

# The IMS Common Service Layer - Can You Live Without It?

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**TAKE BACK CONTROL**

# Introduction

- The **IMS Common Service Layer (CSL)** was introduced as an option in IMS 8
- In IMS 8 and IMS 9, many customers thought that there was insufficient benefit to be gained by implementing the CSL
- **IMS 10 adds extra CSL function and greatly increases the attractiveness of CSL**
  - It provides the operator interface “of choice”
  - It is no longer just for the large IMSplex user, but for the single IMS system user as well
  - It is the prerequisite for several new major functions
- **The IMS Developers assume that the CSL is in place when designing new features and enhancements**
  - IMS 11 illustrates the point!
- **This presentation reviews the CSL and discusses the range of features available in IMS 10 that exploit the CSL**

# Agenda

- **What is the CSL?**
- **Enhanced Operations Management**
- **Enhanced Resource Management**
  - Dynamic Resource Definition
  - Enhanced Online Change Functions
- **Other CSL Facilities**
  - DBRC ARLN and PRA
  - Transaction Level Statistics
  - Global Status
  - MSC Bandwidth Statistics
  - Serial Programs in SQ Environment
  - LE Dynamic Runtime Options
  - Queue Control Facility (QCF)
  - Command Control Facility (CCF)
- **IMS 11 and CSL**



# What is the Common Service Layer?



# Common Service Layer

- **Common Service Layer (CSL)**
  - An architecture, not an address space
  - Introduced in IMS 8
- **Three\* new types of address space built on the Base Primitive Environment (BPE)**
  - Structured Call Interface (SCI)
  - Operations Manager (OM)
  - Resource Manager (RM)

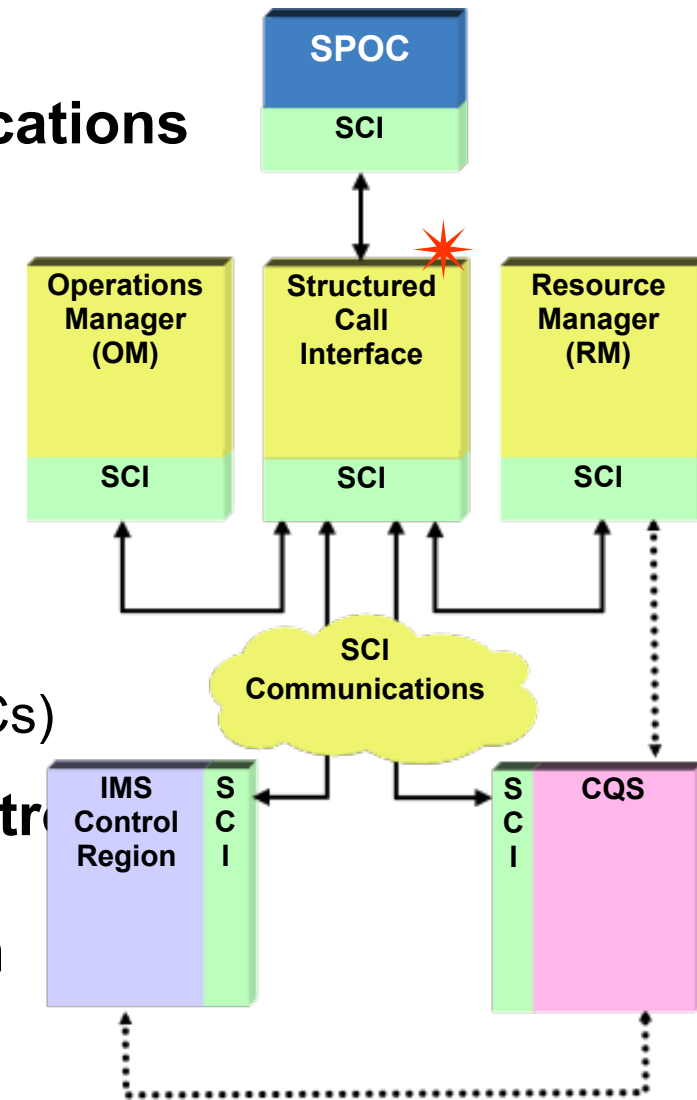
} Not all new functions require all three
- **Purpose**
  - Infrastructure for system management tasks in one or multiple IMS systems within an IMSplex
  - Foundation for new IMS functions as well as Parallel Sysplex enhancements

\* IMS 11 adds ODBM as a new CSL address space



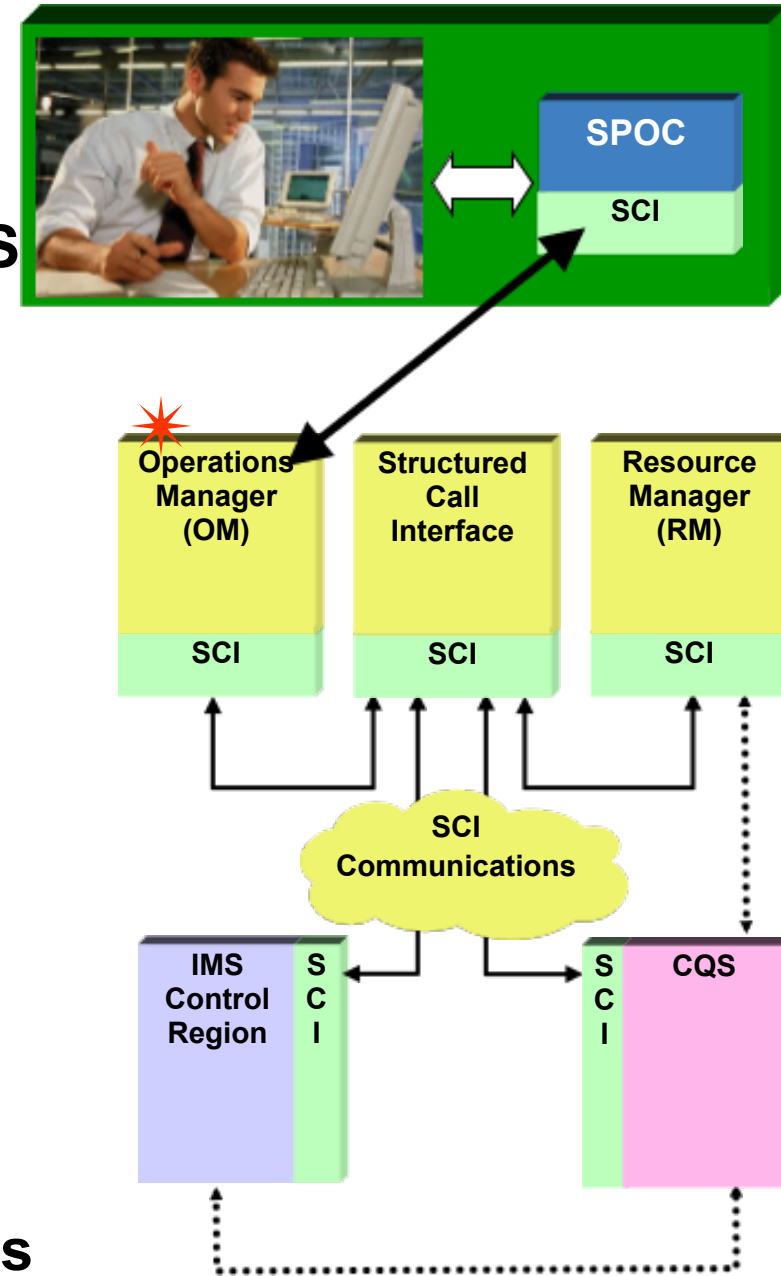
# Structured Call Interface (SCI)

- **SCI provides a high performance communications facility between IMS address spaces**
  - Within a single z/OS
  - Across z/OS systems, using XCF
- **The code sits in the SCI Address Space**
  - Executed in cross-memory mode
  - An SCI AS must exist on every z/OS where there is an IMS address space (including SPOCs)
- **Used, for example, by a Single Point of Control (SPOC) talking to an Operations Manager, and by an Operations Manager talking to an IMS Control Region**
- **Each IMS address space registers with SCI to join a named IMSplex**
  - Security check performed



