CICS Transaction Server for VSE - Update

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CICS TS for VSE History

- CICS TS for VSE/ESA 1.1.0 - released June 1999
  - VSE ported up to 100 OS/390 services
  - New CICS TS port from OS/390
  - Released with VSE/ESA 2.4

- Next major CICS TS update - September 2000
  - CICS TS for VSE/ESA 1.1.1
  - Provides CICS Web Support (CWS), 3270 Bridge, REXX for CICS, Subsystem Storage Protection (SSP), ...
  - Released with VSE/ESA 2.5

- CICS Explorer monitoring support - released June 2012

- Thanks to WAVV, GSE, zUniversity and customer requirements

  We now have a Statement of Direction for a new CICS TS release !

z/VSE Statement of Direction (SOD) in z/VSE 5.2 Announcement on April 7, 2014

- IBM intends to provide

  new capability in a future release of IBM CICS Transaction Server for z/VSE, to provide:
  - (i) Updates to CICS resources for CICS Explorer, and
  - (ii) Channels and Containers to enable the transfer of large amounts of data between CICS applications.

- IBM intends to rename

  the product z/VSE Central Functions to z/VSE in a new z/VSE version.

- z/VSE V5.2 will be the last release that supports IBM System z9. Future releases of z/VSE will support IBM System z10 and higher.

- Stabilization of support and discontinued functions:
  - CICS DDM: Support for CICS Distributed Data Management (DDM) is stabilized in CICS TS for VSE/ESA V1.1.1.
    In a future release of CICS TS for z/VSE, IBM intends to discontinue support for CICS DDM.

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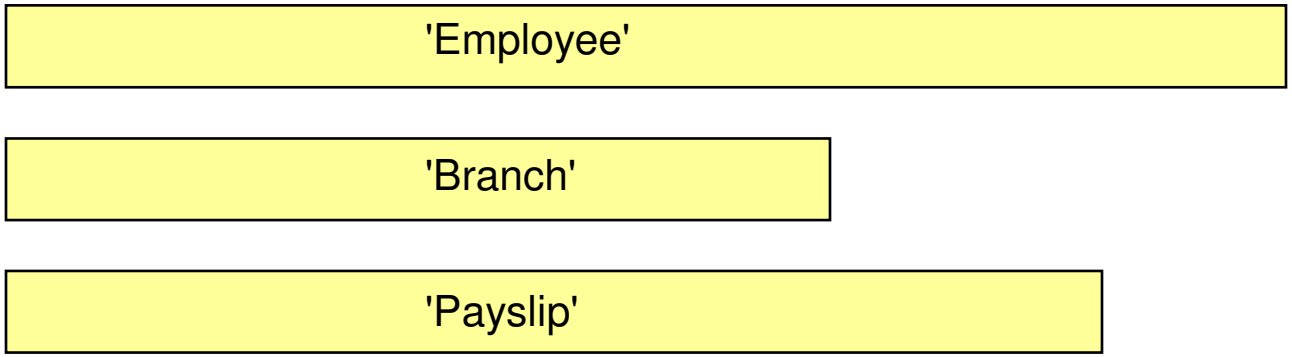
Channels and Containers (Statement of Direction)

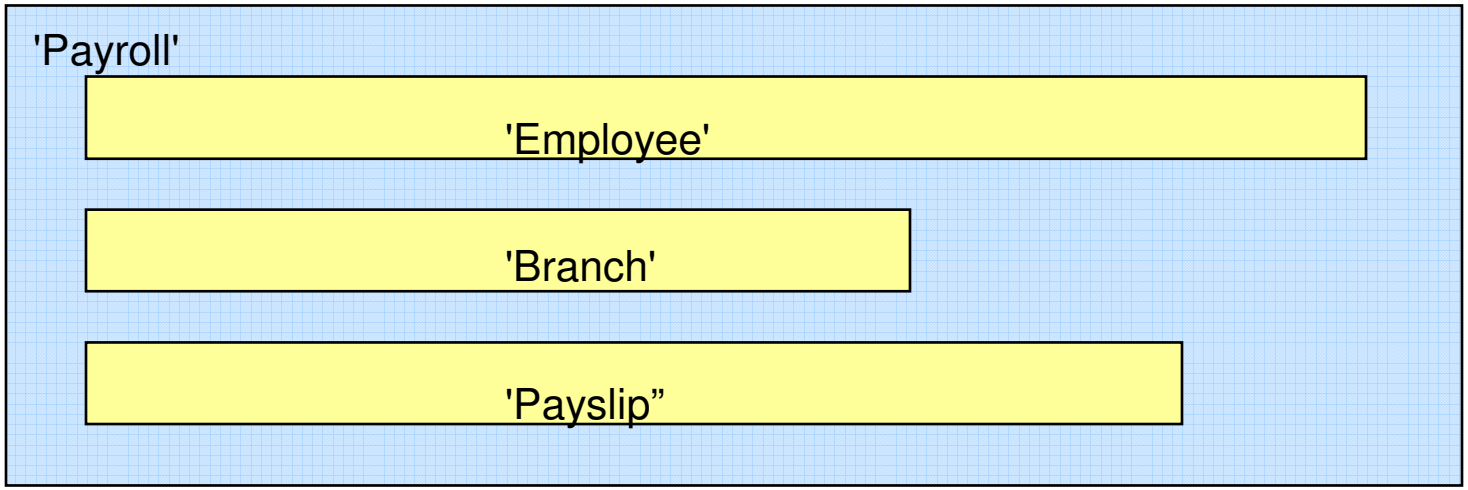
- Requirements
  - Lift 32 KB data limit (RFE 28905 / 29432 / 29422, MR1115112844, MR1114113031)
  - CICS Temporary Storage Upgrade (32K Limitation - RFE 28892, WAVV200826, MR1024084142)
  - Support for channels and containers (RFE 28883, WAVV200614, MR0526066847)
- **Channels and containers** lift the 32K Commarea limitation
  - Applicable for both LINK and XCTL, Distributed Program Link (DPL)
  - Affects the exchange of data between CICS tasks
  - Local and transcation routing
  - START with data
- z/VSE will port channels and containers APIs from CICS TS for z/OS 3.1
- Delivered as part of a new CICS TS for z/VSE release.
- Channels and Containers limitations
  - In 31 bit virtual storage only
  - No support for
    - External CICS Interface (EXCI)
    - External Call Interface (ECI)
    - CICS Web Support (CWS)
    - Business Transaction Services (BTS)
- The following charts are derived from Colin Penfold‘s (CICS for z/OS development) presentation.

