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CICS Interdependency Analyzer

Detailed features

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Overview

Salient features

- ❑ Automates the process to collect resource relationship data at runtime.
- ❑ Impact analysis of routine applications for maintenance becomes easier for the developer.
- ❑ The Flexible reporting capability makes it easier for a user to understand the application flow
- ❑ By using CICS IA, it is possible to achieve better management, re-usability and control of our applications through improved understanding of a wide range of CICS applications, resource flows, and resource inter-relationships.
- ❑ Compare applications and resources across regions and platforms.
- ❑ Upgrade CICS TS release quicker, as time spent on Analysis of existing region & Testing of applications against latest release is reduced.
- ❑ Optimization of CICS regions & Modernization of applications.
- ❑ Helps to Visualize the resource usage by region, transaction, or program.
- ❑ Build & Run customized SQL queries to check the CICS resource relationships.
- ❑ Ease of Analysis & Discovery of resource relationship data across regions help reduce time spent on application understanding by new programmers in case of Mergers, Acquisitions, or Outsourcing.

Salient features



Capture relationship

- Resources used by a transaction - Programs, Files, TSQs, TDQs plus DB2, MQ, IMS, Web services, and Natural
- Identifies AG Natural and Adabas relationships
- Identifies non-threadsafe programs
- Transactions with affinities and their type/lifetime
- API changes between CICS versions / releases
- Unused resources
- Load module & CSECT scanner
- Sequencing of transactions within an application



Value

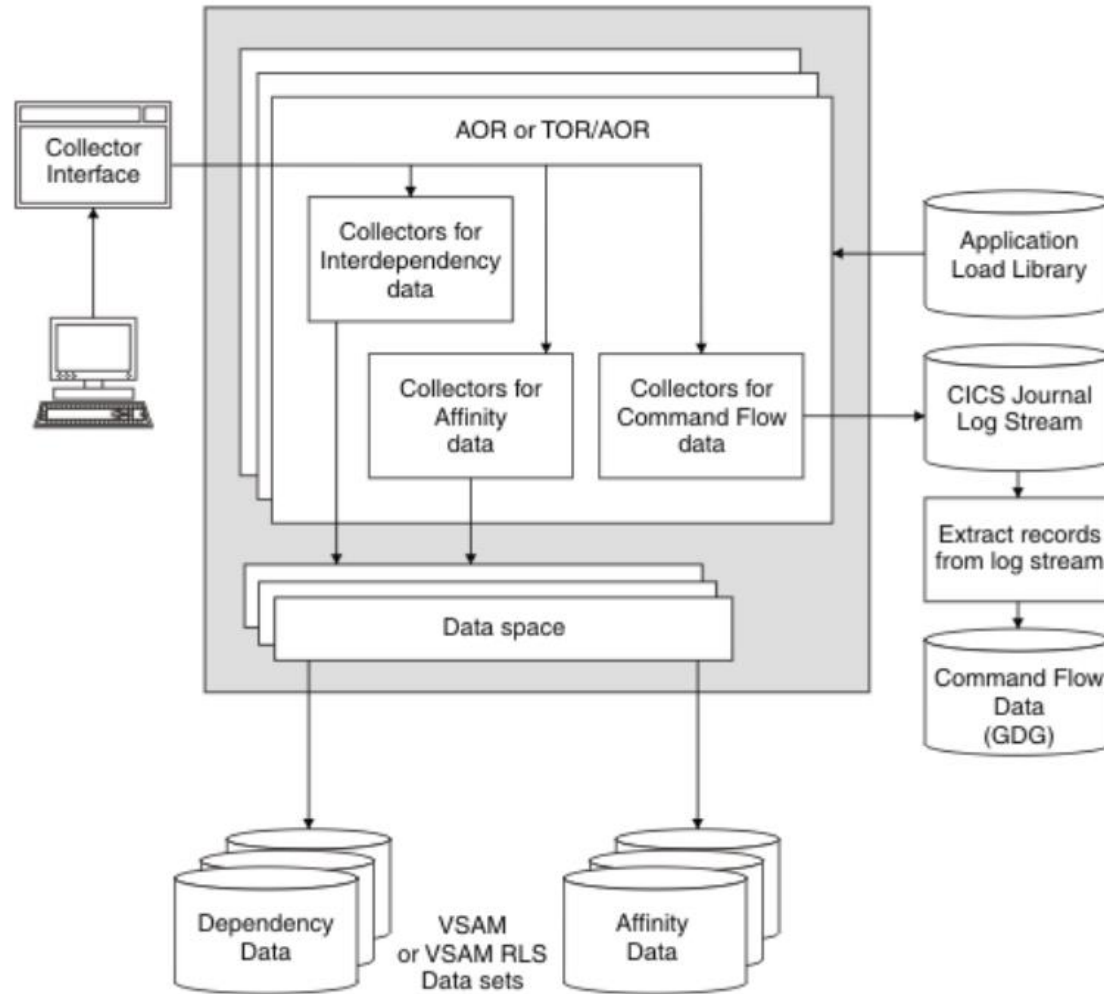
- Real time documentation of CICS systems
- Automate threadsafe analysis
- Identify and analyze affinities
- Assist in application modernization
- Better risk management
- Quickly identify application scope
- Automatically maintain CPSM rules
- Track changes to CICS APIs and SPIs
- Check workload in terms of transactions



Day to day usage

- Governance – check for Affinities, Threadsafe commands, site rules etc.
- What new commands have been added to a given program using the First used timestamp column
- Disable all programs that use a particular file
- Which programs uses a given resource, and what happens if I change this program

Architecture – collector



AOR – Application owning region
TOR – Terminal owning region
RLS – Record level sharing