# Operations Manager (OM)

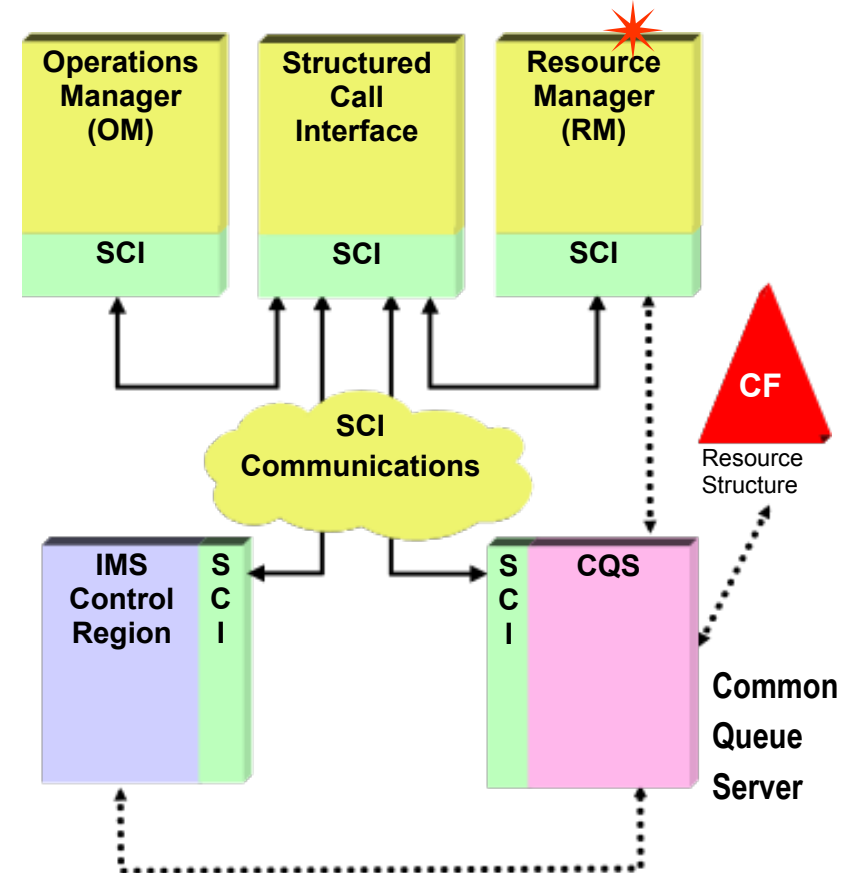
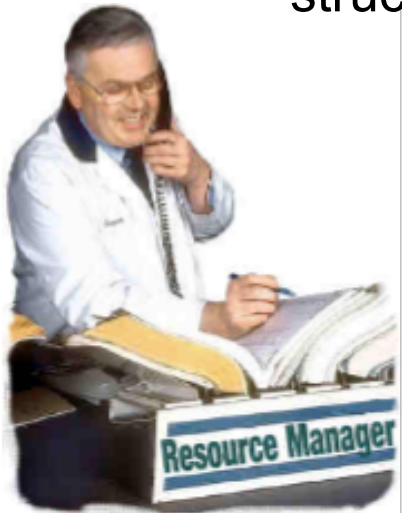
- **Accepts IMS commands from a Single Point of Control (SPOC)**
- **Routes the command to one or more IMS Control Regions**
- **Can perform command security**
  - Typically instead of in each IMS Control Region
  - RACF and/or user exit
- **Gets back all the command responses and consolidates them into a single response to the SPOC**
  - In XML format
  - SPOC is responsible for interface to user
- **An IMSplex can contain one or more OMs**





# Resource Manager (RM)

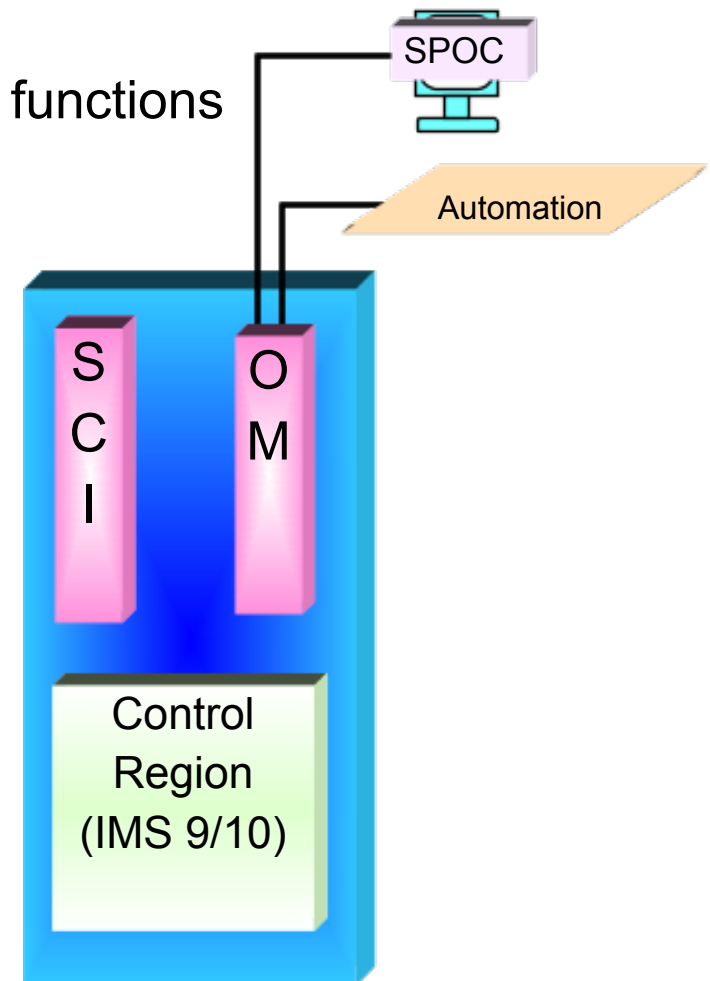
- Responsible for managing global resource status (e.g. VTAM terminal status) and IMSplex-wide processes (e.g. global online change)
- You can have one or multiple RMs in an IMSplex
- When there is more than one RM, global information is maintained in a Resource Structure in the CF
- The RM uses CQS to manage the Resource Structure
  - As for shared queues, the resource structure is a List Structure





# Single-IMS IMSplex Configuration

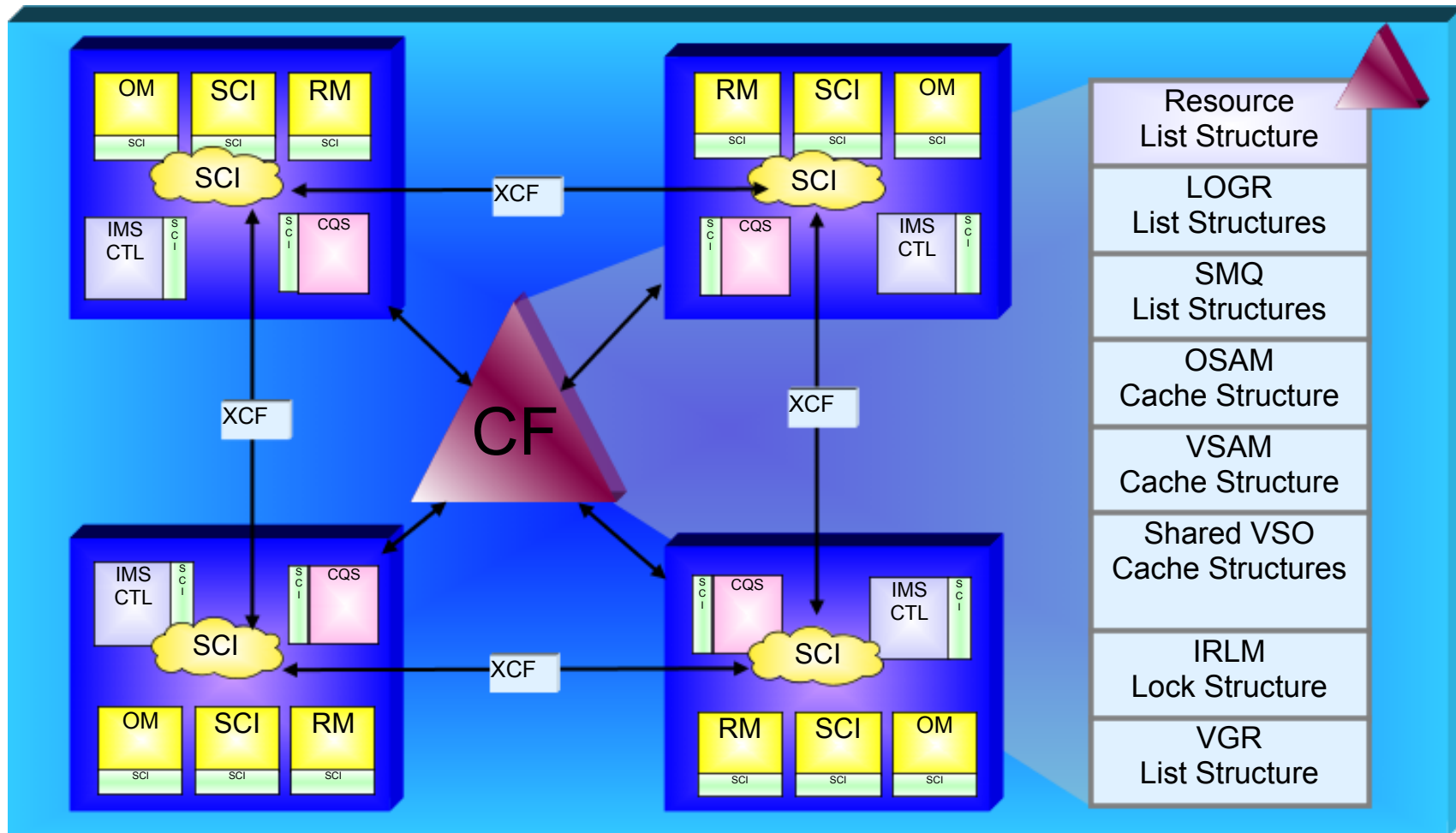
- **Allows Single-IMS-System user (i.e. no data base sharing and no queue sharing) to exploit new facilities**
  - SPOCs and the new operations interface and functions
  - DBRC Automatic RECON Loss Notification
  - Dynamic Resource Definition (IMS 10)
  - ACB Member Online Change (IMS 10)
  - Dynamic LE Runtime Options
  - etc. etc. etc.
- **Might be first step in migration to a more robust IMSplex**
- **IMS 9/10 has a system parameter to request this configuration**
  - In this case, IMS can automatically start the SCI and OM address spaces



