation: bcvm.psbappl.router										
PSBP0102	0	0	0:00.00000	0	0	0	0	None		
Operation: bcvm.psbappl.browse										
PSBP0103	9440	1	0:00.00179	1	0	1024	0	ERDSA	PSBAPPLD BCVM.PSBAPPL.LOAD	
PSBP0104	9440	1	0:00.00134	1	0	1296	0	ERDSA	PSBAPPLD BCVM.PSBAPPL.LOAD	
PSBP0105	9440	1	0:00.00344	1	0	1256	0	ERDSA	PSBAPPLD BCVM.PSBAPPL.LOAD	
PSBP0106	9440	1	0:00.00083	1	0	1304	0	ERDSA	PSBAPPLD BCVM.PSBAPPL.LOAD	
PSBP0107	9314	1	0:00.00176	1	0	1160	0	ERDSA	PSBAPPLD BCVM.PSBAPPL.LOAD	
PSBP0108	9314	1	0:00.00128	1	0	776	0	ERDSA	PSBAPPLD BCVM.PSBAPPL.LOAD	
PSBP0109	9314	1	0:00.00132	1	0	960	0	ERDSA	PSBAPPLD BCVM.PSBAPPL.LOAD	

# Application Resource Monitoring

- Application Program Statistics
  - CICS Explorer (CICS Cloud Perspective)



Application (application.psbappl (1.0.0))

Private Resources

Structure: application.psbappl (1.0.0) ENABLED

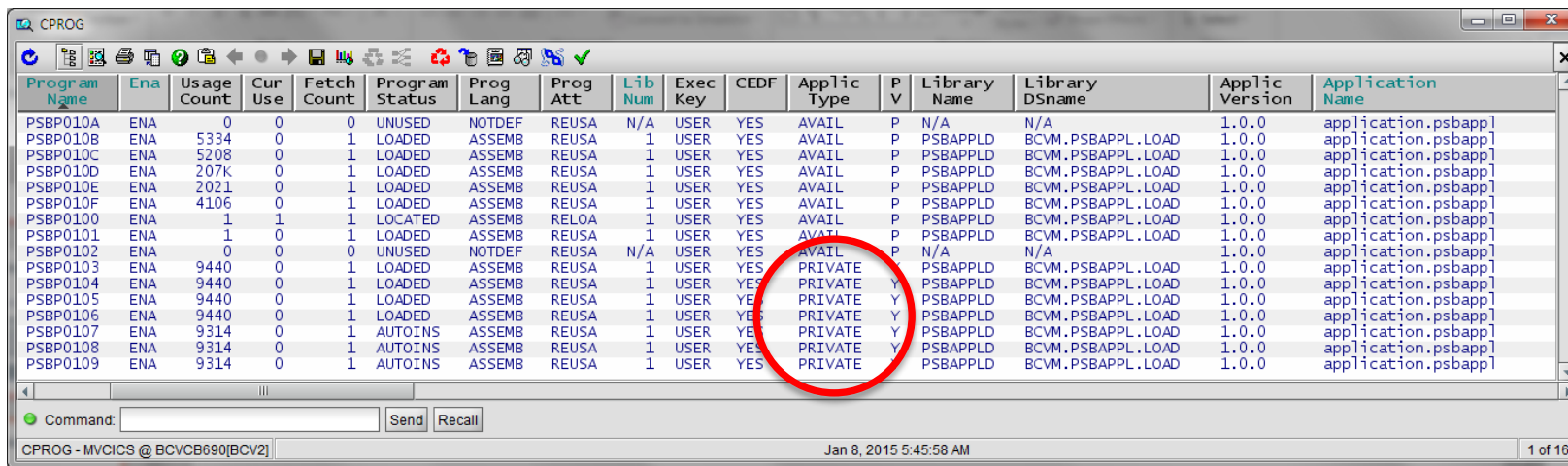
Private Resources: Programs | LIBRARYs | LIBRARY DS Names

CNX0211I Context: BCVDPL70. Resource: PROGRAM. 78 (filtered) records collected at Aug 7, 2015, 9:34:05 AM

Region	Name	Status	Use Count	Concurrent Use Count	Language	Share Status	CEDF Status	NEWCOPY Stat...
BCVDB700	PSBP010A	✓ ENABLED	0	0	NOTDEFINED	PRIVATE	CEDF	NOTREQUIRED
BCVDB700	PSBP010B	✓ ENABLED	0	0	NOTDEFINED	PRIVATE	CEDF	NOTREQUIRED
BCVDB700	PSBP010C	✓ ENABLED	0	0	NOTDEFINED	PRIVATE	CEDF	NOTREQUIRED
BCVDB700	PSBP010D	✓ ENABLED	0	0	NOTDEFINED	PRIVATE	CEDF	NOTREQUIRED
BCVDB700	PSBP010E	✓ ENABLED	0	0	NOTDEFINED	PRIVATE	CEDF	NOTREQUIRED
BCVDB700	PSBP010F	✓ ENABLED	0	0	NOTDEFINED	PRIVATE	CEDF	NOTREQUIRED
BCVDB700	PSBP0100	✓ ENABLED	0	0	NOTDEFINED	PRIVATE	CEDF	NOTREQUIRED
BCVDB700	PSBP0101	✓ ENABLED	0	0	NOTDEFINED	PRIVATE	CEDF	NOTREQUIRED
BCVDB700	PSBP0102	✓ ENABLED	0	0	NOTDEFINED	PRIVATE	CEDF	NOTREQUIRED
BCVDB700	PSBP0103	✓ ENABLED	0	0	NOTDEFINED	PRIVATE	CEDF	NOTREQUIRED
BCVDB700	PSBP0104	✓ ENABLED	0	0	NOTDEFINED	PRIVATE	CEDF	NOTREQUIRED
BCVDB700	PSBP0105	✓ ENABLED	0	0	NOTDEFINED	PRIVATE	CEDF	NOTREQUIRED
BCVDB700	PSBP0106	✓ ENABLED	0	0	NOTDEFINED	PRIVATE	CEDF	NOTREQUIRED