The Solution… Containers



- To solve the 32K Commarea problem a new construct will be provided
- Named block of data designed for passing information between programs
  - Like named COMMAREAs
- CONTAINER API
  - Created using (EXEC CICS) PUT CONTAINER, defines the size of the container
  - Read using (EXEC CICS) GET CONTAINER
  - Delete using (EXEC CICS) DELETE CONTAINER, to free storage, if no longer required
- No CICS enforced size limitation
  - Containers are stored within the CICS EDSA (31 bit partition virtual storage)

The Solution… Channels



- A group of Containers
  - No limit on the number of Containers in a Channel
- A Channel is a sort of program interface
  - Passed on LINK, XCTL, pseudoconversational RETURN, and START commands
- Non-persistent
  - Non-recoverable resource similar to commareas

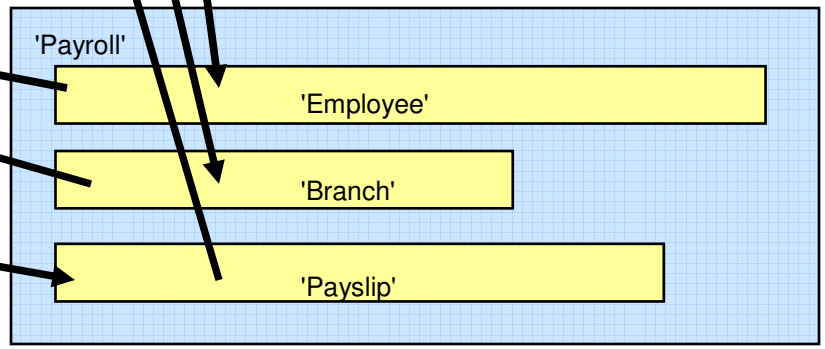
A Simple Example

PROGA

```
PUT CONTAINER('Employee') CHANNEL('Payroll') FROM(emp-data)
PUT CONTAINER('Branch') CHANNEL('Payroll') FROM(branch-data)
LINK PROGRAM('PROGB') CHANNEL('Payroll')
GET CONTAINER('Payslip') CHANNEL('Payroll') INTO(pay-data)
```

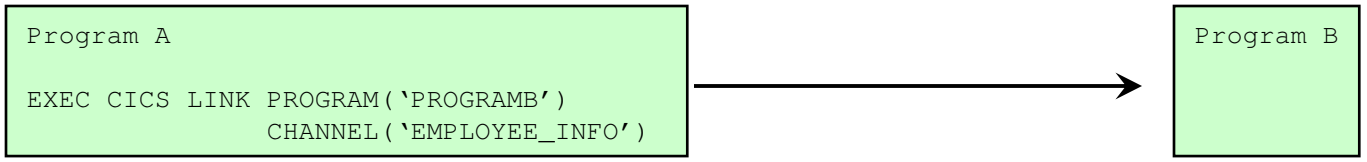
PROGB

```
GET CONTAINER('Employee') INTO(emp-data)
GET CONTAINER('Branch') INTO(branch-data)
...
PUT CONTAINER('Payslip') FROM(pay-data)
```

