

Understanding the IMS Common Service Layer

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Agenda...

- Common Service Layer (CSL) Overview
- Operations Manager (OM)
 - OM clients
 - Audit trail / unsolicited message support (IMS 10)
 - SPOC
 - TSO
 - Batch (IMS 10)
 - Type-2 commands

Agenda...

- Resource Manager (RM)
 - Services provided
 - Maintaining global information
 - Coordinating plexwide processes
 - Usage of a resource structure
 - Functions that exploit RM services
 - Sysplex Terminal Management (STM) (IMS 8)
 - Global Online Change (GOLC) (IMS 8)
 - Global Callable Services (IMS 8)
 - Global Status (IMS 10)
 - Sysplex Serial Program Management (SSPM) (IMS 10)
 - ACBLIB Member Online Change (IMS 10)
 - Database Quiesce (IMS 11)
 - IMS Repository (IMS 12)

Agenda

- Structured Call Interface (SCI)
 - Services provided
 - Communications within the IMSplex
 - Functions provided
 - ARLN (Automatic RECON Loss Notification)
 - PRA (Parallel RECON Access) (IMS 10)
 - Database Quiesce (IMS 11)
- Open Database Manager (ODBM) (IMS 11)
 - Universal Drivers to access IMS DB from Java applications
 - Distributed (type-4) and local (type-2) access

Common Service Layer (CSL) Overview ...

- An architecture to improve the systems management capabilities for IMS systems
 - Operations management (Operations Manager)
 - Resource management (Resource Manager)
 - IMS Database access (Open Database Manager)
- Provides
 - A single system image (IMSpplx)
 - Ease of use through a single point of control
 - Shared resources across all IMS systems
- Reduces complexity of managing multiple IMS systems

Common Service Layer (CSL) Overview

- Many new IMS 10, IMS 11, and IMS 12 features use CSL
 - Dynamic Resource Definition (DRD) (IMS 10)
 - ACBLIB Member Online Change (IMS 10)
 - Database Quiesce (IMS 11)
 - Open Database (IMS 11)
 - IMS Repository (IMS 12)
 - Dynamic Full Function Buffer Pools (IMS 12)
 - MSC TCP/IP (IMS 12)
 - User Exit Enhancements (IMS 11 / IMS 12)
 - and more

IMSplex Definition

- An IMSplex is a set of IMS address spaces that are working together as a unit and are most likely running in a parallel sysplex (but not required)
- Examples of an IMSplex configuration include:
 - A set of IMS control regions at the IMS 11 / IMS 12 level without a CSL that are data sharing or message queue sharing (multiple-IMS IMSplex)
 - A set of IMS control regions at the IMS 11 / IMS 12 level with a CSL that are data sharing and message queue sharing (multiple-IMS IMSplex)
 - A single IMS control region at the IMS 11 / IMS 12 level with a CSL (single-IMS IMSplex)
- Examples of IMSplex components are:
 - IMS subsystems (DB/DC, DBCTL, DCCTL, XRF active, XRF alternate)
 - IMS Connect
 - CQS
 - CSL components (OM, RM, SCI, ODBM)
 - A batch or DB utility region using DBRC
 - DBRC batch utility

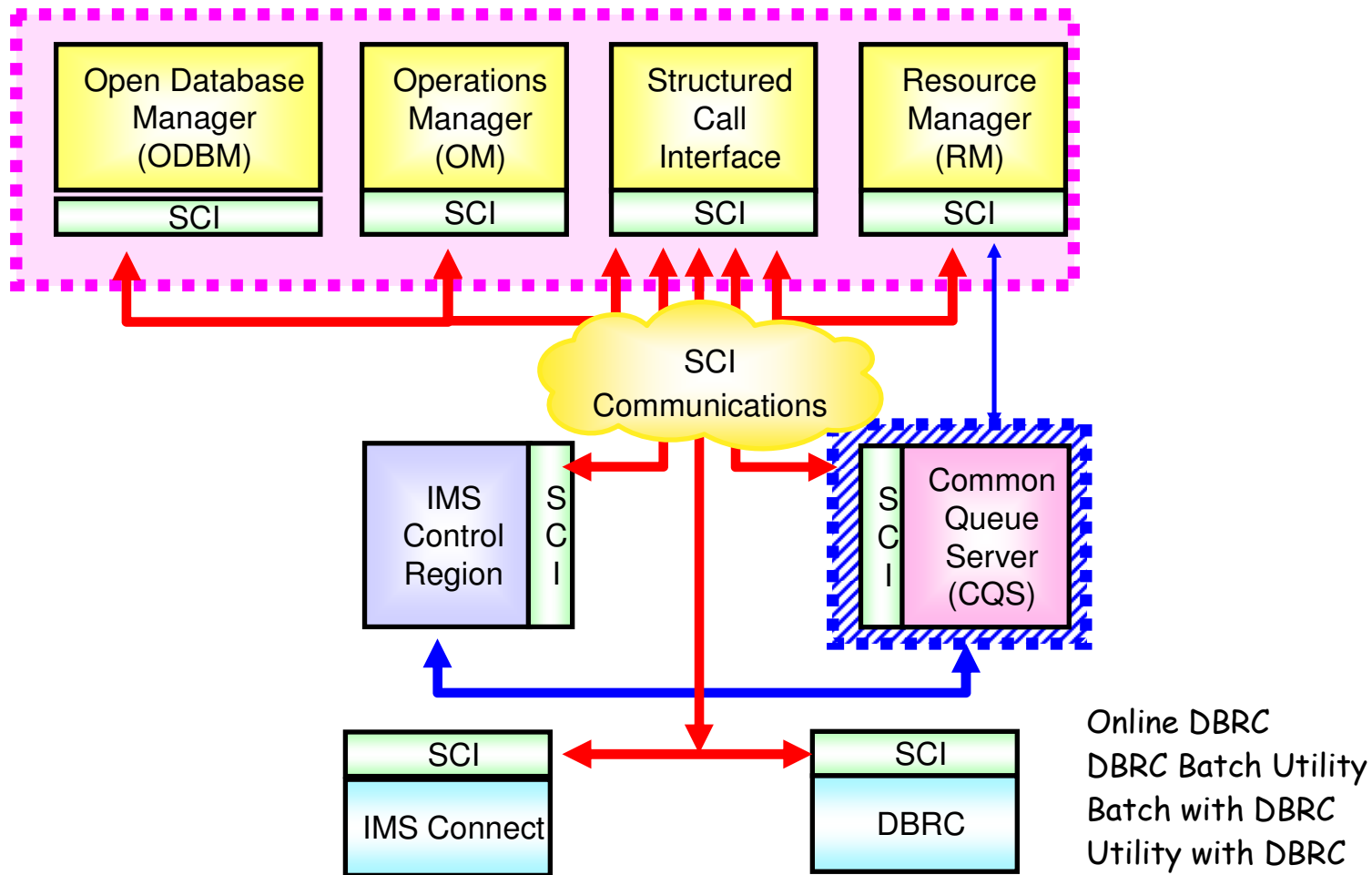
Common Service Layer (CSL) Managers

- Operations Manager (OM) (IMS 8)
- Resource Manager (RM) (IMS 8)
- Structured Call Interface (SCI) (IMS 8)
- Open Database Manager (ODBM) (IMS 11)