IMS 8 always requires a RM as part of the CSL



# Multi-IMS IMSplex Configuration



- Provides “the ultimate” configuration for operation and management of capacity, performance and availability



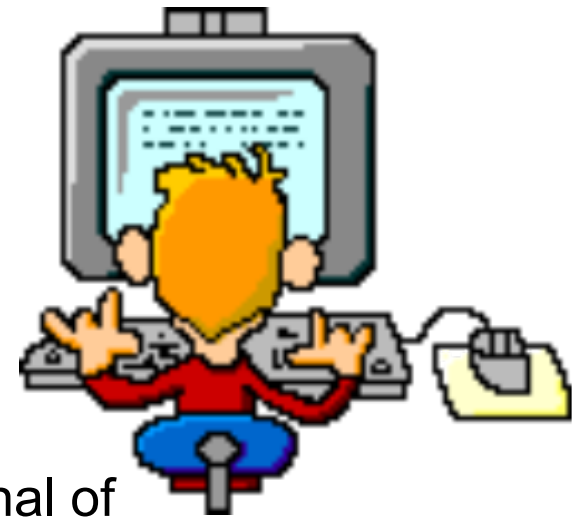
# Enhanced Operations Management

*I remember  
the MTO*



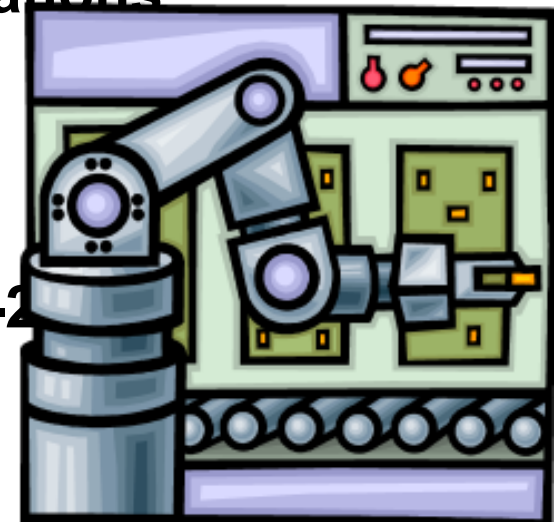
# Traditional IMS Operations

- **Traditionally, IMS online systems have been operated from an IMS Master Terminal and/or a zOS Console**
  - Primary MT = display terminal formatted by MFS
  - Secondary MT = printer acting as a “hard copy” journal of key activity
- **Over the years, about 60 different operator commands have evolved**
  - /START, /DBR, /ASSIGN, etc.
- **These are referred to as “Type 1” commands**
  - Not necessarily designed with usability in mind
  - Lacking consistency and standards
  - Not intuitive – especially for a new breed of young operators
  - Mostly entered and executed on a single IMS system



# Operations with the CSL

- **CSL enables the use of a completely new Operations Interface**
  - **Single Point of Control (SPOC)**
  - A SPOC is a program that enters commands to an Operations Manager
- **Some SPOCs provide an interface for human operators**
  - TSO SPOC (an ISPF application)
  - IMS Control Center (a PC-based operator interface)
- **Some SPOCs are components of automated operations**
  - REXX SPOC
  - Batch SPOC (IMS 10)
- **SPOCs can use traditional type-1 or the new type-2 commands**
- **Commands can be routed to one or multiple IMS systems (via an OM)**



# Type 2 Commands

- **Provide simpler, intuitive, user-friendly resource management**
  - **QUERY** and **UPDATE**
    - Alternatives for **/DIS**, **/START**, **/STOP**, **/ASSIGN**, **/DBR**, etc
  - Resources managed in IMS 10
    - **TRAN**, **RTC**, **PGM**, **DB**, **AREA**, **DATAGRP**, and **MSPLINK**, **MSLINK**, **MSNAME**
- **Many commands include wildcard and filter support to identify target resources**
- **Some UPDATE commands provide function not possible with a single type-1 command**
  - E.g. Starting a DEDB and all its AREAs
- **Other type-2 commands provide support for new facilities**
  - **INIT**, **TERM**, **DELETE**, **CREATE**, **IMPORT**, **EXPORT**, **QUEUE**





# The TSO SPOC

- **Type-2 Command replies – especially result of QUERY command – are displayed as a table**
  - Can sort on different columns
- **Can enter commands to multiple IMS systems and get back a consolidated response**
- **Can look back at earlier commands and their responses, and edit and re-enter the commands**
- **Can set up short cuts for frequently used commands**
- **Special support for new functions such as Dynamic Resource Definition**
  - To simplify the command interface
- **SPOCs are needed for several new systems management functions**
  - DRD, ACB Member Online Change, MSC statistics, etc

```
File Display View Options Help
PLEX1                      IMS Single Point of Control
Command ==> _____

Response For: QRY TRAN NAME (A*) SHOW (ALL) More: +>
Trancode MbrName  CC PSBname  QCnt LCls  LQCnt LLCT LPLCT
ADDINV   IMS1      0          0      4      0     2 65535
ADDINV   IMS3      0 DFSSAM04  4      0     2 65535
ADDPART  IMS1      0          0      4      0     2 65535
ADDPART  IMS3      0 DFSSAM04  4      0     2 65535
AOBMP    IMS1      0          0      23     0 65535 65535
etc.

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





# Additional Operations Facilities

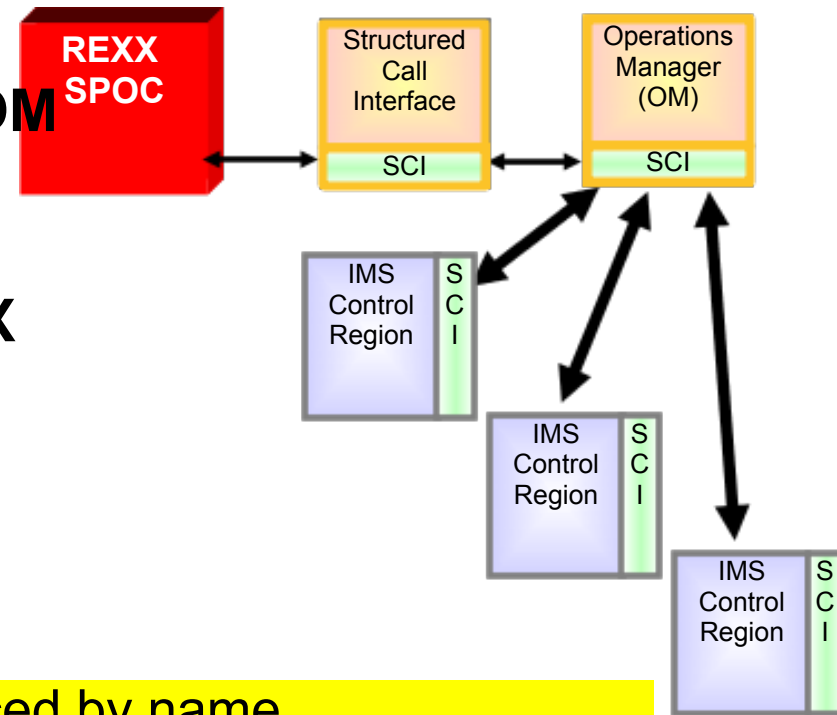
- **Operation of an IMS system or IMSplex requires more than just an operator interface**
- **It requires additional functions in the areas of -**
  - Automation
  - Entering of automation transactions
  - Command auditing
  - Viewing of unsolicited system messages
- **These facilities are all available in IMS 10**



# Automation – the REXX SPOC



- Runs under TSO or Netview
- Can execute in a different z/OS from OM
  - Uses SCI to communicate with OM
- Command responses saved to a REXX “stem variable”

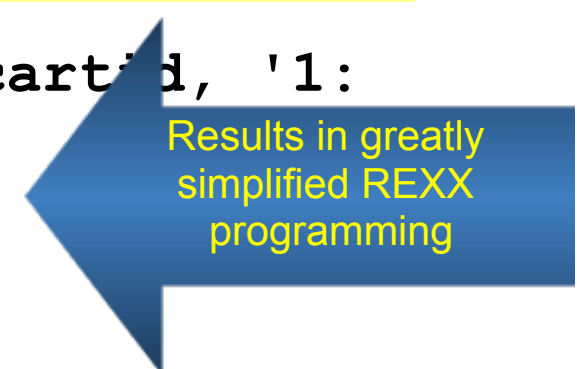


- In XML format
- **IMS 10 provides an XML parser**
  - Individual XML elements can be referenced by name

