Efficient management of online resources using CICS Configuration Manager

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Session GJ

CONTENTS

Why CICS CM is useful

Editing CSD files

CSD files and CPSM BAS

Migrating changes

Delegating responsibilities

Changes across LPAR boundaries

Backout

Audit compliance

Cleanup and analysis

Comparisons and exception analysis

Cold start analysis

zFS support
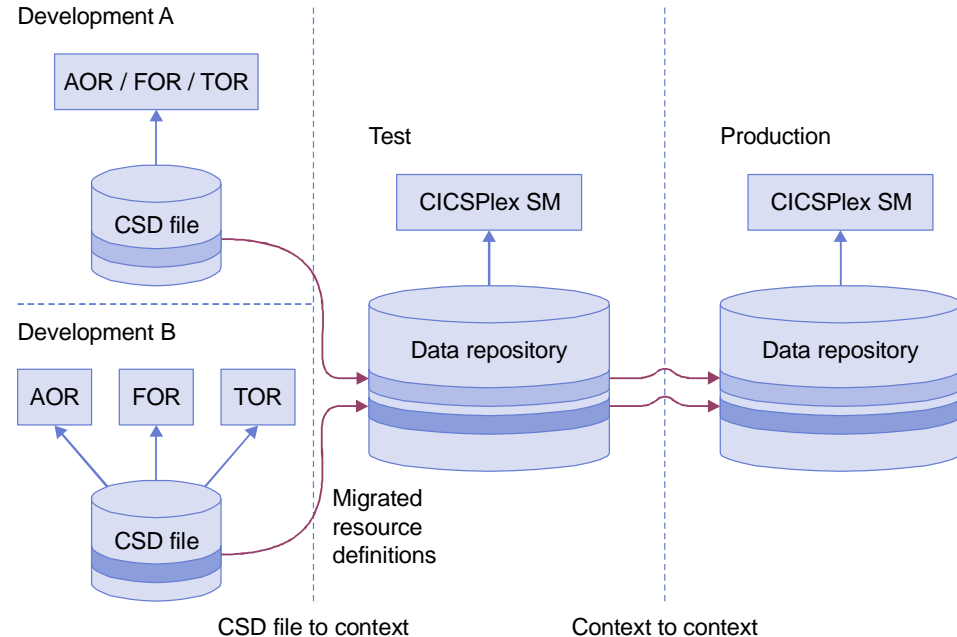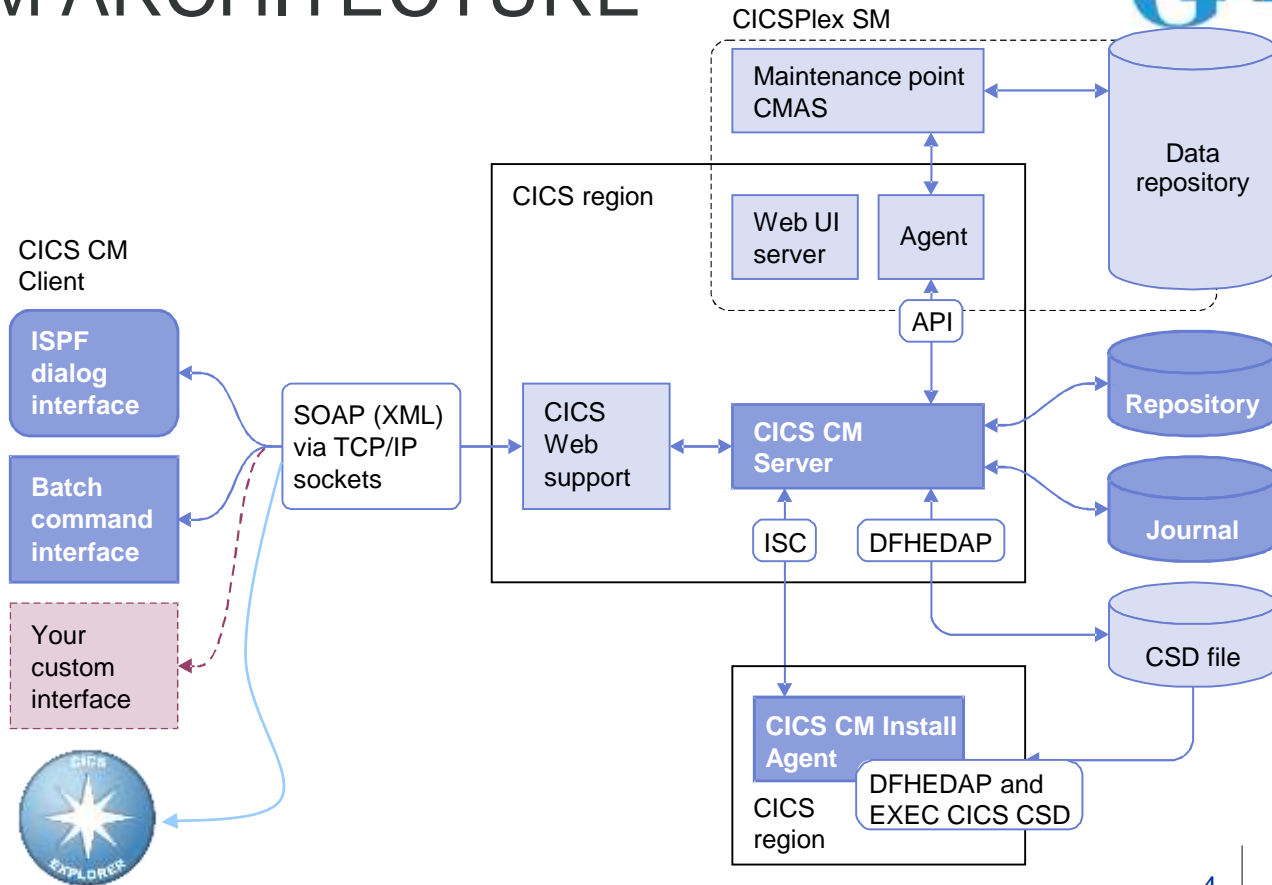
DFHCSDUP audit collection

WHY THE NEED FOR CICS CM

- Manage resource definitions on multiple repositories across diverse environments

- Make rapid and frequent updates to resource definitions to handle new business requirements

- Understand the impact of definition attributes on target environments

- Identify duplicate, redundant, or inconsistent resource definitions

CICS CM ARCHITECTURE

CICSPlex SM

Maintenance point CMAS

Data repository

CICS region

CICS CM Client

ISPF dialog interface

Web UI server

Agent

API

Batch command interface

SOAP (XML) via TCP/IP sockets

CICS Web support

CICS CM Server

Repository

Your custom interface

ISC

DFHEDAP

Journal

CSD file

CICS CM Install Agent

DFHEDAP and EXEC CICS CSD
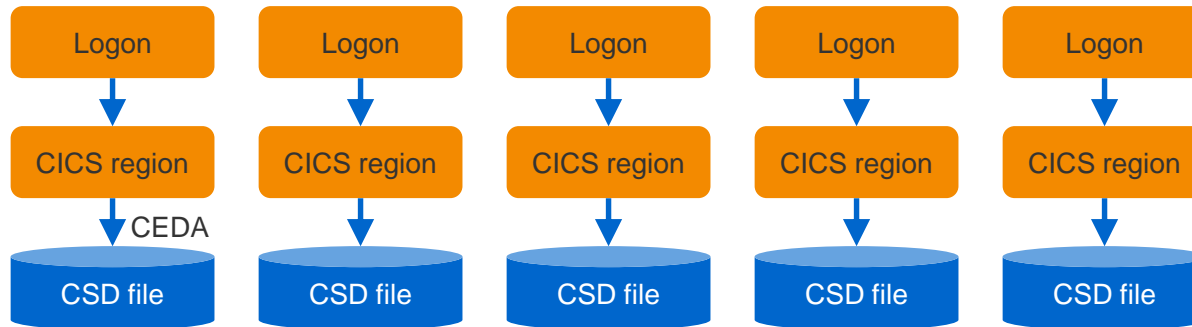
CICS region

4

CICS ADMIN PROBLEMS AND SOLUTIONS

Sample use cases

- Editing CSD files

- Working with CSD files and CPSM BAS repository

- Migrating changes between environments

- Delegating and approving changes

- Changes across LPAR boundaries

- Backout

- Audit compliance

- Clean-up and analysis

- Comparisons and exception analysis

- Cold start analysis

- Control of related zFS files

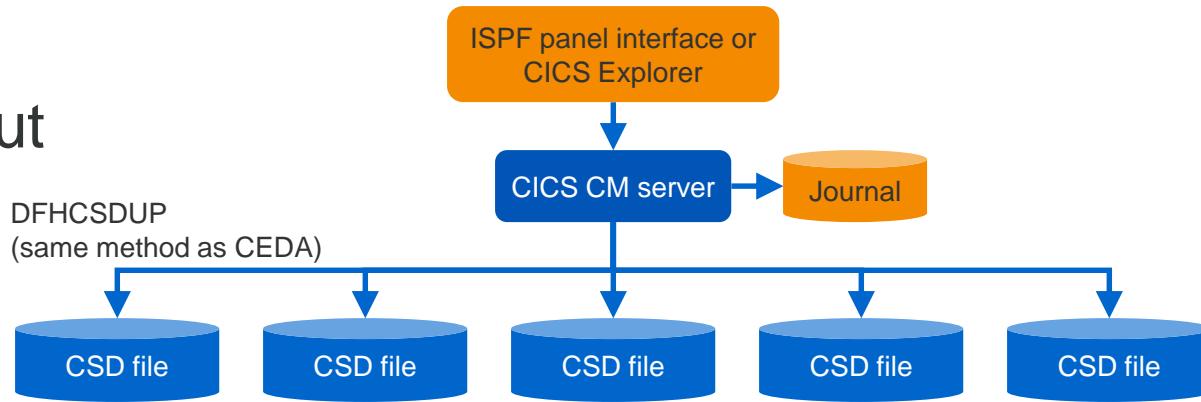- Audit of DFHCSDUP changes

EDITING CSD FILES

Problem

- Logon or route to each CSD's maintenance point

- CICS regions must be running
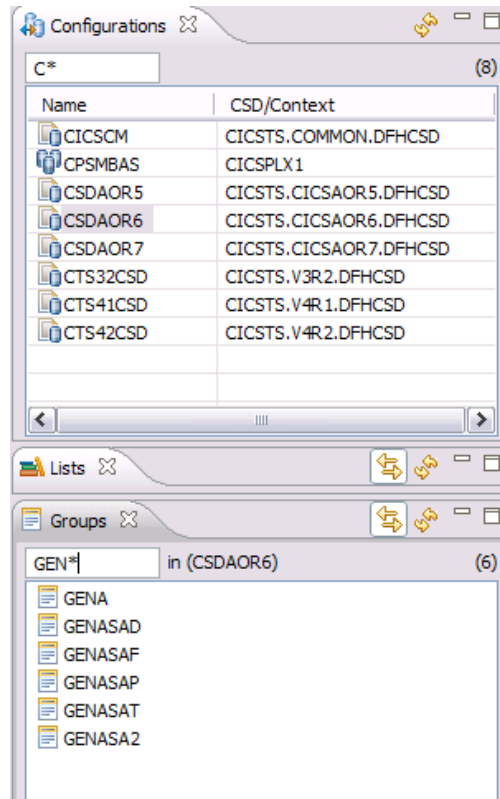
- No audit trail or easy backout