# Application Resource Monitoring

- Application Program Statistics
  - MVCICS Explorer (CPROG View)



Program Name	Ena	Usage Count	Cur Use	Fetch Count	Program Status	Prog Lang	Prog Att	Lib Num	Exec Key	CEDF	Applic Type	P V	Library Name	Library DSname	Applic Version	Application Name
PSBP010A	ENA	0	0	0	UNUSED	NOTDEF	REUSA	N/A	USER	YES	AVAIL	P	N/A	N/A	1.0.0	application.psbapp1
PSBP010B	ENA	5334	0	1	LOADED	ASSEMB	REUSA	1	USER	YES	AVAIL	P	PSBAPPLD	BCVM.PSBAPPL.LOAD	1.0.0	application.psbapp1
PSBP010C	ENA	5208	0	1	LOADED	ASSEMB	REUSA	1	USER	YES	AVAIL	P	PSBAPPLD	BCVM.PSBAPPL.LOAD	1.0.0	application.psbapp1
PSBP010D	ENA	207K	0	1	LOADED	ASSEMB	REUSA	1	USER	YES	AVAIL	P	PSBAPPLD	BCVM.PSBAPPL.LOAD	1.0.0	application.psbapp1
PSBP010E	ENA	2021	0	1	LOADED	ASSEMB	REUSA	1	USER	YES	AVAIL	P	PSBAPPLD	BCVM.PSBAPPL.LOAD	1.0.0	application.psbapp1
PSBP010F	ENA	4106	0	1	LOADED	ASSEMB	REUSA	1	USER	YES	AVAIL	P	PSBAPPLD	BCVM.PSBAPPL.LOAD	1.0.0	application.psbapp1
PSBP0100	ENA	1	1	1	LOCATED	ASSEMB	RELOA	1	USER	YES	AVAIL	P	PSBAPPLD	BCVM.PSBAPPL.LOAD	1.0.0	application.psbapp1
PSBP0101	ENA	1	0	1	LOADED	ASSEMB	REUSA	1	USER	YES	AVAIL	P	PSBAPPLD	BCVM.PSBAPPL.LOAD	1.0.0	application.psbapp1
PSBP0102	ENA	0	0	0	UNUSED	NOTDEF	REUSA	N/A	USER	YES	AVAIL	P	N/A	N/A	1.0.0	application.psbapp1
PSBP0103	ENA	9440	0	1	LOADED	ASSEMB	REUSA	1	USER	YES	PRIVATE	Y	PSBAPPLD	BCVM.PSBAPPL.LOAD	1.0.0	application.psbapp1
PSBP0104	ENA	9440	0	1	LOADED	ASSEMB	REUSA	1	USER	YES	PRIVATE	Y	PSBAPPLD	BCVM.PSBAPPL.LOAD	1.0.0	application.psbapp1
PSBP0105	ENA	9440	0	1	LOADED	ASSEMB	REUSA	1	USER	YES	PRIVATE	Y	PSBAPPLD	BCVM.PSBAPPL.LOAD	1.0.0	application.psbapp1
PSBP0106	ENA	9440	0	1	LOADED	ASSEMB	REUSA	1	USER	YES	PRIVATE	Y	PSBAPPLD	BCVM.PSBAPPL.LOAD	1.0.0	application.psbapp1
PSBP0107	ENA	9314	0	1	AUTOINS	ASSEMB	REUSA	1	USER	YES	PRIVATE	Y	PSBAPPLD	BCVM.PSBAPPL.LOAD	1.0.0	application.psbapp1
PSBP0108	ENA	9314	0	1	AUTOINS	ASSEMB	REUSA	1	USER	YES	PRIVATE	Y	PSBAPPLD	BCVM.PSBAPPL.LOAD	1.0.0	application.psbapp1
PSBP0109	ENA	9314	0	1	AUTOINS	ASSEMB	REUSA	1	USER	YES	PRIVATE	Y	PSBAPPLD	BCVM.PSBAPPL.LOAD	1.0.0	application.psbapp1

Command:  Send Recall

CPROG - MVCICS @ BCVCB690[BCV2] Jan 8, 2015 5:45:58 AM 1 of 16

# Application Resource Monitoring

- Application Library Statistics
  - DFHSTUP Report (TYPE=LIBRARY)

```
Platform      : Platform_DEV69PF_CTS52
Application   : application.psbappl
Major version:      1
Minor version:      0
Micro version:      0
```

LIBRARY Name	Search Position	Ranking	Critical	Enable Status	Program Loads	Number Dsnames	Concat- enation	LIBRARY Dsname
PSBAPPLD	1	50	n/a	Enabled	1	2	000 001	BCVM.PSBAPPL.LOADMT BCVM.PSBAPPL.LOAD

# Application Resource Monitoring

- Application Library Statistics
  - CICS Explorer (CICS Cloud Perspective)

Private Resources

Structure

- application.psbappl (1.0.0) ENABLED

Private Resources

Programs LIBRARYs LIBRARY DS Names

CNX0211I Context: BCVDPL70. Resource: LIBRARY. 6 records collected at Aug 7, 2015, 10:03:31 AM

Region	Name	Search Position	Ranking	Critical Status	Enable Status	Numdsnames	Install Time
BCVDB700	PSBAPPLD	1	50	NONCRITICAL	ENABLED	2	Aug 7, 2015 3:...

