



IBM System z Software Premier Executive Briefing Event

**CICS - Strength throughout the
ecosystem.**

Are you tooled up?



Presenter: Kaamil Baba Kamara

Updated: Friday, October 19, 2012

Agenda

- **Scenario introduction**
 - Business needs
 - Technical solution
- **The scenarios**
- **Summary**
- **Reference material**

Business view

▪ JK Insurance

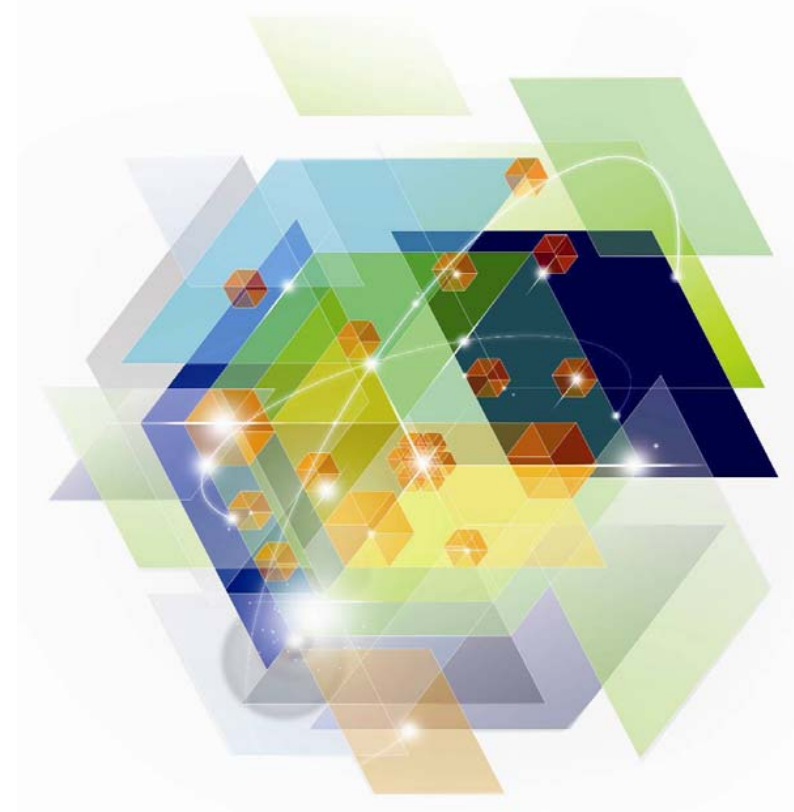
- Regional insurance company - planning to go national
- Extending its current reach with web and Smartphone access
- 24/7 availability needed for consumer buying patterns
- Fast and consistent response times needed to avoid leakage
- PCI DSS (Payment Card Industry Data Security Standard) compliance is essential

IT view

- **Policy trading app (GENAPP) runs in single CICS region**
 - Clone region to improve availability and scalability
 - Implement CICSplex SM for single point of control and workload management
- **Current team unfamiliar with GENAPP**
 - Use appropriate tooling to meet aggressive launch date
 - Analyze application to understand resource interdependencies and affinities
- **VSAM files require batch window for reporting, backups, and maintenance**
 - Migrate files to DB2 without modifying application
 - Encrypt credit card and key customer data
- **Application has some performance issues**
 - Conduct a performance analysis and tuning project

The scenarios

- **Understanding the Application**
- **Building the CICSplex infrastructure**
- **Single point of control over Resource Definitions**
- **Migrating VSAM data to DB2**
- **Performance Analysis**
- **Follow-on activities**



Understanding the application

- Analyze resource interdependencies

The screenshot displays two side-by-side windows of the CICS Interdependency Analyzer. The left window shows a command flow for SSC1 with 13 total commands. The right window shows a command flow for SSC1 with 21 total commands. Both windows have a tree view on the left showing the hierarchy of SSC1, LGTESTC1, LGICUS01, and LGACDB01.

Command	Command Flow ID
Start of transaction Transaction()	GA-C-INQ
Send Map(SSMAPC1)	GA-C-INQ
Handle AID()	GA-C-INQ
Handle CONDITION()	GA-C-INQ
Receive Map(SSMAPC1)	GA-C-INQ
Link Program(LGICUS01)	GA-C-INQ
LGICUS01	
Readq Temporary Storage(GENAWMQC)	GA-C-INQ
Link Program(LGICDB01)	GA-C-INQ
LGICDB01	
Read File(KSDSCUST)	GA-C-INQ
Return Transaction()	GA-C-INQ
LGICUS01	
Return Transaction()	GA-C-INQ
LGTESTC1	
Send Map(SSMAPC1)	GA-C-INQ
Return Transaction(SSC1)	GA-C-INQ

Command	Command Flow ID
Start of transaction Transaction()	GA-C-ADD
Send Map(SSMAPC1)	GA-C-ADD
Handle AID()	GA-C-ADD
Handle CONDITION()	GA-C-ADD
Receive Map(SSMAPC1)	GA-C-ADD
Link Program(LGACUS01)	GA-C-ADD
LGACUS01	
Link Program(LGACDB01)	GA-C-ADD
LGACDB01	
Readq Temporary Storage(GENACUSTNUM)	GA-C-ADD
Write File(KSDSCUST)	GA-C-ADD
Deleteq Temporary Storage(GENACUSTNUM)	GA-C-ADD
Writeq Temporary Storage(GENACUSTNUM)	GA-C-ADD
Return Transaction()	GA-C-ADD
LGACUS01	
Return Transaction()	GA-C-ADD
LGTESTC1	
Enqueue ENQNAME()	GA-C-ADD
Readq Temporary Storage(GENACNTL)	GA-C-ADD
Readq Temporary Storage(GENACNTL)	GA-C-ADD
Readq Temporary Storage(GENACNTL)	GA-C-ADD
Writeq Temporary Storage(GENACNTL)	GA-C-ADD
Dequeue ENQNAME()	GA-C-ADD
Send Map(SSMAPC1)	GA-C-ADD
Return Transaction(SSC1)	GA-C-ADD

CICS Interdependency Analyzer

Understanding the application

- Analyze application and system affinities

The screenshot displays the IBM Performance Explorer interface. The left pane shows a tree view under 'Supplied Samples' > 'CICS' > 'Affinities'. The item 'All GENAPP programs with potential affinities' is selected. The right pane shows the details for this selection, with a red circle highlighting the top three items: 'PROGRAM (LGACDB01) (1)', 'Resource type (TSQUEUE) (1)', and 'GENACUSTNUM'. Below these are other programs like 'PROGRAM (LGAPDB01) (1)', 'PROGRAM (LGDPDB01) (1)', 'PROGRAM (LGICUS01) (1)', 'PROGRAM (LGIPDB01) (1)', 'PROGRAM (LGSTSQ) (1)', and 'PROGRAM (LGTESTC1) (2)'.

Understanding the application

- Analyze application and system affinities

```

11/15/2011 - CICS INTERDEPENDENCY ANALYZER (CIU) - Version 310      Page: 08
INTER-TRANSACTION AFFINITIES REPORT FOR APPLID: IYDZEJ07 - TEMPORARY STORAGE

Trangroup   : TS.0000004
Affinity    : Background
Lifetime    : PERMANENT
Queue       : GENACUSTNUM                (C7C5D5C1C3E4E2E3D5E4D440404040)
Recoverable : Yes                        TSQ MAIN
Tranid      Program      Offset      Usage      Command      Terminal
-----
SSC1        LGACDB01      00000A76    1          READQ        No
SSC1        LGACDB01      00000CEA    2          WRITEQ       No
SSC1        LGACDB01      00000C84    1          DELETEQ     No
Total Transactions : 1
Total Programs    : 1
  
```

- and generate affinity-transaction-group definitions
 - suitable for input to CICSplex SM

CICS Interdependency Analyzer for z/OS V5.1



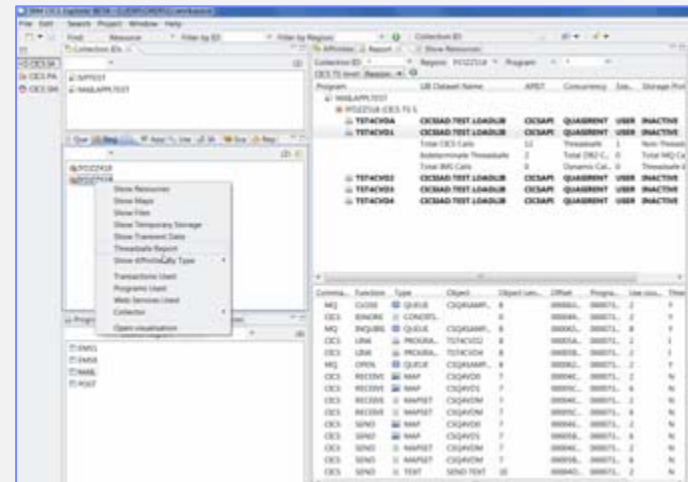
Application insight

What's new in CICS IA V5.1...

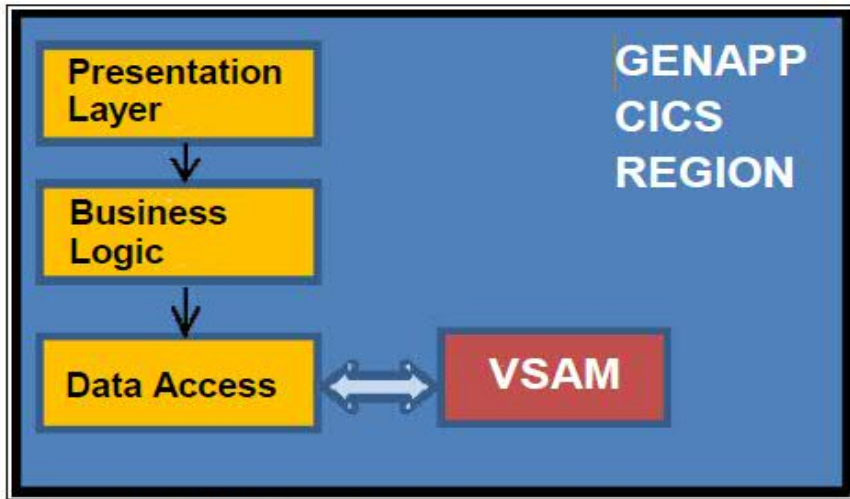
- Support for CICS Transaction Server V5.1, including enhanced business application analysis
- New threadsafe analysis plug-in view and report
- Improved installation and configuration
- DB2 data lifecycle management
- Native SQL language stored procedures
- Graphical visualization view of resources

CICS IA enables you to...