Figure 1. The Collector structure of CICS IA components

Architecture – reporting

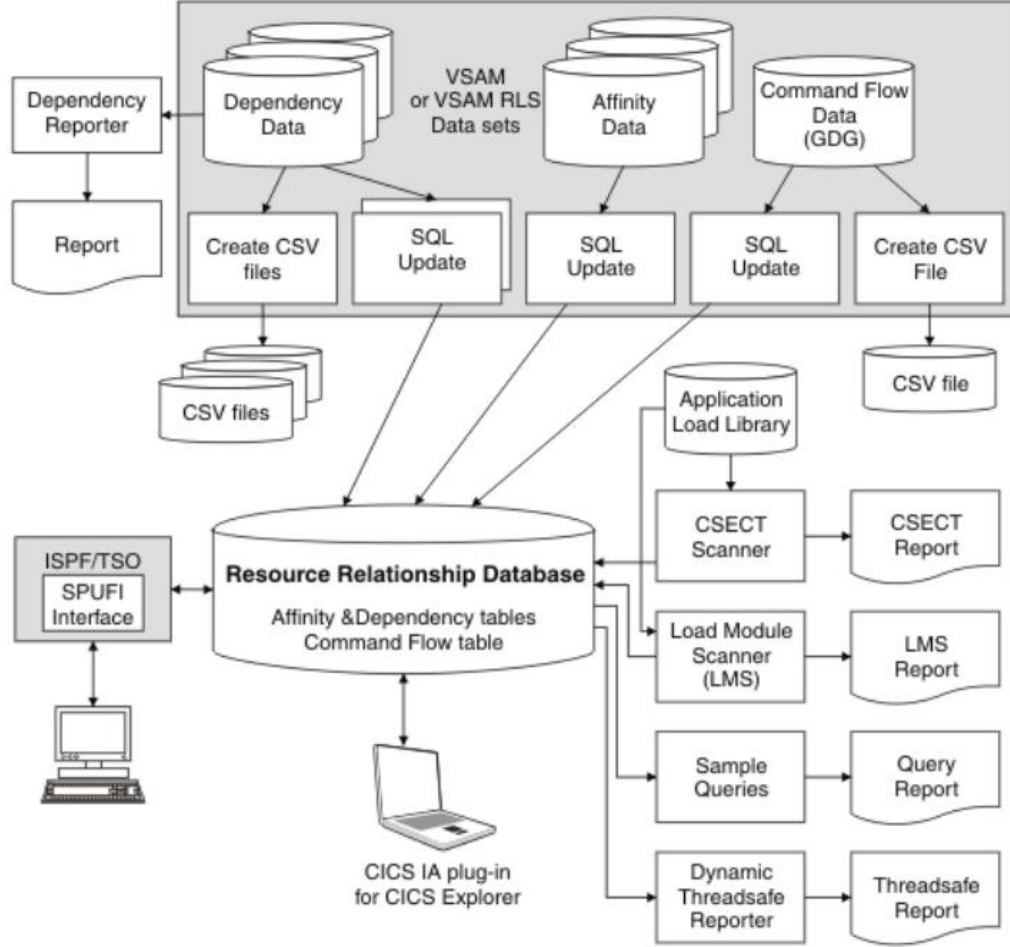


Figure 2. The reporting structure of CICS IA dependency-related components

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Interdependency functions

Interdependency



- ❑ CICS IA assists in understanding, in a controlled manner, the inter relationships between the shared common resources of applications and services
- ❑ For example, to change the content or structure of a file, you must know which programs use this file, because they will need to be changed. CICS IA can identify the programs and the transactions that drive the programs.
- ❑ CICS IA records the interdependencies between resources, such as files, programs, and transactions, by monitoring programming commands that operate on resources.
- ❑ Below is the list of interdependency that are recorded
 - ❑ Files, programs, transactions
 - ❑ Transient data queues, temporary storage queues etc.
- ❑ Commands that are monitored are typically CICS application programming interface (API) and system programming interface (SPI) commands that operate on CICS resources
- ❑ You can also instruct CICS IA to monitor some types of commands that operate on resources that are not CICS. For example:
 - EXEC CPSM calls to CICSplex SM resources
 - EXEC SQL calls to Db2 resources
 - MQ calls to IBM MQ resources
 - EXEC DLI calls and language-dependent native calls to IMS Database resources
 - Dynamic COBOL calls to other programs

Interdependency component

- The collector
- Database objects
- Plugin reports

```

IA55ESC.CIU_CICS_DATA
TRANSID PROGRAM FUNCTION TYPE OBJECT
#11 #12 #13 #14 #15
CH(4) CH(8) CHARACTER(24) CHARACTER(16) CHARACTER(255)
<UN> <UN-+--> <U--+-1-2--> <UN-+-1-+> <UN-+-1-+>
HEL1 DEMO101 DISPLAY
HEL1 DEMO101 DISPLAY
HEL1 DEMO101 RECEIVE NO_CONVID
HEL1 DEMO101 SEND NO_CONVID
HEL1 DEMO101 WRITEQ AUX TSQUEUE TSQHEL25
HEL2 DEMO201 DISPLAY
HEL2 DEMO201 DISPLAY
HEL2 DEMO201 WRITEQ AUX TSQUEUE TSQHEL25
    
```

The screenshot shows a transaction analysis window titled "Transaction(HEL1) in All Regions (4)". It is divided into three panes:

- Resources used:** A tree view showing the resources used by the transaction:
 - Program (1)
 - DEMO101 (1)
 - INIT
 - (2)
 - (1)
 - DISPLAY
 - NO_CONVID (2)
 - RECEIVE
 - SEND
 - Temporary Storage (1)
 - TSQHEL25 (1)
 - WRITEQ AUX
- By Program:** A list showing the programs used: DEMO101.
- Programs using WRITEQ AUX - TSQHEL25:** A tree view showing the programs that use the resource:
 - C55C1C03
 - HEL1
 - DEMO101

Interdependency components

❑ Dependency reporter

The Dependency reporter is a batch utility that you can use to convert the dependency data in the VSAM files into reports in a readable format. You might use this function if, for example, you do not have IBM Db2

```

Generated by CICS Transaction Inter-dependency Utility on 2023/08/25

2023/08/25 - CICS INTERDEPENDENCY ANALYZER (CIU) - Version 550 - Page: 1
--LIST OF CICS COMMAND GROUPS--

Command Type      Reporting
-----
START             Yes
XCTL              Yes
LOAD              Yes
LINK              Yes
RETURN            Yes
HANDLE            Yes
TC                Yes
FC                Yes
BMS               Yes
TS                Yes
TD                Yes
JRNL              Yes
DTP               Yes

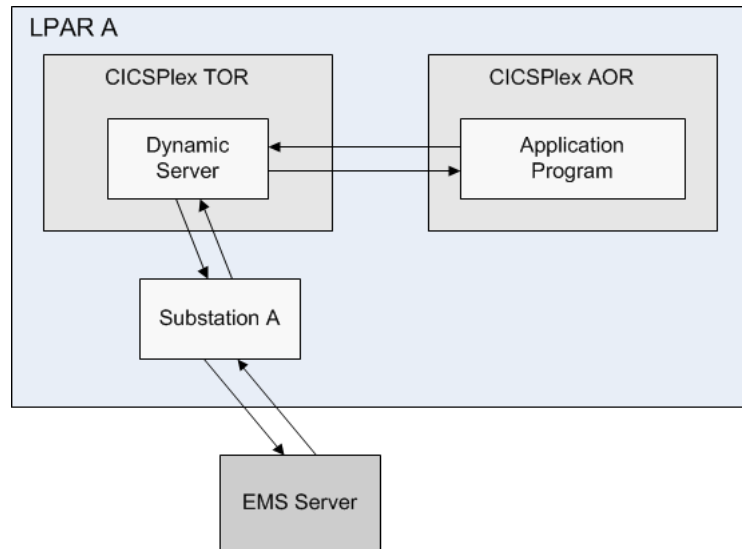
2023/08/25 - CICS INTERDEPENDENCY ANALYZER (CIU) - Version 550 - Page: 2
CICS RESOURCES REPORT FOR APPLID: C55C1C03

Tran  Program  Offset  Command  Resource  SysId  RmtName
-----
                PrgLen      Usage  First Run      Last Run      Term  TCBmode
-----
HEL1  DEM0101  000001BE  EIBFN= x'08F0'  NO_CONVID  -----
                00001848      1  2023-08-25 20.46.59  2023-08-25 20.46.59  Y    QR
                000001F8  RECEIVE (DTP)  NO_CONVID  -----
                00001848      1  2023-08-25 20.46.59  2023-08-25 20.46.59  Y    QR
                00000250  WRITEQ TSQUEUE AUX  TSQHEL25  -----
                00001848      1  2023-08-25 20.46.59  2023-08-25 20.46.59  Y    QR
                000002B6  SEND (DTP)    NO_CONVID  -----
                00001848      1  2023-08-25 20.46.59  2023-08-25 20.46.59  Y    QR
                000002DA  EIBFN= x'08F0'  NO_CONVID  -----
                00001848      1  2023-08-25 20.46.59  2023-08-25 20.46.59  Y    QR
    
```

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Affinity functions

Affinity



- ❑ The affinity related functions of CICS IA help users of CICS dynamic routing, who need to determine whether any of the transactions in their CICS applications use programming techniques that require them to be run in the same region thus creating an inter-transaction affinity, or in a particular region, thus creating a transaction-system affinity. Application programmers can use CICS IA to detect whether the programs they are developing are likely to cause transaction affinities
- ❑ CICS IA detects possible affinities by monitoring those EXEC CICS commands that have the potential to create them
- ❑ It can be run against production CICS regions and is also useful in a test environment, to monitor possible affinities introduced by new or changed application suites or packages
- ❑ Using CICS IA, you can:
 - ⑩ Collect data about potential affinities
 - ⑩ Load the affinity data into Db2 databases
 - ⑩ Use the Query interface to analyze the affinities data by means of SQL queries
 - ⑩ Use the Load Module Scanner to check a load module library for programs that issue commands that might cause transaction affinities
 - ⑩ Use the Affinities Reporter to produce detailed affinity reports
 - ⑩ Use the Builder to create a file of affinity-transaction-group definitions suitable for input to CICSplex SM.