Application (application.psbappl (1.0.0))

Private Resources

Structure

- application.psbappl (1.0.0) ENABLED

Private Resources

Programs LIBRARYs LIBRARY DS Names

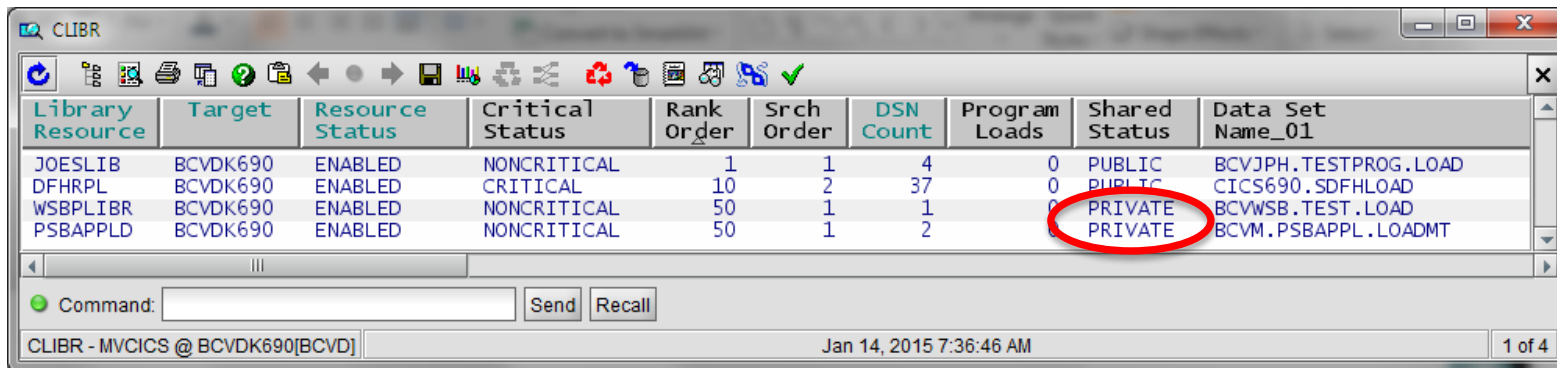
CNX0211I Context: BCVDPL70. Resource: LIBDSN. 12 records collected at Aug 7, 2015, 10:04:10 AM

Region	Name	DS Number	DS Name	DS Name Search Position
BCVDB700	PSBAPPLD	1	BCVM.PSBAPPL.LOADMT	1001
BCVDB700	PSBAPPLD	2	BCVM.PSBAPPL.LOAD	1002

Complete your session evaluations online at [www.SHARE.org/Orlando-Eval](http://www.SHARE.org/Orlando-Eval)

# Application Resource Monitoring

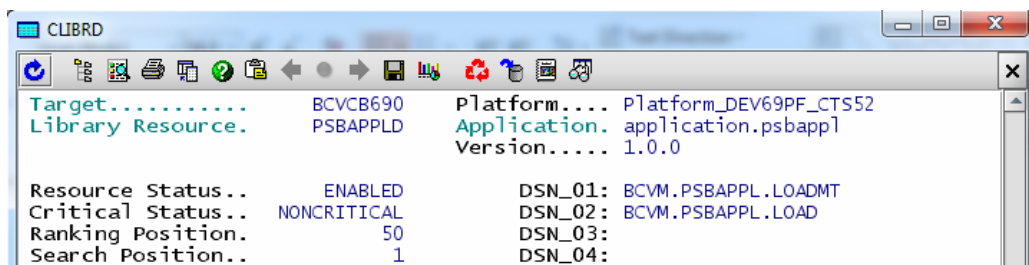
- Application Library Statistics
  - MVCICS Explorer (CLIBR view)



Library Resource	Target	Resource Status	Critical Status	Rank Order	Srch Order	DSN Count	Program Loads	Shared Status	Data Set Name_01
JOESLIB	BCVDK690	ENABLED	NONCRITICAL	1	1	4	0	PUBLIC	BCVJPH.TESTPROG.LOAD
DFHRPL	BCVDK690	ENABLED	CRITICAL	10	2	37	0	PUBLIC	CICS690.SDFHLOAD
WSBPLIBR	BCVDK690	ENABLED	NONCRITICAL	50	1	1	0	PRIVATE	BCVWSB.TEST.LOAD
PSBAPPLD	BCVDK690	ENABLED	NONCRITICAL	50	1	2	0	PRIVATE	BCVM.PSBAPPL.LOADMT

Command:  Send Recall

CLIBR - MVCICS @ BCVDK690[BCVD] Jan 14, 2015 7:36:46 AM 1 of 4



Target.....	BCVCB690	Platform....	Platform_DEV69PF_CTS52
Library Resource..	PSBAPPLD	Application..	application.psbappl
		Version.....	1.0.0
Resource Status..	ENABLED	DSN_01:	BCVM.PSBAPPL.LOADMT
Critical Status..	NONCRITICAL	DSN_02:	BCVM.PSBAPPL.LOAD
Ranking Position..	50	DSN_03:	
Search Position..	1	DSN_04:	

# Application Performance Challenges

- Entry points may not be traditional TRAN IDs
  - Many current monitoring techniques are based on the transaction ID
    - Vendor monitor products
    - Home grown monitors and reports
  - This can include CPU charge-back systems

# Application Performance Monitoring Data

- CICS Provides data in SMF110 to identify applications

**451 (TYPE-C, 'ACAPPLNM', 64 BYTES)**

The 64-character name of the application in the application context data.

**452 (TYPE-C, 'ACPLATNM', 64 BYTES)**

The 64-character name of the platform in the application context data.

**453 (TYPE-A, 'ACMAJVER', 4 BYTES)**

The major version of the application in the application context data, expressed as a 4-byte binary value.

**454 (TYPE-A, 'ACMINVER', 4 BYTES)**

The minor version of the application in the application context data, expressed as a 4-byte binary value.

**455 (TYPE-A, 'ACMICVER', 4 BYTES)**

The micro version of the application in the application context data, expressed as a 4-byte binary value.

**456 (TYPE-C, 'ACOPERNM', 64 BYTES)**

The 64-character name of the operation in the application context data.



