



B56

IMS V8 Operations Management with the Common Service Layer

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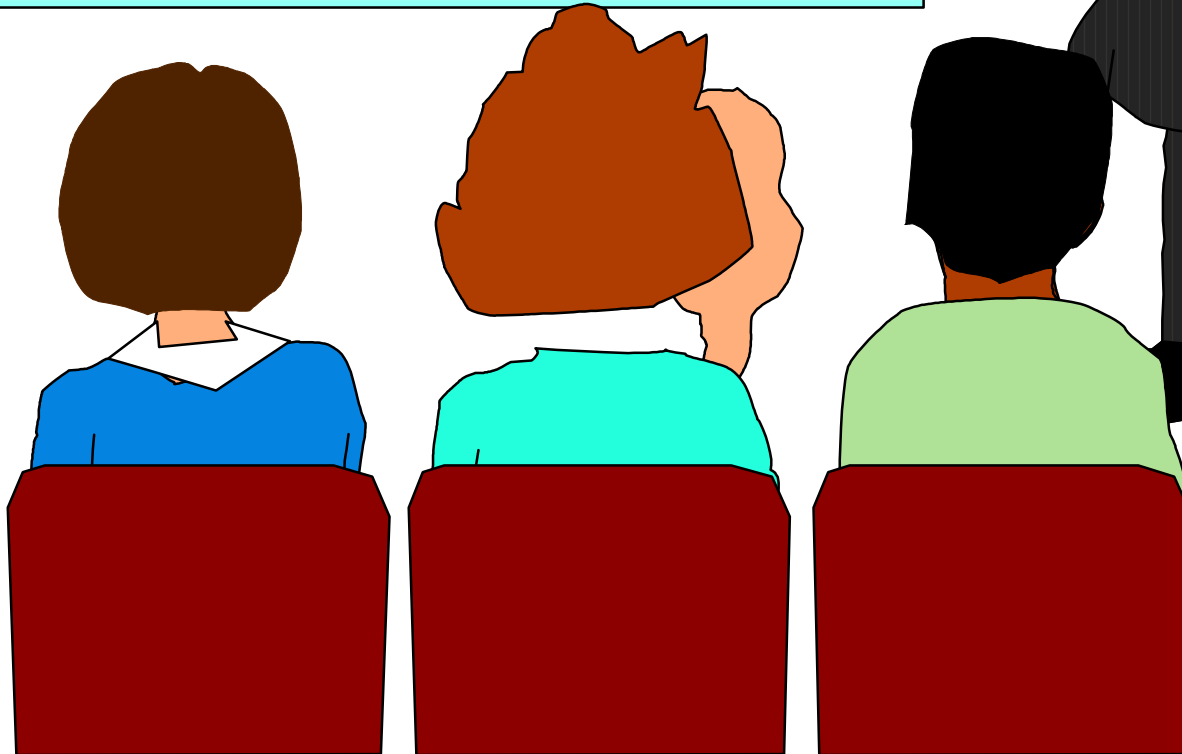
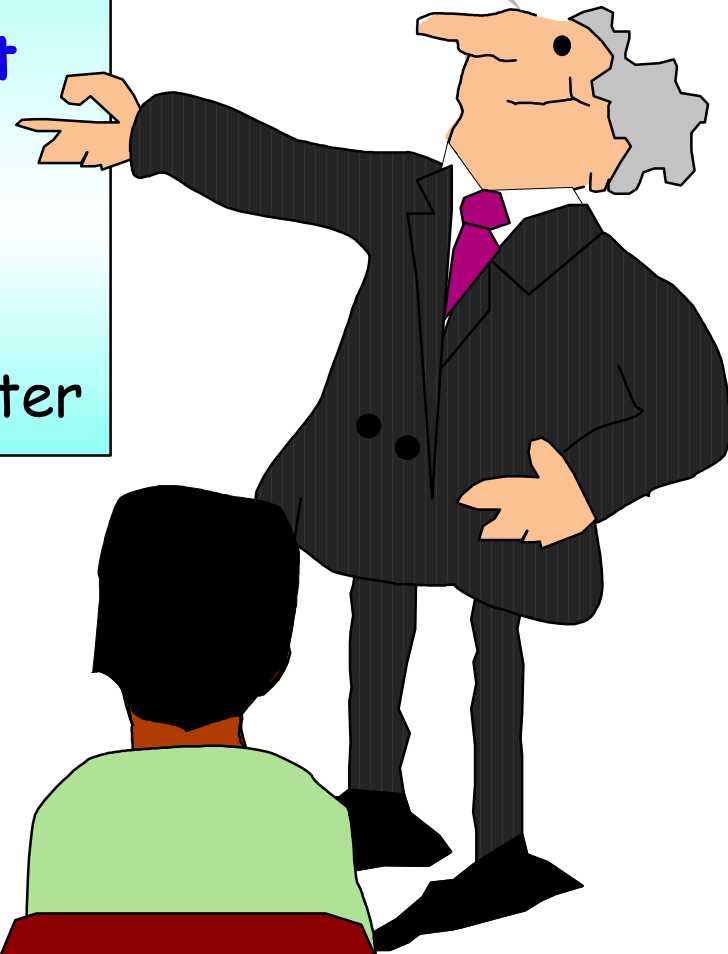
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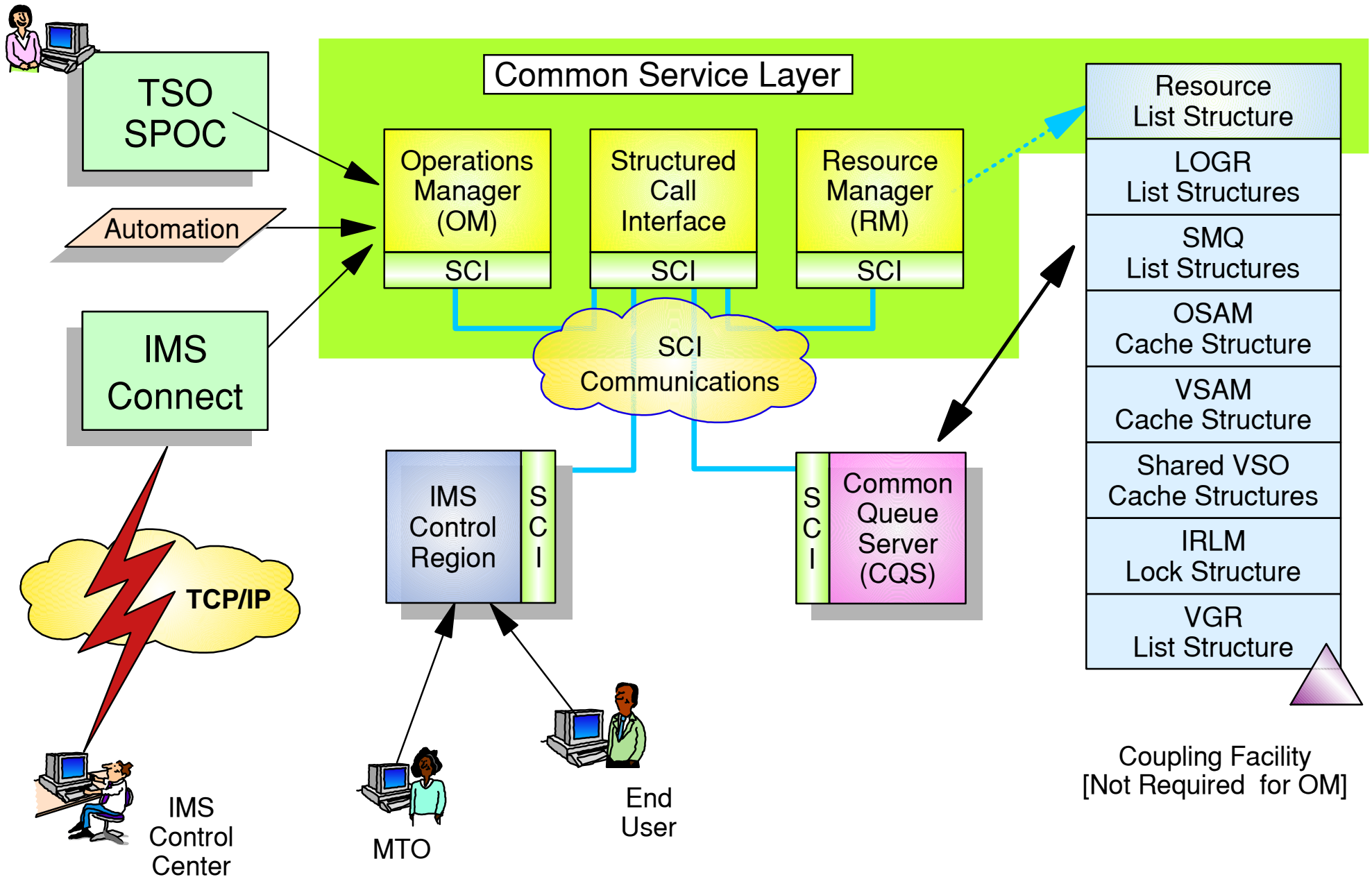
Common Service Layer