Affinity components

- The collector
- Database objects
- Plugin reports

```
IA55ESC.CIU_AFF_CMD_DATA                                     Format TAB
APPLID  TRANSID PROGRAM  OFFSET  COMMAND                                RESTYPE      AFFGROUP  TERMINAL  BTS    LINK3270
#1      #2      #3      #4      #5                                     #6           #7        #8      #9     #10
CH(8)   CH(4)   CH(8)   CH(8)   CHARACTER(24)                         CHARACTER(16) CH(10)    CH(1)  CH(1)  CH(1)
<UN-+--> <UN>   <UN-+--> <U-+--> <U-+-----1-----+-----2-----> <U-+-----1-----+> <UN-+-----> -U     -U     -U
C55C1C03 HEL1    DEMO101 00000250 WRITEQ AUX                           TSQUEUE     TS.0000003 Y      N      N
C55C1C03 HEL2    DEMO201 00000206 WRITEQ AUX                           TSQUEUE     TS.0000003 Y      N      N
```

Affinities

TEMPORARY STORAGE affinities for TRANSID HEL1 in all regions

Resource	Relation type	Lifetime
TSQHEL25	GLOBAL	SYSTEM

Transaction	Program	Command
HEL1	DEMO101	WRITEQ AUX
HEL2	DEMO201	WRITEQ AUX

Affinity components

☐ Affinities reporter

The Affinities Reporter is a batch utility that you can use to do any of the following:

- Convert the affinity data in the Affinity database objects into reports in a readable format.
- Convert the affinity data in the VSAM files into reports in a readable format. You might use this function if, for example, you do not have IBM Db2.
- From the affinity data, in the Affinity database objects, create a file of affinity-transaction-group definitions in a syntax approximating to the batch API of CICSplex SM. This file is intended as input to the Builder component

```
Generated by CICS Transaction Inter-dependency Utility (AFFINITY Reporter) on 2023/08/25
Note: NOT suitable for input to CICSplex SM

                                --LIST OF CICS COMMAND GROUPS--

2023/08/25 - CICS INTERDEPENDENCY ANALYZER (CIU) - Version 550 - Page:  1
--LIST OF CICS COMMAND GROUPS--

Affinity Type      Reporting
-----
Inter-Transaction Affinities
-----

CWA                Yes
CANCEL             Yes
ENQ                Yes
GETMAIN            Yes
GETMAI64           Yes
LOAD               Yes
RETRIEVE           Yes
TS                 Yes

Trangroup      : TS.00000001
Affinity       : GLOBAL      (Worsened from LUNAME )
Lifetime       : SYSTEM
Queue          : TSQHEL25    (E3E2D8C8C5D3F2F540404040404040)
Recoverable    : No         (AUX )
Terminal Id    : 1087       (F1F0F8F7)
Tranid         Program      Offset      Usage      Command      Terminal    CBTS Task    Link3270
-----
HEL1           DEM0101    00000250    1          WRITEQ TS     Yes         No          No
HEL2           DEM0201    00000206    1          WRITEQ TS     Yes         No          No
Total Transactions :          2
Total Programs   :          2
```

Builder for CICSplex

- ❑ The Builder is a batch utility that takes as input a file of basic affinity-transaction-group definitions created by the Reporter. It produces a file of "combined" affinity-transaction-group definitions suitable for input to CICSplex SM
- ❑ The Builder takes as input a set of files containing basic affinity transaction groups, combines those groups, and produces a file containing combined affinity transaction groups
- ❑ You can use the CICS IA Affinities Reporter to produce files of basic transaction affinity groups for input to the Builder

Input to Builder

```
***** ***** Top of Data *****
000001 * HEADER APPLID(C55C1C03)  SAVEDATE(20230825)  SAVETIME(204708  );
000002 *
000003 * Generated by CICS Transaction Affinities Utility (Reporter) on 2023/08/25
000004 * Note: NOT suitable for input to CICSplex SM
000005 *
000006 CREATE TRANGRP NAME(TS.00000001) AFFINITY(GLOBAL  ) AFFLIFE(SYSTEM  )
000007         DESC(TS.TSQHEL25          E3E2D8C8);
000008     CREATE DTRINGRP TRANGRP(TS.00000001) TRANID(HEL1);
000009     CREATE DTRINGRP TRANGRP(TS.00000001) TRANID(HEL2);
***** ***** Bottom of Data *****
```

Builder for CICSplex

Output from Builder

```
2023/08/25 - CICS INTERDEPENDENCY ANALYZER (CIU) - Version 550 - Page: 1
BUILDER REPGRPS DATASETS PROCESSED REPORT

      Dataset Name                CICS      Detector Last   Detector Last
      -----                APPLID      Save Date      Save Time
-----
CICSIAD.ATR.C55C1C03.TRANGRPS    C55C1C03    20230825      204708

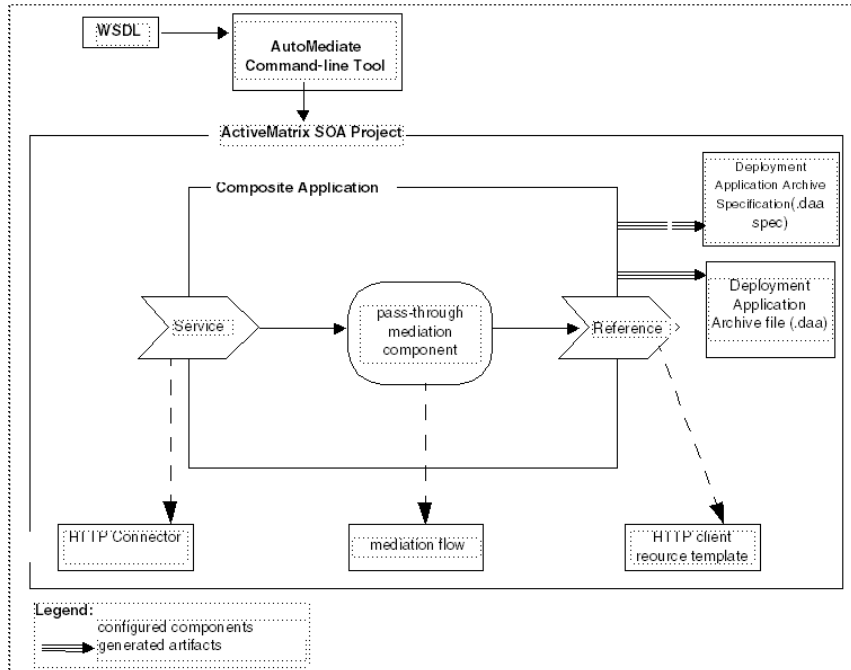
2023/08/25 - CICS INTERDEPENDENCY ANALYZER (CIU) - Version 550 - Page: 2
BUILDER GROUP MERGE REPORT

Trangroup   : HEL1GRP
Affinity    : GLOBAL
Lifetime    : SYSTEM
Match       : LUNAME
State       : ACTIVE
  Consists of Transactions
    HEL1  HEL2
  Consists of groups merged from
    CICSIAD.ATR.C55C1C03.TRANGRPS
    TS.00000001 (GLOBAL  SYSTEM  )
***** BOTTOM OF DATA *****
```