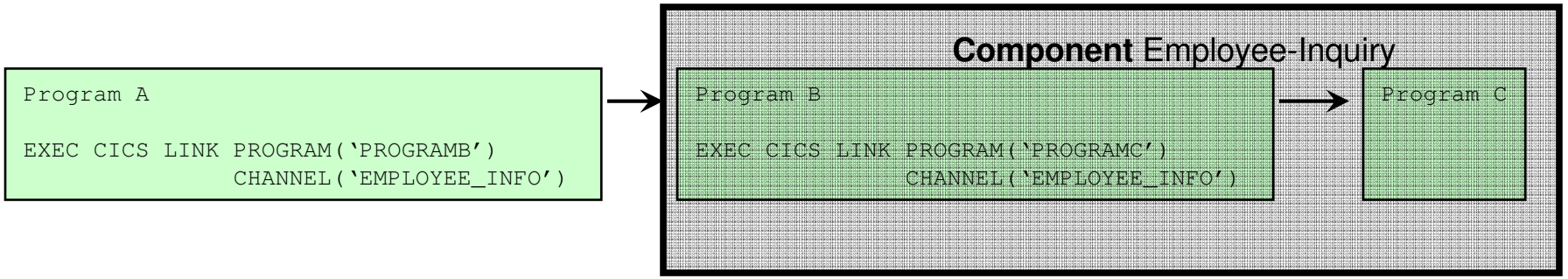


Basic Scenarios for using Channels

- One Channel / One Program

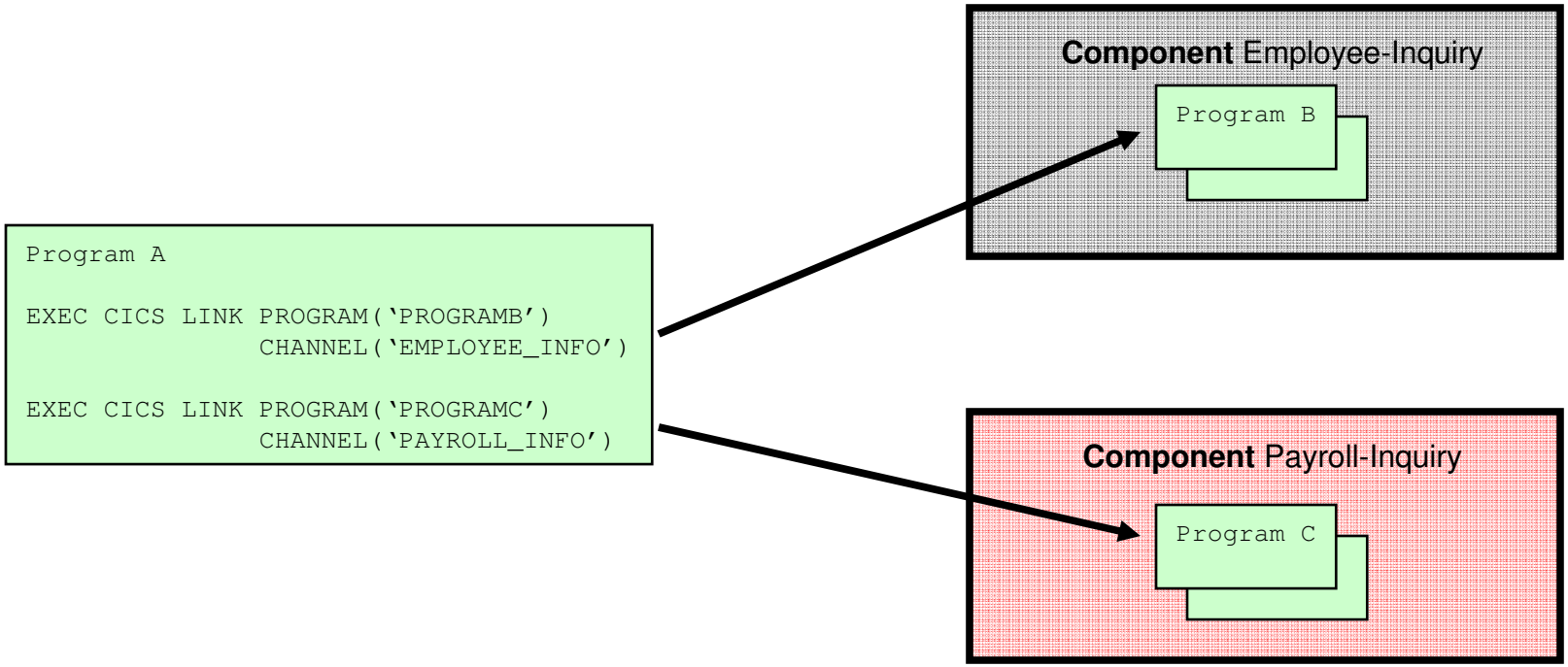


- One Channel / Multiple Programs
  - The Channel is the interface to a Component



Scenario - Multiple Components

- One Program / Multiple Channels

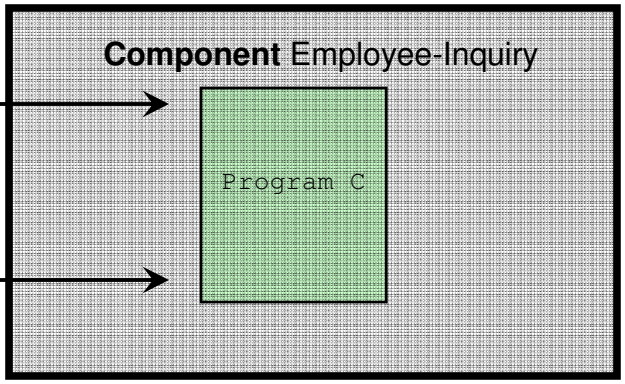


Scenario - Loose Binding

- Multiple Programs / Multiple Channels

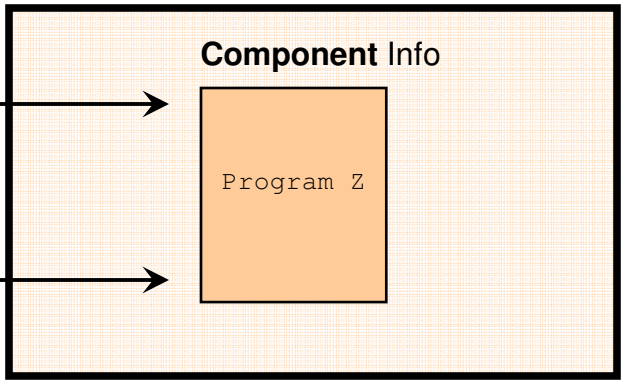
```
Program A

EXEC CICS LINK PROGRAM('PROGRAMC')
               CHANNEL('EMPLOYEE_VER1')
```

```
Program B

EXEC CICS LINK PROGRAM('PROGRAMC')
               CHANNEL('EMPLOYEE_VER2')
```




```
Program X

EXEC CICS LINK PROGRAM('PROGRAMZ')
               CHANNEL('PUBLIC_INFO')
```

```
Program Y

EXEC CICS LINK PROGRAM('PROGRAMZ')
               CHANNEL('PRIVATE_INFO')
```



Note that CICS does not define any security mechanism to enforce who can use a Channel name.