```
"QRY TRAN NAME (CUS*) "  
results = CSLULGTS('qryinfo.', cartid, '1:  
30')
```

■ `qryinfo.cmd.verb` is “QRY”

■ `qryinfo.hdr.6.llbl` is header label for column 6 of the QRY response



# Automation - Batch SPOC Utility



- Provides a capability to submit IMS commands from a batch job

- Uses the Operations Manager (OM) interface
- Supports both Type-1 and Type-2 commands

- IMSplex environment defined in execution parameters

- IMSplex name, Command routing, and Wait time

- Commands defined in SYSIN file

- Multiple commands allowed
- Commands executed serially

- Output to SYSPRINT

- Responses formatted to look like TSO SPOC screen format

```
Log for: QRY TRAN NAME(A*) SHOW(ALL)
IMSplex . . . . . : PLEX1
Routing . . . . . : IM1A
Start Time . . . . : 2007.304 01:08:08.13
Stop Time . . . . . : 2007.304 01:08:08.13
Return code . . . . : 00000000
Reason code . . . . : 00000000
Reason text . . . . :
Command master. . . : IM1A
Response for: QRY TRAN NAME(A*) SHOW(ALL)
Trancode MbrName CC CCText PSBname LCLs LQCnt LLCT LPLCT LPLCTTime
-----
ADDINV IM1A 0 DFSSAM04 1 0 2 65535 6553500
ADDPART IM1A 0 DFSSAM04 1 0 2 65535 6553500
AUTRAN11 IM1A 0 AUTPSB11 1 0 2 65535 6553500
AUTRAN12 IM1A 0 AUTPSB11 1 0 2 65535 6553500
```



# QUEUE Command



- **QUEUE command (type 2 – via a SPOC) can be used to:**
  - **Enter a transaction**
    - Intended for automation transactions
  - **Enter an LTERM message**
  - **Dequeue first or all messages queued to Transaction**
    - New function for non-shared queues users
  - **Dequeue first or all messages queued to an LTERM**

```
QUEUE TRAN NAME(xxx) OPTION(ENQ) DATA(message-data)
```

```
QUEUE LTERM NAME(xxx) OPTION(ENQ) DATA(message-data)
```

```
QUEUE TRAN NAME(xxx) OPTION(DEQ1 | DEQALL)
```

```
QUEUE LTERM NAME(xxx) OPTION(DEQ1 | DEQALL)
```

- **Reply (if any) from QUEUED transaction is sent to Audit Trail**
  - Can be viewed at TSO SPOC



# OM Audit Trail



- **OM can use z/OS System Logger to log -**
  - **Commands** entered via OM, ...
  - ... and their **Responses**
  - **Unsolicited messages** from IMS and CSL address spaces

... to an “audit trail log stream”

- Tailoring of which unsolicited messages get logged is possible
- **Multiple OMs can share the same log stream**
- **Audit trail can be viewed** directly from a TSO SPOC
- **Audit trail can be printed** with enhanced DFSERA10
- **REXX SPOC (for example) can dynamically subscribe** to the audit trail
  - Receive audit trail log messages in real time
- **Use of Secondary Master to journal unsolicited messages can also be controlled**



- Disabled by command /SMCOPY MSG OFF

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- Dynamic selection by enhanced Type 3 AOI Exit (DFSAGE00)

# Audit Trail Display from TSO SPOC

File

X1 IMSplex Audit Trail

Command ==>

Members . . Type . .

File: +>

MemberName Time Message

```
A 2007.298 09:25:49.60 DFS3499I ACTIVE DDNAMES: MODBLKSA IMSACBB FORMATTED
A 2007.298 09:25:49.61 DFS3804I LATEST RESTART CHKPT: 07298/102549, LAST
GHTA 2007.298 09:33:32.60 Cmd input . : DIS OLDS
GHTA 2007.298 09:33:32.60 Response for: DIS OLDS
GHTA 2007.298 10:26:29.28 Cmd input . : QRY TRAN NAME(*) SHOW(TIMESTAMP)
GHTA 2007.298 10:26:29.28 Response for: QRY TRAN NAME(*) SHOW(TIMESTAMP)
GHTA 2007.298 10:26:51.44 Cmd input . : QRY TRAN NAME(*) SHOW(TIMESTAMP)
GHTA 2007.298 10:26:51.44 Response for: QRY TRAN NAME(*) SHOW(TIMESTAMP)
GHTA 2007.298 12:52:56.87 Cmd input . : QUEUE TRAN NAME(PART) DATA(an960c10)
GHTA 2007.298 12:52:56.87 Response for: QUEUE TRAN NAME(PART) DATA(an960c10)
A 2007.298 13:00:01.07 DFS3257I ONLINE LOG NOW SWITCHED - FROM DFSOLP00 T
A 2007.298 13:00:01.08 DFS058I 14:00:01 SWITCH COMMAND COMPLETED.
A 2007.298 13:00:01.10 DFS3257I ONLINE LOG NOW SWITCHED - FROM DFSOLS00 T
A 2007.298 13:00:01.29 DFS2484I JOBNAME=IVPGNJCL
A 2007.299 11:30:49.53 DFS2864I EXTERNAL TRACE DATASET DFS
A 2007.299 13:00:01.08 DFS3257I ONLINE LOG NOW SWITCHED - FR
```

Click on this to see the actual command response

Click on DFS message to gain internet access to M&C manual

- Unsolicited messages are colour coded (I, W, A)



# Enhanced Resource Management

- Dynamic Resource Definition (DRD)
- Global Online Change





# Without Dynamic Resource Definition

- **Each IMS system must have a definition of its resources**
  - Databases, Transactions, Programs and Fastpath Routing Codes
    - The “**MODBLKS resources**”
  - Created in the MODBLKS dataset by the IMS System Definition process
    - Stage 1 input (Assembler Macros) can be very large and requires careful management
  
- **The definitions can be changed with Online Change, but:**
  - **Requires the complete set of resource definitions to be re-built every time**
    - Even for a change of one attribute of one resource!
  
  - **Requires all system processing to be quiesced for the MODBLKS library switch**

■ Impacts service availability

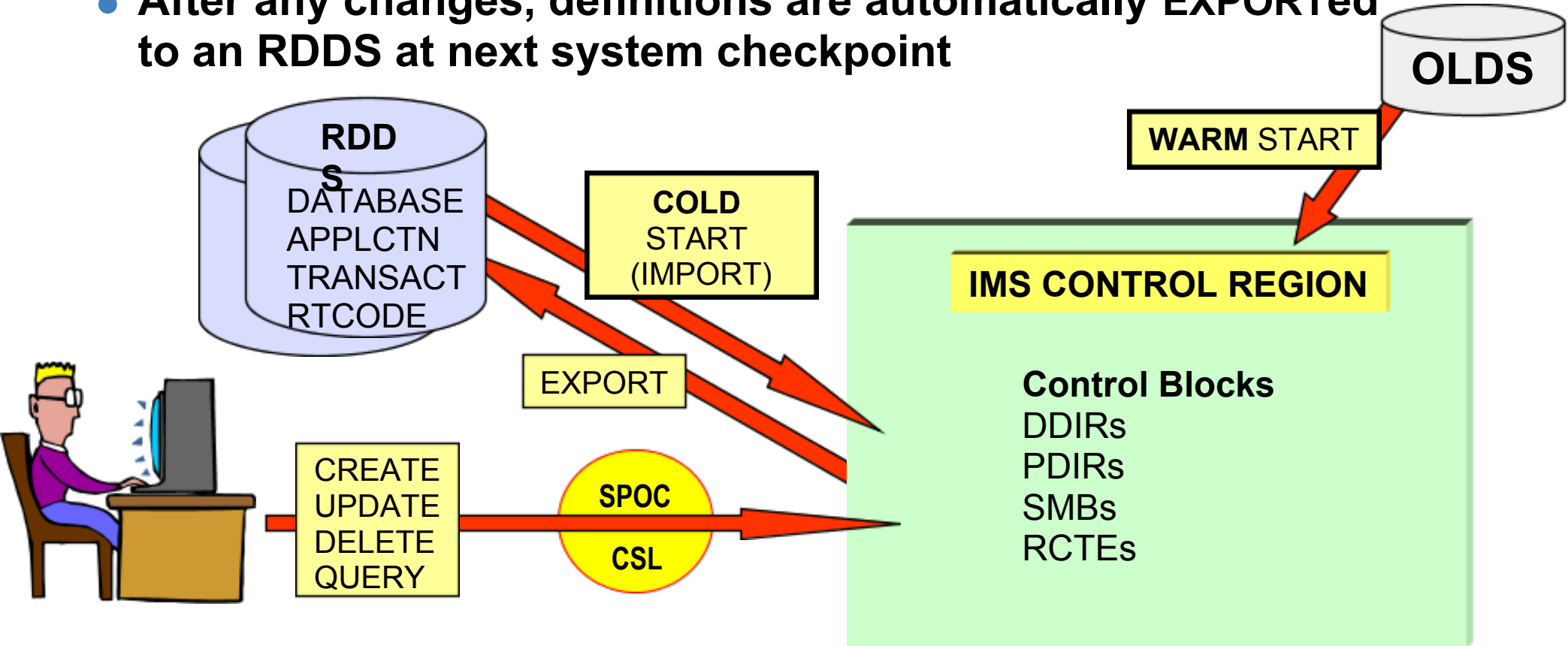
# Why Dynamic Resource Definition?

- **When DRD is enabled, resources need only ever be created once**
  - Kept in a **Resource Definition Dataset (RDDS)**
- **Resources are NOT defined in IMS System Definition**
  - **Stage 1 input** – especially with ETO – will be very small
  - **IMS System Definition** process will **rarely** be required ...
  - ... and will be **much quicker**
- **Resources are updated at a SPOC with UPDATE commands, added with CREATE commands, and deleted with DELETE commands**
  - **No impact on availability of unchanged resources**
  - All resources written to oldest RDDS at next system checkpoint
- **Resource definitions are portable between RDDSs**
  - Using EXPORT and IMPORT commands



# DRD Overview

- During IMS Cold Start processing, resource definitions are IMPORTed from last used *Resource Definition Data Set (RDDs)*
- Type-2 commands used to dynamically CREATE, UPDATE, or DELETE MODBLKS resources
- After any changes, definitions are automatically EXPORTed to an RDDs at next system checkpoint



# Entry Point for DRD Commands

- **Commands to CREATE, UPDATE, DELETE or QUERY resources and descriptors (resource templates) are entered through OM interface**
  - TSO SPOC, BATCH SPOC or other Operations Manager interface
- **Manage Resources User Interface**
  - Subfunction of the TSO SPOC
  - Removes the user's need to -
    - format CREATE, DELETE, UPDATE, and QUERY commands, or ...
    - know names and valid values for attributes
- **Provides two views**
  - **List View** for less skilled operators