EDITING CSD FILES

Solution

- Single point of control (via the CICS CM Server)

- Application CICS regions may be inactive

- Audit trail

- Easy backout

ISPF panel interface or CICS Explorer

CICS CM server → Journal

DFHCSDUP
(same method as CEDA)

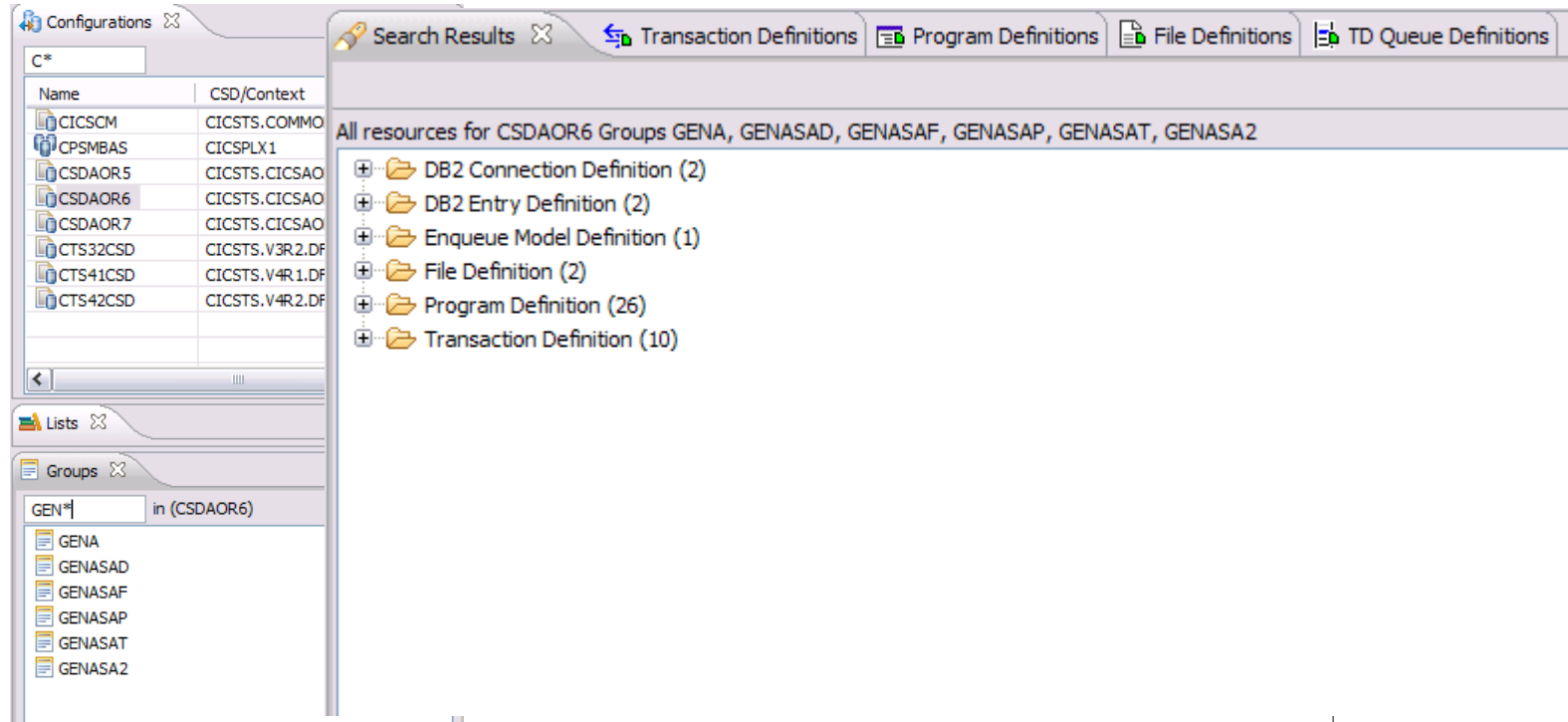CSD file   CSD file   CSD file   CSD file   CSD file

SINGLE POINT OF CONTROL FOR DEFINITIONS

- Access multiple CSDs, Data Repositories, Lists, and Groups from a single interface (Explorer)

SINGLE POINT OF CONTROL FOR DEFINITIONS

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SINGLE POINT OF CONTROL FOR DEFINITIONS

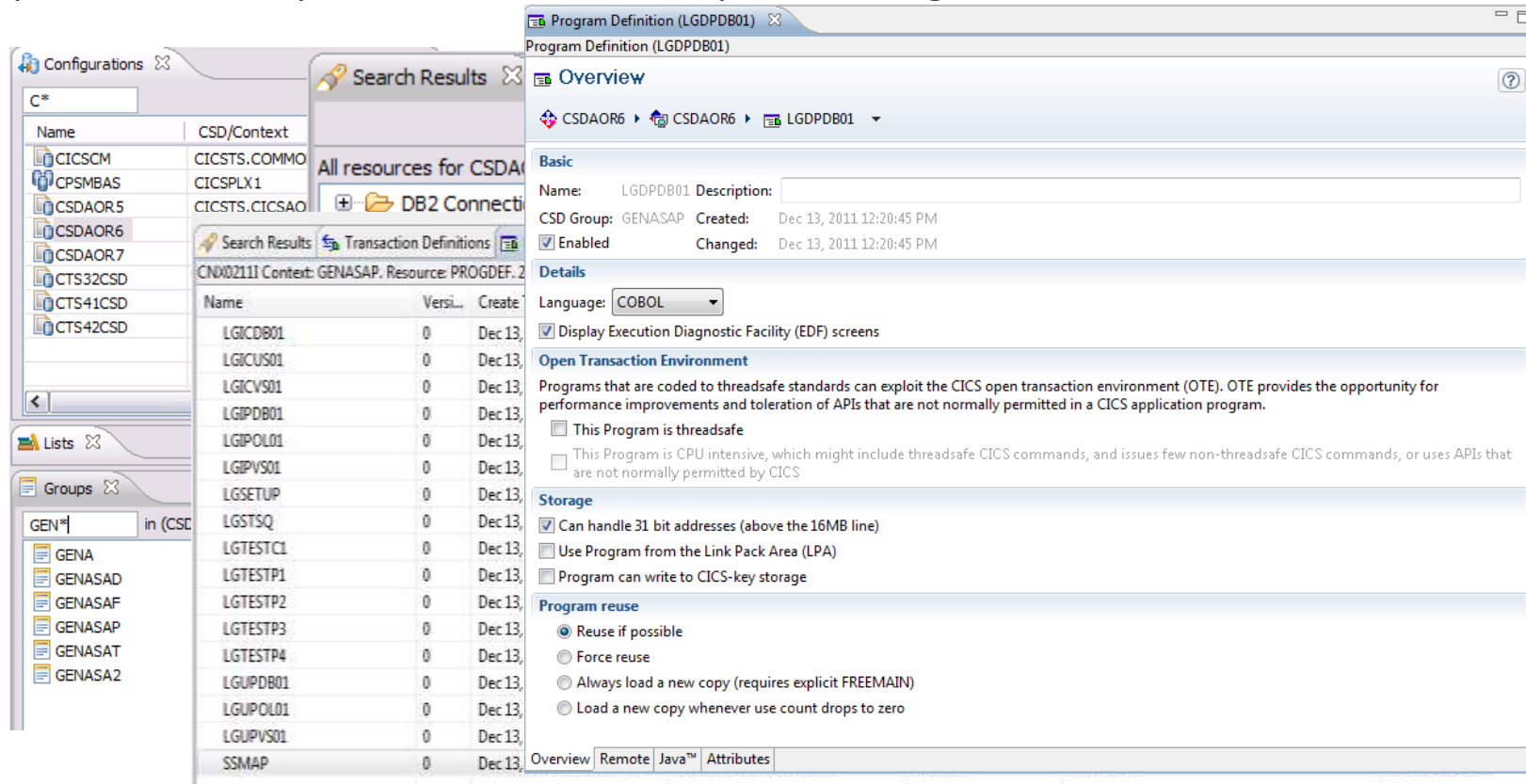- Access multiple CSDs, Data Repositories, Lists, and Groups from a single interface (Explorer)

SINGLE POINT OF CONTROL FOR DEFINITIONS

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SINGLE POINT OF CONTROL FOR DEFINITIONS