Migration of Programs Using LINK

- Existing application with COMMAREA

```
Program A

EXEC CICS LINK PROGRAM('PROGRAMB')
               COMMAREA(structure)
```

```
Program B

EXEC CICS ADDRESS
          COMMAREA(structure-ptr)
```

- Changed application using Channels

```
Program A

EXEC CICS PUT CONTAINER(structure name)
              CHANNEL(channel-name)
              FROM(structure)

EXEC CICS LINK PROGRAM('PROGRAMB')
               CHANNEL(channel-name)

EXEC CICS GET CONTAINER(structure-name)
              INTO(structure)
```

```
Program B

EXEC CICS GET CONTAINER(structure-name)
SET(structure-ptr)

EXEC CICS PUT CONTAINER(structure-name)
FROM(structure)
```

Note that, if Program B changes the Container data, it must PUT the Container back before returning, or the changes will not be visible to the caller.

Migration of Programs Using START

- Existing application with START data

```
Transaction 1

EXEC CICS START TRANSID('TRN2')
                FROM(structure)
```

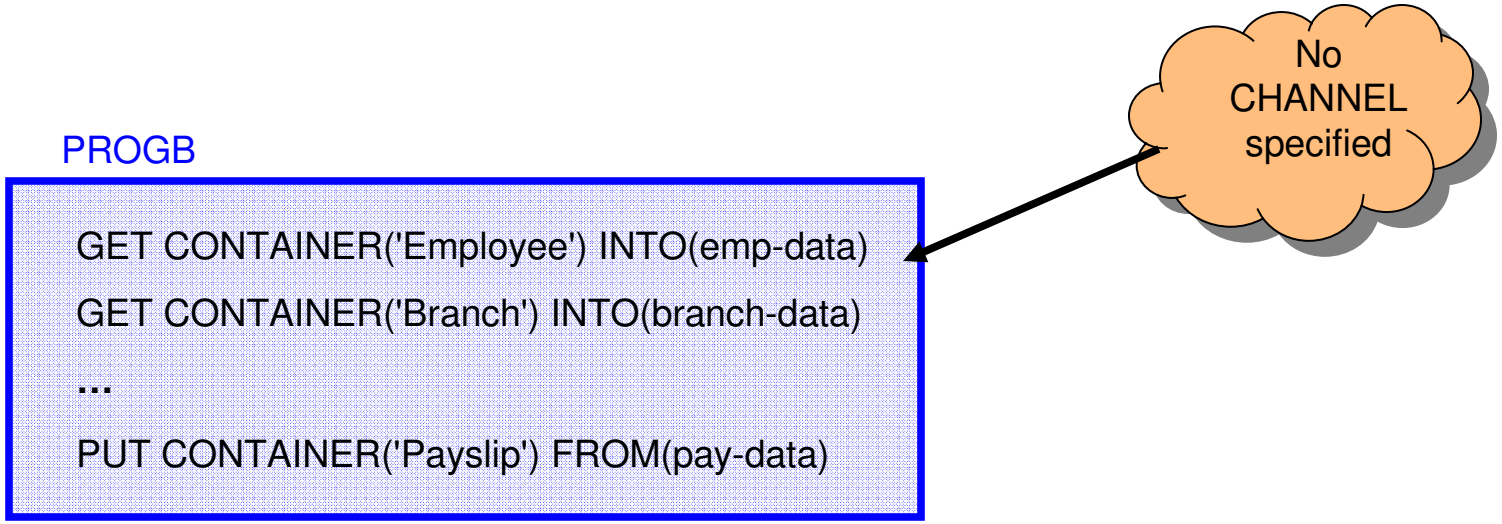
```
Transaction 2

EXEC CICS RETRIEVE
          INTO(structure)
```

- Changed application using Channels

```
Transaction 1

EXEC CICS PUT CONTAINER(structure-name)
              CHANNEL(channel-name)
              FROM(structure)

EXEC CICS START TRANSID('TRN2')
                CHANNEL(channel-name)
```