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Command flow functions

Command flow



- ❑ CICS IA Command Flow utility allows individual users to capture CICS, IBM Db2, MQ and IMS commands in a chronological order for one or more transactions. Each user can capture information for his or her given transaction or transactions. They can also individually load and view the data that they have captured.
- ❑ With the Command Flow feature you can trace the command flow in up to five transactions in chronological order. A trace name can be associated with each instance of the trace.
- ❑ CICS IA uses a number of CICS Global User Exits (GLUEs) and a CICS Task Related User Exit (TRUE) to intercept commands.
- ❑ The command records are written to a CICS User Journal, which uses the MVS logger subsystem to write them to a log streams data set. At the end of a trace, a record containing the name, start time, end time, and the five possible transactions is written to the journal

Command flow components

- ❑ The collector
- ❑ Database objects
- ❑ Plugin reports

```

IASSESC.CIU_CMDFLOW_DATA
PROGRAM  OFFSET  FUNCTION_TYPE  FUNCTION_ID  FUNCTION  TYPE  RESOURCE_NAME
#19      #20      #21            #22          #23      #24      #25
CH(8)   CH(8)   CHARACTER(8)  CH(4)       CHARACTER(24)  CHARACTER(16)  CHARACTER(48)
-----> <-----> <-----> <--> <-----1-----2-----> <-----1-----> <-----1-----2-----3----->
DEMO101
DEMO101  FFFFFFFF  CICS          0CF2        GETMAIN     STORAGE      STORAGE_ADDRESS=1930DCD8,FLEN=4080
DEMO101  000001BE  CICS          08F0        DISPLAY
DEMO101  000001F8  CICS          0402        RECEIVE
DEMO101  00000250  CICS          0A02        WRITEQ     TSQUEUE      TSQHEL25
DEMO101  000002B6  CICS          0404        SEND
DEMO101  000002DA  CICS          08F0        DISPLAY
DEMO101  000002FC  CICS          0E08        RETURN     TRANSID
DEMO101  FFFFFFFF  CICS          0C04        FREEMAIN   STORAGE      STORAGE_ADDRESS=1930DCD8
DEMO201
DEMO201  FFFFFFFF  CICS          0CF2        GETMAIN     STORAGE      STORAGE_ADDRESS=1930DCD8,FLEN=4080
DEMO201  000001BE  CICS          08F0        DISPLAY
DEMO201  00000206  CICS          0A02        WRITEQ     TSQUEUE      TSQHEL25
DEMO201  0000022A  CICS          08F0        DISPLAY
DEMO201  FFFFFFFF  CICS          0C04        FREEMAIN   STORAGE      STORAGE_ADDRESS=1930DCD8
    
```

TASKID(0000073C) under TRANSID (HEL1) in Region C5 9 Commands filtered out of 9

TCB Modes Used	TCB Mode Switches	Task Control Block (TCB)	Command Time Local	Command	Function ID	Offset of Command	Program
<ul style="list-style-type: none"> QR (9) Start of transaction Trans Getmain STORAGE(STOR Display () Receive () Writeq Temporary Stora Send () Display () Return Transaction() Freemain STORAGE(STO 		<ul style="list-style-type: none"> HEL1 DEMO101 Start of tran QR Getmain ST QR Display () QR Receive () QR Writeq Tem QR Send () QR Display () QR Return Tran: QR Freemain S QR 					
			2023-08-25 20:50:11.416217	START OF TRAN...			DEMO101
			2023-08-25 20:50:11.416517	GETMAIN	0CF2	FFFFFFFF	DEMO101
			2023-08-25 20:50:11.416752	DISPLAY	08F0	000001BE	DEMO101
			2023-08-25 20:50:11.416811	RECEIVE	0402	000001F8	DEMO101
			2023-08-25 20:50:11.416918	WRITEQ	0A02	00000250	DEMO101
			2023-08-25 20:50:11.416976	SEND	0404	000002B6	DEMO101
			2023-08-25 20:50:11.417027	DISPLAY	08F0	000002DA	DEMO101
			2023-08-25 20:50:11.417064	RETURN	0E08	000002FC	DEMO101
			2023-08-25 20:50:11.417134	FREEMAIN	0C04	FFFFFFFF	DEMO101

Command flow components

❑ Plugin reports

By Application

Platform / Application	Program (DEMO101)			
Undefined Platform / Undefined Application	Start of transaction Resource: HEL1 Time: 2023-08-25 08:50:11.416	Getmain STORAGE Resource: STORAGE_ADDRESS=1930DCD8,FLEN=4080 Time: 2023-08-25 08:50:11.416	Display Resource: Time: 2023-08-25 08:50:11.416	Receive Resource: Time: 2

By Region

Region	Program (DEMO101)			
APPLID (C55C1C03)	Start of transaction Resource: HEL1 Time: 2023-08-25 08:50:11.416	Getmain STORAGE Resource: STORAGE_ADDRESS=1930DCD8,FLEN=4080 Time: 2023-08-25 08:50:11.416	Display Resource: Time: 2023-08-25 08:50:11.416	Receive Resource: Time: 2023-08-25 08:50:11.416

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Scanner functions

Scanner

```
00010001110010101010010101010100101011010110
00011100101010010000101001010101011001000100
00010001110010101001010101001010101011011000
00011100001010100101010100101010101100010001
010001011001010 OPEN SOURCE 010100101010101
001000111001010100101010100101001100100010
00011011001010100101010100101010101100100010
100011100101010010101010010101010110010001
000111000101010010101010010001010110010001
```

- ❑ The Scanner component consists of two scanners: the Load Module Scanner and the CSECT Scanner
- ❑ Load Module Scanner is a batch utility that scans a load module library to detect those programs in the library that issue commands that might cause transaction dependency or transaction affinities.
- ❑ The report produced by the Load Module Scanner indicates only that potential dependency or affinity problems might exist because it only identifies the programs that issue the commands.
- ❑ CSECT Scanner scans load modules for information that can be used to identify the version of each CSECT. The output is stored in Db2 tables and can be used, in conjunction with the Db2 dependency tables, to identify different versions of programs

Scanner components

Host side reports

```

***** TOP OF DATA *****
ICICS INTERDEPENDENCY ANALYZER Version 5.5.0                                08/26/23   Page
LOAD MODULE SCANNER - DETAILED LISTING OF MOHITP.DEMO.PDSE
0
Module Name - DEM0101 / Load Module Length - 00002000 / Module Entry Point - 00000000
Offset      Storage Content (HEX)                                     EDF DEBUG Possible Command      Type      Depcy  Affinit
-----
000006B1  0402C0002700000014000040000000      00019  RECEIVE
000006CC  0A02E0002780004100      00022  WRITEQ      TSQUEUE   Yes    Trans
Total possible Affinity commands =          1
Total possible Dependency commands =         2
Total possible MVS POSTs          =          0
0
-Module Name - DEM0201 / Load Module Length - 00002000 / Module Entry Point - 00000000
Offset      Storage Content (HEX)                                     EDF DEBUG Possible Command      Type      Depcy  Affinit
-----
00000611  0A02E0002780004100      00018  WRITEQ      TSQUEUE   Yes    Trans
Total possible Affinity commands =          1
Total possible Dependency commands =         1
Total possible MVS POSTs          =          0
ICICS INTERDEPENDENCY ANALYZER Version 5.5.0                                08/26/23   Page
LOAD MODULE SCANNER - DETAILED LISTING OF MOHITP.DEMO.PDSE