- Access multiple CSDs, Data Repositories, Lists, and Groups from a single interface (ISPF)

```
Resources                    CICS Configurations         Row 1 to 31 of 31
Command ===> _____  Scroll ===> PAGE
                                                          More: < >
Filter *_____    *_____   *_____   *_____

     /   Name        Context      File name                             Format
    ___  CICSCM                    CICSTS.CICSCM.DFHCSD                   CSD
    ___  CPSCMBAS     CICSPLX1                                           CPSM
    ___  CPSMBA5      CICSPLX1                                           CPSM
    ___  CSDAOR3                   CICSTS.CICSAOR3.DFHCSD                 CSD
    ___  CSDAOR4                   CICSTS.CICSAOR4.DFHCSD                 CSD
    ___  CSDAOR6
    ___  CSDAOR7
    ___  CSDAOR8
    ___  DEVT2553
    ___  EXPORTPD
    ___  EXPORTST
    ___  EXPTST52
    ___  JOE
    ___  MEXICO
    ___  MEXICOIM
    ___  MEXICSD
    ___  ZTEST
    ___  ZDEVT
```

```
     File  Menu  Settings  Checksum  Show  Help

 Groups                      CSDAOR6 CICS Resources       Row 1 to 2 of 2
 Command ===> _____  Scroll ===> PAGE

 Filter GEN*_____

   /      Group      Prompt
  _____  GENA
  _____  GENASAD
  _____  GENASAF
  _____  GENASAP
  _____  GENASAT
  _____  GENASA2
```
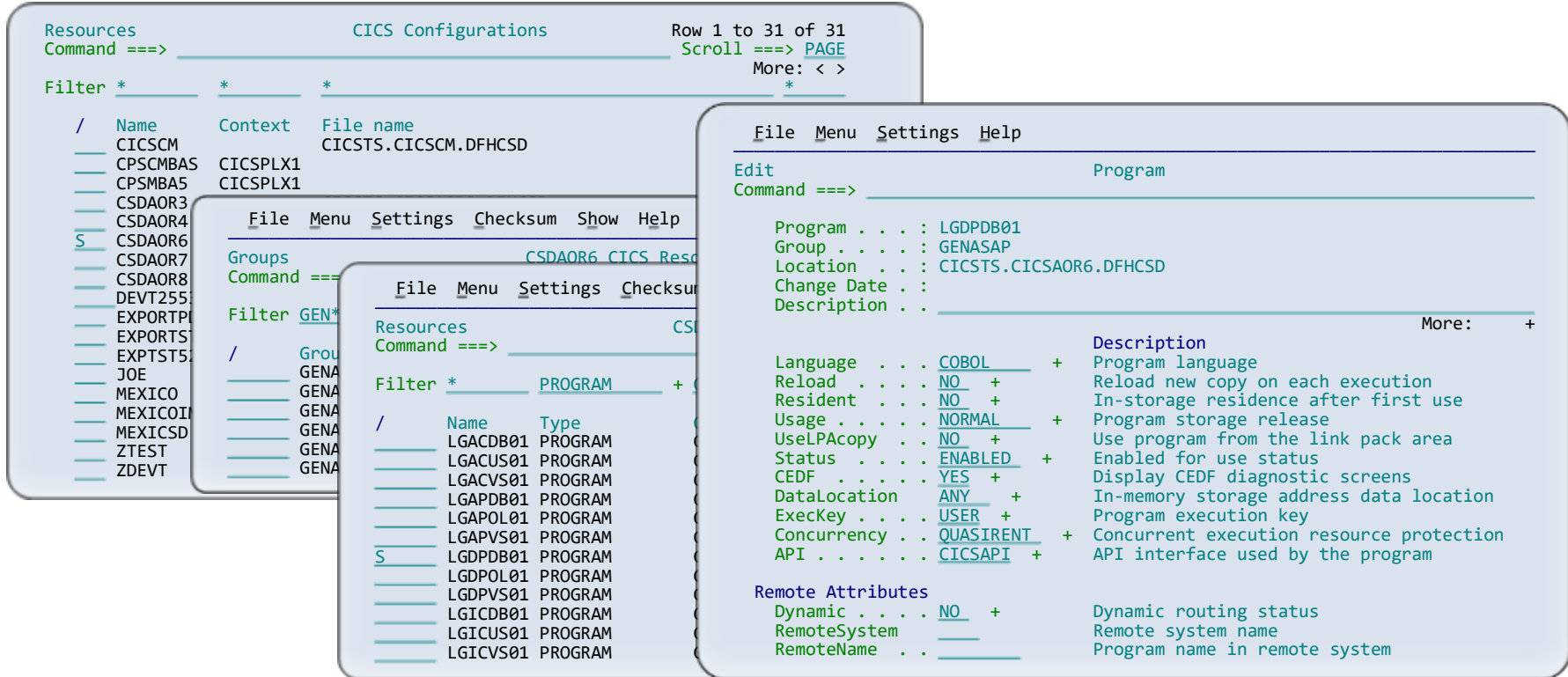
```
      File  Menu  Settings  Checksum  Search  Show  Help

 Resources                   CSDAOR6 CICS Resources       Row 1 to 10 of 10
 Command ===> _____  Scroll ===> PAGE

 Filter *_____    PROGRAM_____  + GEN*_____    *_____

   /      Name      Type       Group      Prompt        --- Changed ----
  _____  LGACDB01  PROGRAM    GENASAP                  2017/09/15 10:48
  _____  LGACUS01  PROGRAM    GENASAP                  2017/10/09 14:42
  _____  LGACVS01  PROGRAM    GENASAP                  2017/10/09 14:42
  _____  LGAPDB01  PROGRAM    GENASAP                  2017/09/20 14:21
  _____  LGAPOL01  PROGRAM    GENASAP                  2017/11/14 14:31
  _____  LGAPVS01  PROGRAM    GENASAP                  2017/09/14 14:42
  _____  LGDPDB01  PROGRAM    GENASAP                  2017/08/11 13:32
  _____  LGDPOL01  PROGRAM    GENASAP                  2016/12/13 07:03
  _____  LGDPVS01  PROGRAM    GENASAP                  2016/10/18 09:04
  _____  LGICDB01  PROGRAM    GENASAP                  2016/12/15 14:30
  _____  LGICUS01  PROGRAM    GENASAP                  2016/12/15 14:30
  _____  LGICVS01  PROGRAM    GENASAP                  2016/12/15 14:30
```

SINGLE POINT OF CONTROL FOR DEFINITIONS

- Access multiple CSDs, Data Repositories, Lists, and Groups from a single interface (ISPF)

WORKING WITH MULTIPLE CONFIGURATIONS

Menu option 4.1, **Reports > Multiple Configs**

Solution

```
Reports                       CICS Configurations              Row 1 to 12 of 12
Command ===> _____    Scroll ===> PAGE
                                                                     More: < >
Select one or more CICS configurations and press Enter

Filter DEMO*

     /  Name        Context    CSD File                                  Format
        DEMO                   CCVCICS.DEMO.DFHCSD                        CSD
     S  DEMOCPSM    CCVPLEXK                                             CPSM
     S  DEMODEVT               CCVCICS.DEMODEVT.DFHCSD                   CSD
        DEMOPROD               CCVCICS.DEMOTEST.DFHCSD                   CSD
     S  DEMOTEST    CPSM1                                               CPSM
```

Select multiple

Display multiple
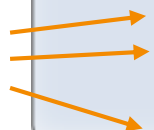
```
Resources               Multiple Configuration Resource  Row 106 to 120 of 1,366
Command ===> _____    Scroll ===> PAGE

Filter *_____  PROGRAM_____  + DEMOGRP1

/      Name      Type          Group      Prompt                        Config
____   DEMAMG10 PROGRAM        DEMOGRP1                                  DEMOCPSM
____   DEMAMG10 PROGRAM        DEMOGRP1                                  DEMODEVT
____   DEMAMG10 PROGRAM        DEMOGRP1                                  DEMOTEST
```
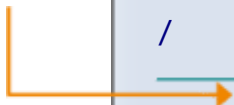
Problem

- Different interfaces: CEDA or CPSM WUI

- No method for moving from CPSM repository to CSD file
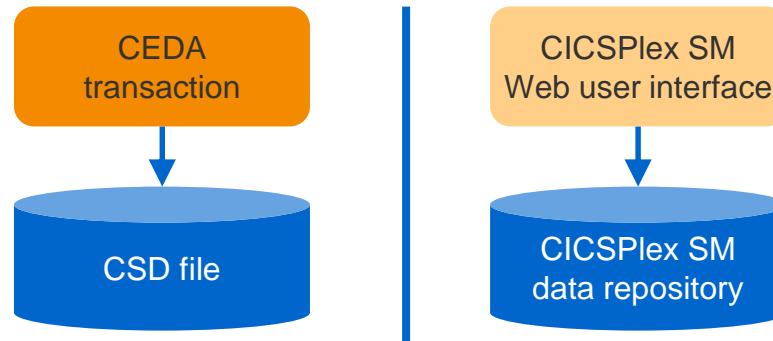
CSD FILES AND CPSM BAS REPOSITORY

- Single user interface

- Seamless across CSD files and CPSM repositories

- Copy resource definitions in either direction
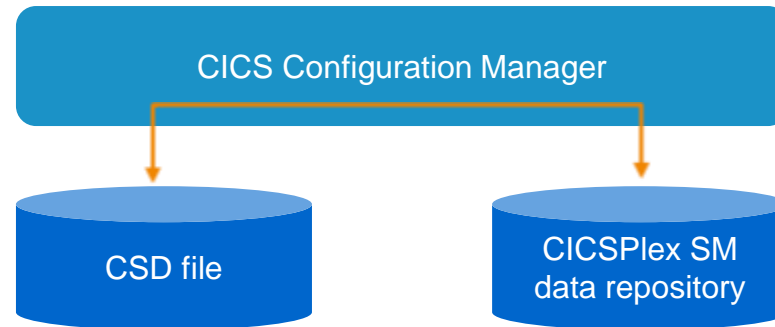
SUPPORT FOR CPSM RESOURCES

■ you can define and work with CICSPlex SM resource definitions

- WLMDEFs (WLMSPEC WLMGROUP WLMDEF TRANGRP LNKSWSCS LNKSWSCG WLMINSPC WLMINGRP DTRINGRP) 👍

- topologies (CSYSDEF CSYSGRP PERIODEF CSGLCGCS CSGLCGCG) 👍

- package (via P line action) 👍

- transform (via ISPF option 1.5) 👍

MIGRATING CHANGES BETWEEN ENVIRONMENTS

Problem

■ How do you systematically promote resource definition changes?

- Collecting sets of definitions

- Tailoring definition attributes (data set names in Files)

- Identifying and updating target CSD files or CPSM BAS repositories

Development environment

CSD files

CPSM

?

Test environment

CSD files

CPSM

Solution

- 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

Development environment	CICS CM change package:	Test environment
CSD files	• Define	CSD files
	• Package	
	• Ready	
	• Approve	
	• Migrate	
CPSM	• Backout	CPSM
	• Install	
	• Newcopy	