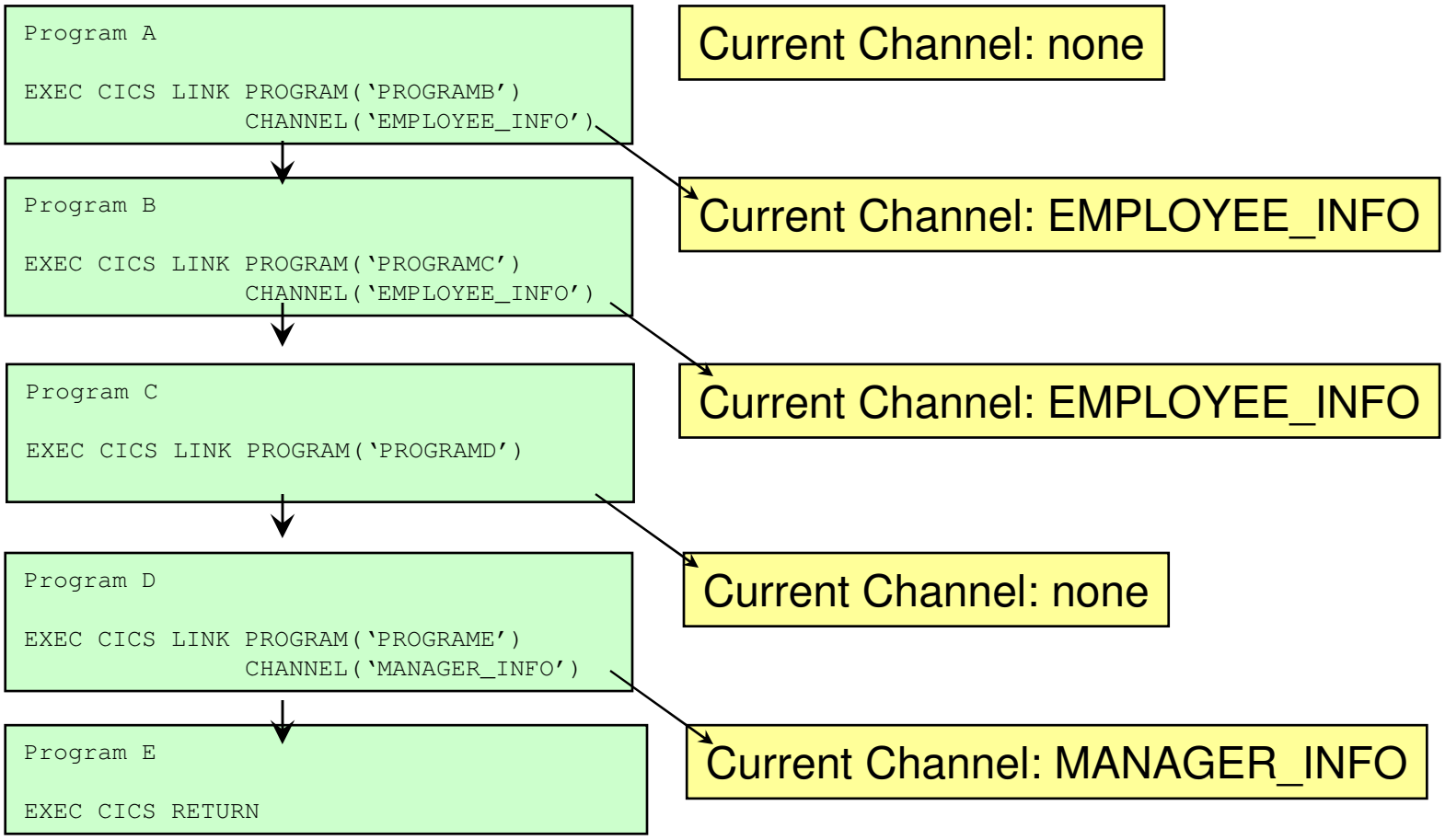
```
Transaction 2

EXEC CICS GET CONTAINER(structure-name)
              INTO(structure)
```

The Current Channel



- The Channel, if any, passed to the program by:
  - LINK, XCTL, START or pseudo-conversation RETURN
- Does not change during the life of the program
  - The program may create other Channels
- Default for EXEC CICS commands that do not explicitly specify a Channel name