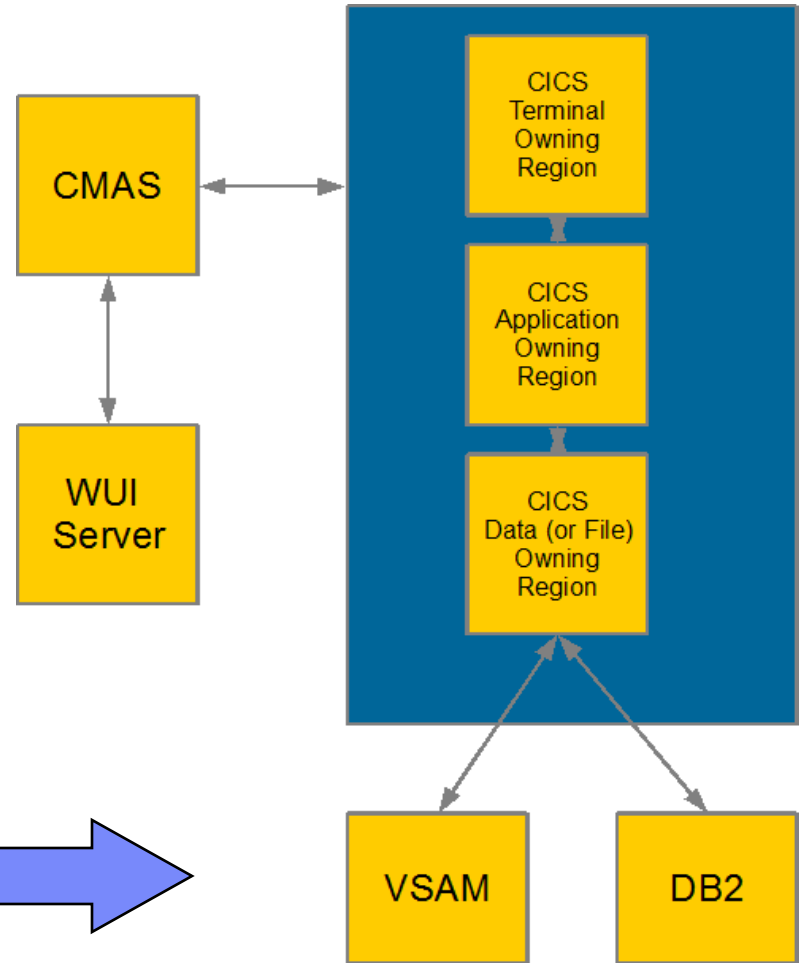
- Identify threadsafe / non-threadsafe programs
- Isolate and remove affinities
- Speed CICSplex® SM workload management
- Advanced CICS command flow analysis
- Highlight CICS web service candidates



Enhance the CICS Infrastructure



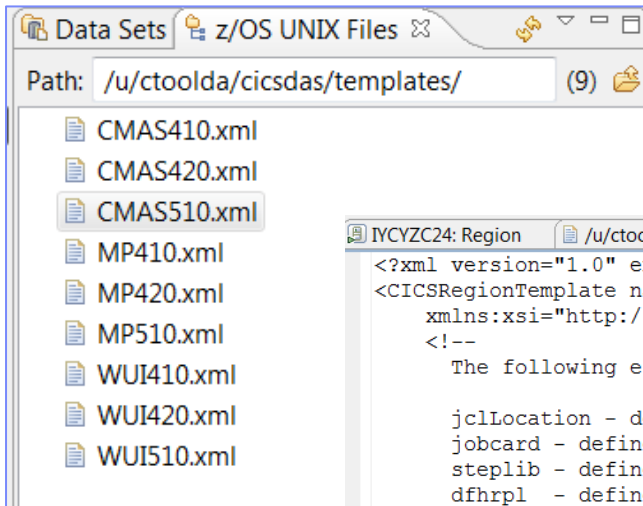
Single region structure



CICSplex structure

Create a CICSplex management facility

Step 1 – update templates



Update with your environments HLQs

```
<?xml version="1.0" encoding="UTF-8"?>
<CICSRegionTemplate name="CMAS510" xmlns="http://com.ibm.cphtemplate"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <!--
    The following elements MUST be modified to the correct values for the local installation:

    jclLocation - defines where the generated JCL for this region is stored
    jobcard - defines the job card used when submitting the JCL for this region
    steplib - defines the libraries required in this region's STEPLIB concatenation. You can add more lines if re
    dfhrpl - defines the libraries required in this region's DFHRPL concatenation. You can add more lines if re
    datasetPrefix - the prefix used when allocating data sets for this region
  -->

  <jclLocation>REDTOOLS.CPSM51.PROCLIB(CMASJOB)</jclLocation>
  <jobcard>//JOBNAMEC JOB </jobcard>
  <steplib>
    <line>BLD.CICSSPA.INCCUR.SEYUAUTH</line>
    <line>CEE.SCEERUN</line>
    <line>BLD.CICSSPA.INCCUR.SDFHAUTH</line>
  </steplib>
  <dfhrpl>
    <line>REDTOOLS.CPSM51.TABLIB</line>
    <line>BLD.CICSSPA.INCCUR.SEYULOAD</line>
    <line>CEE.SCEERUN</line>
    <line>BLD.CICSSPA.INCCUR.SDFHLOAD</line>
  </dfhrpl>
  <datasetPrefix>REDTOOLS.CPSM51</datasetPrefix>
```

Create a CICSplex management facility

Step 2 – select New->CICSplex management facility

The screenshot shows the DA Explorer interface with a context menu open over the 'CICSDA [winmvs2f.hursley.ibm.com]' connection. The 'New' option is selected, and the 'CICSplex management facility' option is highlighted. A blue arrow points from this option to the 'Create a CICSplex management facility' dialog box.

Create a CICSplex management facility
Specify the details for the CICSplex management facility

A CICSplex management facility has a WUI Server which enables CICS Explorer client to access the management services provided by a CMAS.

DA Connection:

Template:

Host name:

Explorer Port: WUI Port:

CMAS APPLID: Sysid:

WUI Server APPLID: Sysid:

z/OS System: Start regions

Create a CICSplex

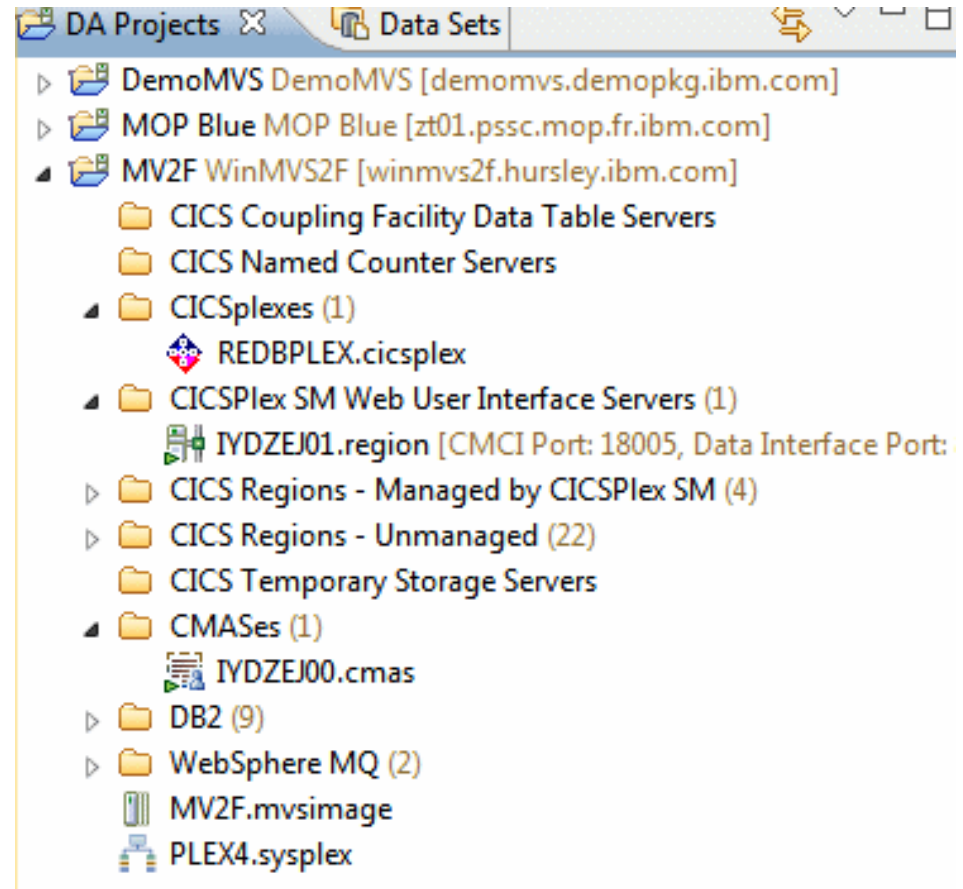
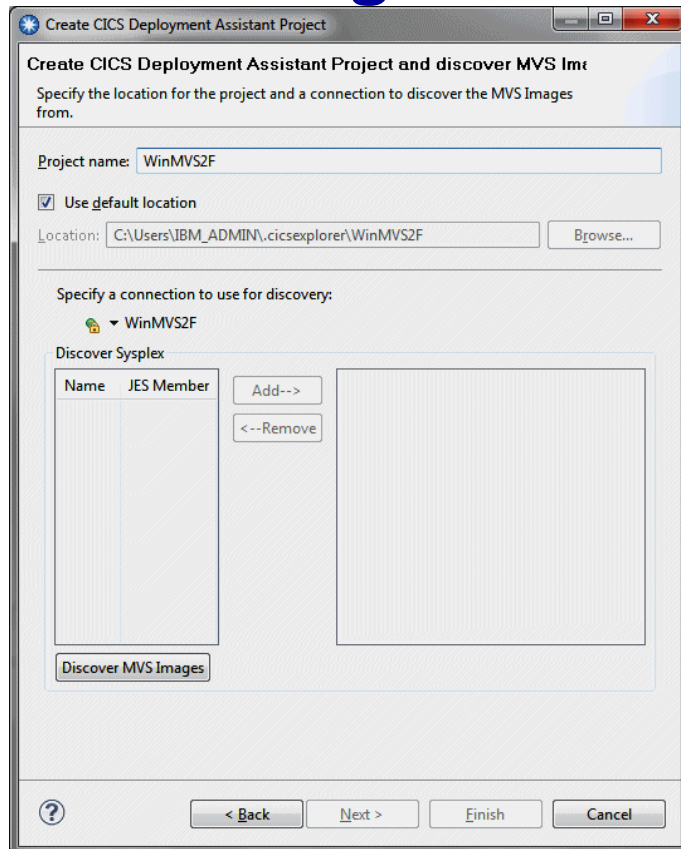
Step 1 – select New->CICSplex

The image shows a screenshot of the DA Explorer application. The 'New' context menu is open, and the 'CICSplex' option is selected. A blue arrow points from the 'CICSplex' option in the menu to the 'Create a CICSplex' dialog box. The dialog box is titled 'Create a CICSplex' and contains the following fields:

- DA Connection: CICSDA
- CMAS Network: REDMAS42
- CICSplex Name: EMSTEST
- Description: CICSplex created by CICS DA
- Maintenance Point CMAS: IYDZEJ00

Below these fields is a section for 'Non-maintenance point CMASs to add to the CICSplex:' with an empty list box. At the bottom of the dialog are 'Finish' and 'Cancel' buttons.