```

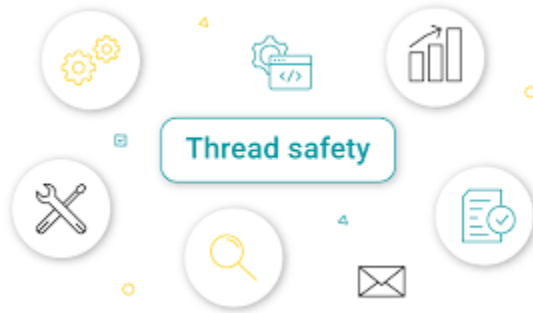
CICS INTERDEPENDENCY ANALYZER Version 5.5.0 10/01/11 Page 4
 CSECT SCANNER - LISTING OF: CICSTLS.STRESS.LOADLIB

Program	Length	Entry	Alias of	Linker name	Version	Timestamp	AMODE	RMODE	
	T1date	T1name	T1ver	T2date	T2name	T2ver	UsrDate	UserData	ZAPdate ZAPdata
CSECT									
DFHELII	2003318	569623400	01.04						
RFWDb201	2004013	5648A2500	22.01						
DSNCLI	2003318	569623400	01.04						
CEESG005	2001115	569623400	01.04	2001115	PL/X-370	01.04	2001116	RSI11151198	
CEEBETBL	2001115	569623400	01.04						
CEESTART	2001115	569623400	01.04						
IGZCBS0	2001115	569623400	01.04	2001115	PL/X-370	01.04	2001116	RSI11151061	
CEEARLU	2001115	569623400	01.04	2001115	PL/X-390	02.01			
CEEBPIRA	2001115	569623400	01.04	2001115	PL/X-390	02.01			
CEECPYRT	2001115	569623400	01.04	2001115	PL/X-390	02.01			
CEEBPUBT	2001115	569623400	01.04						
CEEBTRM	2001115	569623400	01.04						
CEEBLLST	2001115	569623400	01.04						
CEEBINT	2001115	569623400	01.04	2001115	PL/X-390	02.01			

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Threadsafe functions

Threadsafe



- ❑ The Threadsafe Reporter consists of a batch job that produces reports displaying the threadsafe status of each command in the requested programs.
- ❑ The threadsafe report consists of a header page and one or more pages of program data.
- ❑ The header page lists the report options used to create the report and provides definitions for some of the terms used in the report.
- ❑ The remaining pages report on each program that meets the criteria specified by the report options PROGRAMNAME and REGIONNAME.

Threadsafe components

❑ Host side reports

```
CICS INTERDEPENDENCY ANALYZER VERSION 5.5.0                2023/08/25:21.04.24    PAGE    1
Program Dynamic Analysis - THREADSAFE SUMMARY LISTING FOR CICS TS

Report options:
  COLLECTION_ID=*                REGIONNAME=*          PROGRAMNAME=*          CICSLEVEL=          REPORT=SUMMARY    LINESPERPAGE=60

Definitions of Terms:

'Threadsafe' calls are EXEC CALLS commands that do not cause a TCB swap.

'Non-Threadsafe' calls are EXEC CALLS commands that cause a TCB swap.

'Indeterminate Threadsafe' calls are EXEC CALLS commands where it cannot be determined if the call causes a TCB swap.

'Dynamic calls' are calls to modules at execution time. Programs that are called dynamically take on the same environment as the calling program.

'Threadsafe Inhibitor calls' are EXEC CICS commands that need to be investigated further because they may prevent you from defining your program as threadsafe. These commands are: ADDRESS CWA, EXTRACT EXIT, GETMAIN SHARED, and LOAD.
```

Threadsafe components

❑ Host side reports

```
IADEM01      C55C1C03 DEM0101  USER      QUASIRENT  CICSAPI ACTIVE  0720  MOHITP.LOAD.PDSE      ?
  Total CICS calls:      5  Threadsafe:      0  Non-Threadsafe:      5  Indeterminate Threadsafe:      0
  Total CPSM calls:      0  Threadsafe:      0  Non-Threadsafe:      0
                                DB2 calls:      0  MQ calls:      0  IMS calls:      0
                                Dynamic Calls:      0  Threadsafe Inhibitor calls:      0

IADEM01      C55C1C03 DEM0201  USER      QUASIRENT  CICSAPI ACTIVE  0720  MOHITP.LOAD.PDSE      ?
  Total CICS calls:      3  Threadsafe:      0  Non-Threadsafe:      3  Indeterminate Threadsafe:      0
  Total CPSM calls:      0  Threadsafe:      0  Non-Threadsafe:      0
                                DB2 calls:      0  MQ calls:      0  IMS calls:      0
                                Dynamic Calls:      0  Threadsafe Inhibitor calls:      0
```

Threadsafe components

❑ Plugin reports

Threadsafe Report							
Program	LIB Dataset Name	APIST	Concurrency	Execution Key	Storage Protect	Reentrant	CICS Release
IADEMO1							
C55C1C03 (CICS TS 5.5)							
DEMO101	MOHITP.LOAD.PDSE	CICSAPI	QUASIRENT	USER	ACTIVE	?	0720
	Total CICS Calls	5	Threadsafe	0	Non-Threadsafe	5	
	Indeterminate Threa...	0	Total DB2 C...	0	Total MQ Calls	0	
	Total IMS Calls	0	Dynamic C...	0	Threadsafe Inh...	0	
	Total CPSM Calls	0	Threadsafe	0	Non-Threadsafe	0	

Command Type	Function	Type	Object	Offset	Use count	Threadsafe	Inhibitor
CICS	DISPLAY			000001BE	1	N	N
CICS	DISPLAY			000002DA	1	N	N
CICS	RECEIVE		NO_CONVID	000001F8	1	N	N
CICS	SEND		NO_CONVID	000002B6	1	N	N
CICS	WRITEQ AUX	TSQUEUE	TSQHEL25	00000250	1	N	N

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CICS IA usage scenarios

Day to day usage

Dynamic view of

- What region does a particular CICS program run in?
- What are all the CICS resources that a given transaction can use?
- What programs do a given transaction invoke?
- What transactions access a particular file and how?
- What resources do a specific program use?
- How is a file accessed by a particular program?
- Which affinities do a transaction have?
- What kind of database resources do you use in your program?
- What kind of MQ/IMS resources do you use in your program?