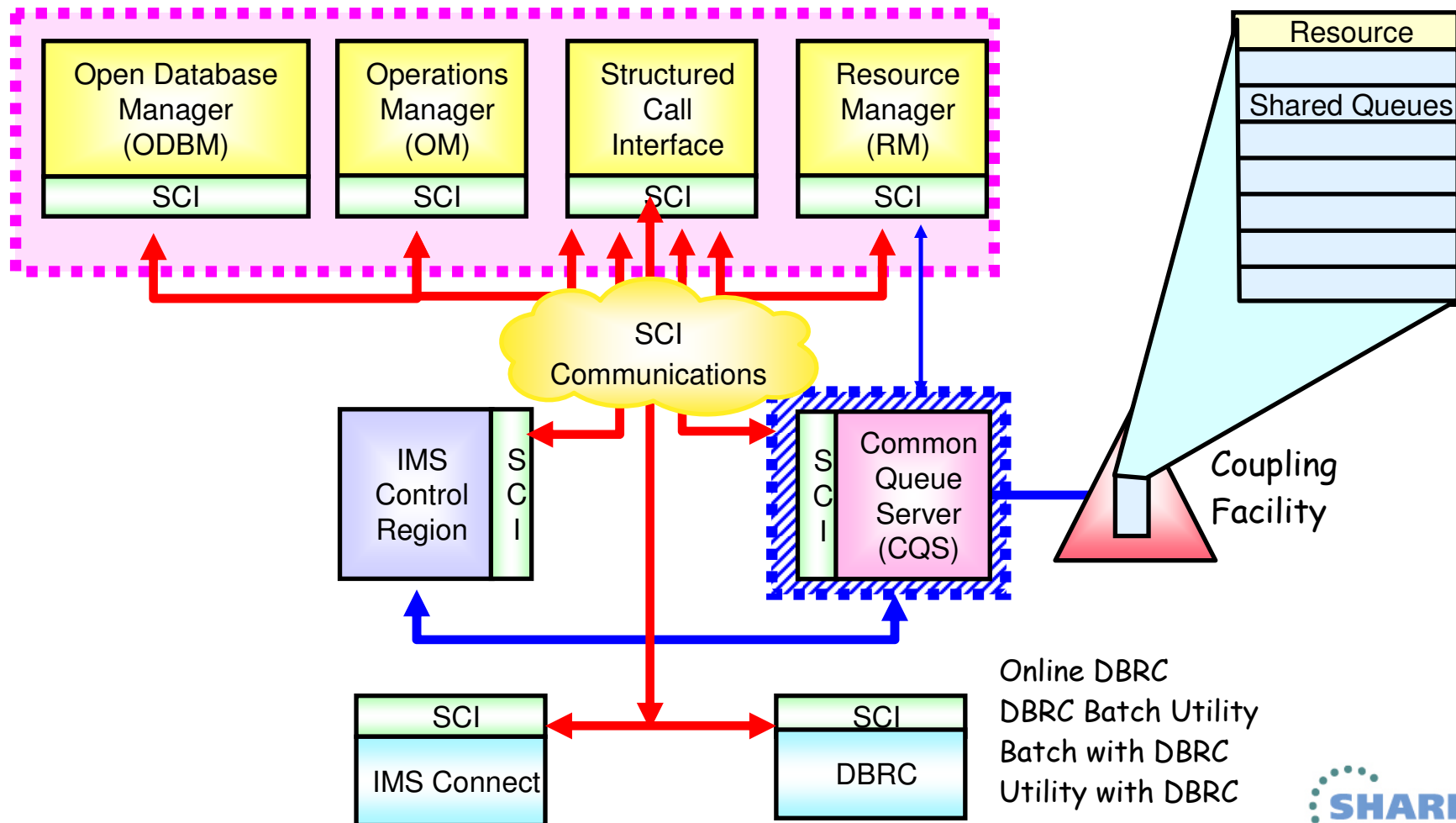
- Based on BPE (Base Primitive Environment)
- Can use CQS (Common Queue Server)

- New address spaces
 - OM, RM, SCI, ODBM, CQS
- New CF structures (optional)
 - Resource, shared queues

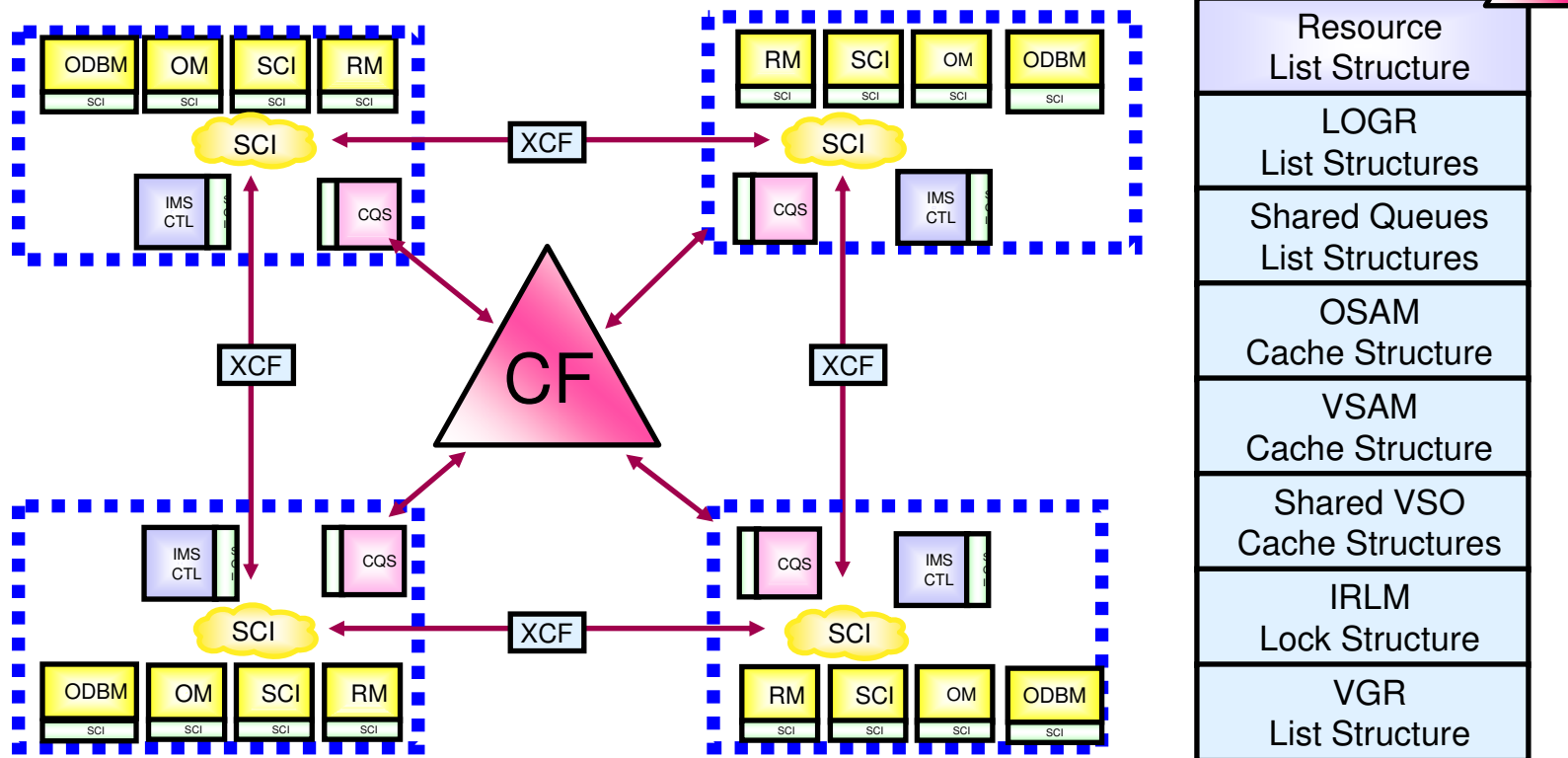
CSL Architecture (Address Spaces)



CSL Architecture (CF Structures)



IMSpdex with Multiple IMS Systems Configuration



- In an IMSplex
 - All members share the same CF structures
 - Intra-IMSpdex communications is implemented by SCI
 - Uses XCF across z/OS images

Operations Manager (OM) ...