- ⚡ CSL Architecture
- ⚡ **Operations Management**
 - ◆ OM
 - ◆ SPOC
 - ◆ REXX
 - ◆ DB2/IMS Control Center

This session's topics are ...



Operations Manager (OM) Is Part of the CSL



CSL Components (OM)

Operations Manager

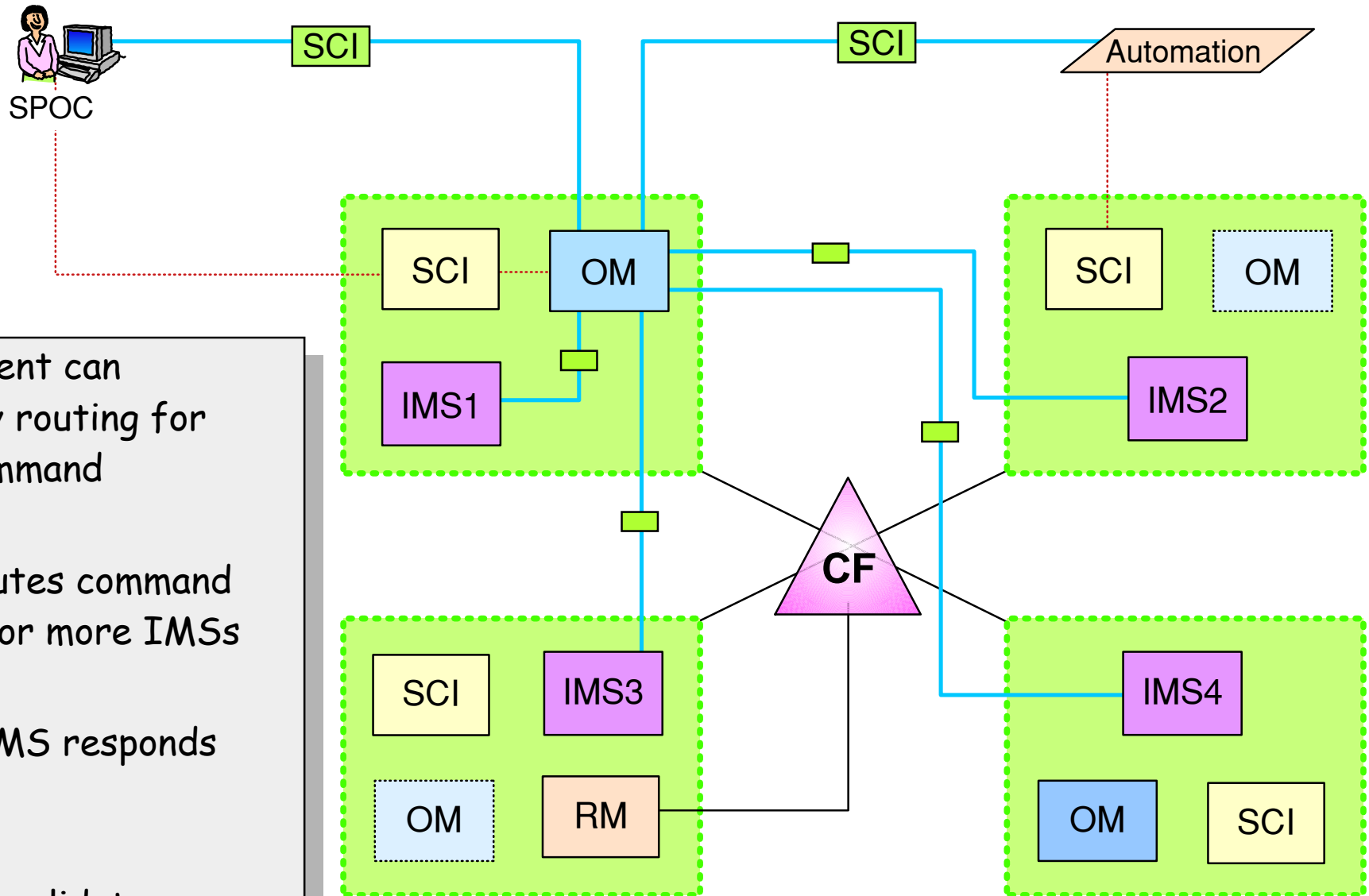
- ❑ One of the CSL address spaces
 - One OM address space required in each CSL IMSplex
 - Recommend at least two for availability
- ❑ OM registers with SCI as a member of the IMSplex
- ❑ OM communicates with other members using SCI communication services
- ❑ Provides an API supporting common point of command entry into IMSplex (can be single IMS - does not need Parallel Sysplex)
 - Focal point for operations management and automation
 - Command responses from multiple IMSs are consolidated