Finding Resources Affected a CICS Upgrade

Problem

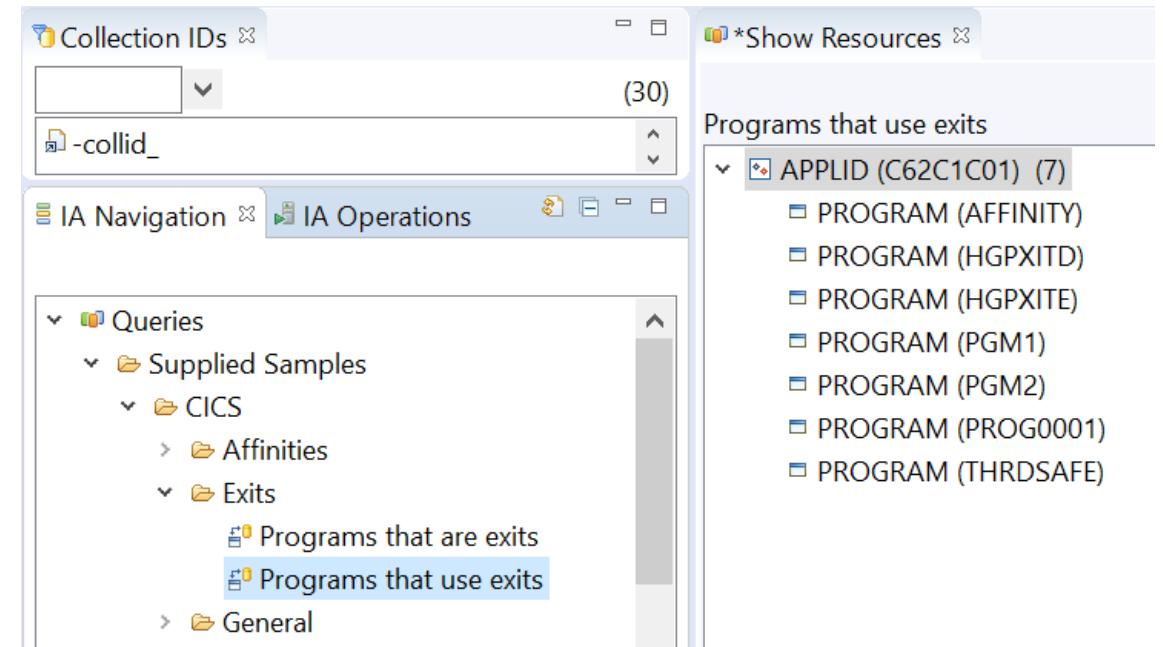
- When a new release of CICS is introduced, how do you ensure the applications will function correctly?
- Several APIs and SPIs may have been modified with the upgrade. What programs are using those API/SPIs? .
- Exits may need to be reassembled and tested. What are the Exit programs? Where are the exits used?
- How do you prove that the application programs were exercised in the upgraded test environment?

Solution

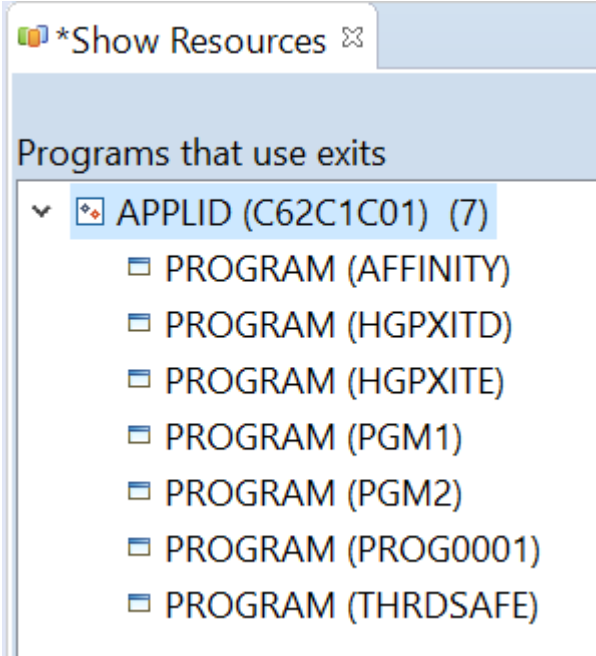
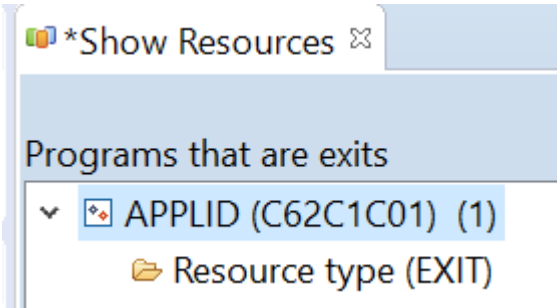
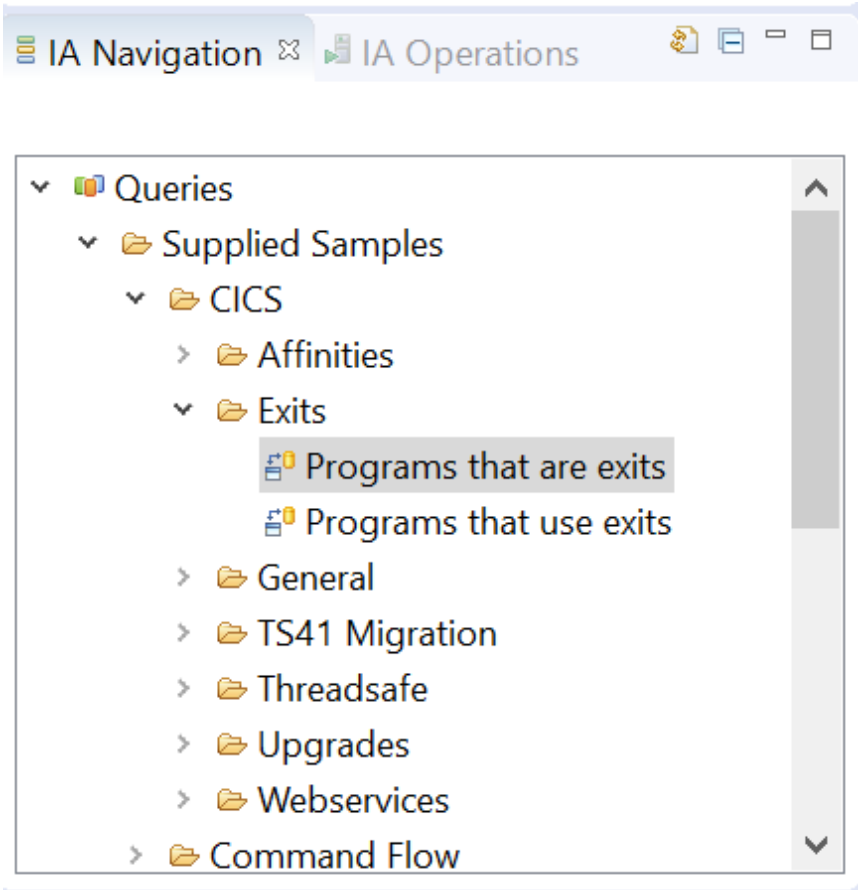
- Supplied Explorer queries
 - Identify programs using APIs and SPIs that have changed over the release levels for the upgrade.
 - Identify Exit programs and the programs that use them.
 - Identify Obsolete commands and options
- IA's timestamp feature can be used to show which programs were exercised in the test environment, and which ones were not.

Value

- Reduce risk associated to the applications when upgrading to a new release of CICS TS.
- Ensure that modules directly impacted by the upgrade get tested
- Speed up the upgrade process by focussing on key application modules



CICS Exits and usage



Check what workload has been exercised

Edit CICS query

Edit query "Programs last used before a given date"

Add, remove or change criteria for which resources to include or exclude

Name: Programs last used before a given date

Show: Transaction, Program

Filter results: Time of last observation is before 31/...