Discovering CICS and other sub-systems



CICS Deployment Assistant
discovery wizard

Add CICS regions to the CICSplex

CICS Deployment Assistant



Add CICS region to CICSplex
Add CICS region IYDZT416 to the specified CICSplex

MAS Name: REDDTOR
Description: Region GENAPP TOR added to CICSplex by CICS DA Wizard

Select a CICSplex: REDBPLEX

Choose some groups

Choose an owning CMAS

Finish Cancel

Clone an existing CICS region

CICS Deployment
Assistant clone
wizard



Clone a CICS Region

Clone a CICS region
Specify attributes and start policy for your new region, based on those from
IYDZEJ07

New CICS Applid: REDDVC42
New CICS Sysid: EJ0B
New MAS Name: REDDVC42
New Description: Region cloned from REDDVA42 by CICS DA

Specify the start policy for your new CICS region.

Start Command: S REDDVC42

? < Back Next > Finish Cancel

CICS Deployment Assistant for z/OS V5.1



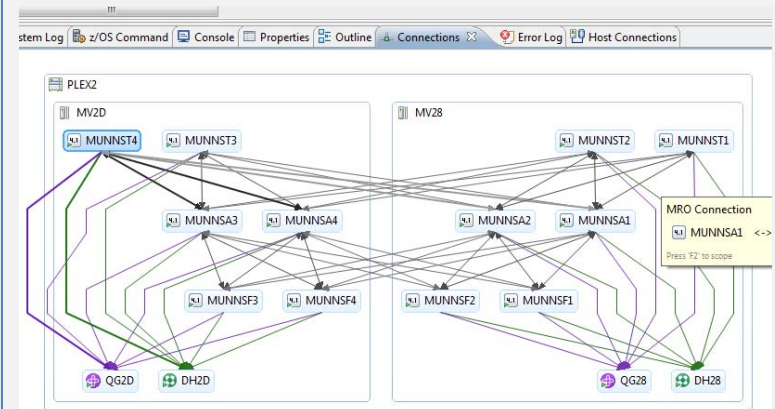
The power of discovery

What's new in CICS DA V5.1...

- Enriched discovery of over 30 entities
- Improved visualization with tagging and filtering
- Connections view with scoping
- Export model for external reporting
- CICS TS V5.1 upgrade cheat sheet
- Tagging and filtering of model elements
- New navigators
- Clone JCL improvements
- IPv6 support
- Virtual IP addressing support
- Serviceability enhancements

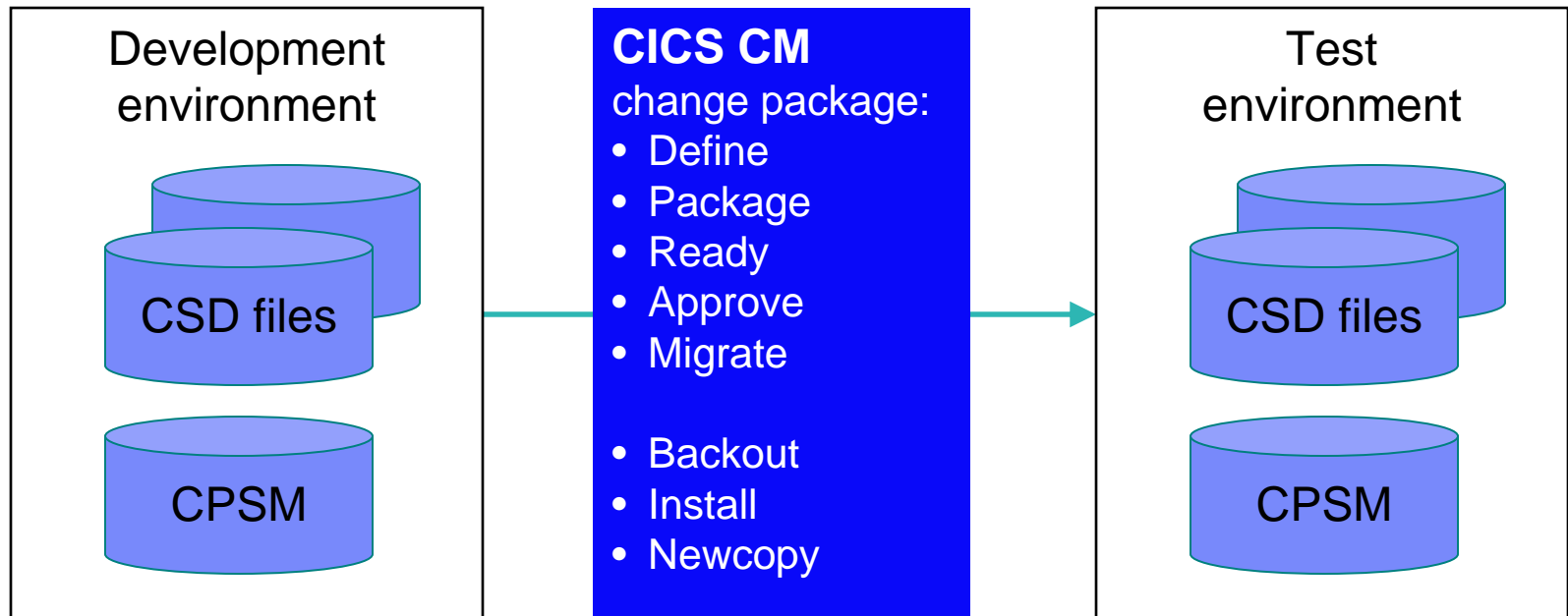
CICS DA enables you to...

- Visualize and manage your CICS topology
- Discover existing regions and sus-systems
- Automation creates new CICSplex
- Plexify and clone CICS regions
- Start and stop a CICS region



Migrating changes between environments

- ✓ Group changes into a CICS CM change package
- ✓ Manage the package as a single unit
- ✓ Supports Ready, Approve and Backout processing
- ✓ APIs and exit-points for integration to change-control products
- ✓ Migration schemes and transformation rules allow for flexible deployment paths



Change Package Lifecycle management – Add resources to Package

The screenshot illustrates the process of adding resources to a package in the Change Package Lifecycle management tool. It is divided into two main sections:

Top Section: Change Package (DEV2TEST)

- Migration Scheme:** Set to DEV2TST.
- Resources:** A tree view showing 'Program Definition (1)' containing 'ZACCTQ' and 'Resource Description Definition (1)' containing 'TESTLIST'. Both are in a 'Ready' state.
- Transaction Definitions Table:**

Name	Version	Create Time	Change Time	Description	Status
KSDSCUST	0	13-Dec-2011 12...	13-Dec-2011 12...		✓ ENABLED
KSDSP...		13-Dec-2011 12...	28-Feb-2012 08...		✓ ENABLED
- Context Menu:** A right-click menu is open over the table, with 'Package...' selected. A sub-menu shows the following packages:
 - DEV2TEST
 - 00000001
 - 00000003
 - 00000002
 - More Packages...

Bottom Section: Configurations

- Change Packages Table:**

Packages	Last Action	Changetime	Description	Last User	Last Scheme	Last Return
DEV2TEST	MIGRATE	2012/04/18 07:13:36.05	Package to migrate from DEV to TEST	STANNA	DEV2TST	00000004
00000001	READY	2012/04/18 05:31:21.81	Migrate resources from CICS TS 3.2 to 4.1	STANNA	CTS32T41	00000004
00000002	MIGRATE	2012/02/13 08:24:08.77	Migrate from AOR6 to AOR7	DNET409	AOR6TO7	00000004
00000003	CREATE	2012/04/03 19:30:22.18	Migrate from PSM BAS	DNET409		00000000
- Context Menu:** A right-click menu is open over the '00000002' row, with 'Open' selected. A sub-menu shows the following options:
 - Ready
 - Unready
 - Migrate
 - Backout

Blue curved arrows indicate the flow of the process: from the 'Package...' option in the top table's context menu to the 'Open' option in the bottom table's context menu.

Single point of control over Resource Definitions



Groups X

in (REDDVA42/GENALIST) Search Results X Transaction Definitions Program Definitions

All resources for REDDVA42 Group GENASAP

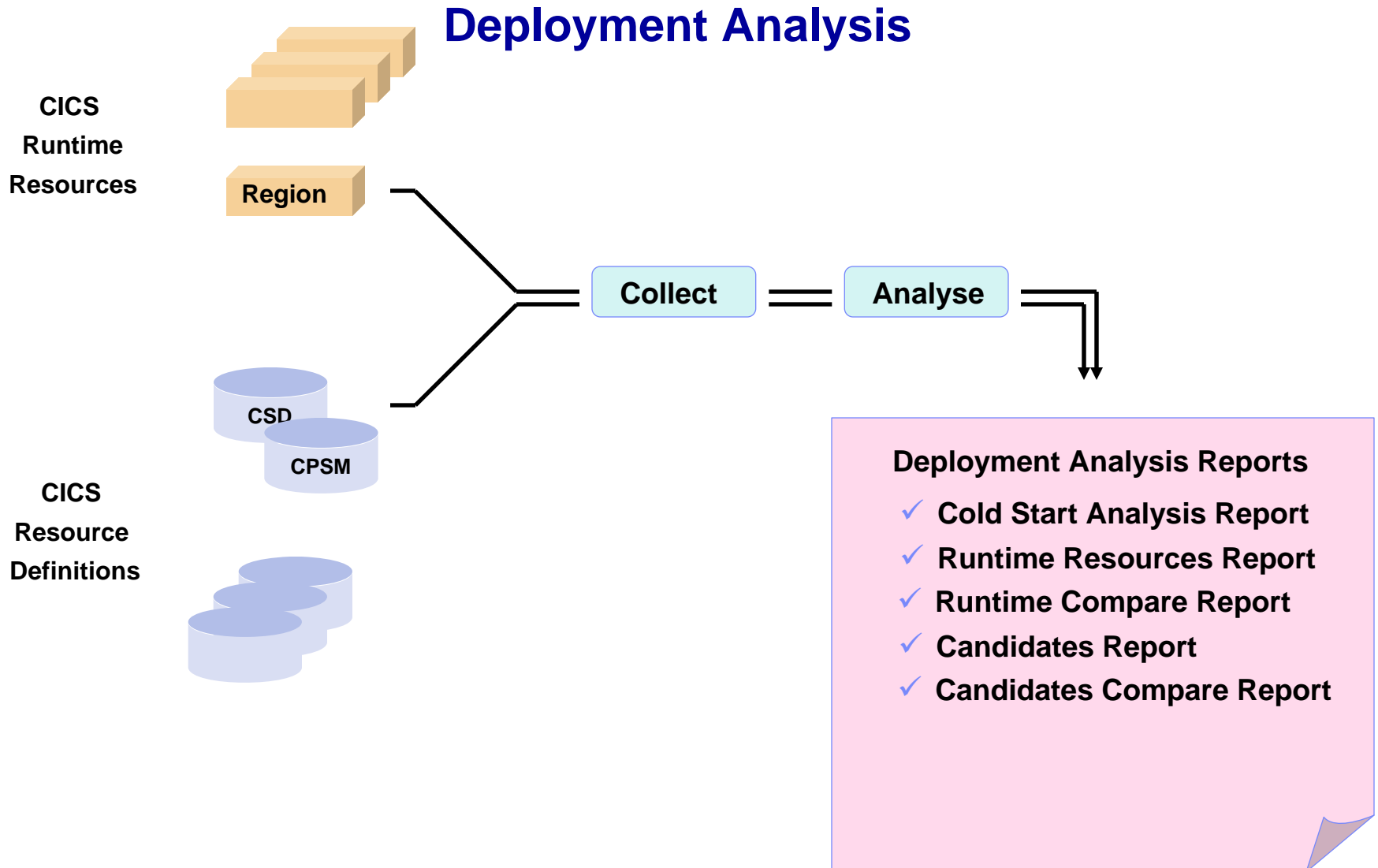
- Program Definition (26)
 - LGACDB01
 - LGACUS01
 - LGACVS01
 - LGAPDB01
 - LGAPOL01
 - LGAPVS01
 - LGDPDB01
 - LGDPOL01
 - LGDPVS01
 - LGICDB01
 - LGICUS01
 - LGICVS01
 - LGIPDB01
 - LGIPOL01
 - LGIPVS01
 - LGSETUP