19

Solution

- Migration schemes identify source and target repositories

- Different schemes to progressively migrate a change package

Solution

- Schemes can intermix CSD files or CPSM repositories

- Supports one or many source/target pairs in any combination
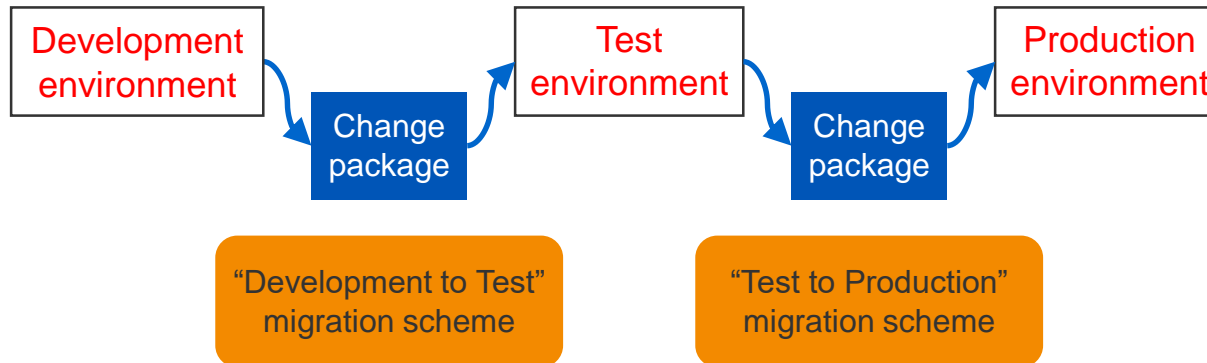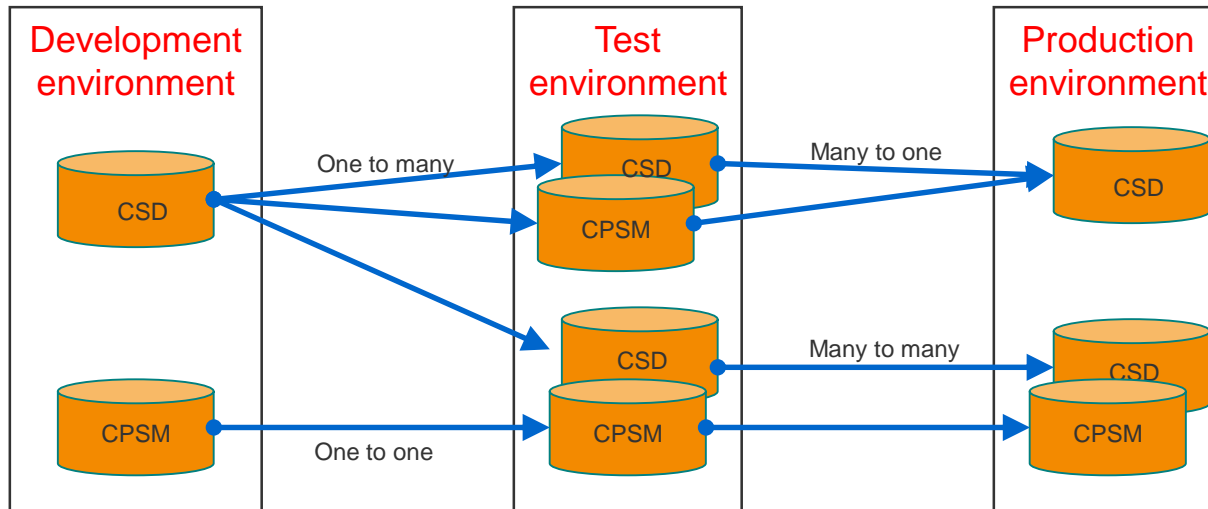
MIGRATING CHANGES BETWEEN ENVIRONMENTS

Solution

- Transformation rules tailor definitions for each target:
  - No manual editing – it's automatic
  - You can change group names, attribute values, or resource definition names
  - Value masking is supported (e.g. change File DSNAME *DEVT* to *TEST*)
  - Qualification criteria may be specified

Development environment

CPSM DR

Group: PAYDEVT
File: PAYMASTER
DSname: PAY.DEVT.MASTER

Transformation Rule

Test environment

CSD file

Group: PAYTEST
File: PAYMASTER
DSname: PAY.TEST.MASTER
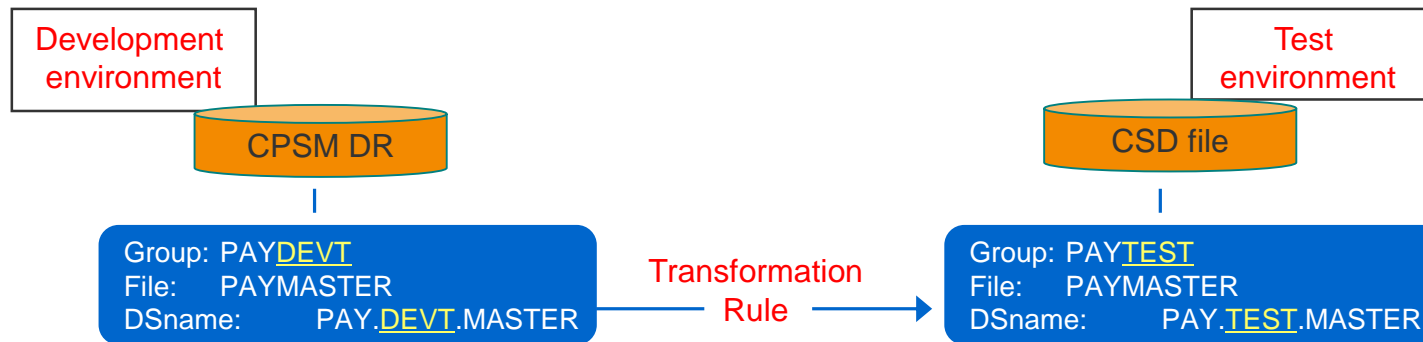
DELEGATING RESPONSIBILITIES

- Administration bottlenecks for resource definition changes

- CICS support personnel are overworked and scarce

- Complexity and 'institutional knowledge' makes delegation risky
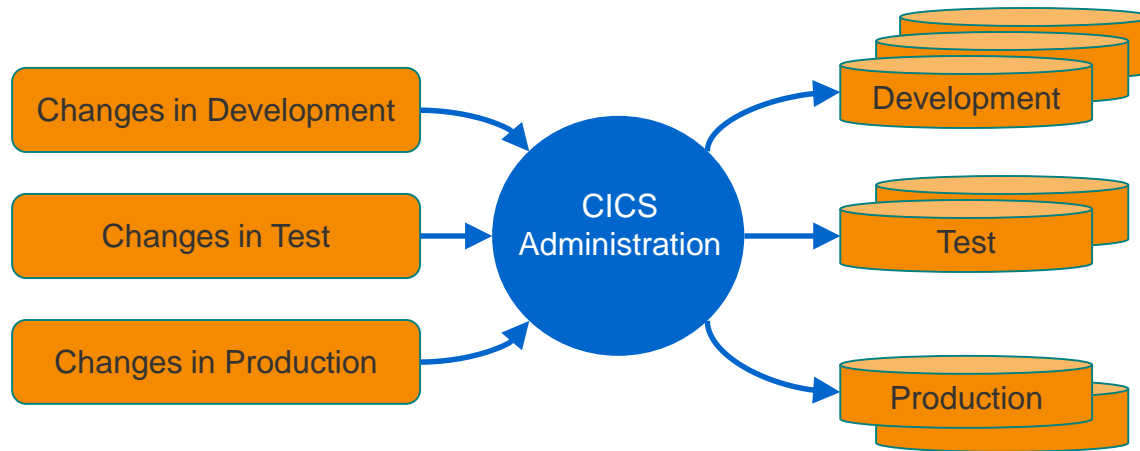
DELEGATING RESPONSIBILITIES

- Security controls by repository, Group, type and name

- Standards enforcement for attribute values

- Approve change packages before migration

- Audit trail with easy backout

24
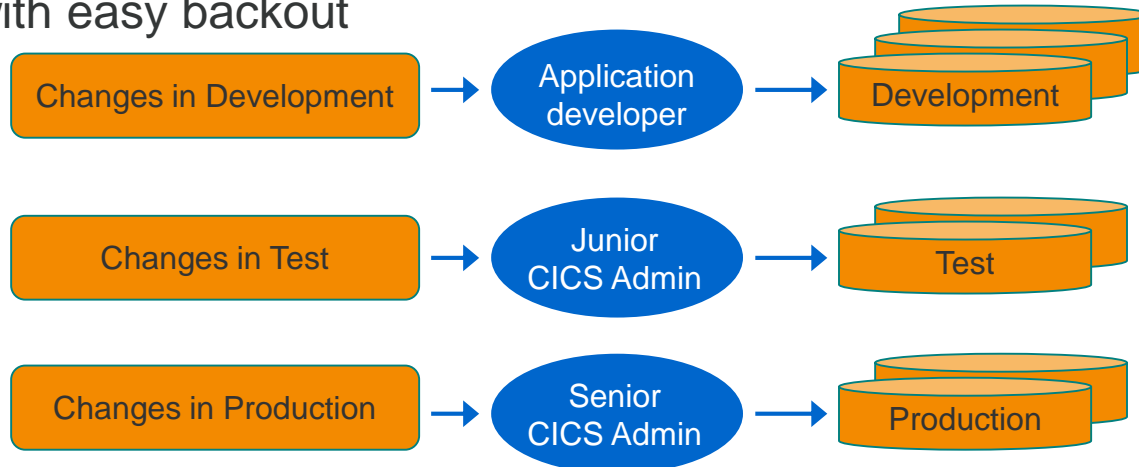
DELEGATING RESPONSIBILITIES

Solution

```
Edit                              Program
Command ===> _____

     Program . . . : DEMACOPY
     Group . . . . : DEMAGRP1
     Location  . . : CCVPLEXF
     Change Date . : 2017/10/30 10:32:01.74
     Description . . Demonstration - COPY API Handler - changed
                                                          More:     +
                                 Default      Alternative Values
     Language  . . . COBOL_____  +  N_A        ASSEMBLER C COBOL LE370 PLI
     Reload  . . . . NO_   +       NO          YES
     Resident  . . . NO_   +       NO          YES
     Usage . . . . . NORMAL____  +  NORMAL      TRANSIENT
     UseLPAcopy  . . NO_   +       NO          YES
     Status  . . . . ENABLED__   +  ENABLED     DISABLED
     CEDF  . . . . . NO_   +       YES         NO
     DataLocation    ANY__    +    BELOW       ANY
     ExecKey . . . . USER_  +      USER        CICS
     Concurrency . . QUASIRENT___  +  QUASIRENT   REQUIRED THREADSAFE N_A
     API . . . . . . CICSAPI_  +    CICSAPI     OPENAPI
```

1. Set CEDF(NO) which violates standards, then SAVE

25

DELEGATING RESPONSIBILITIES

Solution

```
──────────────────────── Exception Messages ────────────────────────
                                                      Row 1 to 3 of 3
 Command ===> _____  Scroll ===> PAGE


 Messages
 XPRA: Create/Update of this resource was rejected by a site Exit.  Rule
 . details: PGM_0001-A-0001
 XPRA: Attribute CEDF must have value YES
 ************************** Bottom of data **************************
```

Standards enforced

RULE NAME		ATTRIBUTE	CONDITION		ACTION
PGM_0001	Q	PROGDEF_GROUP	EQ	DEMOGRP1	
PGM_0001	Q	PROGDEF_NAME	EQM	DEMA*	
PGM_0001	A	PROGDEF_CEDF	NE	YES	REJECT

DELEGATING RESPONSIBILITIES

Solution

```
.---------------------------------- Program ----------------------------------.
               SAVEAS Confirmation      Authorization failed

 Enter details and press Enter to save new PROGRAM

     Name . . . . . . . . . DEMACOPY
     Group  . . . . . . . . PAYROLL     +
     CICS Configuration . . DEMODEVT    +




'-----------------------------------------------------------------------------'

.-----------------------------------------------------------------------------.
|  You are not authorized to perform the requested function. Security         |
|  failure details are logged in the CICS Configuration Manager server job    |
|  output, using a message prefix DFHXS.                                      |
'-----------------------------------------------------------------------------'

  CEDF  . . . . . YES  +        YES             NO
  DataLocation    ANY    +      BELOW           ANY
  ExecKey . . . . USER  +
  Concurrency . . QUASIRENT     +                              N_A
  API . . . . . . CICSAPI  +
```

