CICS TS External Call Programming Interface (EXCI)

John Lawson

Illustro
SYSTEMS INTERNATIONAL, LLC
See The Light.™

1950 Stemmons Frwy.
Suite 5001
Dallas, Texas 75207
Phone: 214-800-8900
Email: info@illustro.com or http://www.illustro.com

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Topics

- Overview
- Implementation
- Programming interfaces
- Summary

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EXCI Overview

- Allows VSE batch program to link to program running in CICS TS
  - Similar to Distributed Program Link
  - Same VSE system
- User-written Client and Server programs
  - Samples supplied
- Two interfaces in Client
  - CALL interface
  - EXEC CICS LINK

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EXCI Overview ...

Any partition

```
// JOB CLIENT
      .
// EXEC client_prog,
OS390
      .
      .

/&
```

IRC

CICS TS Partition

APPLID - DBDCCICS

EXCI CONNECTION

DFHMIRS

server_prog

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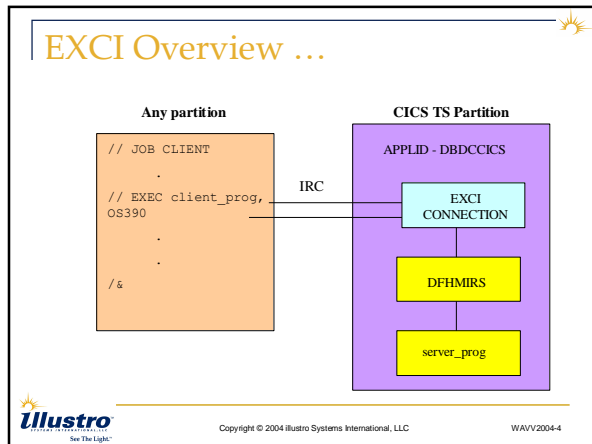
EXCI Overview ...

- What can you do with EXCI?
  - Anything you want, of course!
    - Send data to CICS
    - Get data from CICS
    - Issue commands to CICS
      - SHUTDOWN won't work!
    - Start/Stop transactions in CICS
    - ?????

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EXCI Implementation

- Requirements
  - Interregion Communications (IRC) *must* be defined *and* active in the target CICS
  - CONNECTION and SESSION definition
    - ACCESSMETHOD *must* be IRC
    - PROTOCOL *must* be EXCI
    - CONNTYPE
      - *Must* be GENERIC for EXEC CICS LINK interface
      - Can be GENERIC or SPECIFIC for CALL interface
  - VTAM APPLID used to identify target CICS

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EXCI Implementation ...

- Requirements...
  - The Server program *must* be defined to CICS
    - RDO or Program Autoinstall
  - A Transaction Code *must* be defined
    - Transaction definition *must* point to DFHMIRS
    - RDO or use default transaction code of CSMI

EXCI Programming Interface

- Client and Server programs
  - Batch program is client
  - Server program is CICS application in CICS
  - Communicate via COMMAREA
  - Languages
    - COBOL for VSE
    - PL/I for VSE
    - C for VSE
    - Assembler

EXCI Programming Interface ...

- Copy books map return code fields for both interfaces
  - In PRD1.BASE for all programming languages
    - Assembler   DFHXCPLD.A
    - COBOL   DFHXCPLO.C
    - PL/I   DFHXCPLL.P
    - C   DFHXCPLH.H

EXCI Programming Interface ...

- Client CALL interface
  - 6 different calls
  - Fairly complex
  - Best for multi-request applications
    - Issue multiple DPL_requests
    - Get/Put multiple file records, etc.
  - Linkedit requirements
    - INCLUDE DFHXCSTB (CICS interface stub)
    - AMODE(31)

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EXCI Programming Interface ...

- Client CALL interface...
  - Initialize_user call
    - Initialize the user environment
    - Once per task
  - Allocate_pipe call
    - Allocate a single session for this connection
    - Can allocate up to 25 pipes
    - Generally once per task

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EXCI Programming Interface ...

- Client CALL interface...
  - Open_pipe call
    - Connect an allocated pipe to a receive session in CICS TS
    - Whenever ready to actually issue DPL calls
  - DPL_request call
    - Issue actual requests to CICS TS
    - However many times the application requires
    - Appears to server program as normal EXEC CICS LINK from remote CICS TS partition

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EXCI Programming Interface ...

- Client CALL interface...
  - Close_pipe call
    - Disconnect open pipe from CICS TS
    - Pipe remains allocated
      - Issue Open_pipe to reuse
    - Whenever finished issuing DPL calls
  - Deallocate_pipe call
    - Deallocate pipe from CICS TS
    - Generally once per task

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EXCI Programming Interface ...

Initialize_user

```
CALL 'DFHXCIS' USING VERSION-1
      EXCI-RETURN-CODE USER-TOKEN
      INIT-USER APPLICATION.
IF EXCI-RESPONSE = 0 THEN
      ....
```

Allocate_pipe

```
CALL 'DFHXCIS' USING VERSION-1
      EXCI-RETURN-CODE USER-TOKEN
      ALLOCATE-PIPE PIPE-TOKEN
      TARGET-SYSTEM GENERIC-PIPE.
```

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EXCI Programming Interface ...

Open_pipe

```
CALL 'DFHXCIS' USING VERSION-1
      EXCI-RETURN-CODE USER-TOKEN
      OPEN-PIPE PIPE-TOKEN.
```

DPL_request

```
CALL 'DFHXCIS' USING VERSION-1
      EXCI-RETURN-CODE USER-TOKEN
      DPL-REQUEST PIPE-TOKEN
      TARGET-PROGRAM COMMAREA
      COMM-LENGTH DATA-LENGTH NULL-PTR
      NULL-PTR NULL-PTR EXCI-DPL-RETAREA
      SYNCONRETURN.
```

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EXCI Programming Interface ...

Close_pipe

```
CALL 'DFHXCIS' USING VERSION-1
     EXCI-RETURN-CODE USER-TOKEN
     CLOSE-PIPE PIPE-TOKEN.
```

Deallocate_pipe

```
CALL 'DFHXCIS' USING VERSION-1
     EXCI-RETURN-CODE USER-TOKEN
     DEALLOCATE-PIPE PIPE-TOKEN.
```

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EXCI Programming Interface ...

- Client EXEC CICS LINK interface
  - One simple command
    - All 6 calls in 1 command
  - Best for one-time requests
    - Single command to CICS
    - Single record transfer
  - Requires translator option XOPTS(EXCI)
  - Linkedit requirements
    - INCLUDE DFHXCSTB (CICS interface stub)
    - AMODE(31)

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EXCI Programming Interface ...

Sample Client EXEC CICS LINK

```
EXEC CICS LINK PROGRAM(TARGET-PROGRAM)
     TRANSID(TARGET-TRANSID)
     APPLID(TARGET-SYSTEM)
     COMMAREA(COMMAREA)
     LENGTH(COMM-LENGTH)
     DATALENGTH(DATA-LENGTH)
     RETCODE(EXCI-EXEC-RETURN-CODE)
     SYNCONRETURN
END-EXEC.
```

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Summary

- Easy access from batch to CICS TS
  - Within same VSE image
- Uses CICS Interregion Communication support
- Two interfaces for batch client
  - EXEC CICS LINK
  - CALL
- More capabilities for batch to CICS cooperative processing

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