# Application Performance Monitoring Data

- Sample data from DFHMOLS

-----FIELD-NAME-----		-----UNINTERPRETED-----				-----INTERPRETED-----		
DFHTASK	C001	TRAN	D7E2C2C4				PSBD	
	...							
DFHTASK	C004	TTYPE	E2400000				S	
DFHCICS	T005	START	CE58382200C87C5C				2015/01/12 11:58:27.142791	
DFHCICS	T006	STOP	CE58382202CBAA58				2015/01/12 11:58:27.151034	
DFHTASK	P031	TRANNUM	0012734C				12734	
DFHTASK	A109	TRANPRI	00000001				1	
DFHTASK	C166	TCLSNAME	D7E2C2E6 D9D2D3C4				PSBWRKLD	
	...							
DFHPROG	C071	PGMNAME	D7E2C2D7 F0F1F0C4				PSBP010D	
	...							
	...							
DFHTASK	C451	ACAPPLNM	81979793	898381A3	8996954B	97A28281	97979300	application.psbappl
DFHTASK	C452	ACPLATNM	D79381A3	86969994	6DC4C5E5	F6F9D7C6	6DC3E3E2	Platform_DEV69PF_CTS
		+X0014	F5F20000	00000000	00000000	00000000	00000000	52
DFHTASK	A453	ACMAJVER	00000001				1	
	...							
DFHTASK	C456	ACOPERNM	8283A594	4B97A282	81979793	4B95A493	93000000	bcvm.psbappl.null
	...							

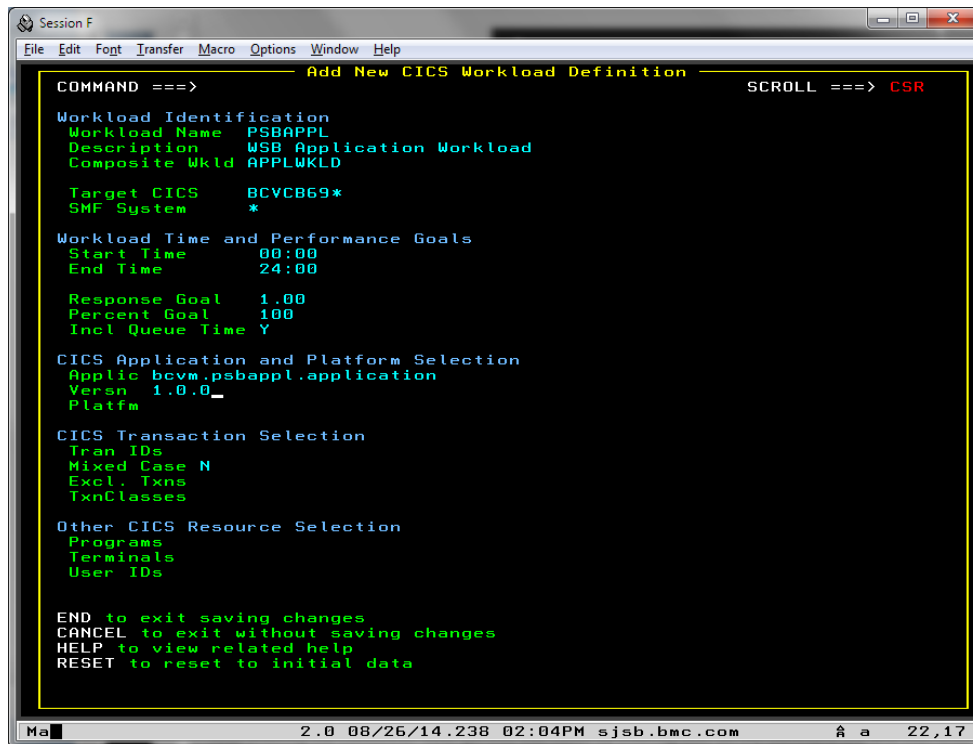
# Application Performance Monitoring Data

- Batch reporting to provide key performance data
  - Total CPU for the application in a period (chargeback)
  - Average times for key application performance fields
    - CPU/Response/Suspend time
    - File control calls / Storage HWM

Summary of Some Key Application Performance Fields						
APPLCATN NAME	TOTAL	CPU REAL TIME	RESPONSE TIME	SUSPEND TIME	FILE COUNT	STORAGE HI_WATER_MARK
application.psbappl	21377	24.669227 0.001154	3834.323193 0.179367	1941.077996 0.090802	974471 46	53001040 2479

# Online Application Performance Data

- Monitors must change too
  - MVCICS Workloads
    - New selection criteria
      - Application Name
      - Version
      - Platform
  - Provides performance indicators (over time)
  - Used in to determine SLAs and resolve problems



```
Session F
File Edit Font Transfer Macro Options Window Help
COMMAND ==> Add New CICS Workload Definition SCROLL ==> CSR

Workload Identification
Workload Name PSBAPPL
Description WSB Application Workload
Composite Wkld APPLWKLD

Target CICS BCVCB69*
SMF System *

Workload Time and Performance Goals
Start Time 00:00
End Time 24:00

Response Goal 1.00
Percent Goal 100
Incl Queue Time Y

CICS Application and Platform Selection
Applic bcvm.psbappl.application
Versn 1.0.0_
Platfm

CICS Transaction Selection
Tran IDs
Mixed Case N
Excl. Txns
TxnClasses

Other CICS Resource Selection
Programs
Terminals
User IDs

END to exit saving changes
CANCEL to exit without saving changes
HELP to view related help
RESET to reset to initial data

Ma 2.0 08/26/14.238 02:04PM sjsb.bmc.com ^ a 22,17
```