CSL Components (OM)

Operations Manager services

- Provides services to members and clients of an IMSplex
 - Provide an API for IMS commands submitted from outside IMS
 - Classic IMS commands (/cmd ...)
 - New enhanced IMSplex commands (QRY, INIT, TERM, DEL, UPD)
 - Command registration to support any command processing client (IMS, ...)
 - Clients tell OM which commands it can process
 - Command security
 - Perform authorization within OM - before sending to IMS
 - RACF or user-written command security exit
 - Route commands to IMSplex members registered for the command
 - Consolidate command responses from individual IMSplex members into a single response to present to the command originator

OM in a Multi-IMS IMSPlex



OM Client can specify routing for any command

OM routes command to one or more IMSs

Each IMS responds to OM

OM consolidates responses for SPOC

Note: OM does not require a Parallel Sysplex if there is just one MVS image.

Operations Manager - API

OM clients

- ❑ **Command processing (CP) clients**
 - Clients which process commands entered from other address spaces
 - IMS is a command processing client

- ❑ **Automated operations (AO) clients**
 - Clients through which commands are entered to OM and then to the command processing client

 - Command may originate with operator, be received from a network client, or be generated by an automation process

- ❑ **OM services are invoked by**
 - **CSL_{OM}xxx macros**
 - Macro coding and use is described in [CSL Guide and Reference](#)
 - **REXX functions** provided to reduce need to write in assembler

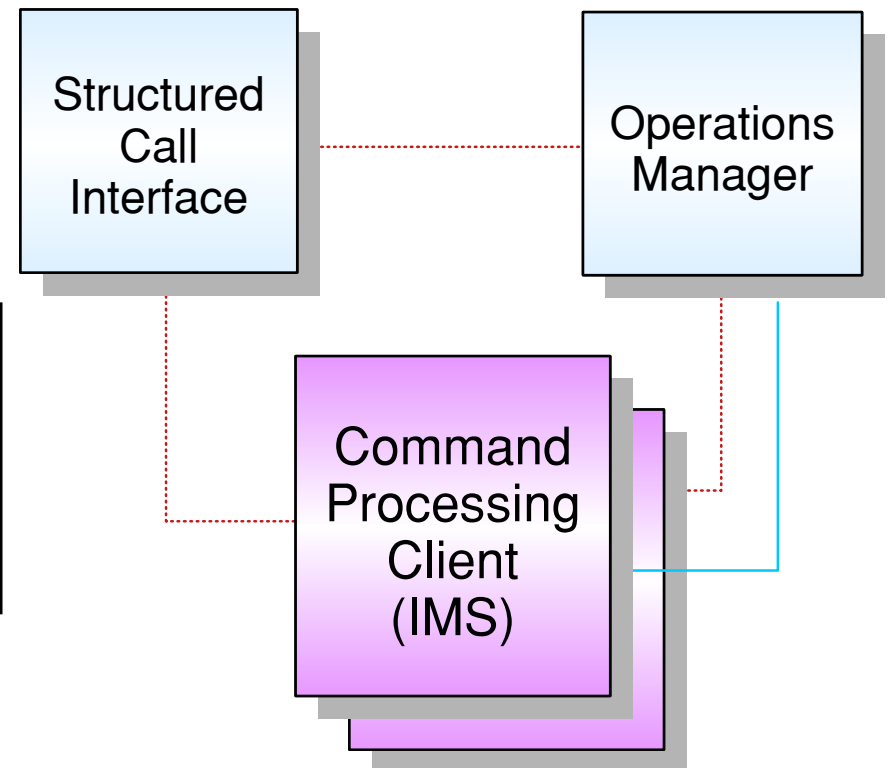
CP Client

Command Processing client

- ❑ OM client that processes commands
 - IMS and RM are command processing clients of OM
- ❑ CP client
 - Registers with SCI
 - Must be on same OS image
 - Registers with OM
 - Identifies commands that it can process
 - Any OM in IMSplex