- Provides 'single point of control' for command entry into an IMSplex
 - Focal point for operations management and automation
- Provides the following services
 - 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
 - Support for new IMSplex commands (type-2 commands) and for existing IMS commands (type-1 commands)
 - Command security for authorization using RACF or equivalent plus user exit
 - User exit capability for editing command input and responses
- Configuration
 - One of more OM address spaces required per IMSplex

Operations Manager (OM)

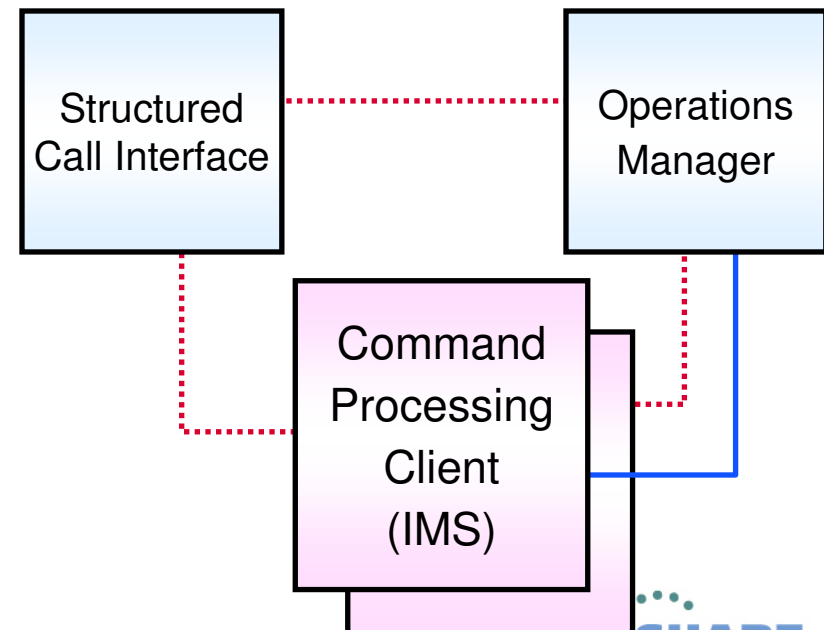
- OM registers with SCI as a member of an IMSplex
- OM communicates with other members using SCI communications services
- IMSplex can be a single-IMS IMSplex
 - Do not need a multiple-IMS IMSplex (parallel sysplex)
- Provides an API supporting common point of command entry into an IMSplex
- Two types of OM clients use this API
 - Command processing (CP) clients
 - Automated operations (AO) clients

OM Clients

- Two types of OM clients
 - Command processing (CP) clients
 - Clients which process commands entered by 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 from an operator, be received from a network client, or be received generated by an automation process
- OM services are invoked by
 - CSLOMxxx macros
 - REXX functions

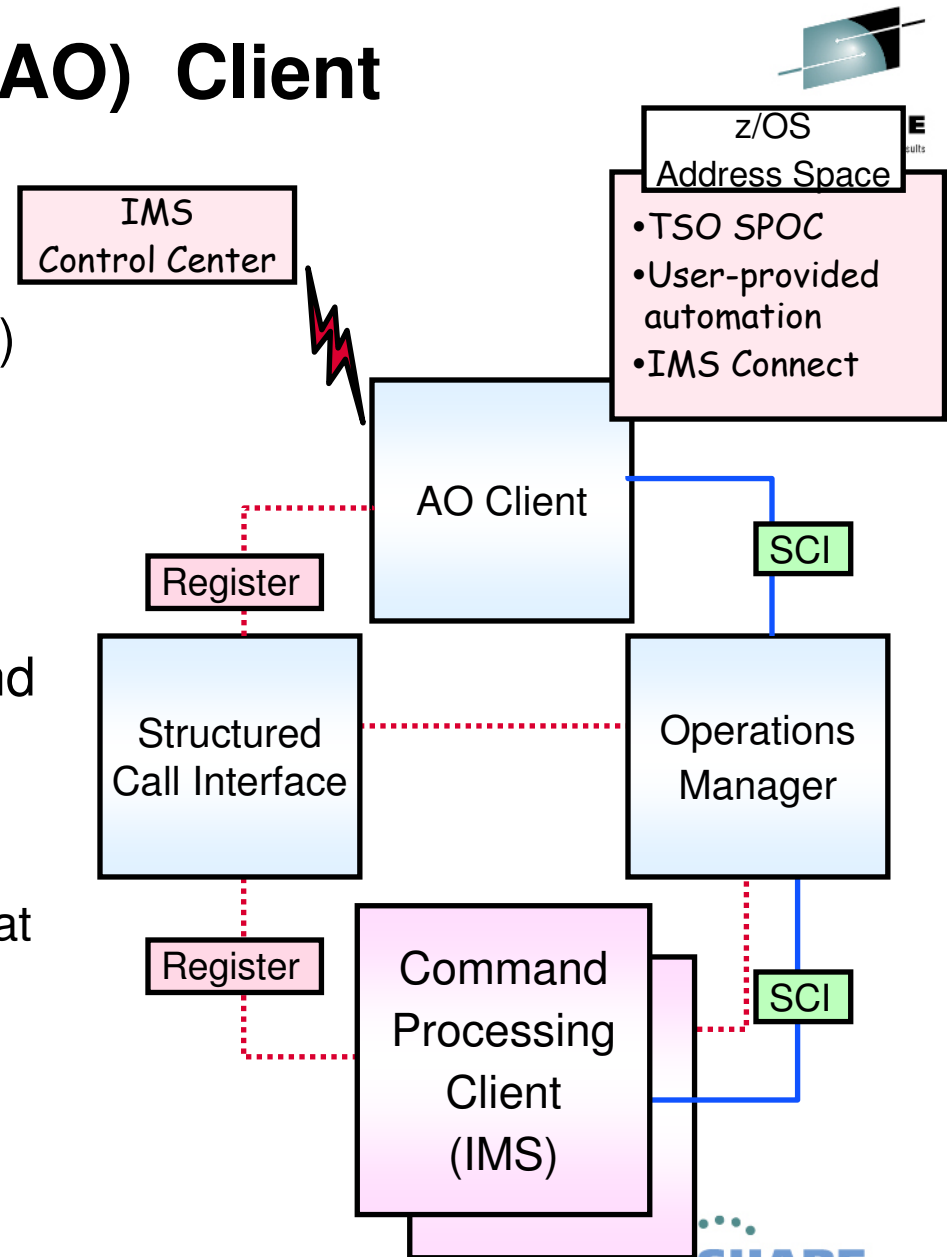
Command Processing (CP) Client

- OM client that processes commands
 - IMS and RM are CP clients of OM
- CP client
 - Registers with SCI
 - Must be on same z/OS image
 - Registers with OM
 - Identifies commands that it can process
 - Any OM in IMSplex
 - Processes commands received from OM
 - Sends command responses back to OM
 - Deregisters from OM
 - Deregisters from SCI



Automated Operations (AO) Client

- Command originates from
 - Operator (TSO SPOC)
 - Automation (Netview EXEC)
 - Network client with IMS Connect
- AO client
 - Registers with SCI
 - Accepts or creates command
 - Uses CSLOMxxx macro or REXX interface to
 - Send command to OM
 - Receive reply in XML format
 - Processes reply
 - Processes display
 - Forward to network client
 - Deregisters from SCI



OM Audit Trail Support (IMS 10)

- Audit trail of IMS commands using OM
 - Audit trail contents
 - Commands from OM clients (TSO SPOC, IMS Control Center, etc.)
 - Responses to commands
 - Unsolicited output messages
 - Consists of log records written to z/OS System Logger log stream
 - DFSERA10 exit routine (CSLULALE) provided for formatting the audit log
 - DFSERA10 exit routine (CSLOERA3) provided for dumping the audit log
 - TSO SPOC and REXX have support for reading the audit trail
 - Specify AUDITLOG= keyword of the IMSPLEX parameter in the CSLOIxxx OM initialization PROCLIB member
- Further information is available in the IBM Information Management Software for z/OS Solutions Information Center at:
<http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/index.jsp> or in the IMS 11 and IMS12 libraries