# Online Application Performance Data



2014/08/26 13:32:40 ----- MAINVIEW WINDOW INTERFACE (V6.1.00)													
COMMAND ==> SCROLL ==> CSR													
CURR WIN ==> ALT WIN ==>													
+H1 =CWOVER===== (BCVCB69*==*)2014/08/26=13:32=152M==MVCICS==D==44													
Target	Interval	Intvl	WorkLoad	Num of	Avg	%	Avg	%	%	%	%	%	%
Date		Time		Tasks-	Resp-	Cpu	Sus	Suspend	Dsq	Com	FC	DB2	IMS
BCVCB690	2014/08/26	13:32	PSBAPPL	3700	0.224	1	99	0.222	5	92		46	5
BCVCB691	2014/08/26	13:32	PSBAPPL	3754	0.437	1	100	0.435	3	80		62	7
BCVCB693	2014/08/26	13:32	PSBAPPL	3758	0.771	1	100	0.769	6	86		70	9
BCVCB690	2014/08/26	13:30	PSBAPPL	21452	0.197	1	99	0.195	6	92		47	7
BCVCB691	2014/08/26	13:30	PSBAPPL	21593	0.336	1	99	0.334	4	93		49	11
BCVCB692	2014/08/26	13:30	PSBAPPL	21544	0.331	1	99	0.330	5	91		67	5
BCVCB690	2014/08/26	13:15	PSBAPPL	21438	0.180	1	99	0.179	6	92		53	15
BCVCB691	2014/08/26	13:15	PSBAPPL	21477	0.179	1	99	0.177	6	94		46	4
BCVCB692	2014/08/26	13:15	PSBAPPL	21500	0.228	1	99	0.226	5	84		41	13
BCVCB693	2014/08/26	13:15	PSBAPPL	21518	0.255	1	99	0.253	4	87		50	11
BCVCB690	2014/08/26	13:00	PSBAPPL	21475	0.198	1	99	0.196	6	91		51	6
BCVCB691	2014/08/26	13:00	PSBAPPL	21482	0.242	1	99	0.240	5	90		50	7
BCVCB692	2014/08/26	13:00	PSBAPPL	21466	0.299	1	99	0.297	5	92		57	5
BCVCB693	2014/08/26	13:00	PSBAPPL	21465	0.296	1	99	0.294	5	92		55	6
BCVCB690	2014/08/26	12:45	PSBAPPL	21451	0.431	1	100	0.430	7	85		49	5
BCVCB691	2014/08/26	12:45	PSBAPPL	21498	0.220	1	99	0.218	6	88		57	5
BCVCB692	2014/08/26	12:45	PSBAPPL	21505	0.313	1	99	0.311	13	85		55	5
BCVCB693	2014/08/26	12:45	PSBAPPL	21480	0.273	1	99	0.271	5	90		57	6
BCVCB690	2014/08/26	12:30	PSBAPPL	21495	0.199	1	99	0.197	6	91		47	5
BCVCB691	2014/08/26	12:30	PSBAPPL	21516	0.236	1	99	0.235	5	82		47	15
BCVCB692	2014/08/26	12:30	PSBAPPL	21560	0.520	1	100	0.518	7	75		54	19
BCVCB693	2014/08/26	12:30	PSBAPPL	21492	0.431	1	100	0.429	14	75		57	12
BCVCB690	2014/08/26	12:15	PSBAPPL	21510	0.237	1	99	0.235	6	92		54	5
BCVCB691	2014/08/26	12:15	PSBAPPL	21591	0.366	1	99	0.364	6	72		46	24
BCVCB692	2014/08/26	12:15	PSBAPPL	21632	0.533	1	100	0.531	9	88		68	5
BCVCB693	2014/08/26	12:15	PSBAPPL	21606	0.469	1	100	0.467	8	86		65	8
BCVCB690	2014/08/26	12:00	PSBAPPL	21462	0.233	1	99	0.231	6	91		51	6
BCVCB691	2014/08/26	12:00	PSBAPPL	21479	0.265	1	99	0.263	5	89		54	8
BCVCB692	2014/08/26	12:00	PSBAPPL	21522	0.387	1	99	0.385	14	81		54	7
BCVCB693	2014/08/26	12:00	PSBAPPL	21506	0.320	1	99	0.318	7	91		55	6
BCVCB690	2014/08/26	11:45	PSBAPPL	21404	0.183	1	99	0.181	7	91		46	5
BCVCB691	2014/08/26	11:45	PSBAPPL	21462	0.175	1	99	0.173	6	89		50	7
BCVCB692	2014/08/26	11:45	PSBAPPL	21450	0.276	1	99	0.274	6	93		62	4
BCVCB693	2014/08/26	11:45	PSBAPPL	21483	0.284	1	99	0.282	5	83		53	14
BCVCB690	2014/08/26	11:30	PSBAPPL	21567	0.361	1	99	0.359	10	86		59	6

Complete your session evaluations online at [www.SHARE.org/Orlando-Eval](http://www.SHARE.org/Orlando-Eval)

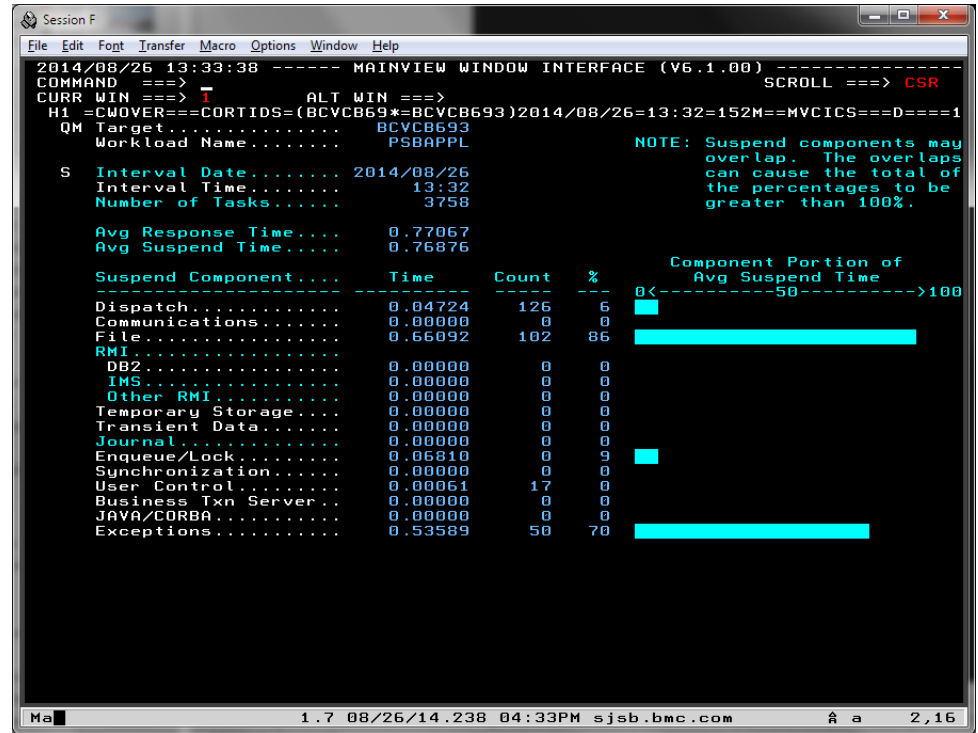
Monitoring CICS TS Version 5 Application Performance – Session 17265