RACF	PFX	CONFIG	GROUP	TYPE	NAME
PERMIT	CCV.DEMOCPSM.PAYROLL.PROGDEF.*				
	CLASS(XFACILIT)				
	ID(RJA2) ACC(NONE)				

Secure definitions by repository, Group, Type and Name

CHANGES ACROSS LPAR BOUNDARIES

Problem

■ Need to distribute resource definition changes to remote CICS sites across LPAR boundaries
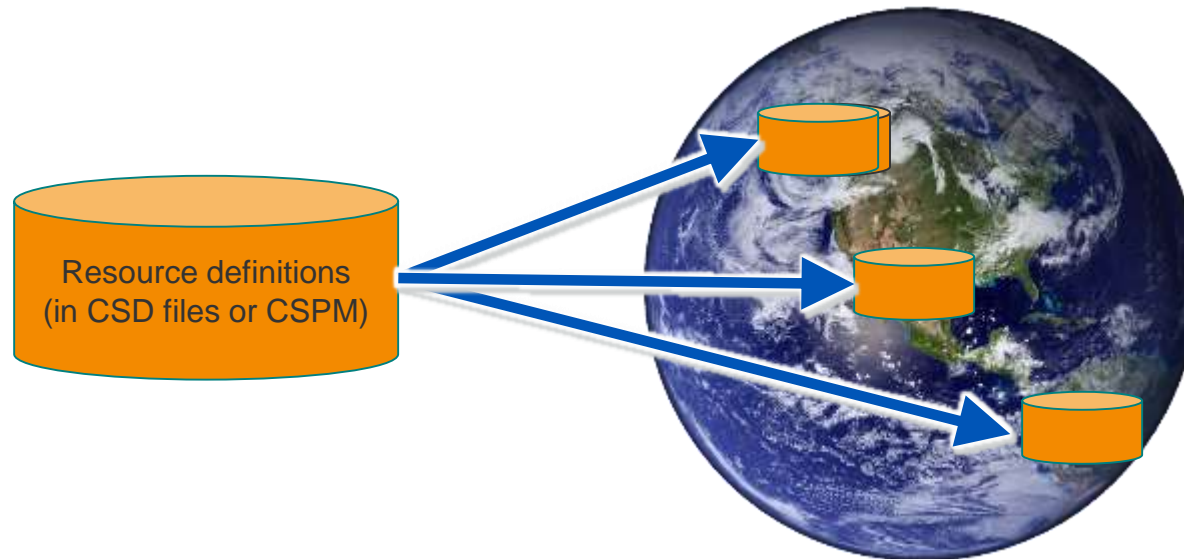
CHANGES ACROSS LPAR BOUNDARIES

Solution

- Export definitions selectively by Copy or via change package Migrate

- Samples illustrate automated file transfer to remote sites

- Import definitions with auto-register of change packages

LPAR

Devt → Test

Copy
Migrate → Export → FTP → Export → Prod

Import   (all or by package)
Copy   (selected definitions)

BACKOUT

- All changes logged to a journal file

- Backout entire change package

- Recover individual resource definitions

- View resource definition histories on screen
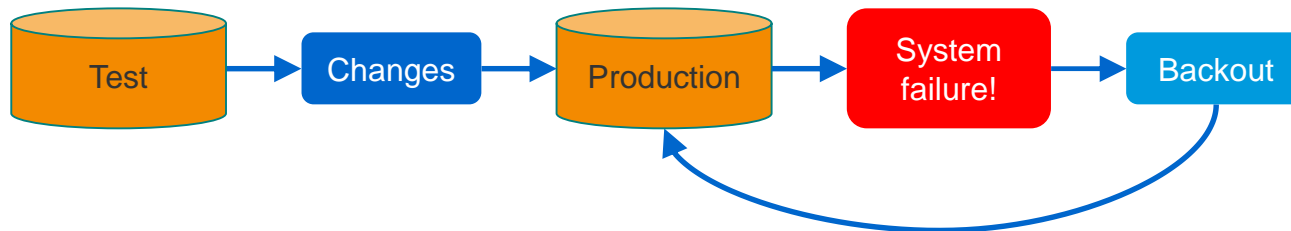
AUDIT COMPLIANCE

- Requirement to collect audit data

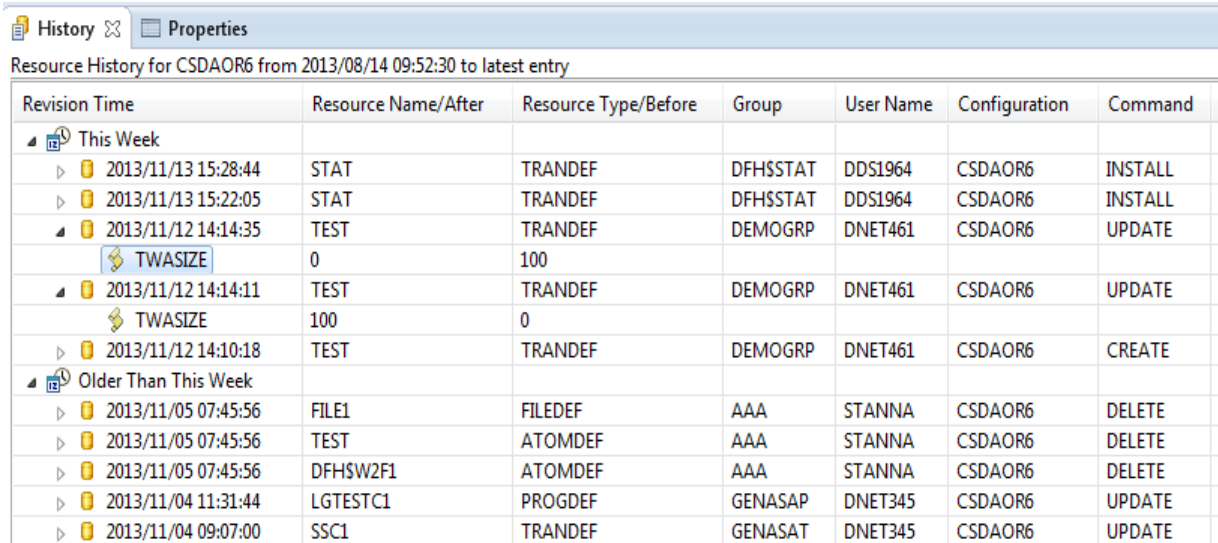- Searching and reporting results is cumbersome and time consuming

Who made changes?

What did they change?

When did they make the changes?

Where did the change occur?

How did they make the change?

Are manual records accurate?

AUDIT COMPLIANCE

Solution

- All changes logged to a journal file

- Online histories and journal-event views

- ISPF, Explorer and Batch journal audit reporting

| History | Properties |

Resource History for CSDAOR6 from 2013/08/14 09:52:30 to latest entry

Revision Time	Resource Name/After	Resource Type/Before	Group	User Name	Configuration	Command	
▲ This Week							
▷ 2013/11/13 15:28:44	STAT	TRANDEF	DFH$STAT	DDS1964	CSDAOR6	INSTALL	
▷ 2013/11/13 15:22:05	STAT	TRANDEF	DFH$STAT	DDS1964	CSDAOR6	INSTALL	
▲ 2013/11/12 14:14:35	TEST	TRANDEF	DEMOGRP	DNET461	CSDAOR6	UPDATE	
⚡ TWASIZE	0	100					
▲ 2013/11/12 14:14:11	TEST	TRANDEF	DEMOGRP	DNET461	CSDAOR6	UPDATE	
⚡ TWASIZE	100	0					
▷ 2013/11/12 14:10:18	TEST	TRANDEF	DEMOGRP	DNET461	CSDAOR6	CREATE	
▲ Older Than This Week							
▷ 2013/11/05 07:45:56	FILE1	FILEDEF	AAA	STANNA	CSDAOR6	DELETE	
▷ 2013/11/05 07:45:56	TEST	ATOMDEF	AAA	STANNA	CSDAOR6	DELETE	
▷ 2013/11/05 07:45:56	DFH$W2F1	ATOMDEF	AAA	STANNA	CSDAOR6	DELETE	
▷ 2013/11/04 11:31:44	LGTESTC1	PROGDEF	GENASAP	DNET345	CSDAOR6	UPDATE	
▷ 2013/11/04 09:07:00	SSC1	TRANDEF	GENASAT	DNET345	CSDAOR6	UPDATE	