Transaction Definitions Program Definitions File Definitions TD Queue Definitions

CNX0211I Context: GENASAP. Resource: PROGDEF. 26 records collected at 18-Nov-2011 11:12:51

Name	Version	Create Time	Change Time
LGACDB01	1	17-Nov-2011 16:52:30	17-Nov-2011 16:52:30
LGACUS01	1	17-Nov-2011 16:52:30	17-Nov-2011 16:52:30
LGACVS01	1	17-Nov-2011 16:52:30	17-Nov-2011 16:52:30
LGAPDB01	1	17-Nov-2011 16:52:30	17-Nov-2011 16:52:30
LGAPOL01	1	17-Nov-2011 16:52:30	17-Nov-2011 16:52:30
LGAPVS01	1	17-Nov-2011 16:52:30	17-Nov-2011 16:52:30
LGDPDB01	1	17-Nov-2011 16:52:30	17-Nov-2011 16:52:30
LGDPOL01	1	17-Nov-2011 16:52:30	17-Nov-2011 16:52:30
LGDPVS01	1	17-Nov-2011 16:52:30	17-Nov-2011 16:52:30
LGICDB01	1	17-Nov-2011 16:52:30	17-Nov-2011 16:52:30
LGICUS01	1	17-Nov-2011 16:52:30	17-Nov-2011 16:52:30
LGICVS01	1	17-Nov-2011 16:52:30	17-Nov-2011 16:52:30
LGIPDB01	1	17-Nov-2011 16:52:31	17-Nov-2011 16:52:31
LGIPOL01	1	17-Nov-2011 16:52:31	17-Nov-2011 16:52:31
LGIPVS01	1	17-Nov-2011 16:52:31	17-Nov-2011 16:52:31
LGSETUP	1	17-Nov-2011 16:52:31	17-Nov-2011 16:52:31
LGSTSQ	1	17-Nov-2011 16:52:31	17-Nov-2011 16:52:31

What will change at the next Cold Start?



Solution

Cold start analysis

CICS Deployment Analysis Report Cold Start Compare Report Missing Definitions

Missing

Report Item	ID	Name	Type	Group	List or RESDESC	Code	Condition	Loc Rem	Ena	VV	Deploy Checksum	Collection Type	RASGNDEF Group Override
142	01	DFHLU0E2	AIMODEL	N/A	N/A	0200	Missing	LOC	N/A		C6648ED2	RUNTIME-CCM	
143	01	DFHLU0M2	AIMODEL	N/A	N/A	0200	Missing	LOC	N/A		95BDADC2	RUNTIME-CCM	
144	01	DFHLU0M3	AIMODEL	N/A	N/A	0200	Missing	LOC	N/A		E2BA9D54	RUNTIME-CCM	

Matched Definitions (with exceptions)

Different

Report Item	ID	Name	Type	Group	List or RESDESC	Code	Condition	Loc Rem	Ena	VV	Deploy Checksum	Collection Type	RASGNDEF Group Override
1	01	WS51	CONNECTION	C251WS51	N/A	0006	Source mismatch	LOC	ENA		D481842E	RUNTIME-CCM	
	02	WS51	CONNECTION	C151WS51	C151VT12	0006	Source mismatch	LOC	ENA		D481842E	CANDIDATES-CSD	8

Referential Integrity Verification

RI errors

Report Item	ID	Name	Type	Group	List or RESDESC	Code	Condition	Loc Rem	Ena	VV	Deploy Checksum	Collection Type	RASGNDEF Group Override
209	02	DB2VS2C	DB2CONN	VTIVP	C151VT12	0950	CCV5450W	LOC	N/A		8F4277B5	CANDIDATES-CSD	13

Attribute: PLANEXITNAME Value: DSNCUEXT

CICS Configuration Manager for z/OS V5.1



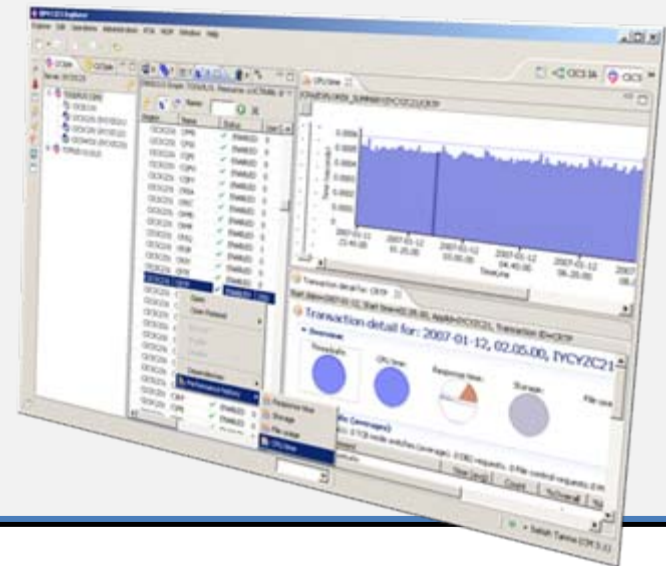
The value of control

What's new in CICS CM V5.1...

- Application, Platform, and Policy resources
- Enhanced plug-in with Packaging and Deployment Analysis
- Sort in Package view and Ready list
- ADD/REMOVE CSD group to/from LIST during Migrate operation
- Option to automatically remove empty Groups from CSD List
- SSL support for plug-in connection
- Audit trail for Install and NewCopy

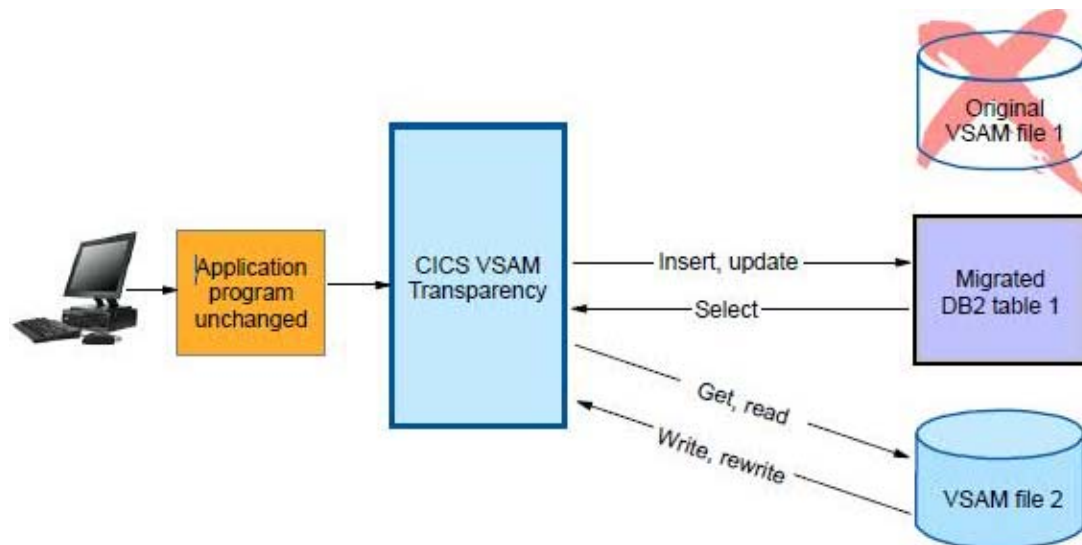
CICS CM enables you to...

- Manage changes throughout the life-cycle
- Create reports to identify redundant definitions, show resource relationships, and change management history
- Manage audit, back-out and change authorizations



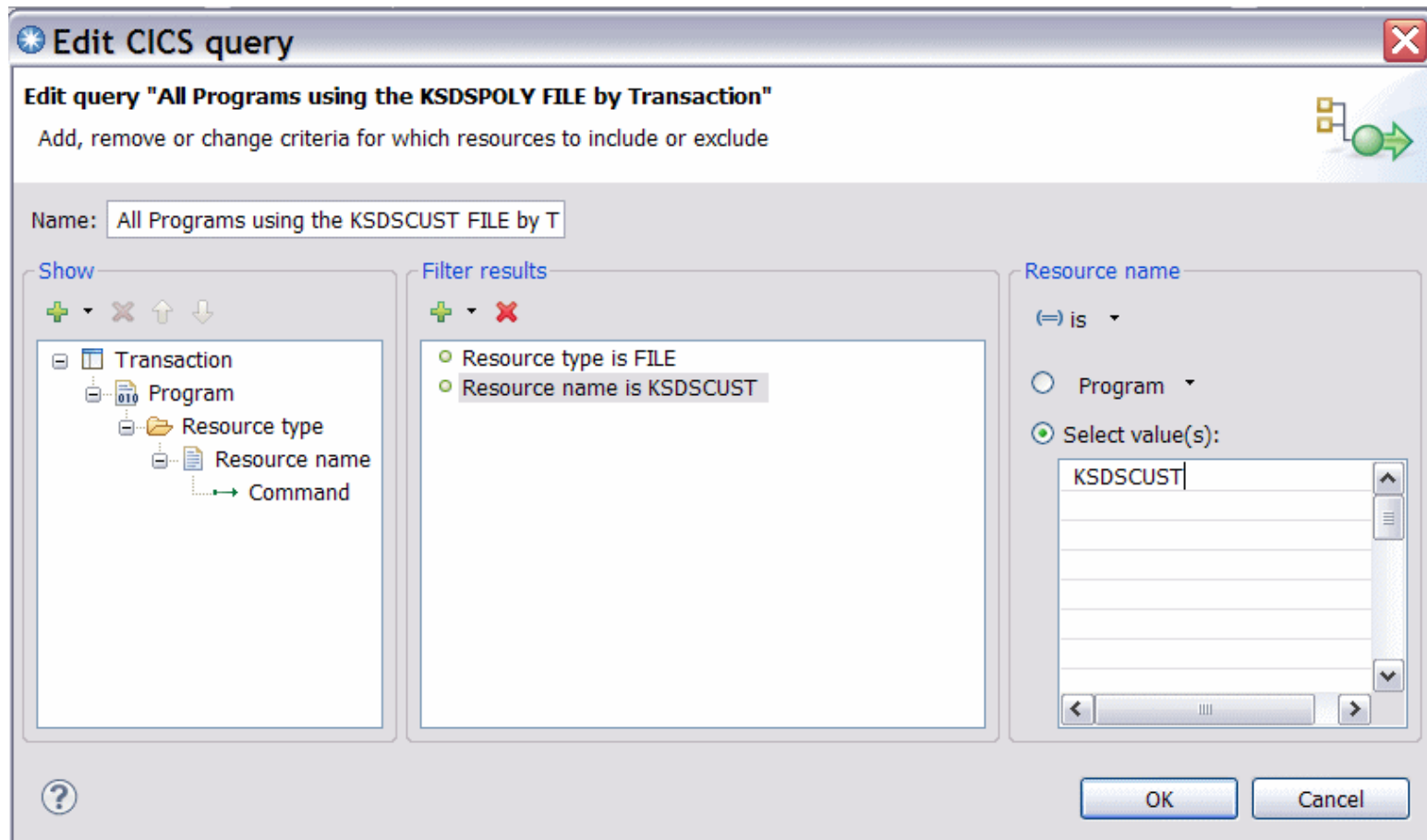
Migrating VSAM data to DB2

- Migrate files transparently - without application change



Migrating VSAM data to DB2

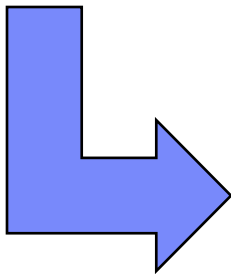
- Determine where the KSDSCUST file is used