August 13, 2015



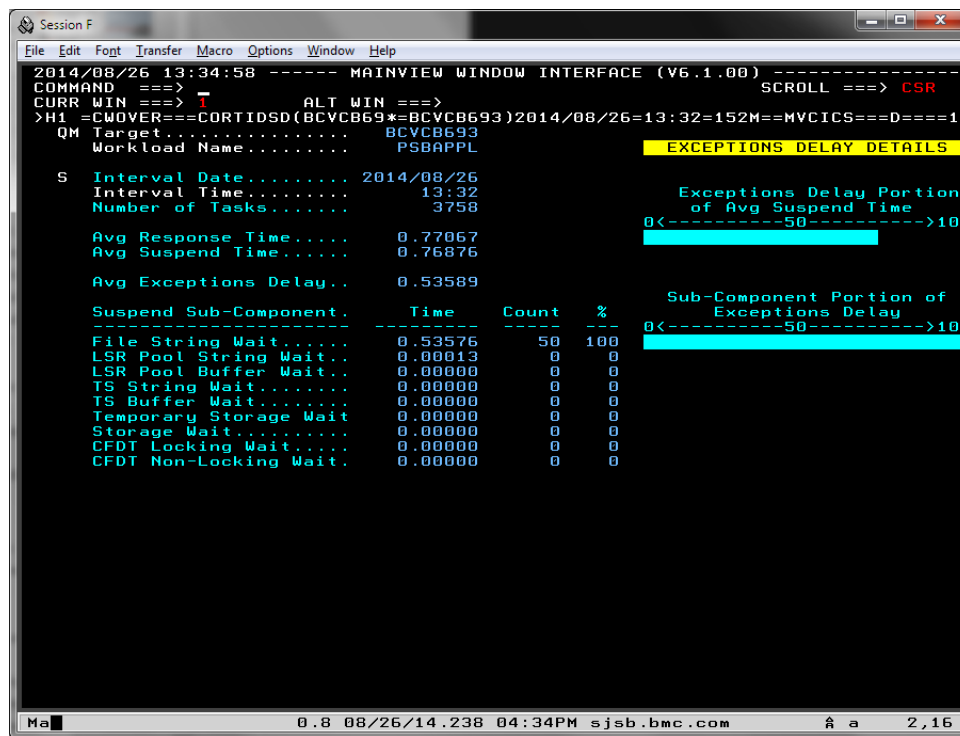
# Online Application Performance Data

- Expanding the interval to see where the problem lies
  - Exception and file waits overlap and consume most of the average response time



# Online Application Performance Data

- Drilling down further
  - All of the exception time for this interval was spent waiting for file strings
  - ... but who (or is that whom)?



```
Session F
File Edit Font Transfer Macro Options Window Help
2014/08/26 13:34:58 ----- MAINVIEW WINDOW INTERFACE (V6.1.00) -----
COMMAND ==>
CURR WIN ==> ALT WIN ==> SCROLL ==> CSR
>H1 =CWOVER==CORTIDSD(BCVCB69*BCVCB693)2014/08/26=13:32=152M==MVCICS===D===1
QM Target..... BCVCB693
Workload Name..... PSBAPPL
S Interval Date..... 2014/08/26
Interval Time..... 13:32
Number of Tasks..... 3758
Avg Response Time.... 0.77067
Avg Suspend Time..... 0.76876
Avg Exceptions Delay.. 0.53589
Sub-Component Portion of Avg Suspend Time
0<-----50----->10
Sub-Component Portion of Exceptions Delay
0<-----50----->10
Suspend Sub-Component. Time Count %
-----
File String Wait..... 0.53576 50 100
LSR Pool String Wait.. 0.00013 0 0
LSR Pool Buffer Wait.. 0.00000 0 0
TS String Wait..... 0.00000 0 0
TS Buffer Wait..... 0.00000 0 0
Temporary Storage Wait 0.00000 0 0
Storage Wait..... 0.00000 0 0
CFDT Locking Wait.... 0.00000 0 0
CFDT Non-Locking Wait. 0.00000 0 0
Ma 0.8 08/26/14.238 04:34PM sjsb.bmc.com a a 2,16
```