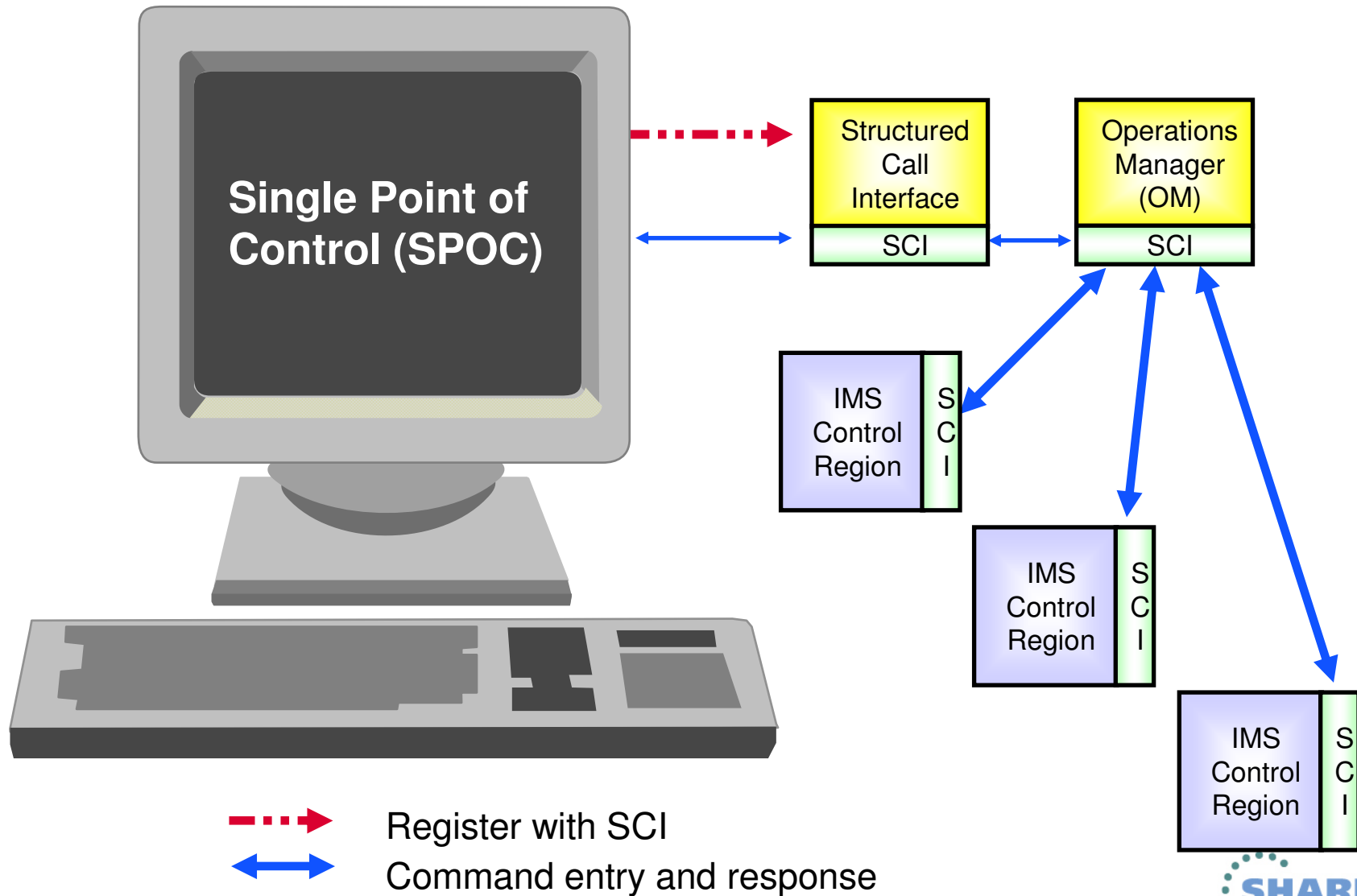
Unsolicited Message Support (IMS 10)

- Unsolicited messages from IMS may be sent to OM clients
 - AOP client may subscribe to OM for unsolicited messages
 - CSLOMSUB/CSLOMUSB requests
 - REXX support via CSLULSUB/CSLULUSB
- Two methods for controlling which unsolicited messages are sent to OM and therefore available to subscribed clients
 - User-modifiable tables for controlling messages from CQS, CSL, and IMS
 - UOM= parameter in DFSCGxxx or DFSDFxxx PROCLIB members to control messages (DFS messages) from IMS only
- Further information is available in the IBM Information Management Software for z/OS Solutions Information Center at:
<http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/index.jsp> or in the IMS 11 and IMS 12 libraries

IMS Single Point of Control (SPOC)

- A SPOC is a program that interfaces between a user and the OM
- From this single point, user can enter commands to any or all IMSs
 - It can run on the mainframe
 - TSO SPOC is provided in IMS
 - REXX SPOC APIs are provided in IMS
 - It can run on the workstation
 - IMS Control Center
- There can be multiple SPOCs in an IMSplex

SPOC Registers with Local SCI



TSO SPOC (Single Point of Control)

- Runs under z/OS as a TSO/ISPF application
- May or may not be on the same z/OS as OM
 - Must be on a z/OS with an SCI
- Provides a 'green screen' terminal interface from which IMS commands (type-2 or type-1) may be entered by an operator to one or more members of an IMSplex (including DB/DC, DBCTL, DCCTL)
- Formats command responses for display
 - OM response encapsulated in XML
- OM provides security checking
 - TSO userid is used to determine RACF authorization

Batch SPOC (CSLUSPOC) (IMS 10)

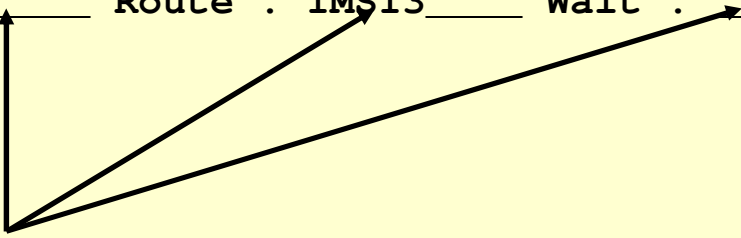
- Provides a capability to submit IMS commands from a batch job step
 - Uses the Operations Manager (OM) interface
- IMSplex environment defined in execution parameters
 - IMSplex name, command routing, wait time
- Commands defined in SYSIN file
 - All commands supported by OM API (type-2 and most type-1)
- Output to SYSPRINT
 - Responses formatted to look like SPOC screen format
- Benefits
 - Batch jobs may include steps with "online" commands
 - For example, steps to /DBR, reorganize, and /START databases
- Further information is available in the IBM Information Management Software for z/OS Solutions Information Center at:
<http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/index.jsp> or
in the IMS 11 and IMS12 libraries

Type-2 Commands

- INIT (INITiate Process)
- TERM (TERMinate Process)
- UPD (UPDate Resource (IMS 10), Quiesce (IMS 11), FF Buffer Pools (IMS 12))
- UPD (UPDate IMSCON) (IMS 12)
- DEL (DELeTe Resource)
- CRE (CREate Resource) (IMS 10)
- EXP (EXPort Resource) (IMS 10)
- IMP (IMPort Resource) (IMS 10)
- QRY (QueRY Resource)
- QRY (QueRy IMSCON) (IMS 12)
- QUE (QUEue Message) (IMS 10)
- REFRESH (REFRESH USEREXIT) (IMS 12)

SPOC Command Entry Panel

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



Override 'Preferences'