```
-----  
IMS Application Menu  
Command ==> 1  
-----  
Select an application and press Enter.  
1 Single Point of Control (SPOC)  
2 Manage resources  
3 Knowledge-Based Log Analysis (KBLA)  
4 HALDB Partition Definition Utility (PDU)  
5 Syntax checker for IMS Parameters (SC)  
6 Installation Verification Program (IVP)  
7 IVP Export Utility (IVPEX)  
8 IPCS with IMS Dump Formatter (IPCS)  
9 Abend Search and Notification (ASN)
```

- Requires more screens

# DRD GUI Interface – Manage Resources

- Example using CREATE TRAN



“LIST” View – requires more screens in most cases

```
Action Manage resources SPOC View Options Help IMS Create
Command ==> Plex . . Route . . Wait . .
Enter to continue More: +
NAME Transaction name . . TESTRAN
CMD AOI command option . . . . . N CMD,N,Tran,Y
SS Class . . . . . 1 1-999
MODE Commit mode . . . . . SNGL Sngl, Mult
V Conversational . . . . . N Y, N
WA Log write-ahead option . . . . . Y Y, N
ROUTE MSC direct routing option. . . . . N Y, N
TRIN Input edit routine . . . . .
TUC Edit to uppercase. . . . . Y Y, N
BSZ EMH buffer size. . . . . 12-30720
```



# DRD Interface – Manage Resources ...



“COMMAND SYNTAX  
View” – one screen

Action Manage resources SPOC View Options Help

Create Transactions Top of data

and ==> Plex . . Route . . Wait . .

Enter to continue