- Processes commands received from OM
- Sends command response back to OM

- Deregisters from OM
- Deregisters from SCI



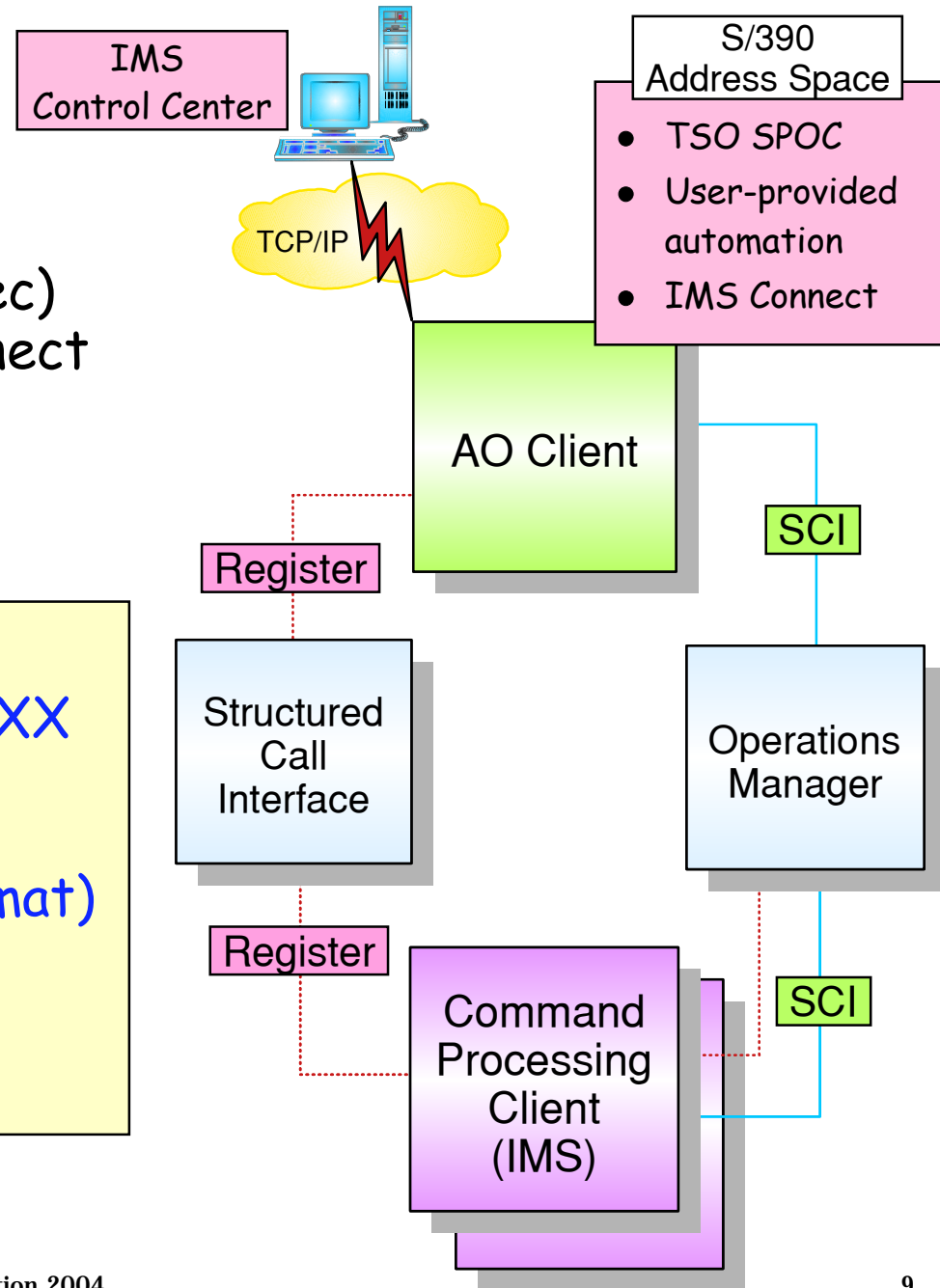
AO Client

S/390 address space

- Command originates from
 - Operator (e.g., TSO SPOC)
 - Automation (e.g., NetView Exec)
 - Network client with IMS Connect
- AO client
 - Registers with SCI

- Accepts or creates command
- Uses **CSL**OMxxx macro or REXX interface to
 - Send command to OM
 - Receive reply (in XML format)
- Processes reply
 - Format for display
 - Forward to network client

- Deregisters from SCI



New "Type 2" Commands Entered through OM Interface Only

INIT (INITiate process)

- ❑ **INIT OLC** - starts a global online change (G-OLC) process

TERM (TERMinate process)

- ❑ **TERM OLC** - stops a global online change that is in progress

UPD (UPDate resource)

- ❑ **UPD LE** - updates dynamic LE runtime options
- ❑ **UPD TRAN** - updates selected TRAN attributes

DEL (DElete resource)

- ❑ **DEL LE** - deletes dynamic runtime LE options

New "Type 2" Commands ...

QRY (QueRY resource)

- ❑ **QRY IMSPLEX** - returns information about one or more members of the IMSplex
- ❑ **QRY MEMBER** - returns status and attributes of the IMS members in the IMSplex
- ❑ **QRY LE** - returns runtime LE options
- ❑ **QRY OLC** - returns OLC library and resource information
- ❑ **QRY TRAN** - returns TRAN info similar to /DIS TRAN
- ❑ **QRY STRUCTURE** - returns structure information of the RM resource structure

Examples - Type 2 Commands

```
INIT OLC PHASE (PREPARE) TYPE (ALL)
```

```
INIT OLC PHASE (COMMIT)
```

```
TERM OLC
```

```
UPD LE SET LEOPT (YES)
```

```
UPD LE TRAN (TRXN1) SET (LERUNOPTS (TERMTHDACT) )
```

```
QRY LE
```

```
DEL LE TRAN (TRXN1)
```

```
QRY TRAN QCNT (GT, 10) SHOW (ALL)
```

```
UPD TRAN NAME (TRXN1) SET (PARLIM (3) , NPRI (10) )
```

```
UPD TRAN NAME (TRXN2) START (SCHD)
```

```
QRY IMSPLEX NAME (CSLPLEX1) SHOW (ALL)
```

```
QRY MEMBER TYPE (IMS) SHOW (STATUS)
```

Sample Command and Response

```
UPD TRAN NAME (PART) SCOPE (ALL) STOP (Q, SCHD)  
START (TRACE) SET (CLASS (4))
```

TRANCODE	MBRNAME	CC
PART	IMS1	0
PART	IMS2	0
PART	IMS3	0

```
QRY TRAN NAME (PART) SHOW (CLASS, STATUS)
```

TRANCODE	MBRNAME	CC	CLS	STATUS
PART	IMS1	0	4	STOQ, STOSCHD, TRA
PART	IMS2	...		

Type 2 Commands Enhanced in V9



Database support

- ❑ **QRY** (database or DEDB area status)
- ❑ **UPD** (database, DEDB area, or datagroup status)

Online Reorganization of HALDB databases

- ❑ **INIT** (online reorg process)
- ❑ **UPD** (online reorg parameters)
- ❑ **TERM** (online reorg process)
- ❑ **QRY** (status of online reorg process)

Examples - Type 2 Commands - V9

QRY DB STATUS (STOSCHD,STOUPDS) SHOW (ALL)

UPD DB NAME (ACCTDB) START (ACCESS)

UPD DB NAME (TESTDB) STOP (SCHD)

UPD DATAGRP (FINDBS) STOP (ACCESS)

INIT OLREORG NAME (CUSTP1,CUSTP2)

SET (RATE (100)) OPTION (DEL)

QRY OLREORG NAME (*) SHOW (ALL)

UPD OLREORG NAME (CUSTP2) SET (RATE (50))

TERM OLREORG NAME (CUSTP1) OPTION (FORCE)

Classic IMS Commands

Most classic IMS commands (/cmd ...) can be entered through OM API

- ❑ IMS commands specific to an input LTERM or NODE are not supported from OM
 - For example
 - `/SIGN ON|OFF, /EXIT, /REL, /RCL, /EXC, ...`