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 . _____

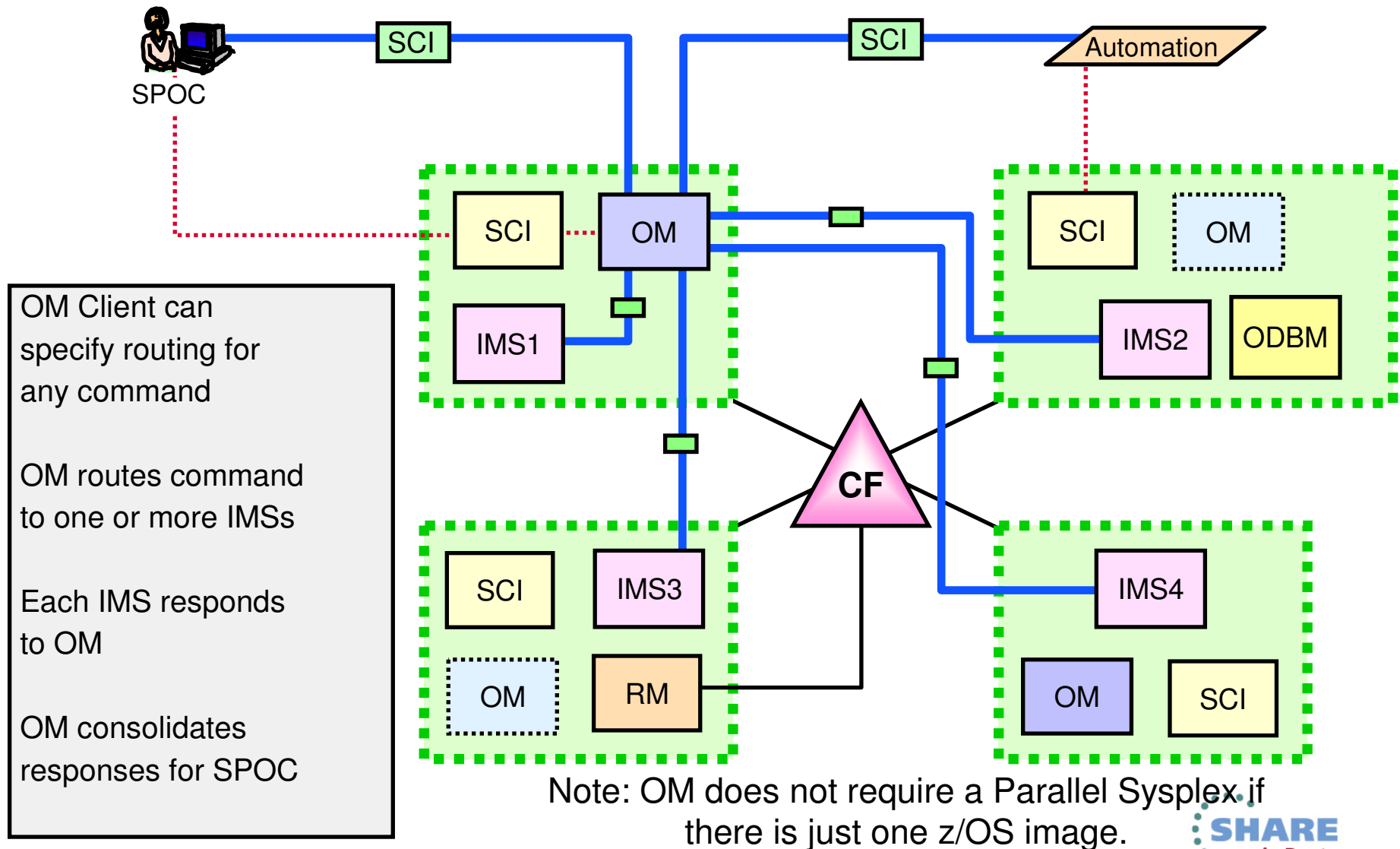
Response for: QRY TRAN NAME(A*) SHOW(ALL)           More:  +>

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

OM in a Multi-IMS IMSplex

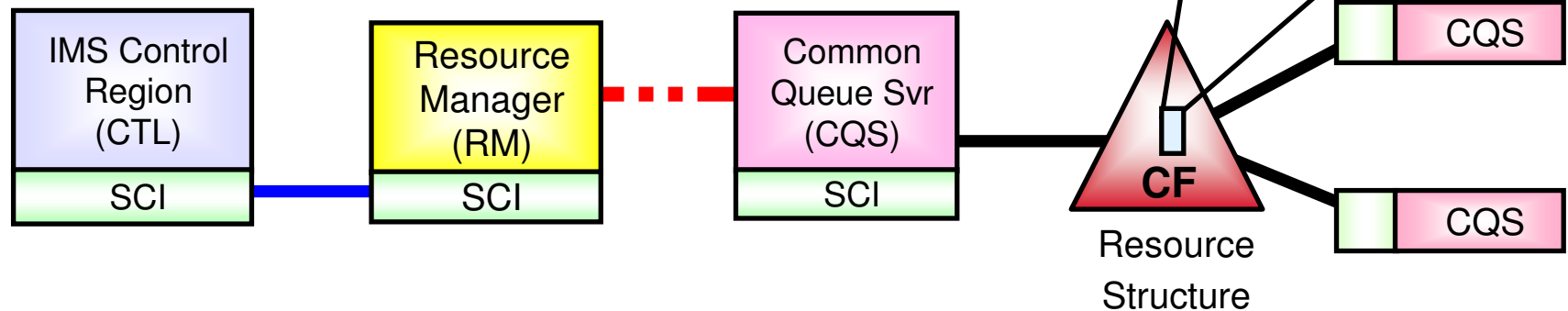


Resource Manager (RM) Overview

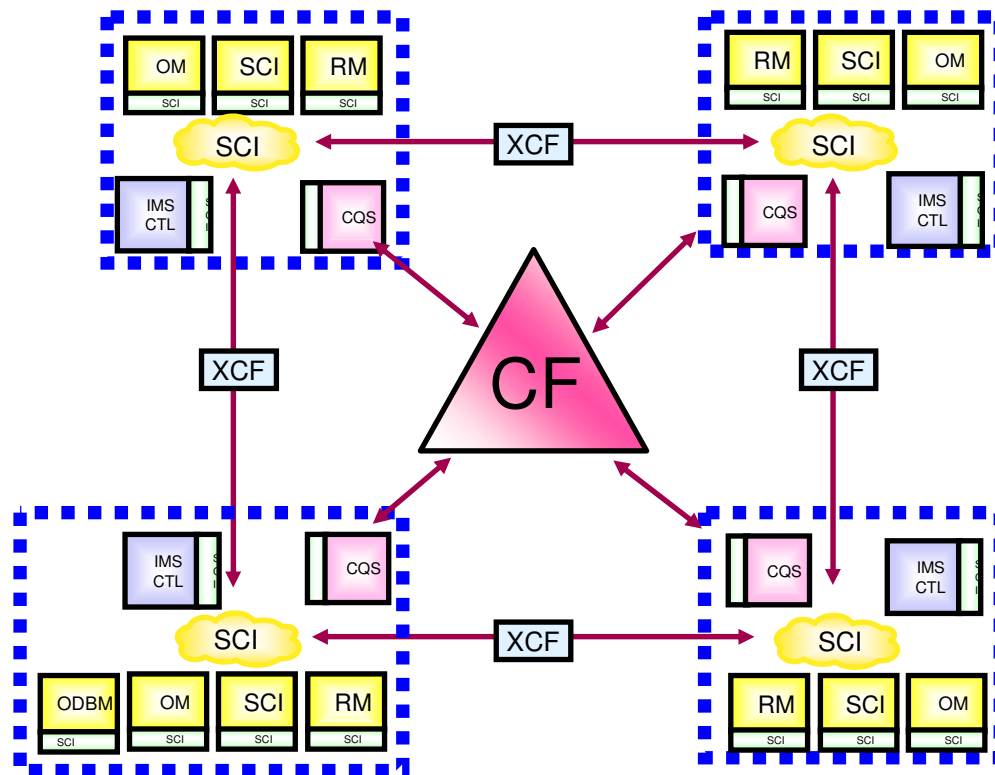
- Provides infrastructure for managing global resources and IMSplex-wide processes
 - IMS is responsible for exploiting RM services
- Provides the following services
 - Maintains global resource information using a resource structure in a Coupling Facility
 - Coordinates IMSplex-wide processes
- Used for the following functions
 - Sysplex Terminal Management (STM) (IMS 8)
 - Global Online Change (GOLC) (IMS 8)
 - Global Callable Services (IMS 8)
 - Global Status (IMS 10)
 - Sysplex Serial Program Management (SSPM) (IMS 10)
 - ACBLIB Member Online Change (IMS 10)
 - Database Quiesce (IMS 11)
 - IMS Repository (IMS 12)