```
TE TRAN NAME( TESTRAN )
AOCMD( N ) CLASS( 1 ) CMTMODE( SNGL ) CONV( N ) DCLWA( Y )
ROUTE( N ) EDITRTN(    ) EDITUC( Y ) EMHBSZ(    )
N ) INQ( N ) LCT( 65535 ) LPRI( 1 ) MAXRGN( 0 ) MSGTYPE( MULTSEG )
ME(    ) NPRI( 1 ) PARLIM( 65535 ) PGM(    )
( 65535 ) PLCTIME( 6553500 ) RECOVER( Y ) REMOTE( N ) RESP( N )
O( 0 ) SEGSZ( 0 ) SERIAL( N ) SIDL( 0 ) SIDR( 0 )
Z(    ) SPATRUNC(    ) TRANSTAT( N ) WFI( N )
```

lp F3=Exit F4=Showlog F6=Expand F9=Retrieve



# Online Change Options

- In IMS 10, for online changing of MODBLKS resources, you *either* use DRD or MODBLKS Online Change
  - Choice determined at cold start
- But in IMS 10, Online Change is still necessary for changing ACBs or MFS formats online
- There are two flavours of Online Change (set at cold start)
  - Local Online Change
    - No requirement for CSL
    - Library status kept in MODSTAT dataset (one per IMS)
  - Global Online Change
    - Requires CSL with a SPOC
    - Library status for IMSplex kept in OLCSTAT dataset
    - Coordinated across all IMSs in IMSplex

Works with a single IMS or a multi-IMS IMSplex



# ACB Member Online Change



- Complements DRD by providing a **non-disruptive online change** facility for ACBs
- Capability to add/change specified ACBs by **only quiescing resources that are affected** by the online change
- Uses INIT commands, entered at a SPOC
  - **INIT OLC PHASE(PREPARE) TYPE(ACBMBR) NAME(list)**
    - From the names specified, IMS builds the complete set of indexes, logically related DBs, and PSBs related to changed DBDs

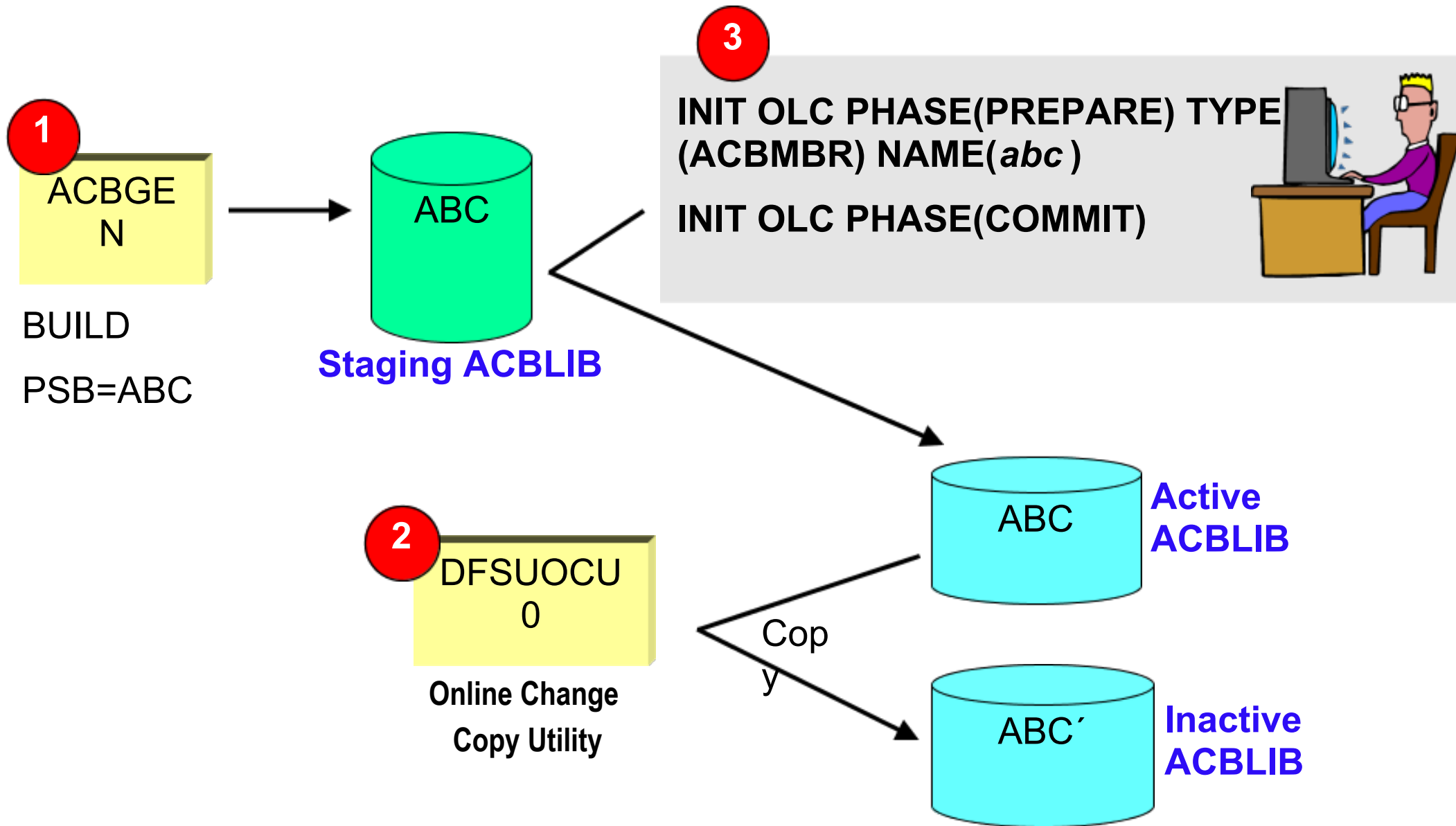
- **ACBGEN is done into the staging ACBLIB (as usual)**

But ...

- **Member-OLC copies modified ACBs into the active ACBLIB**



# Process for ACBLIB Member OLC

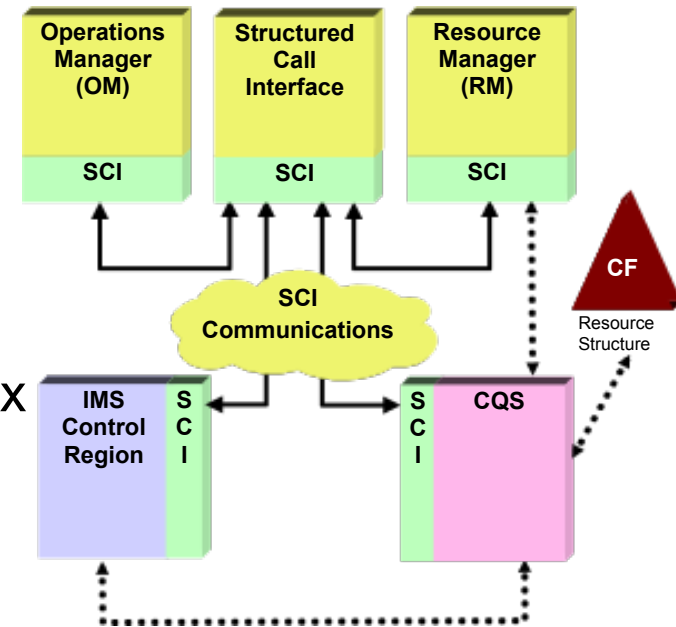


# Sysplex Terminal Management



# Sysplex Terminal Management (STM)

- **Creates a single system image for SNA terminal users in a Shared Queues environment**
- **Enforce global resource **type consistency****
  - Prevent naming inconsistencies between IMSs
- **Enforce global resource **name uniqueness****
  - Prevent multiple logon / signon within the IMSplex
- **Enable Terminal and USER resource **status recovery** across IMSplex**
  - Resume significant status on another IMS after failure
    - Command status (stopped, being traced, etc)
    - User status (Conversation status, STSN sequence numbers)
- **Exploits CSL Resource Manager with a Resource Structure**
  - Structure used to hold Resource Names (LTERMs, Trancodes, USERIDs, etc) and Resource Status (of Terminals and ETO USERS)



# Other CSL Facilities



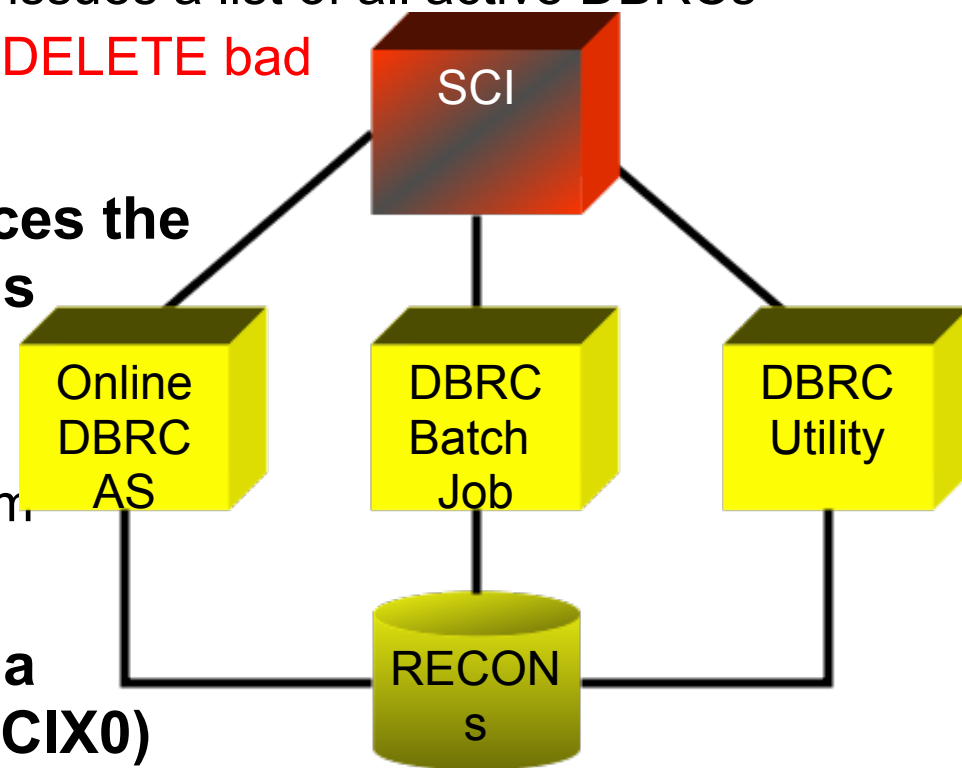
# Automatic RECON Loss Notification

- If a RECON “goes bad”, RECON reconfiguration is performed on that system
  - Operators can not DELETE/DEFINE bad RECON until all active IMS systems have accessed RECONS and performed reconfiguration themselves
    - Only then will bad RECON be deallocated by z/OS
  - DBRC with the problem immediately issues a list of all active DBRCs
  - Problem is knowing when it is OK to DELETE bad RECON and DEFINE a new SPARE

- With CSL, the DBRC that experiences the problem, will notify all other DBRCs

- uses Structured Call Interface (SCI)
- all other systems immediately perform RECON reconfiguration

- Implementation is done by coding a DBRC SCI Registration Exit (DSPSCIX0)



- Exit is passed name of a RECON

# Parallel RECON Access (PRA)



- **Customers (with or without data sharing) sometimes experience RECON contention problems**
  - typically when running multiple batch/utilities concurrently with online IMS or when restarting multiple online systems