Time of last observation: is before

December, 2023

	Tue	Wed	Thu	Fri	Sat
	28	29	30	1	
	5	6	7	8	
	12	13	14	15	
	19	20	21	22	

*Show Resources

- TRANSID (EGUI) (4)
 - PROGRAM (NSM0XCMN)
 - PROGRAM (NSM0XGUI)
 - PROGRAM (NSM0XVDS)
 - PROGRAM (NSM0XWOD)
- TRANSID (LGCF) (1)
 - PROGRAM (LGICVS01)
- TRANSID (NSM4) (3)
 - PROGRAM (TST4CVD1)
 - PROGRAM (TST4CVD4)
 - PROGRAM (TST4CVD5)
- TRANSID (SSC1) (9)

Edit CICS query

Edit query "Programs used for all run"

Add, remove or change criteria for which resources to include or exclude

Name: Programs used for all run

Show: Transaction, Program

*Show Resources

- TRANSID (AFFA) (1)
 - PROGRAM (AFFTESTA)
- TRANSID (AFFN) (1)
 - PROGRAM (AFFINITY)
- TRANSID (AFFZ) (1)
 - PROGRAM (AFFTESTZ)
- TRANSID (AP64) (1)
 - PROGRAM (APICMD64)
- TRANSID (COBN) (1)
 - PROGRAM (COBNEW)
- TRANSID (CONB) (1)
 - PROGRAM (COBNEW)

HCLSoftware

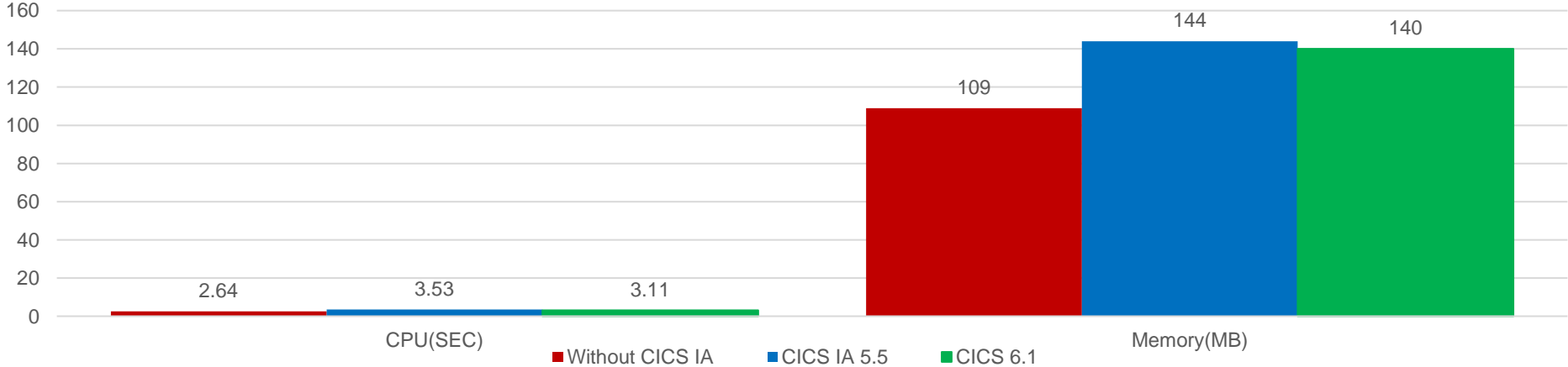
CICS IA Performance and Size

CICS IA Space Requirement

Figure 8. Total DASD Space Required by CICS IA

Library Type	Total Space Required in 3390 Trks	Description
Target	1245 Tracks	
Distribution	900 Tracks	
File System(s)	600 Tracks	

CICS IA Performance - CPU Time (sec) and Average Memory (mb)

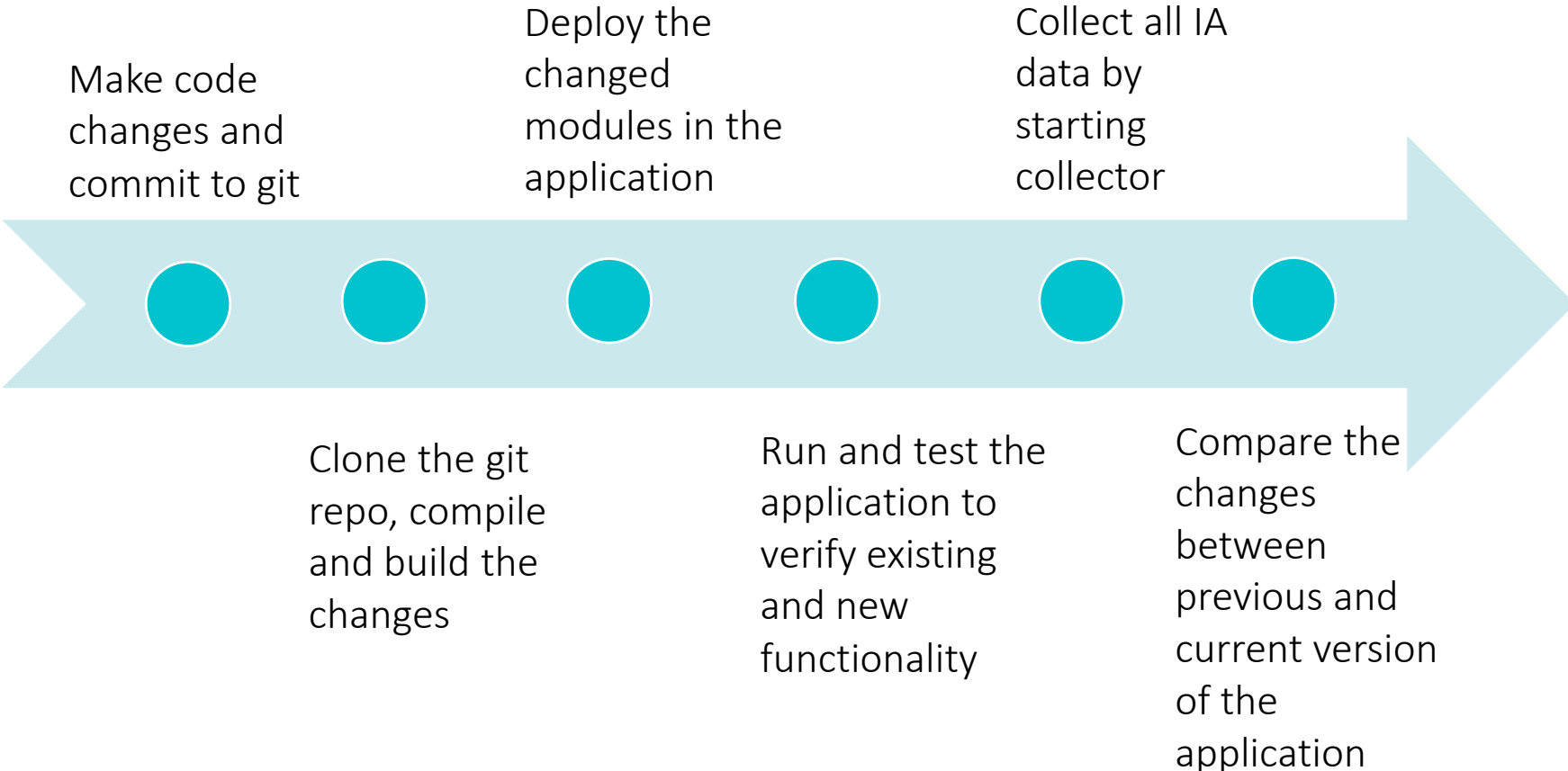


Please refer Appendix B. Task collection frequency: Performance results (Page 235) in CICS IA Redbook for more details.