Resource Manager (RM) Configuration

- Resource management in the IMSplex is performed by a combination of the IMS Control Region, the Resource Manager, the Common Queue Server, and a Resource Structure
 - OM and SCI are used for command entry and communications



IMSpdex RM Configuration



Resource List Structure
LOGR List Structures
SMQ List Structures
OSAM Cache Structure
VSAM Cache Structure
Shared VSO Cache Structures
IRLM Lock Structure
VGR List Structure

- Zero or more RM address spaces required per IMSplex in IMS 11/12
 - Need one or more RM address spaces to enable any RM function
 - Need resource structure if more than 1 RM address space exists in IMSplex

Resource Structure

- Resource structure contains global resource information for uniquely named resources
- Resource structure not required for Global Online Change or ACBLIB Member Online Change (V10)
 - i.e., not required for DBCTL
 - Structure will be used if available
- Resource structure required for other IMSplex-wide global processes and access to global resource information
- Contains entries for certain
 - VTAM terminal resources and associated user resources
 - Global Online Change participants
 - Databases, HALDB partitions, DEDB areas, transactions
 - Serial programs
- One resource structure may be defined per IMSplex
- Requires CQS address space for structure access
- Resource structure is required if more than 1 RM address space exists in the IMSplex

Sysplex Terminal Management (STM)

- Enables improved systems management in an IMSplex by sharing resource status information
 - Applies to VTAM terminal and user resources only
 - Does not apply to OTMA
- Enforces global resource type consistency
 - Prevents naming inconsistencies between IMSs
- Enforces global resource name uniqueness
 - Prevents multiple logon/signon with the IMSplex
- Enables terminal and user resource status recovery across an IMSplex
 - Resumes significant status on another IMS after a failure
 - Reduces need for IMS-managed VGR affinity
- Optional
 - STM=YES in DFSDCxxx PROCLIB member
 - SRMDEF=GLOBAL in DFSDCxxx PROCLIB member, ETO user descriptors

Sysplex Terminal Management (STM)

- Requires RM address space, resource structure, and shared queues
- Resources managed
 - Statically defined VTAM resources
 - Dynamic ETO resources
 - Single session ISC resources
 - Parallel session ISC resources
 - MSC logical links (MSNAMEs)
 - Static transactions
 - APPC CPI-C driven transactions
 - APPC output descriptors
 - Message destinations
- Further information is available in the IBM Information Management Software for z/OS Solutions Information Center at: <http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/index.jsp> or in the IMS Version 8 Implementation Redbook, SG24-6594, IMS in the Parallel Sysplex, Volume III: IMSplex Implementation and Operations Redbook, SG24-6929 , IMS V11 System Administration, SC19-2443, and IMS 12 System Administration, SC19-3020

Global Online Change (GOLC)

- Coordinates online change across multiple IMSs in an IMSplex
 - Optional alternative for local online change
- Uses OM and RM to coordinate the global online change process
- Requires Operations Manager
 - Used to enter type-2 global online change commands
- Requires Resource Manager
 - Used to coordinate online change process
- Everybody succeeds or everybody backs out
- Optional
 - OLC=GLOBAL in DFSDFxxx PROCLIB members

Global Online Change (GOLC)

- Requires OM and RM address spaces
 - Resource structure is optional but used if it exists
- New OLCSTAT data set
 - Replaces MODSTAT data set
 - Contains OLC status for all IMSs
- Type-2 OM commands used – INITIATE / TERMINATE
 - Master IMS uses RM to coordinate all phases of GOLC
 - OM decides which IMS is Master
- Everybody succeeds or everybody backs out
- Base for ACBLIB Member Online Change in IMS 10
- Further information available in the IMS White Paper, 'Position for IMS V10s Member Online Change with Global Online Change Migration', on www.ibm.com/support/techdocs, and in the IBM Information Management Software for z/OS Solutions Information Center at:
<http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/index.jsp>,
IMS V11 System Administration, SC19-2443, and IMS V12 System Administration, SC19-3020

Global Callable Services

- Enables access to ‘global information’ for most IMS exits through ‘callable control block services’
 - Callable services returns global resource information shared in the resource structure
 - If no global information is available, local information is returned
- Further information available in the IMS V11 Exit Routine Reference, SC19-2437, IMS V12 Exit Routines, SC19-3016, or in the IBM Information Management Software for z/OS Solutions Information Center at:
<http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/index.jsp>

Global Status (IMS 10)

- Global command status for databases, HALDB partitions, DEDB areas, and transactions
 - Maintained in RM structure
 - Requires CSL with RM
 - Created by:
 - Type-1 command with GLOBAL parameter for DB, area, or partition
 - */START, /STOP, /DBD, and /DBR*
 - Type-2 command with SCOPE(ALL) for DB, area, partition, or transaction
 - *UPDATE*
 - Global status commands
 - Processed by all active IMS systems
 - *Change the local status*
 - Set status in RM structure for the DB, area, partition, or transaction

Global Status (IMS 10)



- Resources (databases, partitions, areas, and transactions) have local status and global status
 - Examples:
 - Transaction may be stopped globally but started locally in an IMS
 - *This transaction may execute in this IMS system*
 - Database may be started globally but "DBRed" in an IMS
 - *This database is not accessible in this IMS system*
 - Global status is used to set local status only when
 - Global status is set while an IMS system is down and the IMS system is restarted
 - *This IMS system assumes the global status set while it was down*
- Optional
 - PLEXPARM=(GSTSDB=Y|N,GSTSAREA=Y|N,GSTSTRAN=Y|N) in DFSCGxxx or DFSDFxxx (IMS 10) PROCLIB members
- Further information is available in the IBM Information Management Software for z/OS Solutions Information Center at:
<http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/index.jsp> or
in the IMS 11 and IMS 12 libraries

Sysplex Serial Program Management (SSPM) (IMS 10)



- New support to enforce program level serialization across an IMSplex in a shared queues environment
 - SCHDTYP=SERIAL on APPLCTN macro or SCHDTYPE(SERIAL) on the type-2 CREATE PGM command with DRD
 - Previous releases only enforced within each IMS system in an IMSplex
- Optional
 - Automatically enabled with Shared Queues and RM with an RM structure
 - V12 enhancement to disable via GBL_SERIAL_PGM=N | Y
 - No program changes or definition changes
- Only one copy of the IMS TM program will be scheduled across the entire IMSplex
 - Removes requirement for specialized customer procedures
- Further information available in the the IBM Information Management Software for z/OS Solutions Information Center at:
<http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/index.jsp> and in the IMS 10 Release Planning Guide, GC18-9717, and the IMS 11 and IMS 12 libraries.