- **IMS 10 Solution (Optional)**
  - Exploit **Transactional VSAM (TVS)\*** to provide data sharing of the RECON data set
    - TVS: System facility that provides locking, logging, caching, and commit for concurrent updates to VSAM data sets (RECONs)
- **DBRC requests from multiple systems (one request per system – online, batch, or utility) are processed in parallel**
- **Automatic RECON Loss Notification is clearly essential!**
  - Hence CSI (specifically SCI) is a prerequisite

\* TVS is a chargeable feature of DFSMS – but with a specially reduced price when used just for RECON sharing





# Transaction Level Statistics



- **IMS TM logs transaction statistics (type '07' log records) for the whole program schedule**
  - Enhanced in IMS 10 – to contain I/O statistics, previously only available with IMS Monitor
- **Optionally in IMS 10 these statistics can additionally be logged at the transaction level for easier performance analysis or chargeback purposes**
  - System Default specified in DFSDFxxx PROCLIB member
  - TRANSACT macro can specify (APPLCTN for Non-message driven BMP)
  - Dynamically activated/deactivated by UPDATE type-2 command
    - **UPDATE TRAN NAME(xyz) SET(TRANSTAT(Y))**
      - Requires CSL and SPOC
- **IMS Performance Analyzer (IBM Tool) exploits these new log records**



# Online Resource Global Status

**New in  
IMS 10**

- This IMS 10 enhancement is for the multi-IMS IMSplex customer
- As an option, IMS can maintain the operational status within the online systems of DBs, Partitions, DEDB AREAs and Transactions
  - Kept in the Resource Structure in the Coupling Facility
  - Can change (UPDATE IMS ...) which resource-types are tracked
- **Global status is used at online-system start-up**
  - If **Cold Start**, global status is applied to relevant DBs and transactions
  - If **Warm Start**, global status is applied if it was changed while this IMS was down
- **Global Status can only be set by a *Global Command***
  - Type 1 database commands with GLOBAL parameter
    - /DBR DB CUSTDB01 GLOBAL
  - Type 2 UPDATE with SCOPE(ALL) (the default)

Protection of DBs from misuse by batch or utilities should use DBRC PFA and READONLY flags

UPD DB NAME (DEDBMST) STOP (ACCESS) SCOPE (ALL)

IBM INFORMATION ON DEMAND

UPD TRAN CUSTTR02 START (O\_SCHD) SCOPE (ALL)

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# MSC Bandwidth Statistics

New in  
IMS 10

- **IMS 10 introduces several enhancements for MSC**

- Use of **VTAM Generic Resources** for a group of IMS systems in an IMSplex
- **UPDATE** of all attributes of physical and logical links and MSNAMEs
- **Bandwidth Mode** – a higher performance option, set at the logical link level
  - Bandwidth Mode changes MSC message protocol, but without loss of integrity
  - Multiple messages, if available, can be placed in a SEND buffer, and sent with a single Log Write and a single SEND

- **Bandwidth Mode is enabled/disabled by command (type 1 or 2)**

/UPD MSLINK NAME (name) SET((BANDWIDTH(ON | OFF) BUFSIZE(xxxxx))

UPDATE MSLINK NAME (name) SET((BANDWIDTH(ON | OFF) BUFSIZE(xxxxx))

Requires  
the CSL

- **IMS maintains statistics of MSC performance**

- Reset by

# SERIAL Program Management with SQ



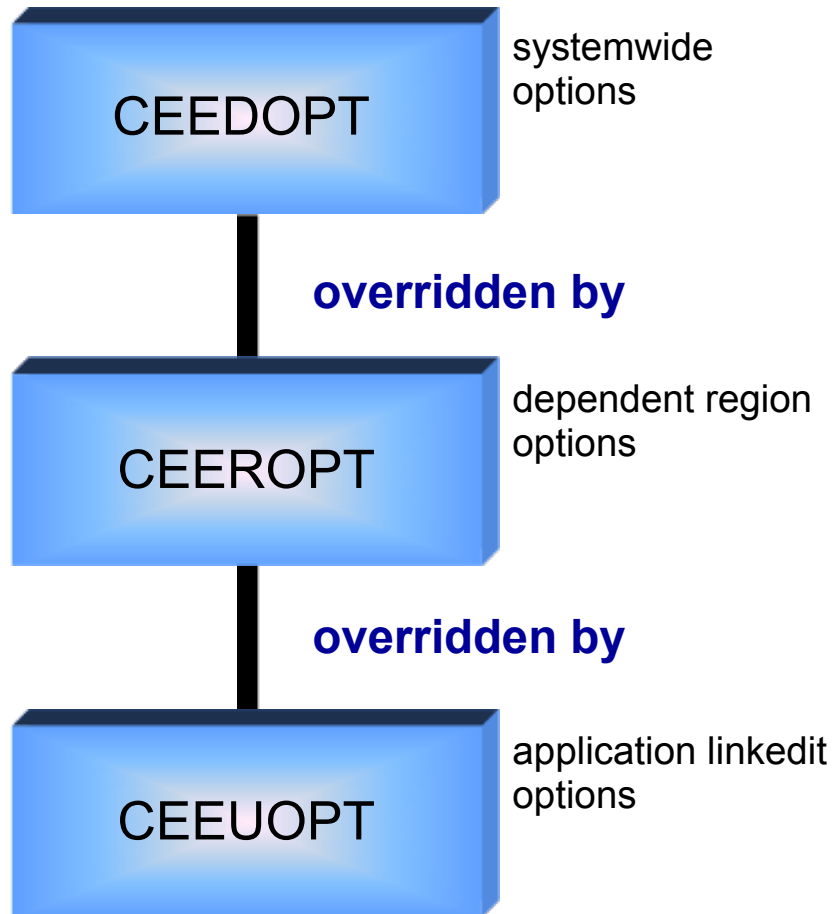
**New in  
IMS 10**

- **IMS 10 provides support for SCHDTYPE=SERIAL programs across an IMSplex with Shared Queues**
- **The CSL Resource Manager uses the Resource Structure to track usage of Serial Programs and ensures only one schedule at a time within the IMSplex**
  - Previously it required a customer solution to guarantee that SCHDTYPE=SERIAL programs processed messages serially within an IMSplex