AUDIT COMPLIANCE

Solution

```
Compare                          Transaction
Command ===> _____

     Transaction . : TEST                    TEST
     ResGroup  . . : DEMOGRP                 DEMOGRP
     Location  . . : CCVCICS.CICSREG.ABCCSD  CCVCICS.CICSREG.ABCCSD
==>  Change Date . : 2017/11/01 08:11:31.10  2017/11/01 08:11:12.47
     Description . :
                                                       More:      +

     Program . . . : GETWIT                  GETWIT
==>  TWAsize . . . : 0                       100
     Profile . . . : DFHCICST                DFHCICST
     PartitionSet  :
     Status  . . . : ENABLED                 ENABLED
     TaskDataLoc . : BELOW                   BELOW
     TaskDataKey . : USER                    USER
     StorageClear  : NO                      NO
     Runaway . . . : SYSTEM                  SYSTEM
     Shutdown  . . : DISABLED                DISABLED
     Isolate . . . : YES                     YES
     BRexit  . . . :
```
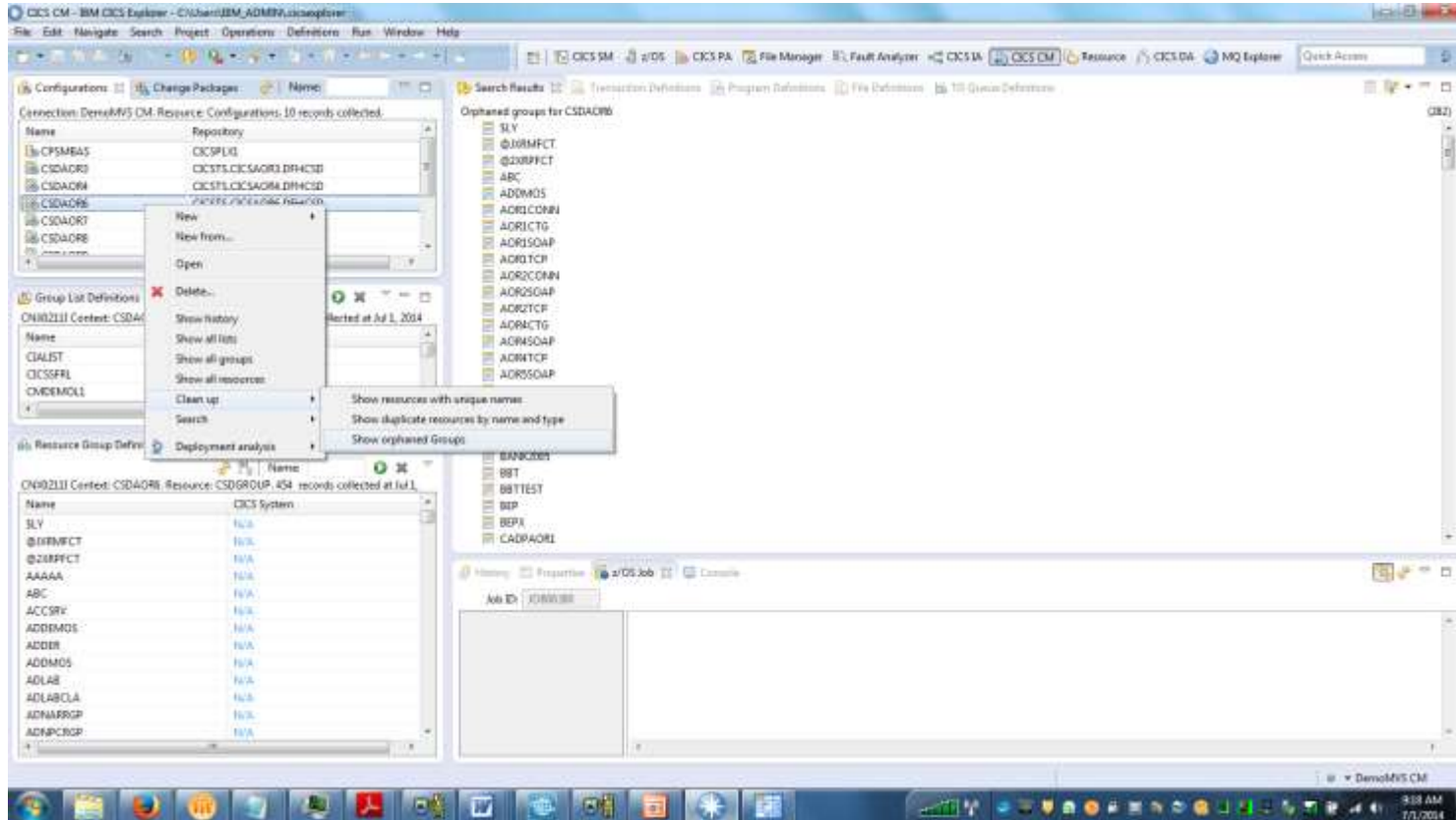
CLEANUP AND ANALYSIS

Problem

- Do I have:
  - Orphan Groups   (Groups unrelated to any Lists)
  - Duplicated definitions   (same name, different attribute values)
  - Redundant definitions   (same attribute values, different names)

- How do I find … a needle in a haystack?
  - All PAY files using LSRpoolID(1)
 - All programs using DataLocation(BELOW)

CLEANUP AND ANALYSIS

Solution

COMPARISONS AND EXCEPTION ANALYSIS

Problem

- Is Group(PAYROLL) the same in TEST and PRODUCTION?
- What definitions are missing?
- What definitions are different?
- Are the FILEs the same, except for DSNAME?
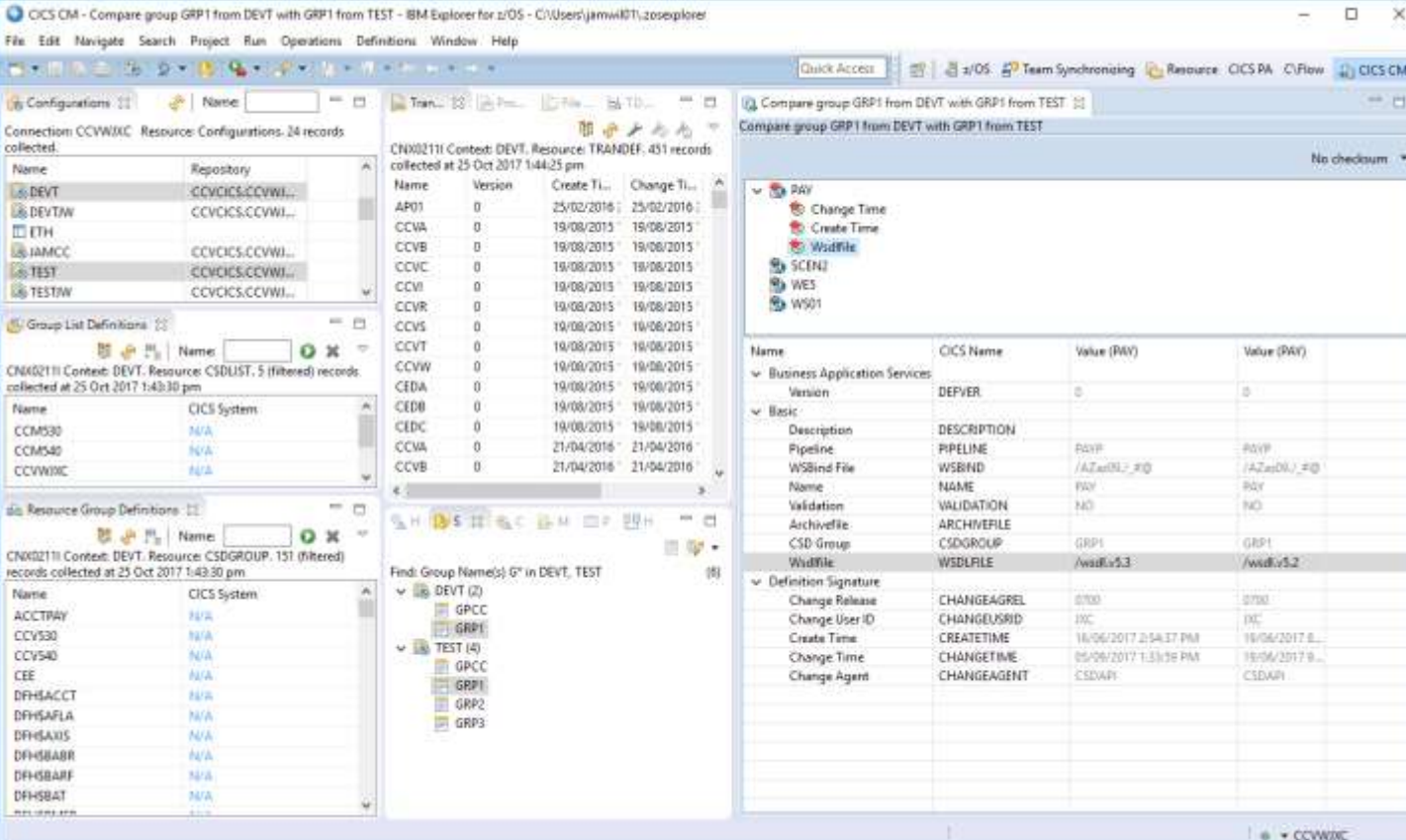- How can I compare two resource definitions?

Test
PAYROLL group

Production
PAYROLL group

Same or different?
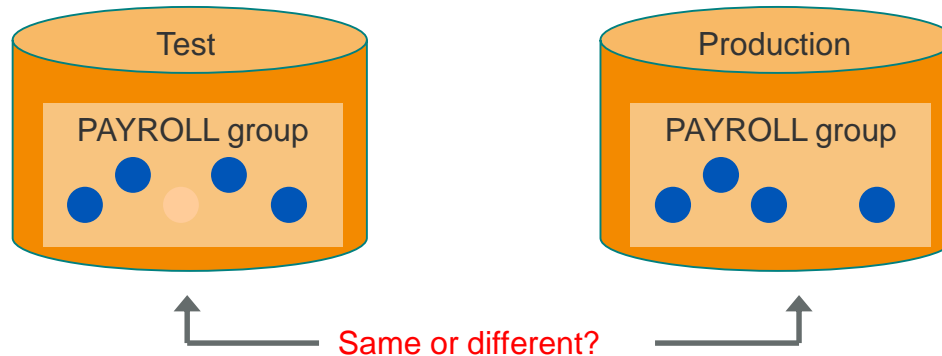
COMPARISONS AND EXCEPTION ANALYSIS

Solution

- Side-by-side compare of Lists, Groups, or Resources

- Compare across CSDs, CPSM DRs, or history views

- 'Checksum' analysis (hash-value used as a compare indicator)

  - Predefined attribute lists for checksum calculation
  - User-selectable attributes for checksum calculation
  - n-Way analysis across 2, 3, 4 or multiple repositories
  - 'Show' exception analysis to highlight anomalies

COMPARISONS AND EXCEPTION ANALYSIS

Solution

COLD START ANALYSIS

Problem

■ What will change at the next Cold Start?
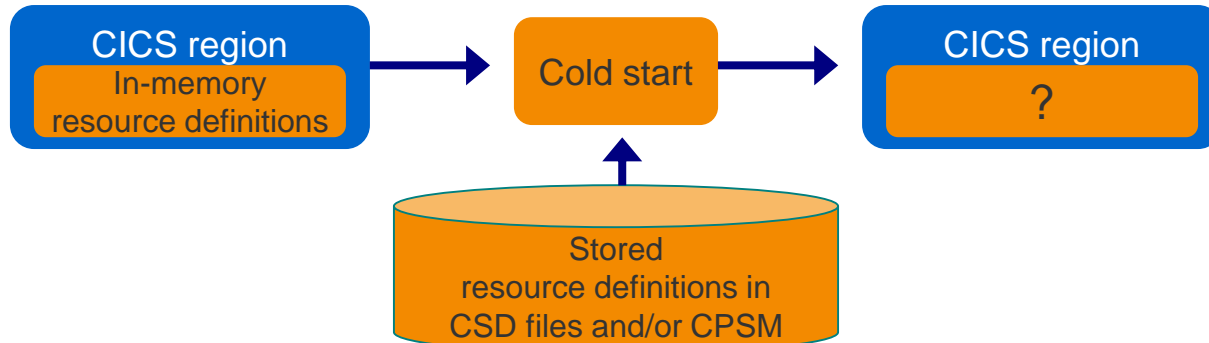
COLD START ANALYSIS