If Resource Structure exists, some commands have global impact, for example

`/STOP NODE ABC`

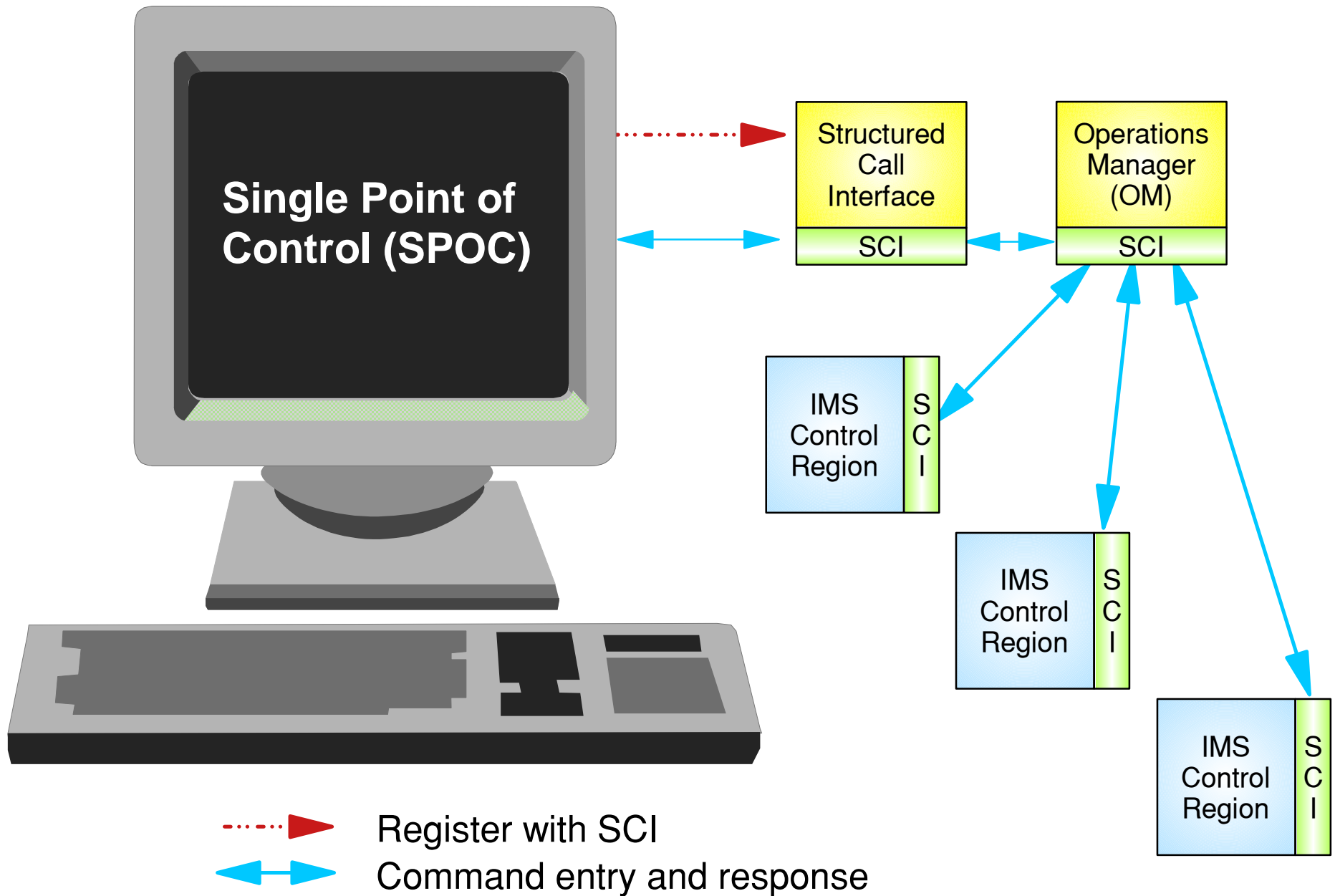
- ❑ Node ABC is flagged as stopped in resource structure
- ❑ Node ABC is stopped on all IMSs
 - Cannot log on to any IMS in IMSplex

TSO Single Point Of Control (SPOC)

TSO SPOC is an *AO client* of OM

- ❑ Runs in TSO session
 - ISPF Application (DFSSPOC)
- ❑ May or may not be on the same LPAR as OM
 - Must be on MVS image with SCI
 - Uses SCI to communicate with OM
- ❑ Provides a **GREEN SCREEN** terminal interface from which IMS commands may be entered by an operator to one or more members of an IMSplex
 - Including DB/DC, DB/CTL, DC/CTL
- ❑ Formats command responses for display
 - OM response is encapsulated in XML
- ❑ OM provides *security checking*
 - TSO userid is used to determine RACF authorization
 - RACF and/or Command Authorization Exit

SPOC Registers with Local SCI



Setting Preferences

IMS Single Point of Control Preferences

Command ==>

Select your options and press the Enter key.

Default IMSplex. . . . PLX0

Default routing. . . . IMS1 IMS2 IMS3 IMS4 _____

Wait interval. . . . 1:00 (MM:SS)

Waiting preference . . 2 1. Wait for command to complete.
2. Do not wait for command response.

Command shortcuts. . . 1 1. Use command shortcuts.
2. Do not use command shortcuts.

Shortcut processing. . 2 1. Merge explicit and default parameters.
2. Explicit parameters override defaults.

Initial view 1 1. SPOC command panel.
2. SPOC status list.

Group Definitions

Help

Single Point of Control Group Definitions

COMMAND ==> _____

Enter a group name and member names to add a new group. Enter 's' to select a default, or 'd' to delete a group.

Default routing . . . : IMS1234

Act	Group	IMSpIex members
_____	_____	_____
S__	IMS1234_	IMS1 IMS2 IMS3 IMS4_____
_____	IMS13_____	IMS1 IMS3_____

***** Bottom of data *****

Command Shortcuts

File Display View Options Help

SPOC Command Shortcuts

Command ===> _____

Use the blank line to add commands or 'd' to delete a command. The additional parameters will be appended to the command when it is issued. Prefix the command with an ampersand to replace the entire command.

Act	Command	Additional Parameters
_____	_____	_____
_____	&QRYPLX _____	QRY_IMSPLEX SHOW (STATUS) _____
_____	QRY_MEMBER _____	TYPE (IMS) SHOW (ALL)
_____	QRY_TRAN _____	NAME (A*) SHOW (ALL) _____
_____	/DIS REGION	ACTIVE

***** Bottom of data *****

SPOC Command Entry Panel

```
File  Display  View  Options  Help
-----
PLX0          IMS Single Point of Control
Command ==> QRY TRAN NAME(A*) SHOW(ALL)
-----
Response for: Plex . _____ Route . IMS13 _____ Wait . _____

Override 'Preferences'
```

The diagram shows three arrows originating from the text 'Override 'Preferences'' and pointing to the input fields for 'Plex', 'Route', and 'Wait' in the command entry panel.

F1=Help F3=Exit F4=Showlog F6=Expand F9=Retrieve F12=Cancel

Command Response

File Display View Options Help

IMS Single Point of Control

Command ==> _____

----- Plex . _____ Route . IMS13 _____ Wait . _____
Response for: QRY TRAN NAME(A*) SHOW(ALL) More: +>

Trancode	MbrName	CC	PSBname	LClS	LQCnt	LLCT	LPLCT
ADDINV	IMS1	0	INVPSB	4	6	2	65535
ADDINV	IMS3	0	INVPSB	4	12	2	65535
ADDPART	IMS1	0	PARTPSB	23	0	65535	65535

etc.

Display formatted by
SPOC from
XML response.