ACBLIB Member Online Change (IMS 10)

- New capability in IMS 10 to add or change one or more members of the ACBLIB dynamically without the need to perform an online change on the entire library
 - Does not support deletion of ACBLIB members
- Only the resources that are affected by the member online change are quiesced, allowing for more concurrent activity during the online change process than the current full library switch online change
- Coexists with existing full library switch online change capability
- Complements DRD for adding or changing programs and databases
- Goal is to improve usability and availability of online change over previous IMS versions

ACBLIB Member Online Change (IMS 10)

- Uses existing IMS libraries (PSBLIB, DBDLIB, ACBLIB) and existing IMS control block generation processes (PSBGEN, DBDGEN, ACBGEN)
- Uses IMS type-2 commands only
 - INIT OLC PHASE(PREPARE) TYPE(ACBMBR) ...
- Uses staging ACBLIB as the source ACBLIB
 - Full library switch OLC uses inactive ACBLIB (copied from staging ACBLIB)
- Must use OLCSTAT data set (not MODSTAT)
 - IMSplex must be using global online change
 - GOLC needs OLC=GLOBAL in DFSCGxxx or DFSDFxxx (IMS V10) PROCLIB members
 - Single IMS system cannot use MODSTAT

ACBLIB Member Online Change (IMS 10)

- CSL with RM required for multiple IMS systems
 - Resource structure recommended but not required
- CSL with SCI and OM required for single IMS system
 - Specify RMENV=N in DFSCGxxx or DFSDFxxx
- No coexistence with previous IMS versions
 - All members in an IMSplex need to be at least at IMS V10
- Further information available in the IMS White Paper, 'Position for IMS V10s Member Online Change with Global Online Change Migration', on www.ibm.com/support/techdocs, and in the IBM Information Management Software for z/OS Solutions Information Center at:
<http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/index.jsp>, and the IMS 11 and IMS 12 libraries.

IMS Repository (IMS 12)

- Contains resource and descriptor definitions for Dynamic Resource Definition (DRD)
- Provides an alternative to using RDDSs (resource definition data sets) for DRD
- Has a new Repository Server (RS) address space that is managed by the CSL RM address space
- Uses VSAM KSDS data sets to store its information
 - Catalog repository
 - IMSRSC repository
- Can be used with a single-IMS IMSplex or a multiple-IMS IMSplex
- Typically one IMS repository per IMSplex

IMS Repository (IMS 12)

- Requires a Common Service Layer (CSL) IMSplex configuration consisting of
 - Operations Manager (OM)
 - Resource Manager (RM)
 - Structured Call Interface (SCI)
 - SPOC for entering type-2 commands
 - Optional resource structure with CQS address space
- Further information available in the IBM Information Management Software for z/OS Solutions Information Center at:
<http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/index.jsp>, and the IMS 12 library.

Structured Call Interface (SCI) Overview

- Provides for standardized intra-IMSplex communications between members of an IMSplex
- IMSplex members issue CSL manager requests for SCI services
- Provides
 - Member registration services for security (CSLSCREG)
 - Communications services (CSLSCMSG)
- Used for the following functions
 - ARLN (Automatic RECON Loss Notification) (IMS 8)
 - PRA (Parallel RECON Access) (IMS 10)
 - Database Quiesce (IMS 11)
 - MSC TCP/IP (IMS 12)
- Configuration
 - One SCI address space required on each z/OS image with IMSplex members

Automatic RECON Loss Notification (ARLN)

- Capability that all members of the IMSplex sharing the same set of RECON data sets are automatically notified of any configuration change (IMS 8)
- IMSplex name for the RECON must be specified
 - DBRC SCI Registration Exit (DSPSCIX0) - recommended
 - DBRC JCL procedure parameter IMSPLEX=
 - DBRC initialization member (w/BPE) – DSPBIxxx
IMSPLEX(NAME=name)
- Further information available in the IBM Information Management Software for z/OS Solutions Information Center at:
<http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/index.jsp>,
and the IMS 11 and IMS 12 libraries.

Parallel RECON Access (PRA) (IMS 10)

- New optional capability for serialization of the DBRC RECON data sets
 - Allows multiple DBRC instances to access the RECONs concurrently
 - Alternative to using RESERVE/RELEASE volume level serialization for users with high RECON contention across DBRC instances
 - Uses Transactional VSAM (DFSMSStvs) record level locking for serialization
- PRA requires DFSMSStvs environment
- PRA is turned on with a RECON setting
`CHANGE.RECON ACCESS (SERIAL | PARALLEL)`
`INIT.RECON ACCESS (SERIAL | PARALLEL)`
- Further information available in the the IBM Information Management Software for z/OS Solutions Information Center at: <http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/index.jsp>, z/OS DFSMS documentation available in the z/OS Internet Library at: <http://www-03.ibm.com/systems/z/os/zos/bkserv/>, and the IMS 11 and IMS 12 libraries.

Database Quiesce (IMS 11)

- New capability to create coordinated recovery points for IMS databases
 - A point to which a database may be recovered
 - OLDS is switched
 - DBRC ALLOC records are closed
 - Coordinated across IMSplex
 - All databases, areas and partitions have the same recovery point time
 - Databases are not taken offline
 - Transactions and BMPs are not terminated
 - Update activity is internally quiesced after the next application synch point
 - Read-only activity can continue
- Implemented with the type-2 UPDATE DB|AREA|DATAGRP command
 - QUIESCE and NOHOLD
 - QUIESCE and HOLD

Database Quiesce (IMS 11)

- Prerequisites
 - SCI and OM are required
 - RM may be used
 - RM address space is required with multiple IMS systems
 - *RM coordinates DB Quiesce process in IMSplex*
 - RM address space is not required with a single IMS system
 - *RMENV=N is valid*
 - RM structure is not required though used if available
 - There is no global database status stored in RM for DB Quiesce
 - RECON data sets should be registered with SCI and unique group ID must be specified (DBRC SCI registration recommended)
 - RECON MINVERS value must be '11.1'
- Further information available in the the IBM Information Management Software for z/OS Solutions Information Center at:
<http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/index.jsp>, and the IMS 11 and IMS 12 library.

MSC TCP/IP Support (IMS 12)

- A new physical link MSPLINK TYPE=TCPIP
 - Take advantage of TCP/IP networks
 - Potentially higher bandwidths
- CSL provides the Structured Call Interface (SCI) for communications between IMS components including IMS Connect
 - Each IMS and its local MSC-routing IMS Connect system must be part of the same IMSplex
 - IMSPLEX= plexname parameter in the Common Layer Section of the DFSDFxxx of IMS proclib
 - The Operations Manager (OM) is not required but recommended
 - For type-2 command support
- Further information available in the the IBM Information Management Software for z/OS Solutions Information Center at:
<http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/index.jsp>, and the IMS 12 library.

Open Database Manager (ODBM) (IMS 11)



- Supports open standards for distributed and local Java application program connectivity to IMS databases
- Provides the following services
 - IMS Universal Drivers
 - Works with IMS Connect using DRDA for distributed access (type-4)
 - Works through DRA (Database Resource Adapter) interface for local access within a z/OS LPAR or across z/OS LPARs (type-2)
- Used for the following functions
 - Open Database (IMS 11)
- One ODBM address space is required on each z/OS image that contains databases to which ODBM clients (such as the IMS Universal Drivers) require access per IMSplex

Open Database (IMS 11)

- Direct access to IMS databases from programs on any platform
 - z/OS
 - Distributed
- Standards based
 - DRDA (Distributed Relational Database Architecture) to communicate with IMS Connect
 - Universal drivers for different APIs
 - JEE and Non-JEE environments
- IMS Connect provides access from distributed platforms and other z/OS LPARs
 - IMS Connect becomes gateway to IMS transactions and IMS databases

Open Database (IMS 11)

- Universal drivers concept
 - Single driver supports both type-4 (cross platform) and type-2 (same platform) connectivity
 - Java access to IMS in a uniform way with relevant industry standards
 - DRDA communications with IMS Connect for type-4 connectivity
- Universal drivers
 - **Universal DB Resource Adapter**
 - JEE environments (e.g. WebSphere Appl. Server)
 - JCA
 - **Universal JDBC driver**
 - Non-JEE and JEE environments
 - JDBC
 - **Universal DLI driver**
 - Non-JEE and JEE environments
 - DL/I call concepts (SSAs, paths,...)