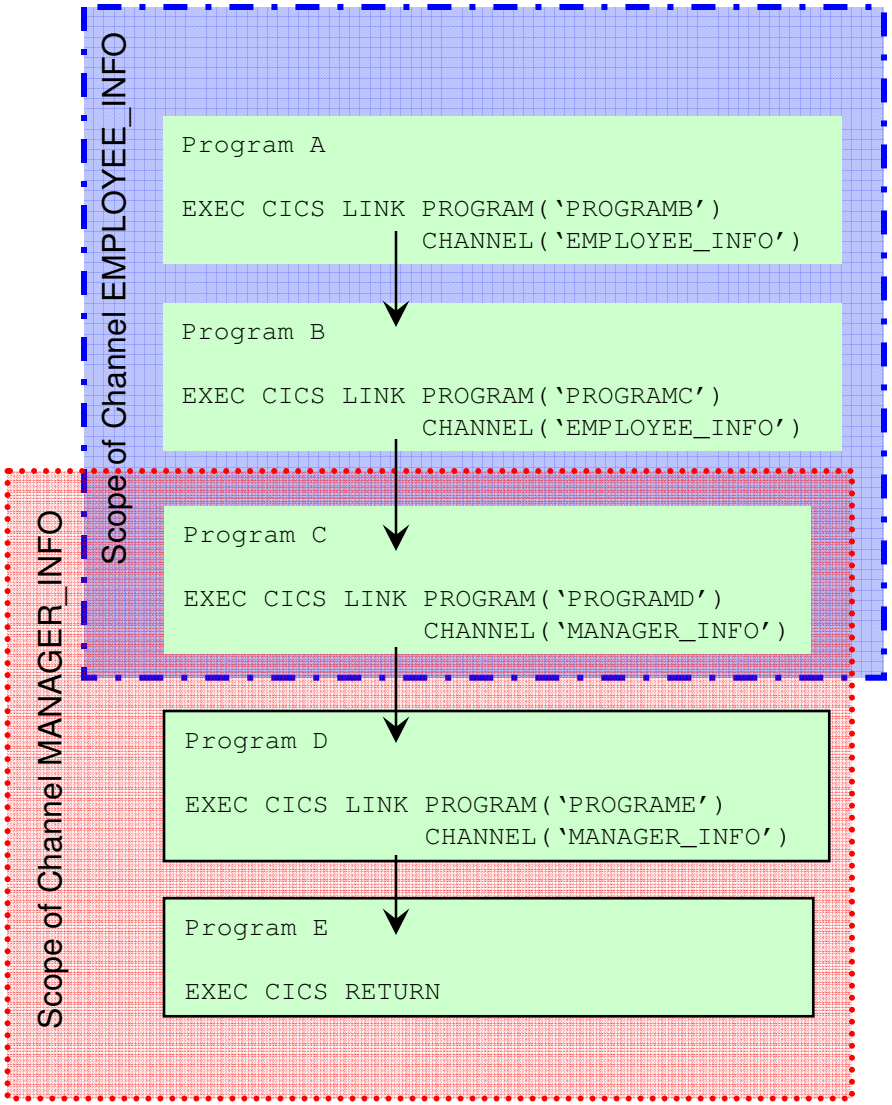
Current Channel



The Scope of a Channel

- The programs which can access a Channel
- A program can access
  - Its Current Channel
  - Any other Channels it creates
- When no program in the link stack can access a Channel it is deleted
  - Can occur on RETURN or XCTL
- Channels cannot be accessed by other tasks

Channel Scope



Current Channel: none
Created Channel: EMPLOYEE_INFO

Current Channel: EMPLOYEE_INFO

Current Channel: EMPLOYEE_INFO
Created Channel: MANAGER_INFO

Current Channel: MANAGER_INFO

Current Channel: MANAGER_INFO

API Commands

- Container commands
  - PUT CONTAINER
  - GET CONTAINER
  - MOVE CONTAINER
  - DELETE CONTAINER
- Program transfer commands
  - LINK PROGRAM
  - XCTL PROGRAM
- Inquiry commands
  - ASSIGN CHANNEL
  - STARTBROWSE CONTAINER
  - GETNEXT CONTAINER
  - ENDBROWSE CONTAINER
- Transaction transfer commands
  - RETURN TRANSID
  - START TRANSID

Container Commands

- EXEC CICS PUT CONTAINER
  - Copies data into a container within the channel
  - Overwrites existing data if container already exists
  - Creates channel if it does not already exist
- EXEC CICS GET CONTAINER
  - Retrieve the container data into user storage
- EXEC CICS MOVE CONTAINER
  - Moves a container from one channel to another
  - Can be used to rename a container
- EXEC CICS DELETE CONTAINER
  - Deletes a container from the channel
  - Does not delete the channel, even if no containers left

EXEC CICS PUT CONTAINER

- CONTAINER (data-value)
  - The name (1-16 characters) of the container
- CHANNEL (data-value)
  - The name (1-16 characters) of the channel that owns the container.
  - Defaults to current channel.
- FROM (data-area)
  - Specifies the data area from where the data to be saved is read.
- FLENGTH (data-value)
  - Specifies the length of the data area to be saved.
  - Can be 0 to very large.
  - This parameter is added by the translator if not specified (except C).
- FROMCCSID (data-value)
  - Specifies the current Coded Character Set of the character data to be put into the container. Defaults to the CCSID of the local CICS region.
- DATATYPE (CVDA)
  - BIT - The data in the container cannot be converted.
  - CHAR - Character data which can be converted.

EXEC CICS GET CONTAINER

- CONTAINER (data-value)
  - The name (1-16 characters) of the container
- CHANNEL (data-value)
  - The name (1-16 characters) of the channel that owns the container.
  - Defaults to current channel.
- INTO (data-area)
  - Specifies the data area into which the retrieved data is to be placed.
- SET (ptr-ref)
  - Specifies a data area in which the address of the retrieved data is returned
- FLENGTH (data-area)
  - Specifies the length of the data area to be read.
  - Returns the length actually read.
- NODATA
  - Specifies the only the length of the data in the container is to be returned. The length returned will take into account the INTOCCSID.
- INTOCCSID (data-value)
  - Specifies the current Coded Character Set into which the character data is to be converted. Defaults to the CCSID of the local CICS region.

Scenario – Simple Data Conversion

- PUT and GET can be used for data conversion
- Uses CICS or conversion tables
- Simple example of converting data to UTF-8

```
EXEC CICS PUT CONTAINER('temp') CHANNEL('dummy')
          FROM(ebcdic-data)
          CHAR

EXEC CICS GET CONTAINER('temp') CHANNEL('dummy')
          SET(utf8-ptr) FLENGTH(utf8-len)
          INTOCCSID(1208)
```

EXEC CICS MOVE CONTAINER

- CONTAINER (data-value)
  - The name (1-16 characters) of the container
- CHANNEL (data-value)
  - The name (1-16 characters) of the channel that owns the container.
  - Defaults to current channel.
- TOCHANNEL (data-value)
  - Specifies the name of the channel that will own the target container
- AS (data-value)
  - Specifies the name of the target container

EXEC CICS DELETE CONTAINER

- CONTAINER (data-value)
  - The name (1-16 characters) of the container
- CHANNEL (data-value)
  - The name (1-16 characters) of the channel that owns the container.
  - Defaults to current channel.
- Note: There is no command to delete a channel.
  These are deleted automatically when the go out of scope.