F1=Help F3=Exit F4=Showlog F6=Expand F9=Retrieve F12=Cancel

Command Response w/Shared Queues

File Display View Options Help

IMS Single Point of Control

Command ==> _____

----- Plex . _____ Route . IMS13 _____ Wait . _____
Response for: QRY TRAN NAME(A*) SHOW(ALL) More: +>

Trancode	MbrName	CC	PSBname	QCnt	LCls	LQCnt	LLCT	LPLCT
ADDINV	IMS1	0		0				
ADDINV	IMS1	0	INVPSB		4	0	2	65535
ADDINV	IMS3	0		0				
ADDINV	IMS3	0	INVPSB		4	0	2	65535
ADDPART	IMS1	0		0				
ADDPART	IMS1	0	PARTPSB		23	0	65535	65535

etc.

When running with shared queues,
one IMS reports global queue count.

F1=Help F3=Exit F4=Showlog F6=Expand F9=Retrieve F12=Cancel

Classic Command and Response

```
File  Display  View  Options  Help
-----
                    IMS Single Point of Control
Command ==> _____
-----
Plex . _____ Route . IMS13 _____ Wait . _____
Log for . . . . : /DIS STATUS DATABASE
IMSpdex . . . . : PLX0
Routing . . . . : IMS13
Start time. . . . : 2001.199 16:43:53.31
Stop time . . . . : 2001.199 16:43:54.47
Return code . . . : 00000000

Reason code . . . : 00000000
Command master. . : IMS1

MbrName      Messages
IMS1         **DATABASE**
IMS1         STATUS UNRESTRICTED
IMS3         **DATABASE**
IMS3         BANKATMS  NOTINIT, NOTOPEN, STOPPED

F1=Help F3=Exit F4=Showlog F6=Expand F9=Retrieve F12=Cancel
```

Command message log
can be shown at top or
bottom of display.

Command Entry Using Shortcut

File Display View Options Help

PLX0 IMS Single Point of Control

Command ==> QRY TRAN

----- Plex . _____ Route . IMS13 _____ Wait . _____

Response for:

QRY TRAN command without
parameters uses defaults from
SHORTCUTS.

QRY TRAN NAME(A*) SHOW(ALL)

F1=Help F3=Exit F4=Showlog F6=Expand F9=Retrieve F12=Cancel

Command Entry Using Shortcut ...

File Display View Options Help

PLX0 IMS Single Point of Control

Command ==> QRY TRAN NAME(B*) SHOW(QCNT)

----- Plex . _____ Route . IMS13 _____ Wait . _____

Response for:

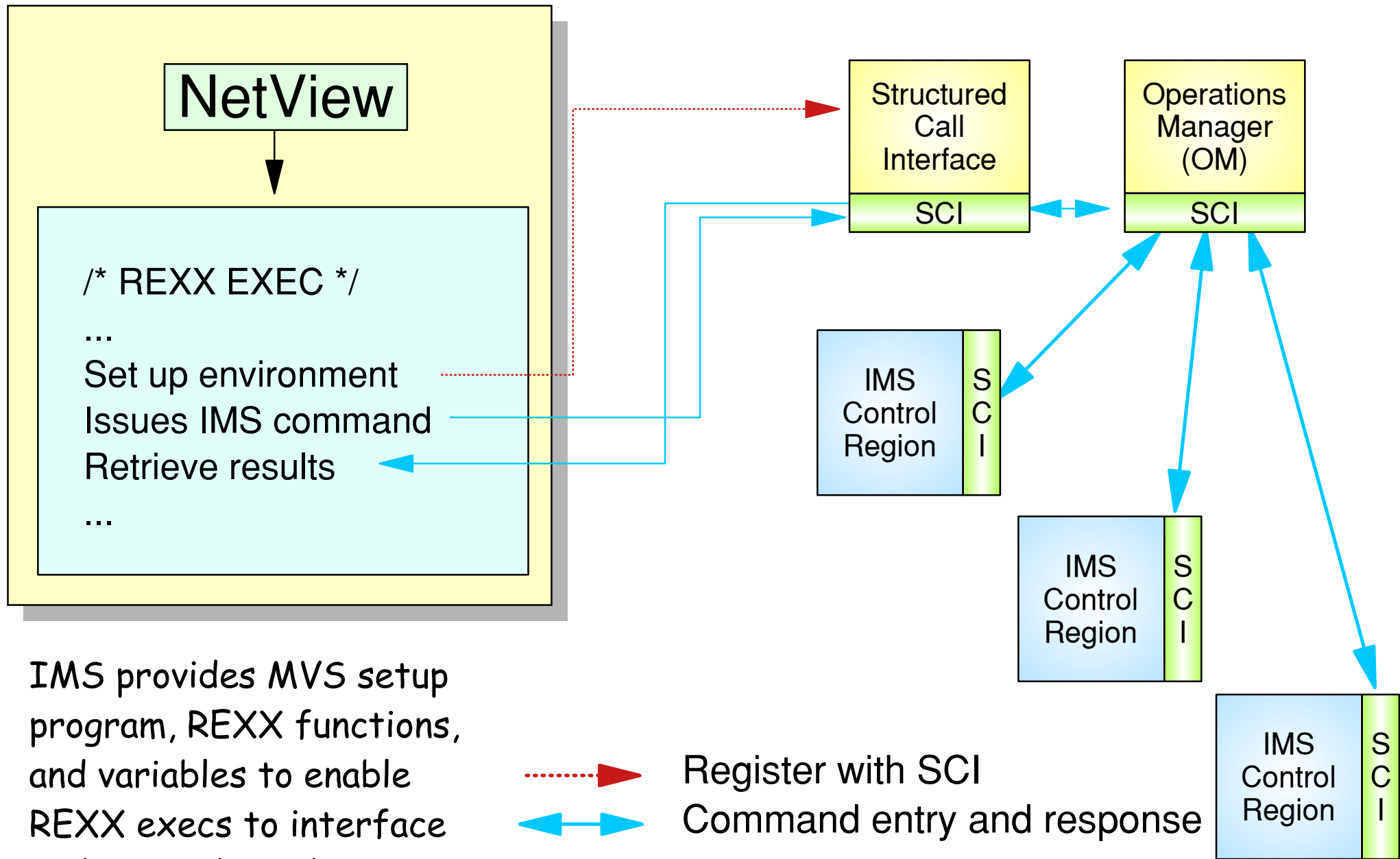
QRY TRAN command **with** parameters
may **override** or be **merged** with
parameters defined in SHORTCUT.

Depends on PREFERENCE.