Migrating VSAM data to DB2

- **Convert KSDSCUST file from VSAM to DB2**
 - Mapping – to create the database schemas

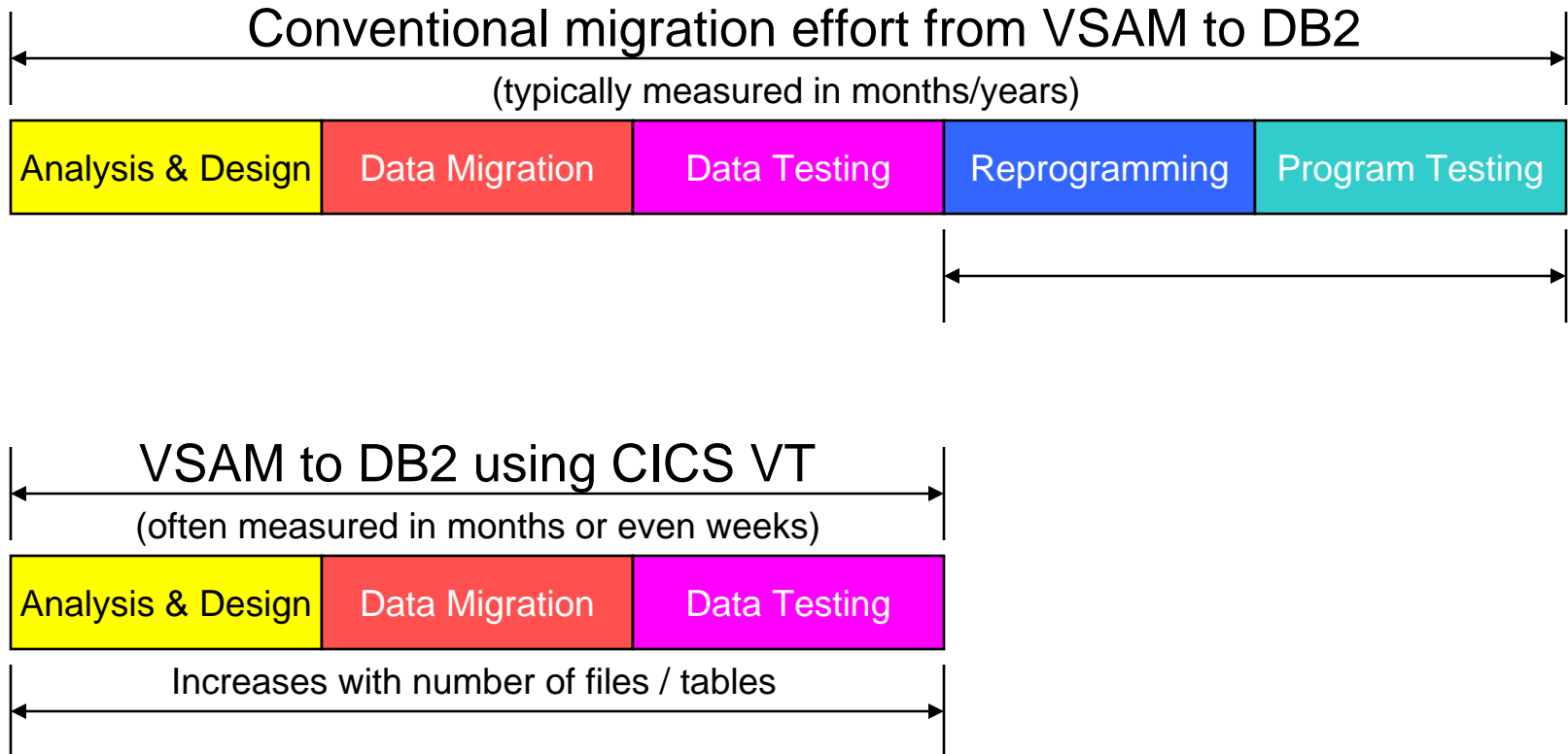
```
01  LG-CUSTOMER-INFO.
05  LG-CUST-NUMBER      PIC 9(10).
05  LG-FIRST-NAME      PIC X(10).
05  LG-LAST-NAME       PIC X(20).
05  LG-DOB              PIC X(10).
05  LG-HOUSE-NAME      PIC X(20).
05  LG-HOUSE-NUM       PIC X(4).
```



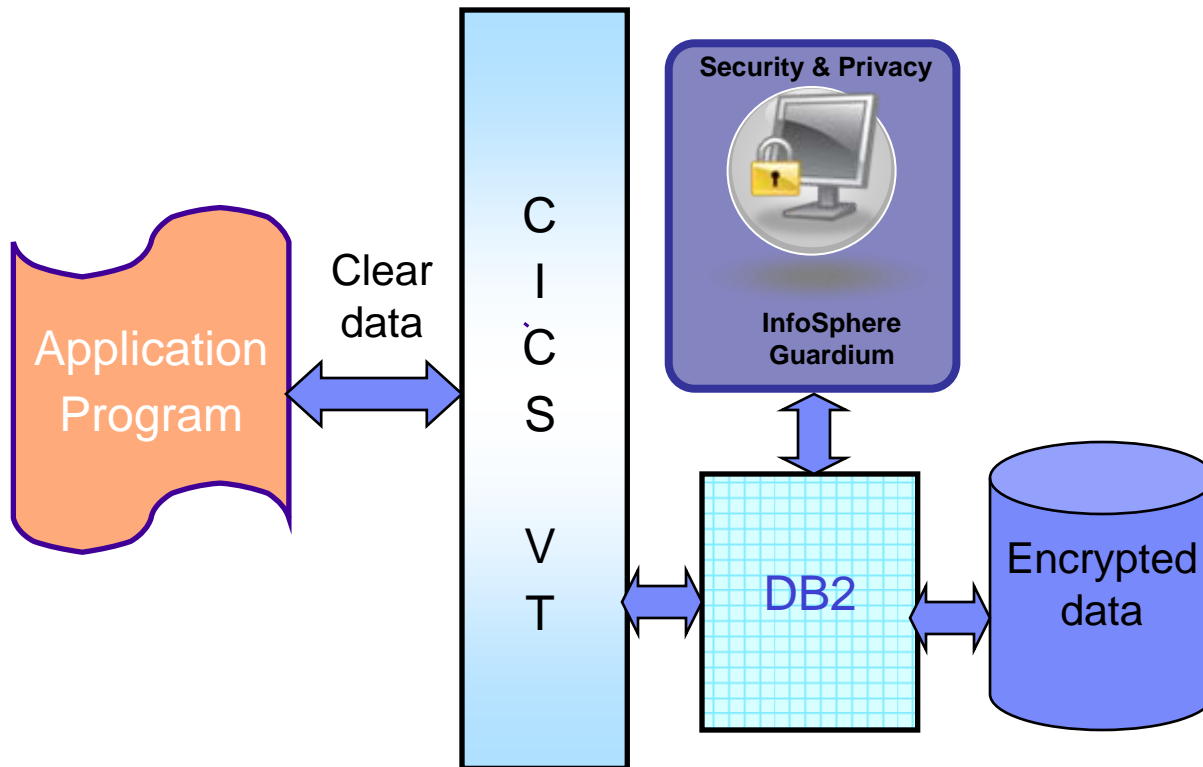
```
CREATE TABLESPACE KSDSCUS
  IN CVIDB
  USING STOGROUP CVTSG
  PRIQTY 65862
  SECQTY 2
  SEGSIZE 4
  BUFFERPOOL BPO
  ;
COMMIT;
CREATE TABLE DMUSERS.KSDSCUS
  (
    LG_CUST_NUMBER          CHAR(10)      NOT NULL,
    LG_FIRST_NAME          CHAR(10)      NOT NULL,
    LG_LAST_NAME           CHAR(20)      NOT NULL,
    LG_DOB                  CHAR(10)     NOT NULL,
    LG_HOUSE_NAME          CHAR(20)      NOT NULL,
    LG_HOUSE_NUM           CHAR(4)       NOT NULL,
    LG_POSTCODE            CHAR(8)       NOT NULL,
    PRIMARY KEY (
      LG_CUST_NUMBER
    )
  )
  IN CVIDB.KSDSCUS;
COMMIT;

CREATE UNIQUE INDEX DMUSERS.IX_KSDSCUS
  ON DMUSERS.KSDSCUS
  (
    LG_CUST_NUMBER          ASC
  )
```

Data Migration – CICS VT vs. Conventional Method



RUN TIME CALL INTERCEPTION - CICS



CICS VT plug-in shows status of migrated files

Regions Tasks ISC/MRO Connections Terminals Transactions Files CICS VT Files

Data collected : Tue Oct 16 10:20:20 BST 2012

CICS DD Name	CICS VT DIM Name	Status
ACCTFIL	ACCTFIL	ACTIVE
ACCTFILE	ACCTFIL	ACTIVE
ACCTNAM	ACCTX01	ACTIVE
ACCTNAME	ACCTX01	ACTIVE
APPLCTL	APPLCTL	ACTIVE
CAP1BR	CAP1BR	ACTIVE
CBRRAW	CZIDCBR	ACTIVE
CLE0	CLE0	ACTIVE
CLE00	CLE00	ACTIVE
CLE001	CLE001	ACTIVE
CLE001A	CLE0X01	ACTIVE
CLE001AA	CLE001AA	ACTIVE
CLE001B	CLE0X02	ACTIVE
CLE001C	CLE001C	ACTIVE
CLE001F	CLE001F	ACTIVE
CLE001FA	CLE001FA	ACTIVE
CLE001EE	CLE001EE	ACTIVE