- **This function is automatically enabled when CSL Resource Manager and Resource Structure exist**
- **Support for Serial Transactions is unchanged**
  - Transaction gets processed serially in the local IMS which receives the message
  - Appropriate, for example, for automated operator transactions that must run on the IMS that creates them



# LE Dynamic Runtime Options

## Without CSL...

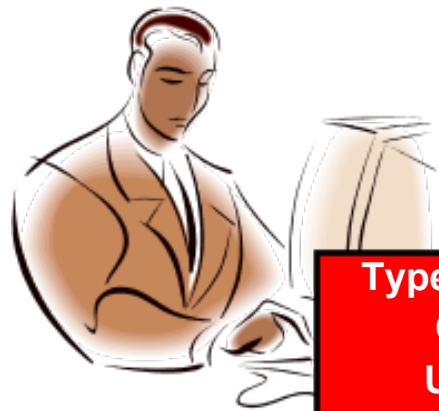


- **Changing runtime options is sometimes needed**
  - eg. to get diagnostic information
- **Changing options is not trivial!**



# LE Dynamic Runtime Options with CSL

- The LE allows an exit (CEEEXIT) to be called at program start-up to set runtime options, and IMS provides such an exit - DFSBXITA
- user sets overrides for txn/lterm/userid/pgm with type-2 commands
- user turns LEOPT on or off with type-2 command
- CEEBXITA (IMS supplied) exit is called at program schedule
- Exit issues INQY LERUNOPT call, and if overrides found for this txn/lterm/userid/pgm (and LEOPT=Y), then exit sets the override options



**Type-2 Commands**  
QUERY LE  
UPDATE LE  
DELETE LE

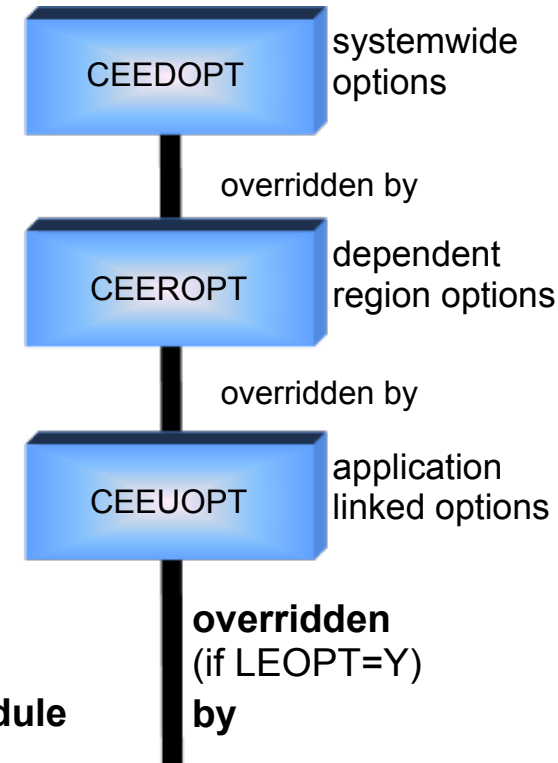
update  
query

**IMS TM Parameters**  
by  
txn/lterm/userid/p  
gm

INQY call

**DFSBXITA**  
"INQY LERUNOPT"  
Set new options  
**CEEEXIT User Exit**

Program Schedule



# IMS Queue Control Facility V3



- **QCF V3 has been re-architected to exploit the Common Service Layer**
  - Structured Call Interface (SCI) used for all communications
    - QCF BMP has gone!
  - Console can be used to enter QCF commands
- **IMS Queue Control Facility consists of**
  - a TSO client address space
  - a server address space
  - a batch address space
  - an IMS Queue Control Facility extension
    - which runs in the IMS control region address space

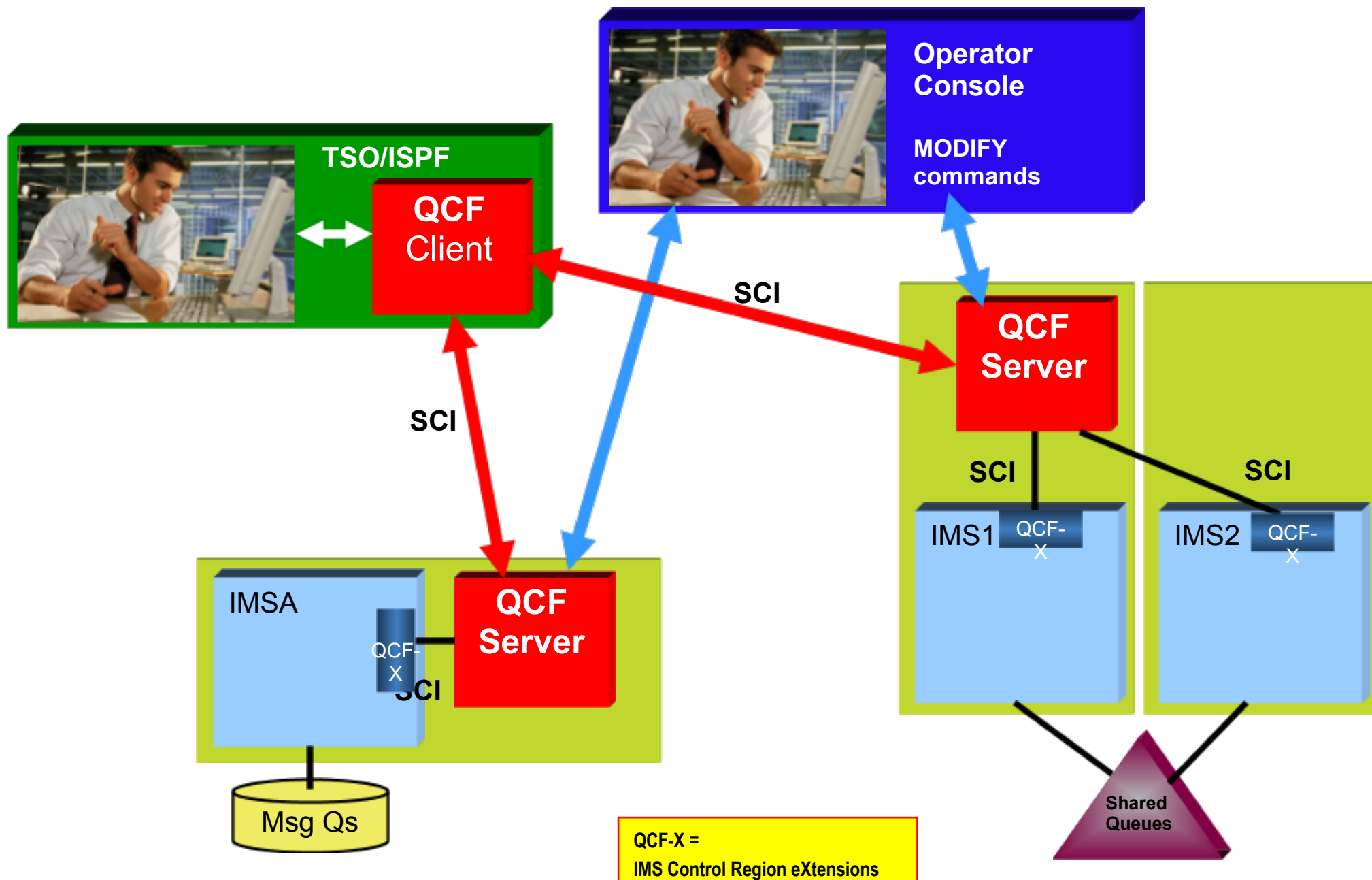
All communicate  
via SCI

**Note: QCF V3 does not require IMS itself to be using the CS**

- No OM or RM is needed

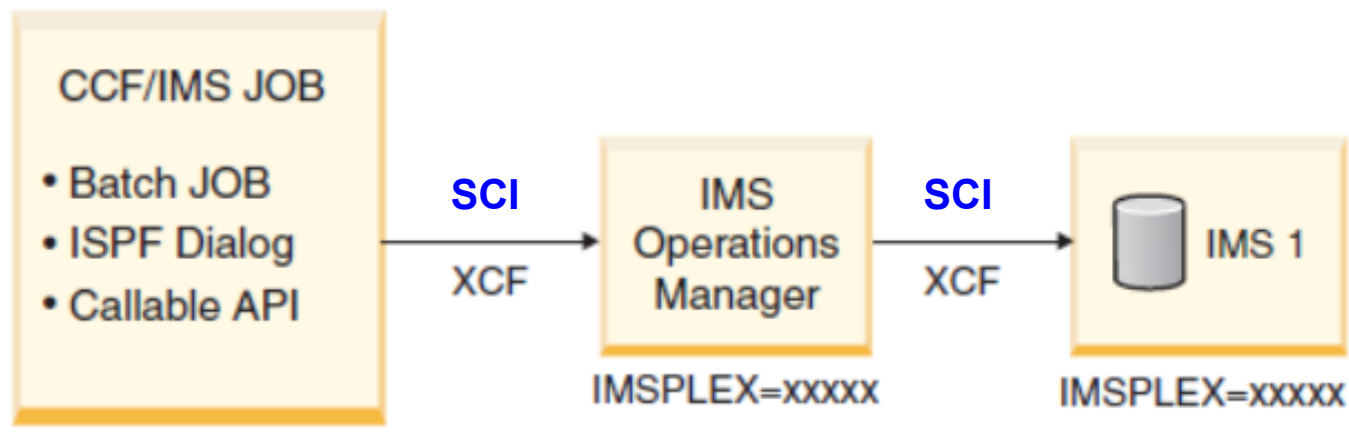


# QCF V3 Architecture



# Command Control Facility (CCF) V2.1

- **CCF 2.1 supports multiple techniques for sending commands to “remote” IMS systems**
  - (1) APPC/IMS, (2) APPC/MVS to a command-issuing BMP, or (3) **SCI to an OM**



- **CCF is a SPOC**

- Supports type-1 and type-2 commands
- No requirement for APPC
  - No command restrictions (can issue /EXIT, /LOCK and /UNLOCK)

- Using ISPF, CCF provides an “advanced function” TSO SPOC

# CSL with IMS 11



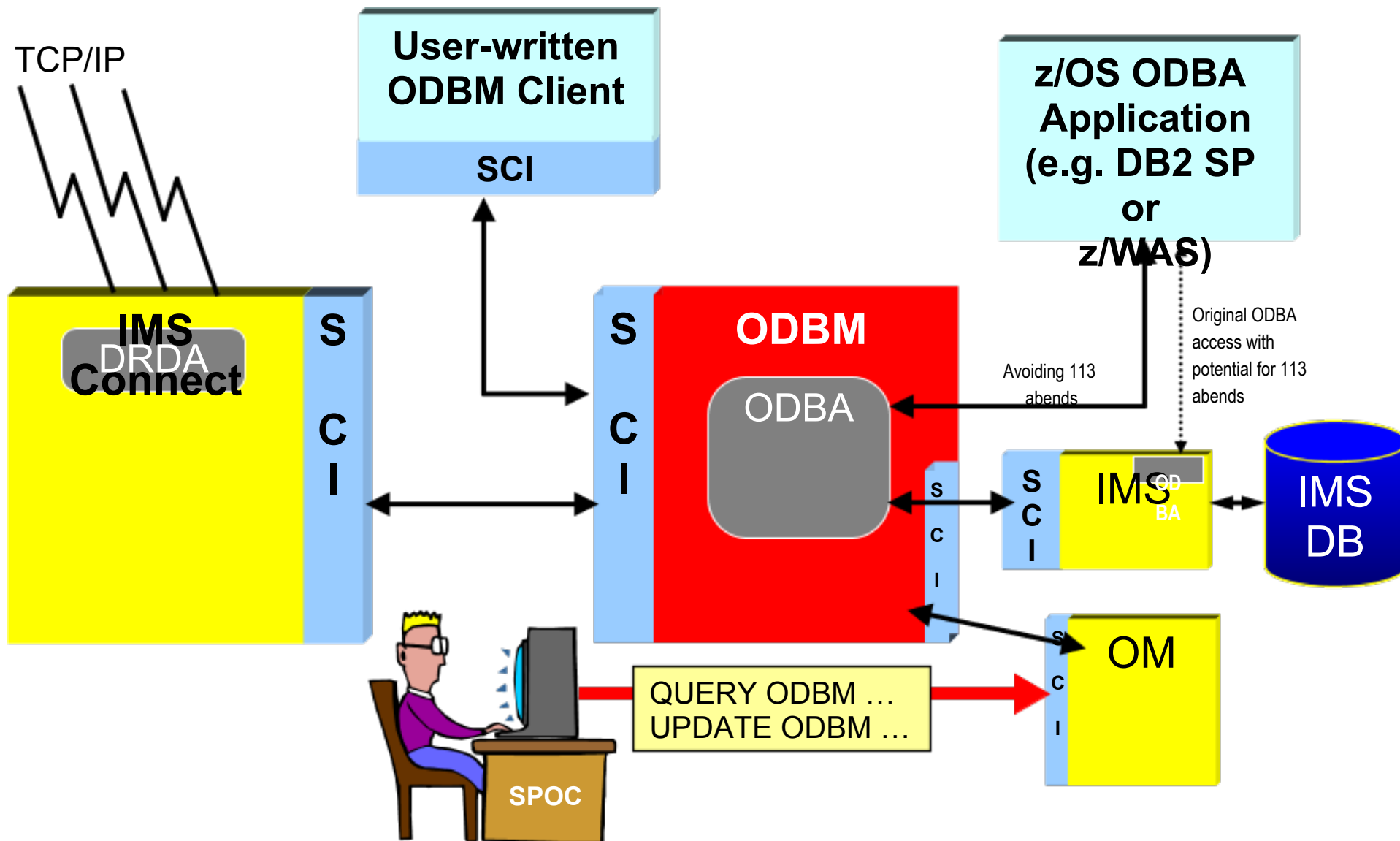
# IMS 11 Adds Even More CSL Function

- **DB Quiesce**
  - Enhanced UPDATE command, with RM coordination across IMSplex
- **DB Level Trace**
  - Controlled by UPDATE command
- **64-bit FP Buffer Pool and ACB Pool support**
  - QUERY POOL TYPE(FPBP64) and TYPE(ACBIN64) commands
- **LTERM, NODE, USER and Userid supported by QUERY**
- **OTMA operation**
  - Monitoring (QUERY) of Commit Mode 1 queues
  - QUERY, UPDATE, CREATE, DELETE OTMA Routing Descriptors
- **Support for transaction timeout**
  - QUERY, CREATE, and UPDATE TRAN commands
- **User Exit Support (for exits in DFSDFxxx  
<SECTION=USER\_EXITS>)**



# IMS 11 Open Database Manager

- ODBM is a new Common Service Layer Address Space



# Summary



# Summary

- With IMS 10, the Common Service Layer has really “*come of age*”
- The CSL is “free” with IMS
- There is *so much you can do with it*
- There is *so much you can't do without it*



- The CSL should now be seen as an *integral part* of any IMS system
  - Whether you use stand-alone IMS systems or shared DB or shared queues
  - For IMS TM or CICS DBCTL
  - The IMS Developers assume the CSL is in place!
    - Used widely in IMS 11