QRY TRAN NAME(B*) SHOW(QCNT)

F1=Help F3=Exit F4=Showlog F6=Expand F9=Retrieve F12=Cancel

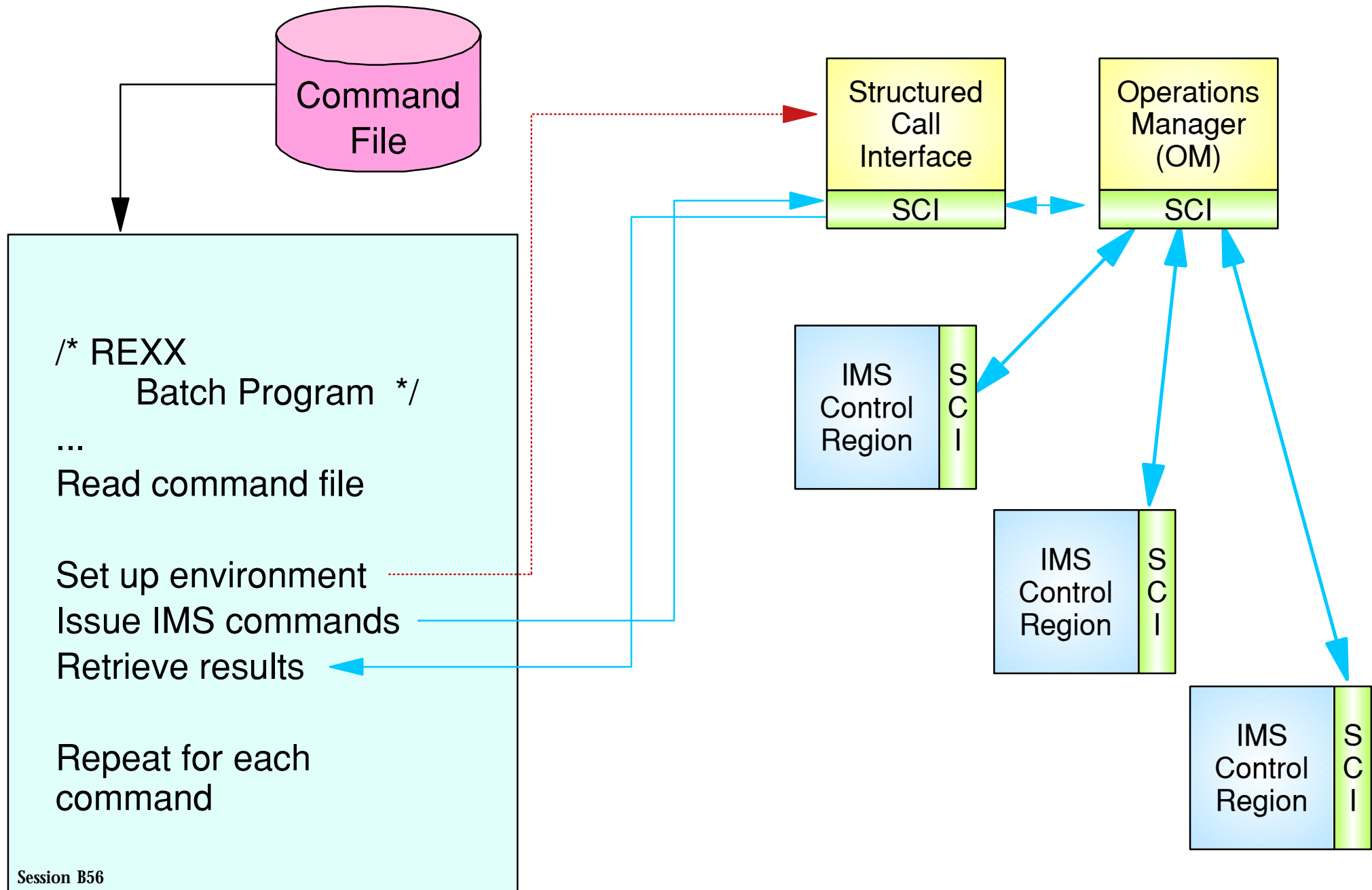
REXX Exec Interface to OM and IMS



IMS provides MVS setup program, REXX functions, and variables to enable REXX execs to interface with IMS through OM.

.....▶ Register with SCI
◀▶ Command entry and response

REXX Exec Interface to OM and IMS



REXX SPOC

Support for a REXX SPOC includes

- ❑ CSLULXSB program
 - Sets up IMSSPOC host command environment for REXX with several subcommands
 - Establishes REXX function for retrieving response
 - Provides REXX variables for return and reason codes
- ❑ IMSSPOC command
 - Establishes IMSSPOC host command environment
 - All commands to OM
 - Subcommands establish IMSplex parameters
- ❑ CSLULGTS() function
 - REXX "function" to retrieve response from OM