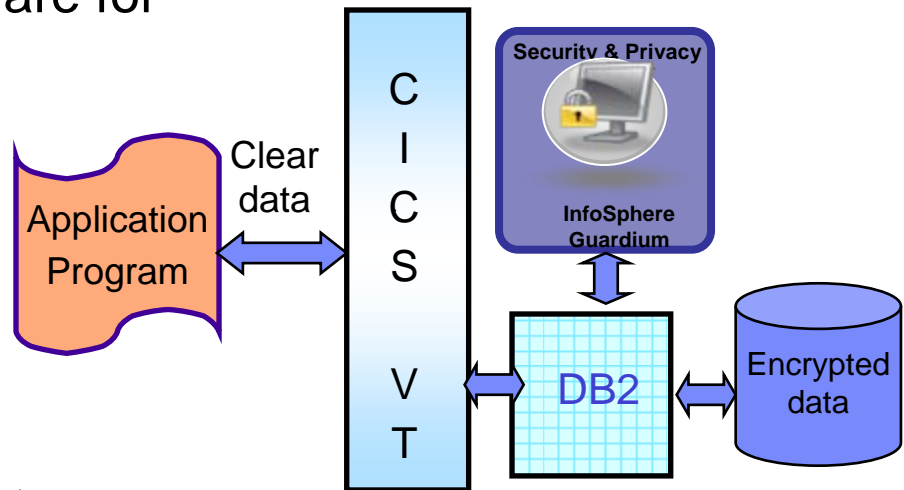
Available December 2012

Encrypt credit card and key customer data

▪ InfoSphere Guardium Data Encryption for DB2 and IMS Databases

- DB2 edit routines and IMS exit routines that invoke the z/OS Integrated Cryptographic Service Facility (ICSF), which exploits the Crypto Hardware for data encryption and decryption
- Sample implementation jobs
- An ISPF front end to build implementation jobs
- The capability to specify unique encryption keys

▪ Use in conjunction with CICS VT to encrypt key credit card data to meet PCI-DSS requirements



CICS VSAM Transparency for z/OS V2.1



The value of control

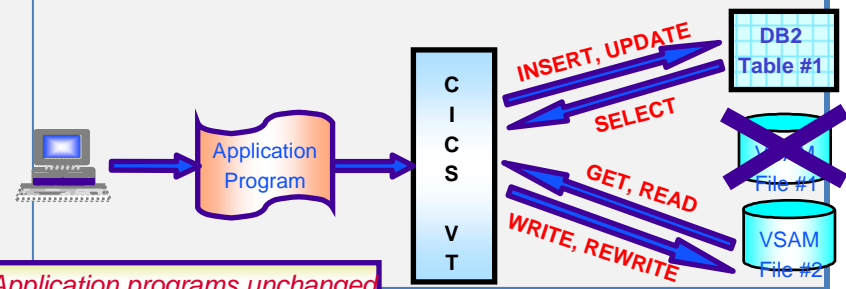
What's new in CICS VT V2.1

- Auto-generate customized data migration JCL
- Enhanced IDCAMS REPRO support
- New migration tracking report
- Improved diagnostic facilities
- Support for CICS® Transaction Server V4.2 and DB2® 10
- Other functional enhancements
 - Long column name support
 - HLL support for user exits
 - RRS support in batch
 - Read-only DDM
 - Dynamic DST update

CICS VT enables you to...

- Migrate VSAM files to DB2 without changing application programs
- Maintain a single copy of the data
- CICS and batch programs access data in DB2 under the control of CICS VT
- Access migrated DB2 data natively by new programs
- Enhance existing programs using SQL
- Lower risk migration strategy

After CICS VT



Application programs unchanged

Performance analysis



- Respond to user feedback to help desk

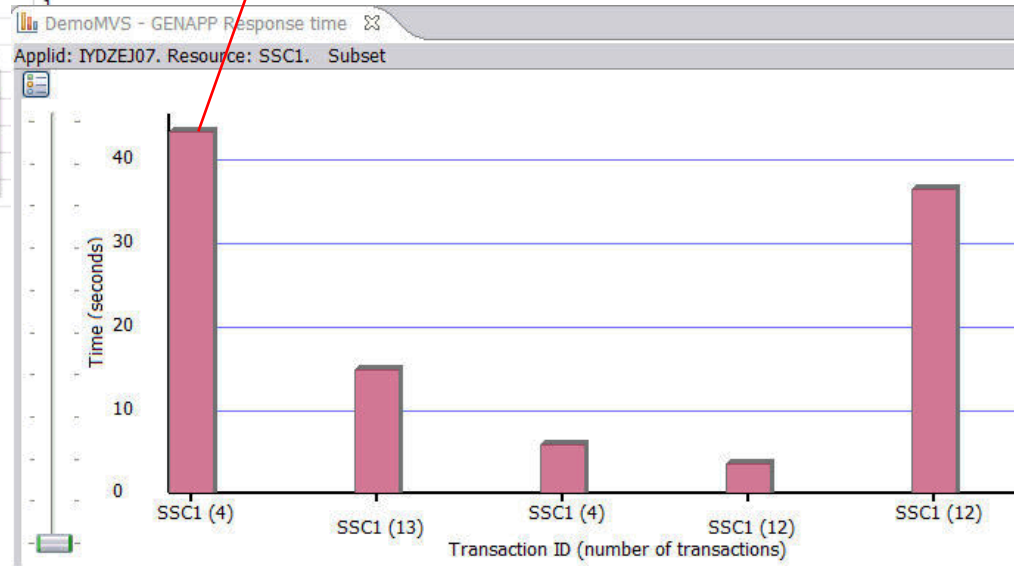
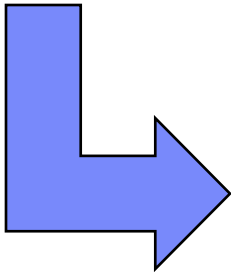
Regions Tasks ISC/MRO Connections Terminals Files Transactions

CNX0211I Context: REDDVA42. Resource: LOCTRAN. 92 records collected at Nov 18, 2011 4:23:20

Region	Name	Status	Use Count	Program	Priority
REDDVA42	SE65	ENABLED	0	SE650001	1
REDDVA42	SE66	ENABLED	0	SE660001	1
REDDVA42	SSC1	ENABLED	0	LGTESTC1	1
REDDVA42	SSP1	ENABLED	0	LGTESTP1	1
REDDVA42	SSP2	ENABLED	0	LGTESTP2	1
REDDVA42	SSP3	ENABLED	0	LGTESTP3	1
REDDVA42	SSP4	ENABLED	0	LGTESTP4	1
REDDVA42	SS05	ENABLED	0	SS050001	1
REDDVA42	SS06	ENABLED	0	SS060001	1
REDDVA42	SS07	ENABLED	0	SS070001	1
REDDVA42	SS08	ENABLED	0	SS080001	1
REDDVA42	SS09	ENABLED	0	SS090001	1
REDDVA42	SS10	ENABLED	0	SS100001	1
REDDVA42	SS11	ENABLED	0	SS110001	1
REDDVA42	SS12	ENABLED	0	SS120001	1
REDDVA42	SS13	ENABLED	0	SS130001	1

Open
Open Related
Discard
Enable
Disable
Dependencies
Performance history
Response time
Storage
File usage
CPU time

High response time
SLA says <=1 sec



Performance analysis

- Drill down into problem

DemoMVS - GENAPP Response time | DemoMVS - GENAPP Transaction detail for: SSC1

Start Date=2011-11-16, Start time=11.35.00, Applid=IYDZEJ07, Transaction ID=SSC1

Transaction detail for: 2011-11-16, 11.35.00, IYDZEJ07, SSC1

Overview:

Response time | Storage | File usage | Threadsafe | CPU time

Response time (averages)

12 transaction(s): 0 TCB mode switches (average). 36.521965 seconds average response time per transaction.

Response measurement	Time (a...	Count	%Ove...	%Rela...
Response time	36.521965		-	-
User Dispatch time	0.000956	1.333333	-	-
User CPU time	0.000720	1.333333	-	75%
QR TCB CPU time	0.000720	1.333333	-	100%
Suspend time	36.521009	1.333333	100%	100%
Dispatch wait time	0.000004	0.333333	-	-

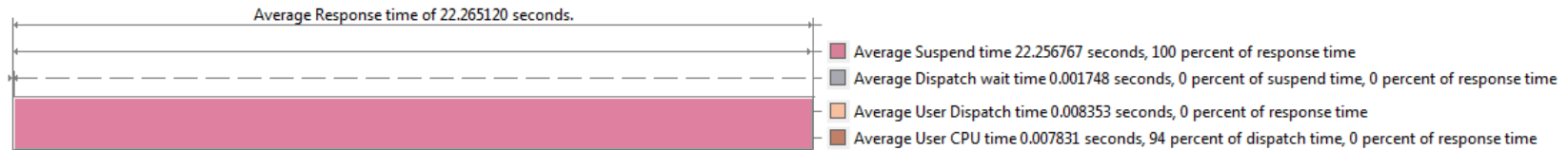
Performance analysis

Drill down into problem

Start Date=2012-01-03, Start time=09.20.00, Applid=CICSACB6, Transaction ID=SSC1

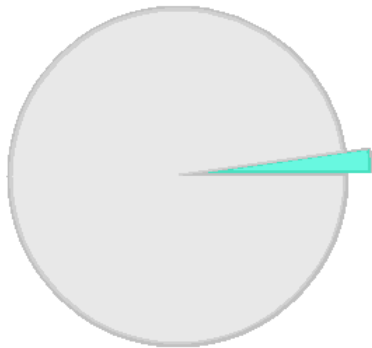
Start Date=2012-01-03, Start time=09.20.00, Applid=CICSACB6, Transaction ID=SSC1

Transaction response time (average)



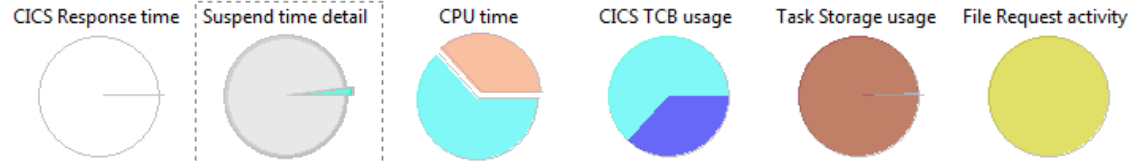
Suspend time detail (averages)

3 transaction(s): 22.256767 average suspend time per transaction.



- Restrict tree nodes to those applicable to visible chart.
- Include available non-zero values only

Performance averages at a glance



action.