Program Transfer Commands

- LINK PROGRAM [CHANNEL|COMMAREA]
  - Links to another program, on a local or remote system, passing the channel and container data
  - Creates the channel if it doesn't already exist
- XCTL PROGRAM [CHANNEL|COMMAREA]
  - Transfers control to the program on a local system passing the channel and container data
  - Creates the channel if it doesn't already exist

Transaction Transfer Commands

- RETURN TRANSID [CHANNEL|COMMAREA]
  - Returns control to CICS, passing the channel and container data to the next transaction id
  - Creates the channel if it doesn't already exist

- START TRANSID [CHANNEL|FROM]
  - Starts a task, on a local or remote system
  - Copies the named channel and container data and passing it to the started task
  - Creates the channel if it doesn't already exist

Inquiry commands

- ASSIGN CHANNEL(data-area)
  - Returns the name of the current channel
  - Spaces returned if no current channel

- Container browse commands
  - STARTBROWSE CONTAINER [CHANNEL(data-area)]
  - GETNEXT CONTAINER (data-area)
    - Container names returned in no particular order
  - ENDBROWSE CONTAINER

Interface Changes

- Global User Exits (GLUEs)
  - Can create and pass channels and containers to programs they call
- Task Related User Exits (TRUEs)
  - Can create and pass channels and containers to programs they call
- User Replaceable Modules (URM)
  - Can create and pass channels and containers to programs they call
  - URMs may not access contents of application channels
- Monitoring
  - New monitoring group DFHCHNL
  - Changed monitoring group DFHPROG
  - Changed monitoring group DFHTASK
- Statistics
  - New fields in ISC/IRC system entry
  - New fields in Connections and Modenames

Summary

- **Channels and Containers are not yet available for z/VSE. See Statement of Direction (SOD) on page 5**

- Channels and Containers will allow more than 32k of data to be passed between CICS applications
  - Program to program
    - LINK and XCTL
  - Transaction to transaction
    - START and RETURN

- Allow better structuring of application data
  - Different containers to prevent overloaded copybooks

- Minimal application changes required for exploitation

- Allow for data conversion between different code pages

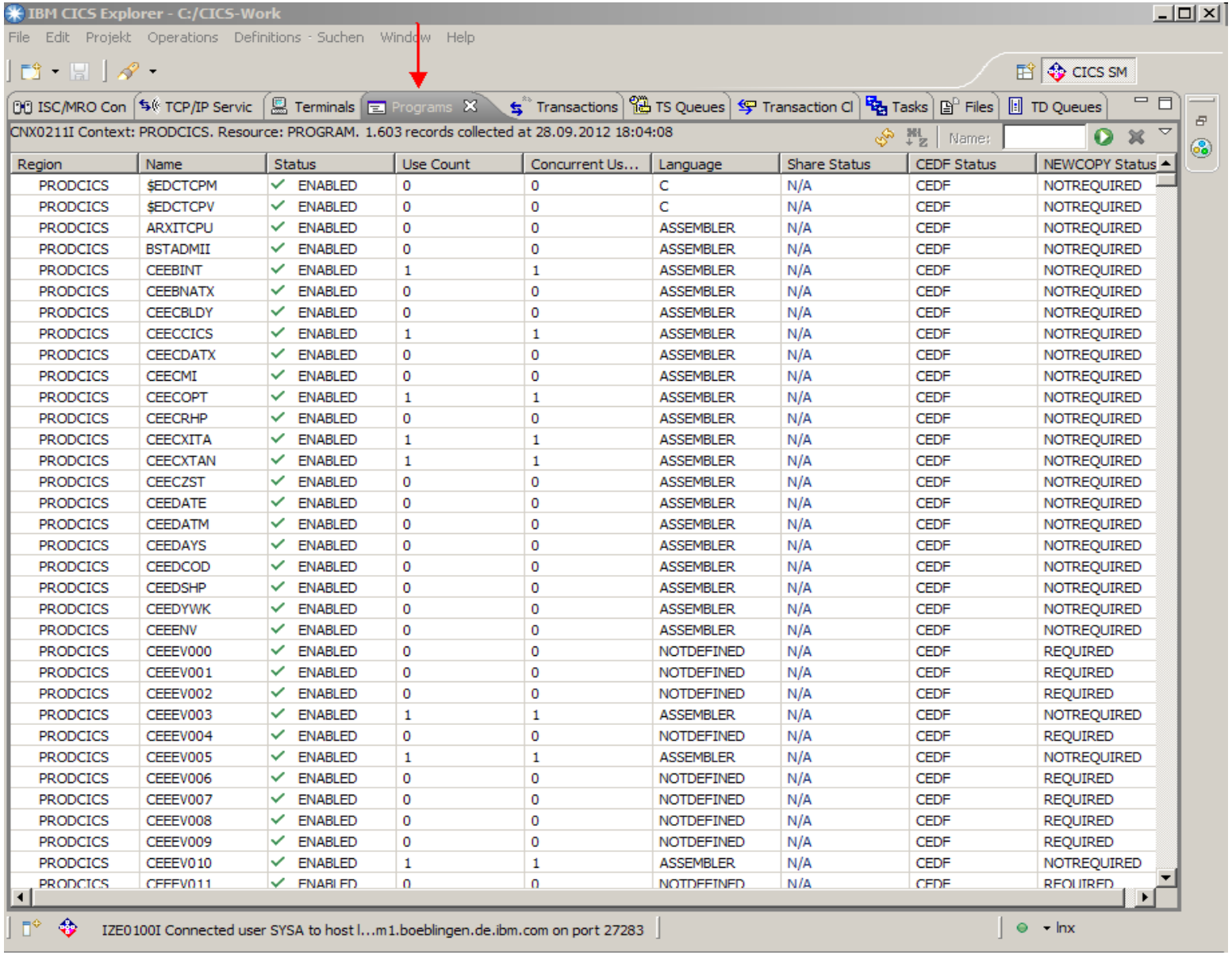
We are looking for beta customers. Please contact Ingolf Salm (salm@de.ibm.com).