# Online Application Performance Data

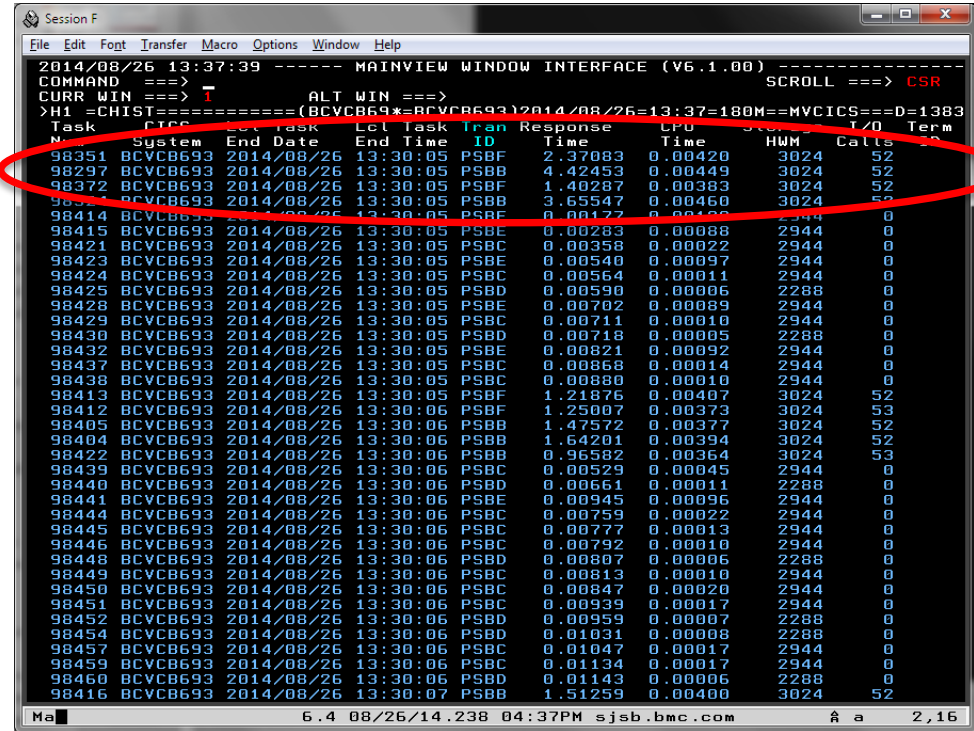
- Expansion of the large interval (15 minutes) down to single minute slices shows the offending set of tasks for this application (in red)



```
2014/08/26 13:35:52 ----- MAINVIEW WINDOW INTERFACE (V6.1.00) -----
COMMAND ==>
CURR WIN ==> ALT WIN ==>
>H1 =CHISTINT===== (BCVCB69*=BCVCB693)2014/08/26=13:35=180M==MVCICS===D===6
Target Lcl Intv LIntv No of Average Average Average Average Average
CICS End Date ETime Tasks Response CPU Suspend Stg HWM IO
BCVCB693 2014/08/26 13:31 1383 1.81384 0.00187 1.81162 2839 20
BCVCB693 2014/08/26 13:32 1424 0.13958 0.00139 0.13788 2832 18
BCVCB693 2014/08/26 13:33 1424 0.19420 0.00152 0.19246 2852 20
BCVCB693 2014/08/26 13:34 1428 0.16246 0.00147 0.16078 2841 20
BCVCB693 2014/08/26 13:35 1440 0.11485 0.00126 0.11335 2827 17
BCVCB693 2014/08/26 13:36 1060 0.14658 0.00144 0.14492 2839 20
```