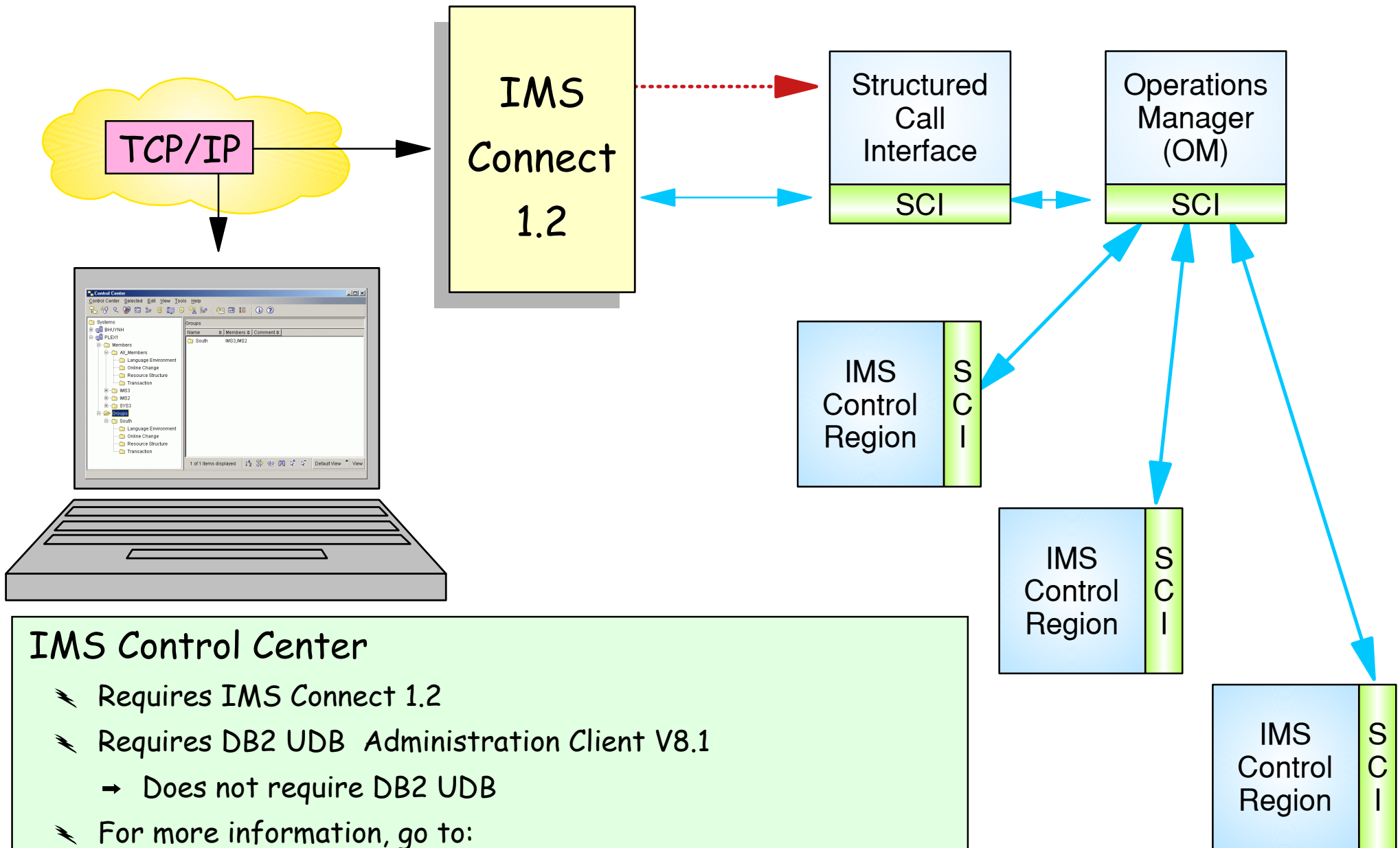
REXX SPOC Example

```
1  /* sample rexx exec */
2  parse upper arg theIMScmd
3  Address LINK 'CSLULXSB'
4  if rc = 0 then do
5      Address IMSSPOC
6      "IMS plx0"
7      "ROUTE ims1"
8      "CART token1"
9      "WAIT 0:30"
10 theIMScmd
11 results = cslulgts('resp.', 'token1', "0:40")
12 say 'imsrc='imsrc 'imsreason='imsreason
13 if resp.0 /= '' then do
14     say resp.0' lines of output'
15     do indx = 1 to resp.0
16         say resp.indx
17     end
18 end
19 "END"
20 End
```

Set up environment,
formulate, and
submit command

Process results
received from IMSs
through OM

IMS Control Center



IMS Control Center

- ⚡ Requires IMS Connect 1.2
- ⚡ Requires DB2 UDB Administration Client V8.1
 - ➔ Does not require DB2 UDB
- ⚡ For more information, go to:

Session B56 <http://www-3.ibm.com/software/data/ims/imscc/index.html>

IMS Control Center - Example

Select TRAN QRY - Identify Trancode(s)

Control Center

Control Center Selected Edit View Tools Help

Query Transaction Wizard

1. Name
2. Select
3. Class
4. Show
5. Summary

Which transactions do you want to see?

Use the Query Transaction wizard to list the transactions that you want displayed. [Task overview.](#)

Type a transaction name in the Transaction name field and click Add, or press Enter, to add it to the Selected list. You can also select previous transactions from the History list and you can use the wildcard character(*) to display all transactions or to filter the transactions. For example, specifying ABC* displays all transactions starting with the characters ABC.

The command keyword associated with your input on this page is NAME.

Transaction names

Add

History

- TRANC
- TRANB
- TRANA
- TRAN*
- TRAN3
- TRAN2
- TRAN1

Selected

- SKS*

Next ► Finish Cancel

IMS Control Center - Example ... Select Transaction STATUS

Query Transaction Wizard

1. Name
2. Select
3. Status
4. Show
5. Summary

Which transaction statuses do you want to see?

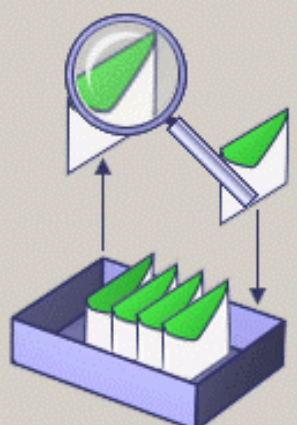
Click the LIST radio button if you want to select the transaction status types you want to query.

The command keyword associated with your input on this page is STATUS.

If you are ready to issue the command, click Finish.

DEFAULT - All
 LIST - Select from list

- BAL - Balancing
- CONV - Conversational
- CPIC - CPI-C
- DYN - Dynamic
- FPE - Fast Path exclusive
- FPP - Fast Path potential
- IOPREV - I/O previous
- LCK - Lock
- QERR - Queue error
- RESP - Response mode
- RMT - Remote transaction
- SUSPEND - Suspend queue
- STOQ - Stopped for queueing
- STOSCHD - Stopped for scheduling



◀ Back Next ▶ Finish Cancel

IMS Control Center - Example ... Ready to Submit

Query Transaction Wizard

1. Name
2. Select
3. Status
4. Show
5. Summary

Do you want to query your transactions now?

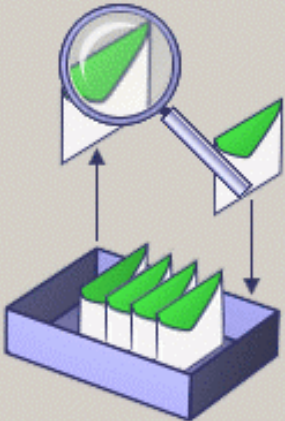
Review the command syntax in the Command field. Click Finish to perform all specified actions and close the wizard, when all required fields are complete. If you opened your wizard by right-clicking the resource member in the Control Center tree, your command results, if error-free, appear in the right-hand pane of the Control Center. If errors result from issuing your command, or if you opened the wizard by clicking on the resource member in the Control Center tree, your results, with the errors, are returned to you in a separate window.

Click Back to go to the previous wizard page. Click Cancel to cancel any changes and close the wizard.

IMS sysplex: PLEX1

Route: All_Members

Command:
QUERY TRAN
NAME(SKS*)
STATUS(STOQ, STOSCHD)



◀ Back Finish Cancel

OM Summary - Operations Manager

Operations Manager is part of Common Service Layer

- ❑ Joins IMSplex
 - Registers with SCI
 - Uses SCI to communicate with other IMSplex members
- ❑ One OM address space required per IMSplex
 - May have multiple OMs for availability and performance
 - Built on Base Primitive Environment (BPE)
- ❑ Provides services to IMSplex Command Processing (CP) and Automated Operations (AO) clients
 - API for submitting commands
 - Command registration for CP clients
 - Routes commands from AO clients to CP clients
 - Consolidates responses from CP clients and passes to AO client
 - Provides command security for classic and IMSplex commands