Open Database (IMS 11)

- z/OS address space
 - Common Service Layer component
- Functions
 - Receives database connection requests from IMS Connect
 - Translates incoming database requests from DDM protocol to DL/I calls
 - Translates responses to the client into the DDM protocol
 - Used by IMS Catalog (IMS 12) and IMS Explorer
- Distributed Syncpoint (global transaction) requires RRS on z/OS
 - Use of RRS with ODBM is optional

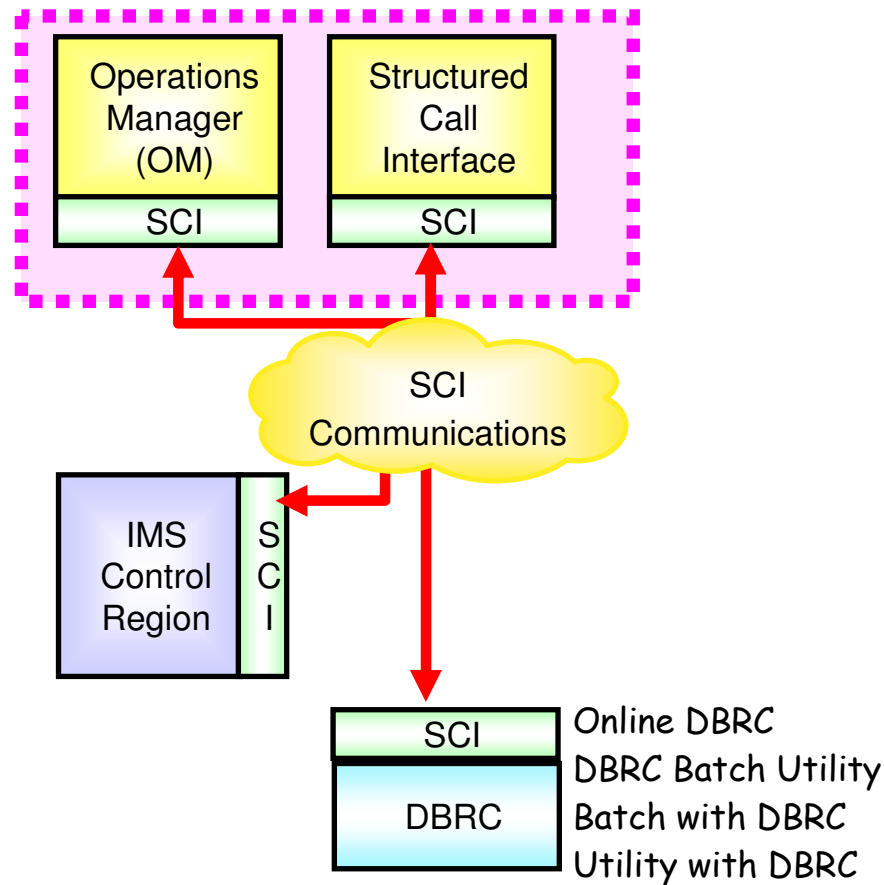
Open Database (IMS 11)

- Provides access to IMS databases from any platform
 - z/OS and distributed
 - Java JEE and non-JEE
- Further information available in the IBM Information Management Software for z/OS Solutions Information Center at:
<http://publib.boulder.ibm.com/infocenter/dzichelp/v2r2/index.jsp>, and the IMS 11 Open Database Redbook, SG24-7856-00, and the IMS 11 and IMS 12 libraries

IMS Common Service Layer Implementation

- Most new functions are based on CSL
 - Operations management (OM)
 - Resource management (RM)
 - Structured call interface (SCI)
 - Open database access (ODBM)
- Though available since IMS 8, IMS 10 / IMS 11 / IMS 12 / IMS 13 provide many more interesting and useful functions
- Seriously consider implementing a minimal CSL (SCI/OM)
 - Called '**enhanced command environment**'
 - Most new functions require OM type-2 commands
 - Begin in test environment first

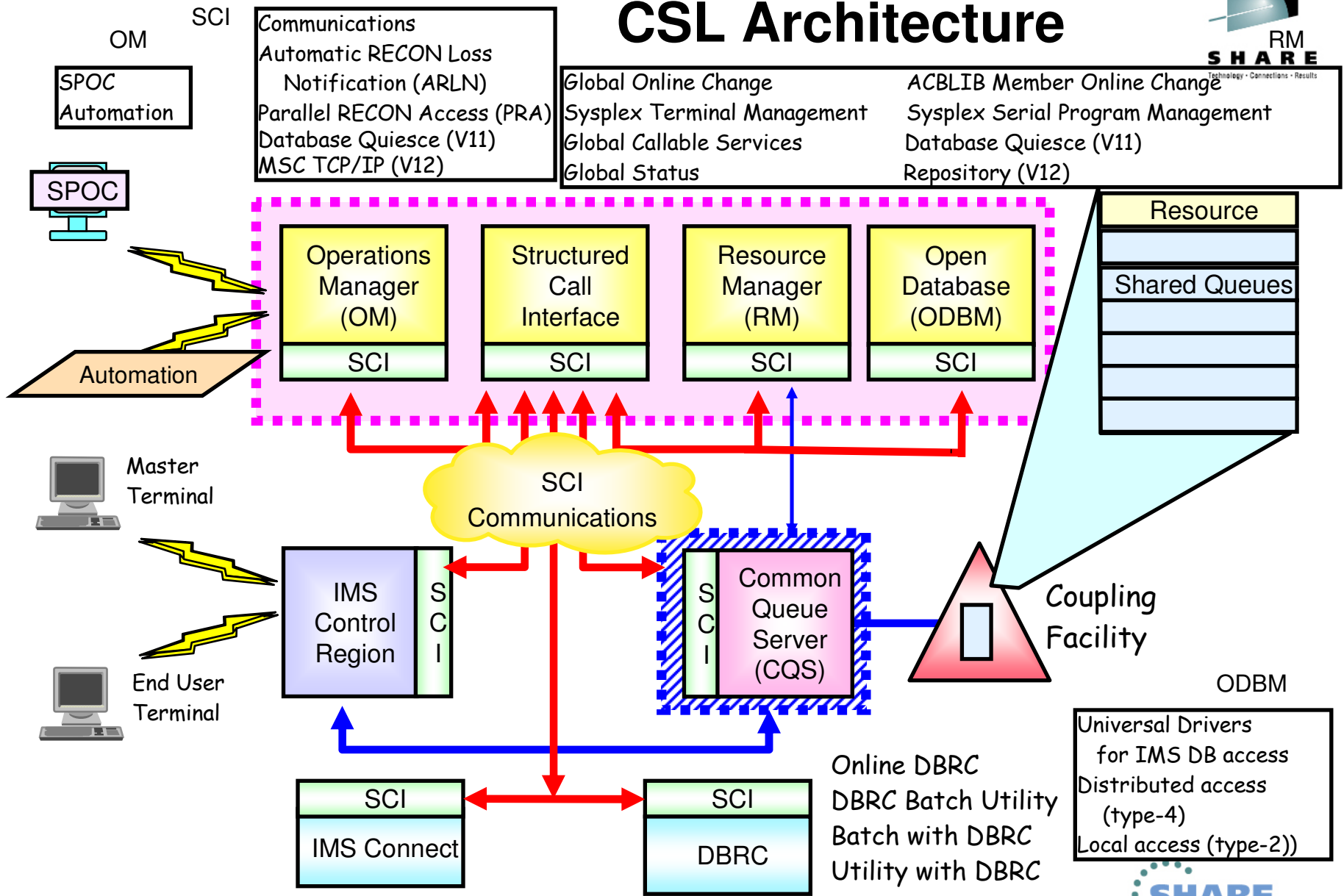
CSL Architecture (Address Spaces) – Enhanced Command Environment



Summary

- Common Service Layer (CSL) Overview
 - OM, RM, SCI, ODBM
- Details for using functions of CSL
 - OM
 - RM
 - SCI
 - ODBM
- CSL is the IMS architecture that is being used for more and more new enhancements
- Begin installing CSL to take advantage of these new capabilities

CSL Architecture



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