# Online Application Performance Data

- Further expansion of individual tasks show some with extended response time

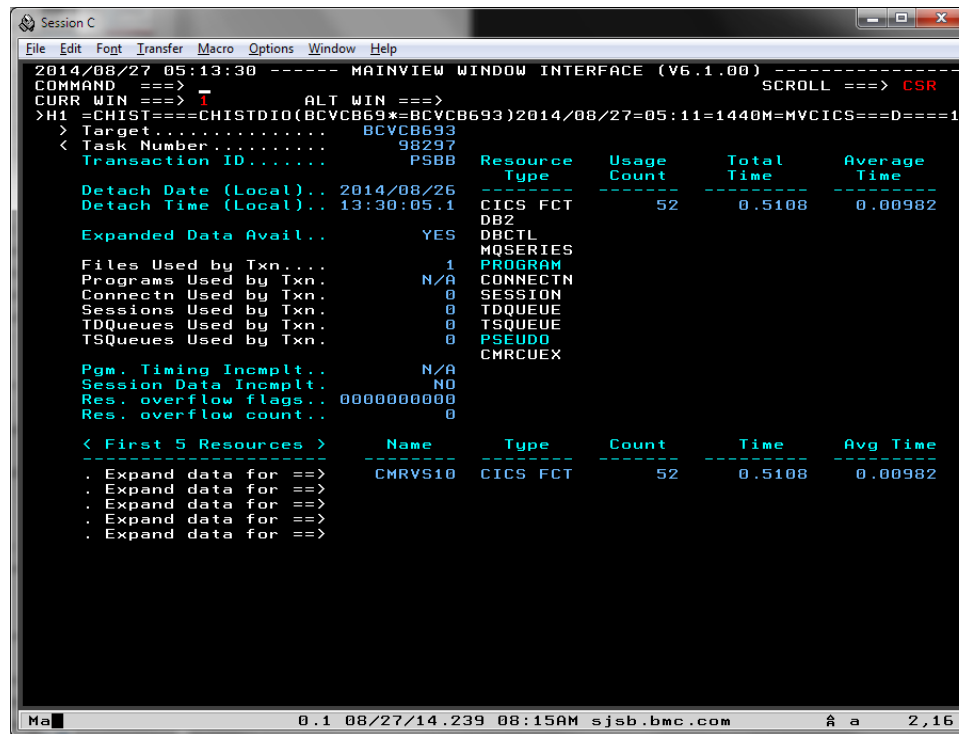


Task No	CICS	Set Task	End Date	End Time	Lcl Task ID	Response Time	CPU Time	HW	Term
98351	BCVCB693	2014/08/26	13:30:05	PSBF	2.37083	0.00420	3024	52	
98297	BCVCB693	2014/08/26	13:30:05	PSBB	4.42453	0.00449	3024	52	
98372	BCVCB693	2014/08/26	13:30:05	PSBF	1.40287	0.00383	3024	52	
98371	BCVCB693	2014/08/26	13:30:05	PSBB	3.65547	0.00460	3024	52	
98414	BCVCB693	2014/08/26	13:30:05	PSBE	0.00177	0.00100	2944	0	
98415	BCVCB693	2014/08/26	13:30:05	PSBE	0.00283	0.00088	2944	0	
98421	BCVCB693	2014/08/26	13:30:05	PSBC	0.00358	0.00022	2944	0	
98423	BCVCB693	2014/08/26	13:30:05	PSBE	0.00540	0.00097	2944	0	
98424	BCVCB693	2014/08/26	13:30:05	PSBC	0.00564	0.00011	2944	0	
98425	BCVCB693	2014/08/26	13:30:05	PSBD	0.00590	0.00006	2288	0	
98428	BCVCB693	2014/08/26	13:30:05	PSBE	0.00702	0.00089	2944	0	
98429	BCVCB693	2014/08/26	13:30:05	PSBC	0.00711	0.00010	2944	0	
98430	BCVCB693	2014/08/26	13:30:05	PSBD	0.00718	0.00005	2288	0	
98432	BCVCB693	2014/08/26	13:30:05	PSBE	0.00821	0.00092	2944	0	
98437	BCVCB693	2014/08/26	13:30:05	PSBC	0.00868	0.00014	2944	0	
98438	BCVCB693	2014/08/26	13:30:05	PSBC	0.00880	0.00010	2944	0	
98413	BCVCB693	2014/08/26	13:30:05	PSBF	1.21876	0.00407	3024	52	
98412	BCVCB693	2014/08/26	13:30:06	PSBF	1.25007	0.00373	3024	53	
98405	BCVCB693	2014/08/26	13:30:06	PSBB	1.47572	0.00377	3024	52	
98404	BCVCB693	2014/08/26	13:30:06	PSBB	1.64201	0.00394	3024	52	
98422	BCVCB693	2014/08/26	13:30:06	PSBB	0.96582	0.00364	3024	53	
98439	BCVCB693	2014/08/26	13:30:06	PSBC	0.00529	0.00045	2944	0	
98440	BCVCB693	2014/08/26	13:30:06	PSBD	0.00661	0.00011	2288	0	
98441	BCVCB693	2014/08/26	13:30:06	PSBE	0.00945	0.00096	2944	0	
98444	BCVCB693	2014/08/26	13:30:06	PSBC	0.00759	0.00022	2944	0	
98445	BCVCB693	2014/08/26	13:30:06	PSBC	0.00777	0.00013	2944	0	
98446	BCVCB693	2014/08/26	13:30:06	PSBC	0.00792	0.00010	2944	0	
98448	BCVCB693	2014/08/26	13:30:06	PSBD	0.00807	0.00005	2288	0	
98449	BCVCB693	2014/08/26	13:30:06	PSBC	0.00813	0.00010	2944	0	
98450	BCVCB693	2014/08/26	13:30:06	PSBC	0.00847	0.00020	2944	0	
98451	BCVCB693	2014/08/26	13:30:06	PSBC	0.00939	0.00017	2944	0	
98452	BCVCB693	2014/08/26	13:30:06	PSBD	0.00959	0.00007	2288	0	
98454	BCVCB693	2014/08/26	13:30:06	PSBD	0.01031	0.00008	2288	0	
98457	BCVCB693	2014/08/26	13:30:06	PSBC	0.01047	0.00017	2944	0	
98459	BCVCB693	2014/08/26	13:30:06	PSBC	0.01134	0.00017	2944	0	
98460	BCVCB693	2014/08/26	13:30:06	PSBD	0.01143	0.00006	2288	0	
98416	BCVCB693	2014/08/26	13:30:07	PSBB	1.51259	0.00400	3024	52	



# Online Application Performance

- One last expansion shows it to be a specific file giving the issue



```
Session C
File Edit Font Transfer Macro Options Window Help
2014/08/27 05:13:30 ----- MAINVIEW WINDOW INTERFACE (V6.1.00) -----
COMMAND ==>
CURR WIN ==> T ALT WIN ==>
>H1 =CHIST===CHISTDIO(BCVCB69*BCVCB693)2014/08/27=05:11=1440M=MVCICS===D===1
> Target..... BCVCB693
< Task Number..... 98297
Transaction ID..... PSBB
Resource Usage Total Average
Type Count Time Time
-----
Detach Date (Local).. 2014/08/26
Detach Time (Local).. 13:30:05.1 CICS FCT 52 0.5108 0.00982
DB2
Expanded Data Avail.. YES DBCTL
MQSERIES
Files Used by Txn... 1 PROGRAM
Programs Used by Txn. N/A CONNECTN
Connectn Used by Txn. 0 SESSION
Sessions Used by Txn. 0 TDQUEUE
TDQueues Used by Txn. 0 TSQUEUE
TSQueues Used by Txn. 0 PSEUDO
CMRCUEX
Pgm. Timing Incmplt.. N/A
Session Data Incmplt. NO
Res. overflow flags.. 0000000000
Res. overflow count.. 0
< First 5 Resources > Name Type Count Time Avg Time
-----
. Expand data for ==> CMRVS10 CICS FCT 52 0.5108 0.00982
. Expand data for ==>
. Expand data for ==>
. Expand data for ==>
. Expand data for ==>
Ma 0.1 08/27/14.239 08:15AM sjsb.bmc.com a a 2,16
```

## Conclusion

- CICS TS5 Applications provide challenges to monitoring
  - Data for resource monitoring may be harder to locate
    - This can cause issues in problem diagnosis
  - Old performance monitors may need updates
    - Batch programs need to look for different identifiers
    - Online monitors need similar changes
    - Performance indicators need to be examined across CICS regions to satisfy POLICY across the PLATFORM

## Conclusion

- CICS TS5 Applications provide opportunities to monitoring
  - Application name provides access to performance data
    - Allows for a looser connection between the systems performance group and development
    - Decreases need for systems groups to intimately know every resource (transaction, program, etc.) that make the application work