Suspend time component	Time (avg)	Count (avg)	%Suspend t...	%Relative
Suspend time	22.256767	34	-	-
I/O wait time	0.522672		2%	2%
Terminal control I/O wait time	0.522672	14	2%	100%
Other wait time	0.000060		-	-
First dispatch delay time	0.000032	1	-	53%
Change-TCB mode delay time	0.000023	4	-	38%
RMI Suspend time	0.000005	1	-	9%
Uncaptured wait time	21.734034		98%	98%

Performance analysis

- Drill down into problem

Long terminal waits suggest not pseudo-conversational

```
Iran=SSCI
```

Summary Data	Time		Count		Ratio
	Total	Average	Total	Average	
# Tasks			101		
Response Time	968.0143	9.5843			
Dispatch Time	0.3526	0.0035	138	1.4	0.0% of Response
CPU Time	0.0001	0.0000	138	1.4	22.7% of Dispatch
Suspend Wait Time	967.6618	9.5808	138	1.4	100.0% of Response
Dispatch Wait Time	0.0015	0.0000	37	0.4	0.0% of Suspend
QR TCB Redispach Wait Time	0.0015	0.0000	37	0.4	100.0% of Dispwait
Resource Manager Interface (RMI) elapsed time	0.0002	0.0000	202	2.0	0.0% of Response
Resource Manager Interface (RMI) suspend time	0.0000	0.0000	0	0.0	0.0% of Suspend

Suspend Detail	Suspend Time			Graph	Count	
	Total	Average	%age		Total	Average
TCIDWTT Terminal wait for input time	563.1805	5.5760	58.2%	*****	28	0.3
DSPDELAY First dispatch wait time	404.1028	4.0010	41.8%	*****	101	1.0
TCLDELAY > First dispatch TCLSNAME wait time	404.0997	4.0010	41.8%	*****	15	0.1
JCIDWTT Journal I/O wait time	0.2055	0.0020	0.0%		6	0.1
FCIDWTT File I/O wait time	0.1729	0.0017	0.0%		3	0.0

Performance analysis

▪ Gather further evidence

– Statistics alerts indicate TCLASS problem

Sheet view Transaction Classes (1/1 rows)

Maximum active transactions in class reached Applid=IYDZEJ07, Version Release Modification=670, Interval Number=761, Type=INT, MVS ID=MV2F, Transaction class=DFHTCL09 Specific

Start D...	Start ti...	Applid	MVS ID	Version...	Type	Interval...	Interval...	Transaction class	Attaches	Times at Max active	Purged...	No long...	Accept
2011-11...	12.41.00	IYDZEJ07	MV2F	670	INT	00.01.00	761	DFHTCL09	14	15	0	1	

Alerts

Connected: DemoMVS - GENAPP. Alert table: Alert.

Alert description	Start ...	Start t...	Applid	MVS ID	Resourc...	Resourc...	Actual	Threshold	Type	Version .
Critical										
Maximum active transactions in class reached	2011-1...	12.41.00	IYDZEJ07	MV2F	Tclass Na...	DFHTCL09	15	>10	INT	670
Maximum active transactions in class reached	2011-1...	12.42.00	IYDZEJ07	MV2F	Tclass Na...	DFHTCL09	21	>10	INT	670
DB2 pool thread waits	2011-1...	13.16.00	IYDZEJ07	MV2F	DB2CONN...	DB2CONN1	148	>5	INT	670
Enqueues waited in ENQ pool - local	2011-1...	13.16.00	IYDZEJ07	MV2F	ENQ Pool...	EXECADDR	37	>25	INT	670

Performance analysis

▪ Implement changes

- Update programs to remove terminal waits
- Increase TCLASS limit for more parallelism

... and validate the results

V3R2M0

CICS Performance Analyzer
Transaction Profiling

PROF0001 Printed at 23:01:30 11/17/2011 Page 1

Report Data from 17:32:42 11/17/2011 to 17:45:53 11/17/2011
Baseline Data from 10:16:33 11/16/2011 to 12:19:45 11/16/2011

SSC1 Transaction Profiling: Pseudo Conversational

Tran		#Tasks	Avg Response Time	Avg Dispatch Time	Avg User CPU Time	Avg Suspend Time	Avg DispWait Time	Avg FC Wait Time	Avg FCAMRq Count	Avg IR Wait Time	Avg SC24UHWM Count	Avg SC31UHWM Count
SSC1	Report	53	.7972	.0036	.0009	.7936	.0001	.0002	0	.0000	0	254117
SSC1	Baseline	101	9.5843	.0035	.0008	9.5808	.0000	.0017	0	.0000	0	234009
	Delta	-48	-8.7871	+.0001	+.0001	-8.7872	+.0001	-.0015	+0	.0000	0	+20108
	Change%	-47.52	-91.68	+2.28	+8.04	-91.72	+395.11	-87.25	+12.39	.00	.00	+8.59
Total	Report	53	.7972	.0036	.0009	.7936	.0001	.0002	0	.0000	0	254117
	Baseline	101	9.5843	.0035	.0008	9.5808	.0000	.0017	0	.0000	0	234009
	Delta	-48	-8.7871	+.0001	+.0001	-8.7872	+.0001	-.0015	+0	.0000	0	+20108
	Change%	-47.52	-91.68	+2.28	+8.04	-91.72	+395.11	-87.25	+12.39	.00	.00	+8.59

CICS Performance Analyzer for z/OS V5.1



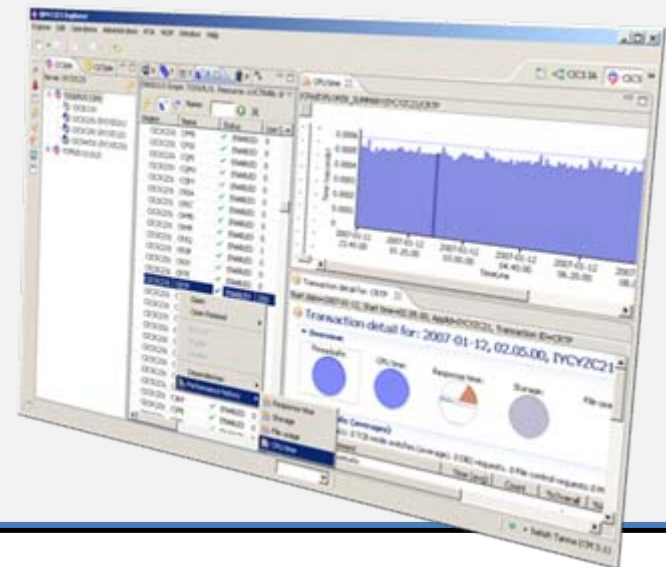
Performance insight

What's new in CICS PA V5.1...

- CICS TS V5.1 – support for new metrics
- Application, Platform, and Policy
- Plug-in enhancements:
 - Application centric view
 - Customizable sheet views
 - Suspend time reporting
 - Easy navigation to key reports and alerts
- SMF logstream support
- Batch statistics reporting for CICS TG
- Improved management of PA data loaded to DB2
- CPU totals on MQ reports
- SMF data processing performance improvements

CICS PA enables you to...

- Comprehensive Performance Reporting and Analysis for CICS including DB2, WebSphere MQ, and MVS System Logger
- Understand trends and develop capacity plans
- View statistics and create statistical alerts



Follow-on activities

- **Remove affinities from the applications**
 - Use IBM Debug Tool for source level debug
 - Rerun CICS IA affinity query to validate all removed
- **Performance analysis**
 - Use IBM Application Performance Analyzer for deep dive into GENAPP performance
 - Threadsafe analysis using CICS IA and CICS PA
- **Event-enable GENAPP to gain insight from Analytics**
 - Using WODM, WBM, Cognos, etc
- **Rule-enable GENAPP to reduce IT latency and return some control to the LOB**
 - WODM rules server runs inside CICS TS

IBM Problem Determination Tools Version 12.1



Tools to address your z/OS Development or System Programming needs

What's new in PD Tools V12.1

- New **IBM Problem Determination Tools Studio** pre-packaged with plug-ins
- File Manager DB2 and CICS plug-in
- Initial Workload Simulator plug-in
- Enhanced integration and synergy amongst PD Tools, CICS Explorer and/or IMS Explorer taking advantage of newly announce common z/OS Explorer capabilities
- CICS TS 4.2, IMS V12, MQ 8.1 updates to ensure synchronization with latest subsystems
- Improved Java support in APA and FA

PD Tools provides ...

- Five tools addressing z/OS problem resolution needs - Debug Tool, Fault Analyzer, File Manager, Application Performance Analyzer and Workload Simulator
- Subsystem and language support traversing z/OS provided in a timely manner when subsystems and languages are updated
- Improved TCO with full function tools at competitive price



IBM CICS Explorer® V5.1



Enhanced!

Session and user views, Configuration, Broadcast, User and Admin commands

ISM

New!

Migrated file status

VT

Daemon & Connection Status & Test

TG

Threadsafe, File, CPU, Response & Wait analysis, Statistics, Alerts, Graphical and Sheet views

PA

Deployment, Discovery, Visualization, Cloning, Automation & Control

DA

Execution Tree Dependencies Queries Command Flow

IA

CRUD, Install, History, Backout, Audit, Search, Compare, Packaging

CM

SM	CICS Transaction Server
IA	CICS Interdependency Analyzer
PA	CICS Performance Analyzer
CM	CICS Configuration Manager
DA	CICS Deployment Assistant
TG	CICS Transaction Gateway
ISM	IBM Session Manager
VT	CICS VSAM Transparency

PD ...

PD Tools Studio

Manage IMS ...

IMS Explorer

Develop Test

RDz

CRUD, Install, Control, Filter, Sort, Topology, Events, ATOM, Java, WLM, Txn Tracking, Copy/Paste

SM

z/OS Connections, z/OS Datasets, z/FS files, JES

z/OS Explorer

CICS TS, IMS, DB2, MQ, z/OS

Configuration Status Control, Test

MQ

Manipulate, browse z/OS data sets, z/FS, VSAM, MQ, CICS, DB2

FM

CICS, IMS, DB2, & z/OS Application Debugging

DT

3270 application performance testing

WSIM

APA	Application Performance Analyzer
FA	Fault Analyzer
DT	Debug Tool
FM	File Manager
WSIM	Workload Simulator
MQ	WebSphere MQ
XE	OMEGAMON XE for CICS
RDz	Rational Developer for System z

Status Situations Topology

XE

CICS, IMS, DB2, & z/OS Abend Reporting & Diagnosis

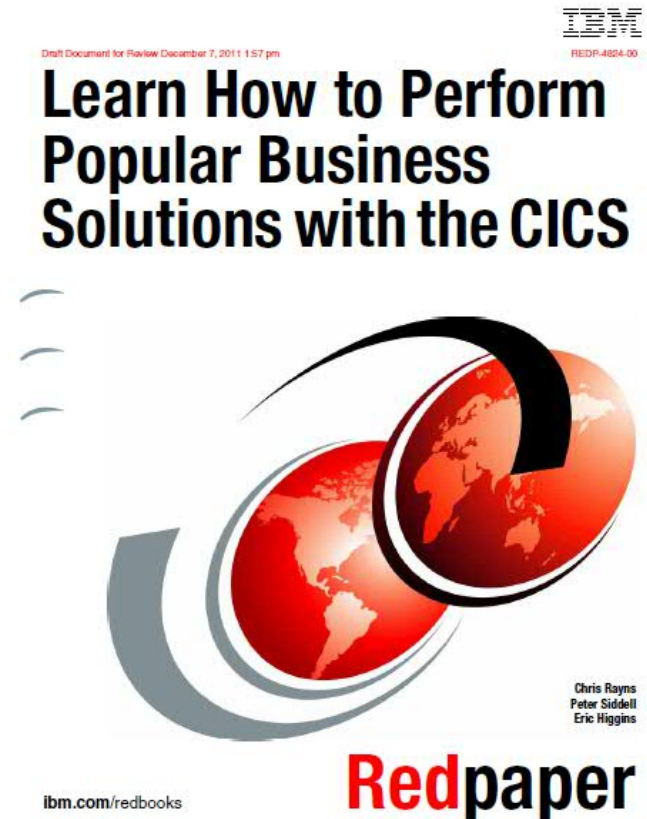
FA

CICS, IMS, DB2, & z/OS Observation Requests & Reporting

APA

GENAPP – SupportPac and Redpaper

- **GENAPP will be available to customers as SupportPac CB12**
 - Download from <http://www-01.ibm.com/support/docview.wss?rs=1085&uid=swg24031760>
- **This presentation is based on GENAPP and the scenarios in this new IBM Redpaper**
 - Download from <http://www.redbooks.ibm.com/abstracts/redp4824.html?Open>