HCLSoftware

CICS IA standard pipeline

CICS IA standard pipeline



Note: For comparison between previous and current version of the application, we need to run the previous (production) version of the application and collect all the relevant data

HCLSoftware

Enhancements

zowe client

Update CICS Profile

CICS Interdependency Analyzer Connection Details

Protocol: Host URL: Port:

Only accept trusted TLS certificates: True False

Profile Name:

ZOWE EXPLORER

- DATA SETS
- UNIX SYSTEM SERVICES (USS)
- JOBS
- CICS IA
 - hclctc1
 - SWARMQIMS
 - TEST_INT
 - TESTING
 - TS55_CMDS
 - UNKNOWNNA
 - WAAFTST
 - WAITTEST
 - User Command Flow
 - Owner User ID (CICSUSER)
 - Owner User ID (NASAKIN)
 - Reports
 - Affinity Reports
 - Builds
 - Threadsafe Reports
 - aff9thread.thr
 - aff9_c56.thr
 - aff9_thrd.thr
 - AFF9_Threadsafe.thr
 - Affn0001_summ.thr
 - affn_zowe.thr
 - affn_zowe3.thr
 - affz_kas.thr
 - AFFZ_thrd.thr
 - all_thrd.thr
 - C56_threadsafe_aff9.thr
 - call_prog.thr
 - CALLTRAN_SUMM_SPC.thr
 - CALLTRAN_DETAIL_ALL.thr

Threadsafe Report

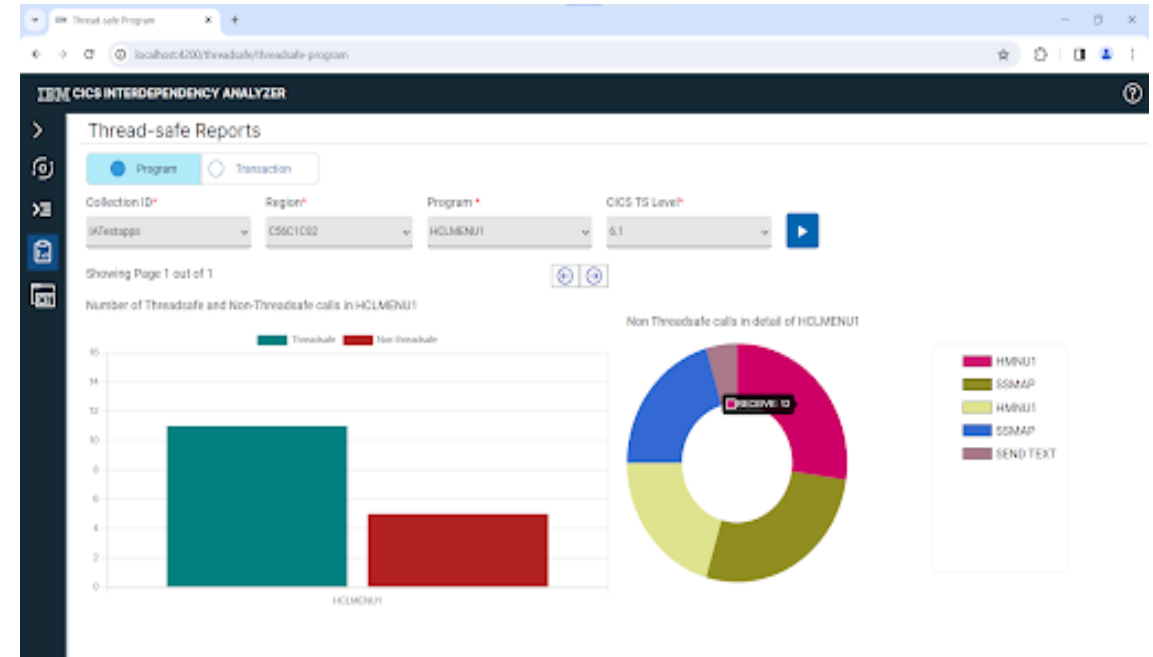
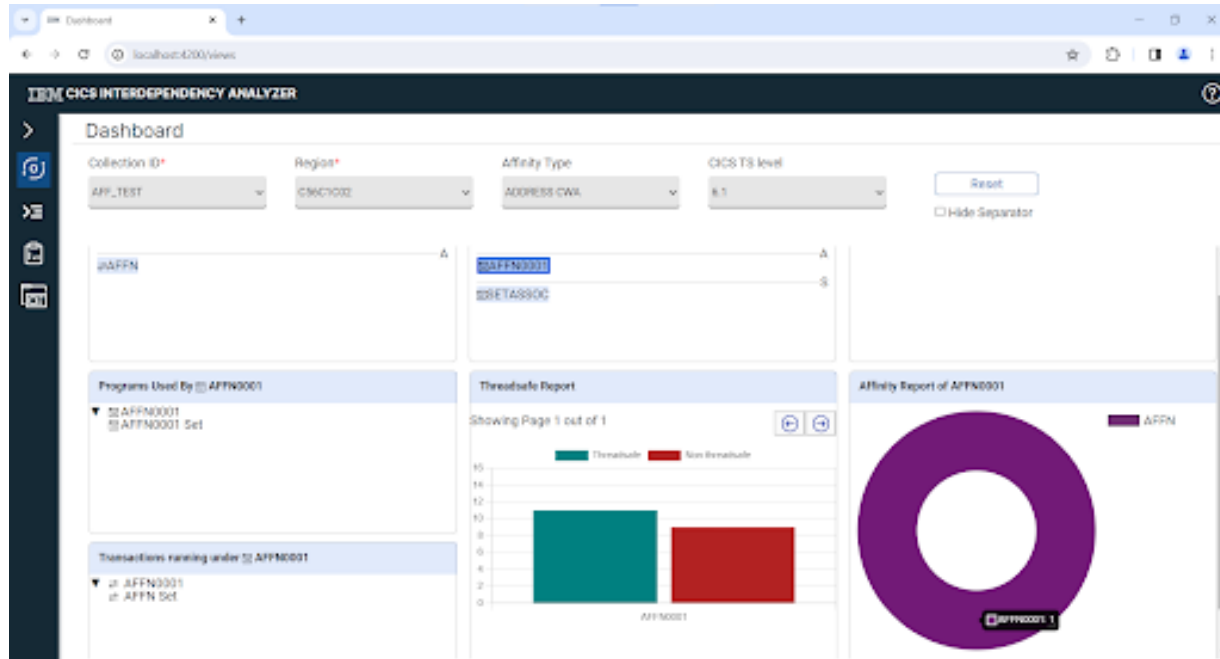
Program	LIB Dataset Name	APIST	Concurrency	Execution Key	Storage Protect	Reentrant	CICS Release
IAWsimConvert							
C56C1C03 (CICS TS 5.6)							
AFFTESTZ	ITBLD.IAT01.MASTER.TESTLOAD	CICSAPI	QUASIRENT	USER	ACTIVE	?	0730
	Total CICS Calls	68	Threadsafe	37	Non-Threadsafe	25	
	Indeterminate Threadsafe	6	Total DB2 Calls	0	Total MQ Calls	0	
	Total IMS Calls	0	Dynamic Calls	0	Threadsafe Inhibitor Calls	1	
	Total CPSM Calls	0	Threadsafe	0	Non-Threadsafe	0	

Command Type	Function	Type	Object	Offset	Use Count	Threadsafe	Inhibitor
CICS	ADDRESS		CWA	0000E62	1	Y	Y
CICS	ASKTIME	TIME		0000100C	1	Y	N
CICS	ASSIGN		C56C1C03	00000EA0	1	Y	N
CICS	CREATE	FILE	TESTFILE	00001834	1	N	N
CICS	CREATE	PROGRAM	AFFTESTP	00001F3A	1	N	N
CICS	DEFINE	COUNTER	TESTCOUNTER	00001354	1	Y	N

ZOWE EXPLORER

- DATA SETS
- UNIX SYSTEM SERVICES (USS)
- JOBS
- CICS IA
 - hclctc1
 - SWARMQIMS
 - TEST_INT
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 - aff9_thrd.thr
 - AFF9_Threadsafe.thr
 - Affn0001_summ.thr
 - affn_zowe.thr
 - affn_zowe3.thr
 - affz_kas.thr
 - AFFZ_thrd.thr
 - all_thrd.thr
 - C56_threadsafe_aff9.thr
 - call_prog.thr
 - CALLTRAN_SUMM_SPC.thr
 - CALLTRAN_DETAIL_ALL.thr

Web client



HCLSoftware

Demo

HCLSoftware

Q&A

HCLSoftware

[hcltechsw.com](https://www.hcltechsw.com)