Solution

- Immediate analysis – no need to stop/start CICS regions

- Supports CSD, CPSM, or CSD/CPSM hybrid models

- Understands 'order-sequence' processing and RASGNDEF overrides

- Provides filtering for auto-install, dynamic resources, known conditions

- Reports …

CICS region
In-memory resource definitions

CICS CM

Stored resource definitions in CSD files and/or CPSM

Analysis Report
- ✓ What's new, missing, different
- ✓ Duplicate candidates, winners & losers
- ✓ Referential-integrity errors
- ✓ Uninstallable definitions
- ✓ Enabled/disabled states
- ✓ Local/remote indicators

40
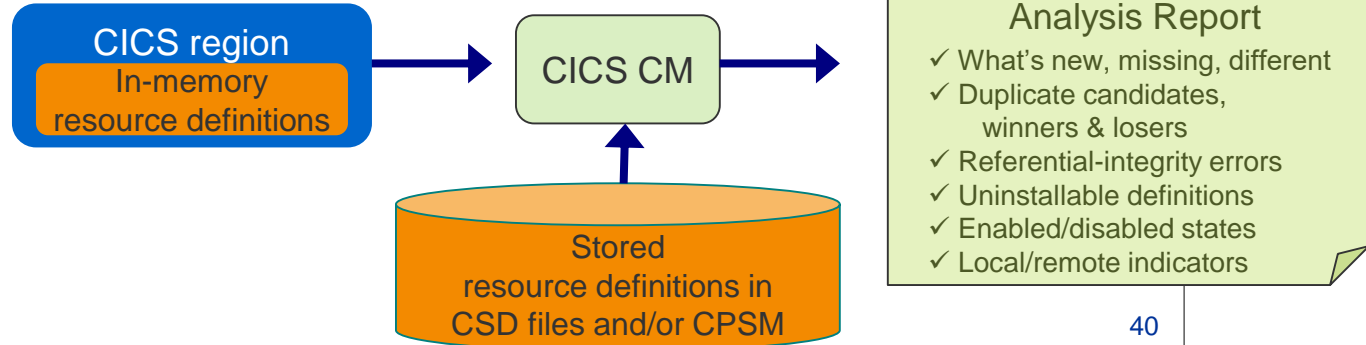
COLD START ANALYSIS

Solution

```
                    CICS Deployment Analysis Report
                      Cold Start Compare Report
                        Missing Definitions                          Missing

Report                              List or                   Loc      Deploy   Collection
Item    ID Name       Type    Group RESDESC  Code Condition   Rem Ena VV Checksum Type
------  -- -------- ------- -------- -------- ---- ----------------- --- --- -- -------- --------------
     7  01 CCVR0001 FILE    CCVSRCSD N/A      0200 Missing       LOC UNE    A028B276 RUNTIME-CCM
     8  01 CCVR0002 FILE    CCVSRCSD N/A      0200 Missing       LOC UNE    CDC28071 RUNTIME-CCM
```

```
                    CICS Deployment Analysis Report
                      Cold Start Compare Report
                       Mismatched Definitions                         Different

Report                              List or                   Loc      Deploy   Collection
Item   ID Name       Type        Group    RESDESC  Code Condition   Rem Ena VV Checksum Type
------ -- -------- ------------ -------- -------- ---- ----------------- --- --- -- -------- --------------
    98 01 T31M     CONNECTION                     0300 Checksum Mismatch LOC ENA    5136F694 REGION-CCM
          Attribute:  ACCESSMETHOD    Value:  IRC
    99 02 T31M     CONNECTION   CCVLINKS CCVT22M  0300 Checksum Mismatch LOC ENA    E709BDAA CANDIDATES-CSD
          Attribute:  ACCESSMETHOD    Value:  XM
```
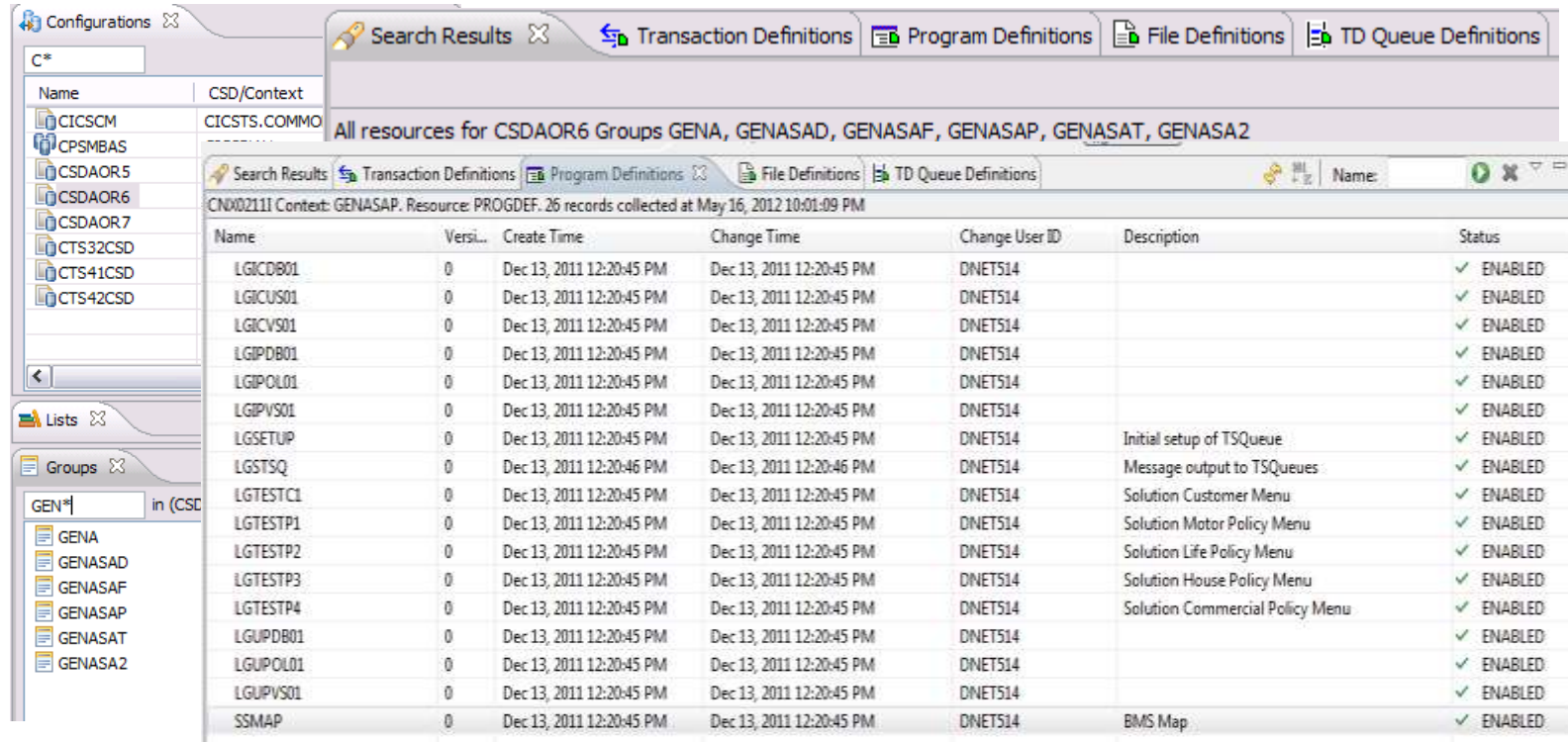
```
                    CICS Deployment Analysis Report
                      Cold Start Compare Report
                   Referential Integrity Verification                 RI errors

Report                              List or                   Loc      Deploy   Collection
Item   ID Name       Type        Group    RESDESC  Code Condition   Rem Ena VV Checksum Type
------ -- -------- ------------ -------- -------- ---- ----------------- --- --- -- -------- --------------
   148 02 CCVBACK  FILE         CCV540   CCM540   0951 CCV5451W       LOC ENA    4FE7F1CF CANDIDATES-CSD
          Attribute:  LSRPOOLID    Value:  1
```

SINGLE POINT OF CONTROL FOR DEFINITIONS

- Access multiple CSDs, Data Repositories, Lists, and Groups from a single interface (Explorer)

CICS CM – CICS RESOURCE DEFINITION LIFECYCLE MANAGEMENT

Benefits

- Eliminate manual and error prone processes
- Full audit trail and backout capability
- Integrate with source code change management processes
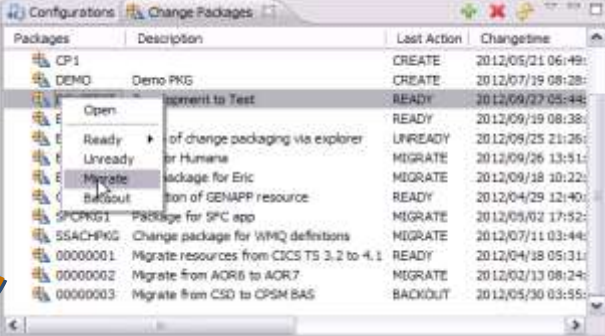
Change package created for resources in Development repository

Install definitions in CICS regions on test environment

Change package migrated to Test environment

ZFS SUPPORT

Problem

- Some CICS resource definitions have related zFS files, for example bundles and WebService WSDL files.

- **I need configuration control over these too.**
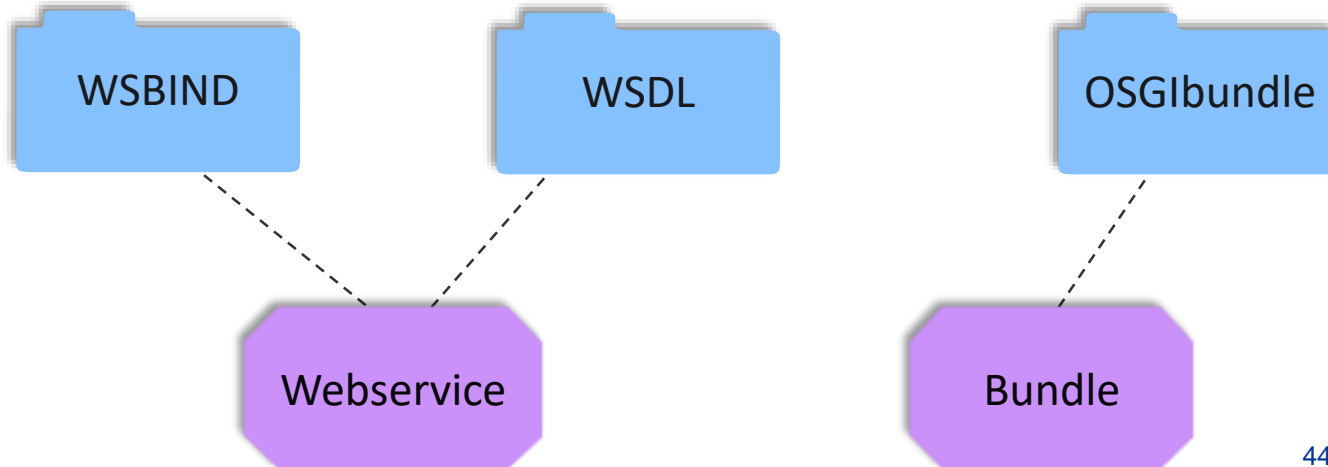
ZFS SUPPORT