**GENAPP will be updated in December 2012
to exploit new CICS TS V5.1 features**

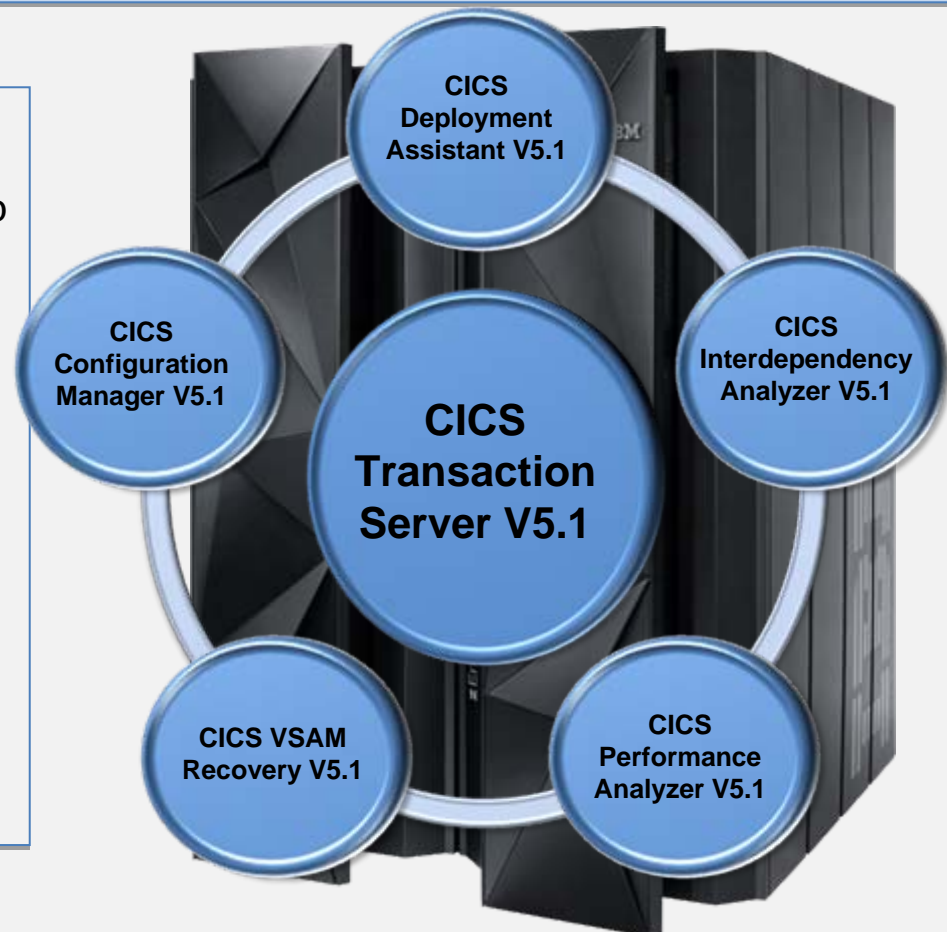
New CICS Tools V5.1 enhance Operation Efficiency & Service Agility



Five core foundational CICS Tools – updated to exploit CICS TS V5.1

Fully integrated with CICS TS & CICS Explorer

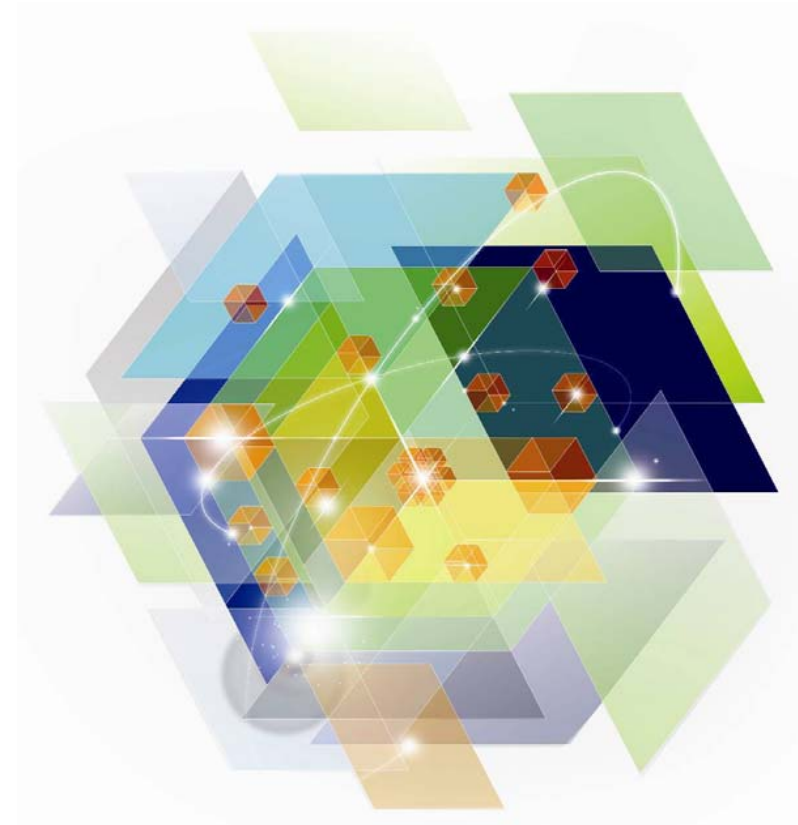
- Discovery and visualization aids insight into application and platform dependencies
- Automation speeds service delivery and ensures standardization and governance
- Modern, integrated user interfaces lower skills barrier
- Day-1 exploitation of CICS TS V5.1 new capabilities reduces time to value
- Five core tools support and extend the CICS runtime



Summary

- **IBM CICS Tools and Problem Determination Tools can help you to be more effective**
 - Architects designing extensions to existing CICS applications
 - Developers diagnosing problems and packaging up code changes
 - System programmers deploying new regions and tracking performance
- **CICS Explorer delivers an integrated solution**
 - Meets the needs of beginners **and** experienced professionals

Reference material



Google CICS or check us out at:

 ibm/developerworks/cicsdev

 facebook.com/IBMCICS


 twitter.com/IBM_CICS

 youtube.com/cicsfluff

 youtube.com/cicsexplorer

 twitter.com/IBM_System_z

 CICS Explorer Forum
ibm.com/developerworks/forums/forum.jspa?forumID=1475&start=0

 CICS-L list Forum
listserv.uga.edu/archives/cics-l.html




Key documents

▪ Analyst papers

- Lustratus Research - New project platform section for CICS Users
ftp://public.dhe.ibm.com/software/htp/cics/pdf/Lustratus_Research_Paper_New_project_platform_selection_for_CICS_users.pdf
- Branham Group: IBM CICS Tools: Unrealized Productivity Gains and True Cost Savings
ftp://public.dhe.ibm.com/software/htp/cics/tools/IBM_CICS_Tools_Whitepaper_2009.pdf
- Software Strategies: IBM z/OS Problem Determination Tool Suite Leads Again
https://www14.software.ibm.com/webapp/iwm/web/preLogin.do?lang=en_US&source=swg-rszswg

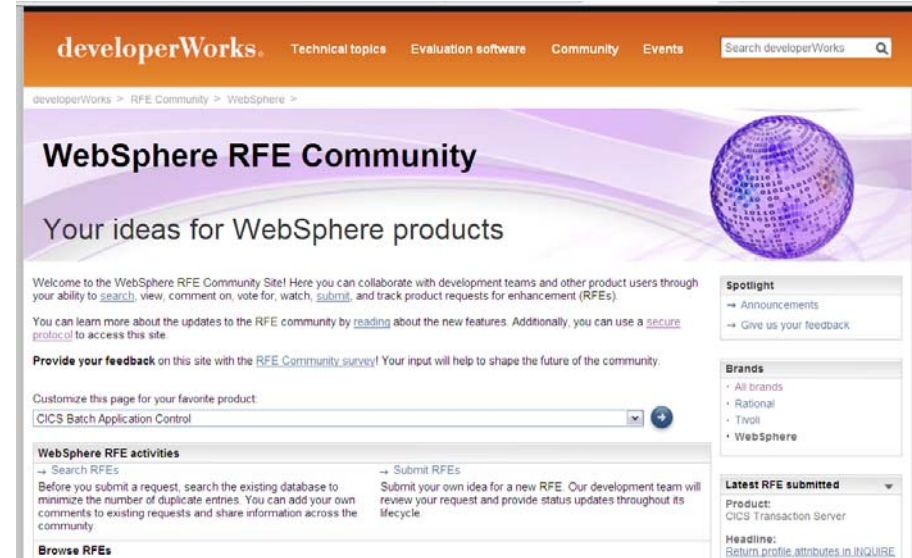
▪ IBM Redbooks

- [CICS Transaction Server from Start to Finish](#), SG24-7952-00
- [Smarter Banking with CICS Transaction Server](#), SG24-7815-00
- [Implementing Event Processing with CICS](#), SG24-7792
- [CICS and SOA: Architecture and Integration](#), SG24-5466-06
- [Implementation of Popular Business Solutions with CICS Tools](#), REDP-4824-00
- [Threadsafe considerations for CICS](#), SG24-6351-04
- [Architects guide to CICS on System z](#), SG24-8067-00 
- [CICS Transaction Server Application Architecture](#), Redbooks solution guide

Raising new requirements with RFE

- You can now raise and track requirements using the new IBM RFE system for

- CICS Transaction Server
- CICS Explorer
- TXSeries
- WXTR
- IBM CICS Tools
- CICS Transaction Gateway
- PD Tools



- All previous FITS requirements have been processed, and either be transferred to RFE or closed and returned
- All brands <https://www.ibm.com/developerworks/rfe/> - select Brand: WebSphere
- WebSphere only https://www.ibm.com/developerworks/rfe/?BRAND_ID=181
- Select Product Family: Transaction Processing - for CICS Transaction Server, TXSeries, and WXTR
- Select Product Family: Enterprise Tooling - for the CICS Tools, CICS Transaction Gateway, and PD Tools
- Raise CICS Explorer base requirements against the Explorer component of CICS TS.
- Raise plug-in requirements against the Explorer component of related product.