CICS Explorer for z/VSE

- Announced 04/03/2012, GA 06/15/2012

- CICS Explorer – The new face to CICS
  - System management framework for CICS TS
  - Consists of CICS Explorer client and a CICS TS server extension
  - CICS Explorer client
    - Read-only capabilities
    - Eclipse-based user interface on workstation
    - Connects to CICS TS via TCP/IP - Communication via HTTP requests
  - CICS Explorer server extension
    - Delivered as PTF for CICS TS for VSE/ESA 1.1.1
    - z/VSE V5 only

- **Statement of direction (SOD)**
  - IBM CICS Explorer to provide updates to CICS resources
    - Update resources as you would do with transactions on your CICS terminal
    - Enable / disable CICS resources
    - Change selected CICS definitions
    - ….



Region	Name	Status	Use Count	Concurrent Us...	Language	Share Status	CEDF Status	NEWCOPY Status
PRODCICS	$EDCTCPM	ENABLED	0	0	C	N/A	CEDF	NOTREQUIRED
PRODCICS	$EDCTCPV	ENABLED	0	0	C	N/A	CEDF	NOTREQUIRED
PRODCICS	ARXITCPU	ENABLED	0	0	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	BSTADMII	ENABLED	0	0	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEEBINT	ENABLED	1	1	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEEBNATX	ENABLED	0	0	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEECBLDY	ENABLED	0	0	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEECCICS	ENABLED	1	1	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEECDATX	ENABLED	0	0	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEECMI	ENABLED	0	0	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEECOPT	ENABLED	1	1	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEECRHP	ENABLED	0	0	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEECXITA	ENABLED	1	1	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEECXTAN	ENABLED	1	1	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEECZST	ENABLED	0	0	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEEDATE	ENABLED	0	0	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEEDATM	ENABLED	0	0	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEEDAYS	ENABLED	0	0	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEEDCOD	ENABLED	0	0	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEEDSHP	ENABLED	0	0	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEEDYWK	ENABLED	0	0	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEEENV	ENABLED	0	0	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEEEV000	ENABLED	0	0	NOTDEFINED	N/A	CEDF	REQUIRED
PRODCICS	CEEEV001	ENABLED	0	0	NOTDEFINED	N/A	CEDF	REQUIRED
PRODCICS	CEEEV002	ENABLED	0	0	NOTDEFINED	N/A	CEDF	REQUIRED
PRODCICS	CEEEV003	ENABLED	1	1	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEEEV004	ENABLED	0	0	NOTDEFINED	N/A	CEDF	REQUIRED
PRODCICS	CEEEV005	ENABLED	1	1	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEEEV006	ENABLED	0	0	NOTDEFINED	N/A	CEDF	REQUIRED
PRODCICS	CEEEV007	ENABLED	0	0	NOTDEFINED	N/A	CEDF	REQUIRED
PRODCICS	CEEEV008	ENABLED	0	0	NOTDEFINED	N/A	CEDF	REQUIRED
PRODCICS	CEEEV009	ENABLED	0	0	NOTDEFINED	N/A	CEDF	REQUIRED
PRODCICS	CEEEV010	ENABLED	1	1	ASSEMBLER	N/A	CEDF	NOTREQUIRED
PRODCICS	CEEEV011	ENABLED	0	0	NOTDEFINED	N/A	CEDF	REQUIRED

More Information

… on VSE home page: http://ibm.com/vse

- Ingolf's z/VSE blog: https://www.ibm.com/developerworks/mydeveloperworks/blogs/vse

- Hints and Tips for z/VSE 5.1:
  - http://www.ibm.com/systems/z/os/zvse/documentation/#hints

- 64 bit virtual information:
  - IBM z/VSE Extended Addressability, Version 5 Release 1
  - IBM z/VSE System Macro Reference, Version 5 Release 1

- CICS Explorer: http://www.ibm.com/software/htp/cics/explorer/

- IBM Redbooks:
  - Introduction to the New Mainframe: z/VSE Basics
    http://www.redbooks.ibm.com/abstracts/sg247436.html?Open
  - Security on IBM z/VSE – updated
    http://www.redbooks.ibm.com/Redbooks.nsf/RedbookAbstracts/sg247691.html?Open
  - z/VSE Using DB2 on Linux for System z
    http://www.redbooks.ibm.com/abstracts/sg247690.html?Open
  - New: Enhanced Networking on IBM z/VSE
    http://www.redbooks.ibm.com/Redbooks.nsf/RedpieceAbstracts/sg248091.html?Open

- Please contact z/VSE: https://www-03.ibm.com/systems/z/os/zvse/contact/contact.html
  or me – Ingolf Salm – salm@de.ibm.com – for any questions

Questions ?