Solution

- Define 'ZFSFILE' resource definitions that refer to zFS files or directories. Then migrate or copy the ZFSFILEs to the desired CICS configuration along with the related CICS resources.
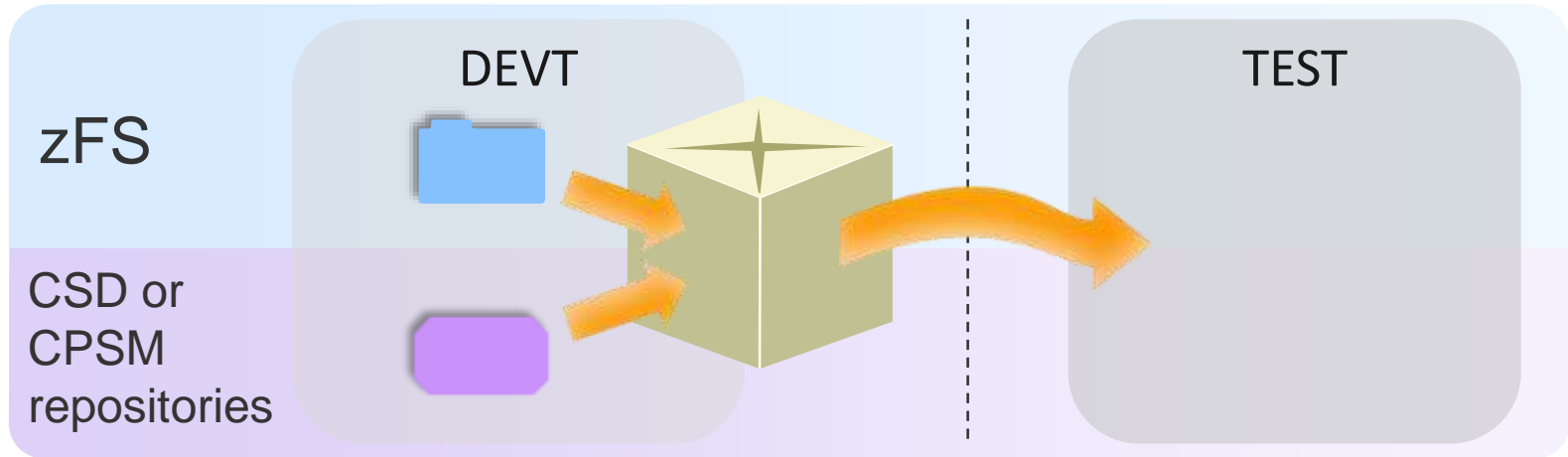
ZFS SUPPORT - CICS CONFIGURATIONS

```
Edit                          CICS Configuration
Command ===> _____

Name  . . . . : ZTEST
Description . . A source directory where zFS files are stored_____

Specify the type of Configuration
4  1. CICSPlex SM context . . _____
   2. CSD file  . . . . . . . _____
   3. Export-import file  . . _____
   4. zFS directory . . . . . /ccv000/test/_____  +>

Choose a view for related options
5  1. Transform    2. CSD        3. CSD remote   4. Export    5. zFS
      variables       options       connections     options      options

Define zFS processing options
   Backup method . . . . DIR_  +  DIR or NONE
   Backup count  . . . . 9        0, 3-9
   Backup directory  . . /ccv000/backup/_____  +>
```

ZFS SUPPORT - ZFSFILE RESOURCE DEFINITIONS

```
 Edit                              ZFSFILE
 Command ===> _____


    Name  . . . . : ZWSDL1
    Location  . . : /u/products/ccv000/wabc/devt/
    Change Date . :
    Description . . This resource definition ZWSDL1, refers to file first.wsdl
                                                          More:      +
  Attributes                        Description
    RelativePath  . first.wsdl                                         +>
               . . _____
               . . _____
               . . _____
               . . _____

  Information Attributes
    Data1 . . . . . _____  Data1 (CICS resource name)
    Data2 . . . . . _____  Data2 (CICS resource type)
    Data3 . . . . . _____  Data3 (CICS resource group)
    Data4 . . . . . _____  Data4 (CICS resource attribute)
```

DFHCSDUP AUDIT COLLECTION

Problem

- Sometimes, we need to make emergency changes to CICS resources using DFHCSDUP. These changes aren't tracked by CICS CM, so there is nowhere where you can see an audit record of both the CICS CM and the DFHCSDUP changes.

- **I need to track all changes to the CSD.**
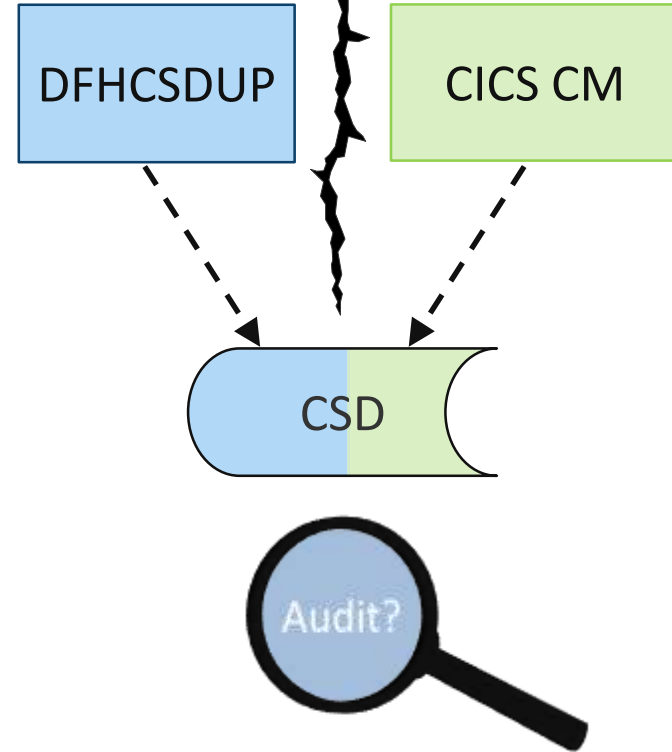
DFHCSDUP AUDIT COLLECTION

Solution

- Collect DFHCSDUP audit records with no changes to existing interfaces or to existing JCL DFHCSDUP jobs

Native

DFHCSDUP
✓commands

CSD

CICS CM wrapper

Repository

CCVCSDUP

Control table

DFHCSDUP
✓commands

Audit Collection

Termination Exit

CSD

Identifies repository for auditing requirements

Collection methods: EXCI, FILE, or DYNAMIC (tries EXCI then FILE)

EXCI
to server

Audit File

Allows audit file post-processing
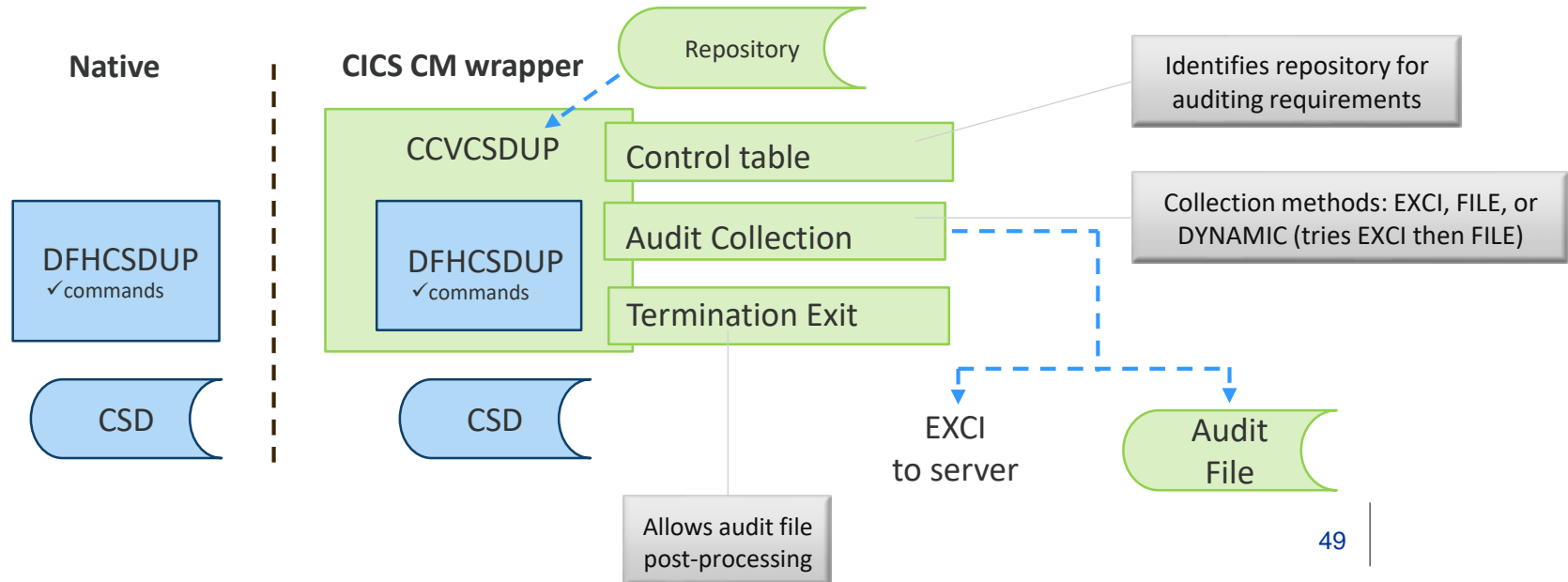
BETTER SUPPORT FOR DFHCSDUP EXPORT FILES

Previously…

- CICS CM is not available on a remote system. I can already use a DFHCSDUP-format export file to get resources to that system, but I can't export commands to that file to do tasks like deleting resources from a group.

Now…

- You can now write change package commands to a DFHCSDUP-format export file.

- Therefore you can take advantage of the benefits of CICS CM even when a few of your systems are not running the CICS CM server.

SUMMARY

- Why CICS CM is useful

- Editing CSD files

- Working with CSD files and CPSM BAS repository

- Migrating changes between environments

- Delegating responsibilities

- Changes across LPAR boundaries

- Backout

- Audit compliance

- Cleanup and analysis

- Comparisons and exception analysis

- Cold start analysis

- zFS support

- DFHCSDUP audit collection

Thank You for Attending!
Please remember to complete your evaluation of this session

Efficient management of online resources using CICS Configuration Manager