# IMS/DB & IMS/TM for Technical Support Training

Duration: **5 Day**

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This course is essential for all those who have responsibility for the support and maintenance of IMS DB and IMS and IMS TM technical environments. Covering both IMS on-line operations and support functions, the course provides comprehensive cross-training for systems support specialists from parallel disciplines such as z/OS, CICS, or DB2.<br><br>Attendees will learn effective IMS system administration, based on a comprehensive insight into the structure and function of the IMS processes and resources, together with the parameters and operator commands that control them.<br>Typical problems are outlined, emphasizing the identification of the appropriate skills and the utility procedures required to resolve them. Exercises reinforce the formal tuition sessions.<br><br> Following this course, attendees will be able to provide standby support to their IMS colleagues (following an overview of the standards, conventions, and procedures that are used in their own IMS department).

## Prerequisites

A general understanding of z/OS, ISPF, VSAM and at least one year of experience in providing technical support to z/OS, CICS, COBOL, MQ, or a similar area. Previous attendance on the introductory course **IMS Essentials** is also strongly recommended.

## What You Will Learn

- describe the role of the Systems Administrator, and the terms, activities, and functions specific to the role
- describe the process of a Control Blocks generation, and implementation via Online Change
- follow the path of a Transaction through an Online IMS system identifying supporting buffer pools, datasets, and parameter definitions
- explain the internal functions for effective selection of system definition and tuning options
- identify problem areas and assist in resolution efforts with appropriate functional specialists
- maximize IMS performance to meet critical application requirements within the scope of available resources.

## Training Outline

**Overview and Definitions**

Database Management Systems (DBMS); IMS configurations: batch and online; System Regions; Dependent Regions; The Control Region (CTL); The DLI Separate Address Space (DLISAS); The Database Recovery Control Region (DBRC); The IMS Resource Lock Manager (IRLM); The Message Processing Region (MPR); The Batch Message Processing Region (BMP); The IMS Fast Path region (IFP); IMS configurations - DB/DC, DBCTL or DCCTL; IMS configurations: CICS, DB2, Function Shipping, Data Sharing; Shared queues; IMS and the z/OS environment; IMS and the network: VTAM, OTMA, Internet; Extended Terminal Option; IMS products.

**IMS and the System Administrator**

The System Administrator; Useful skills; Tasks; keep it running; Configuration updates; Resources; Machine readable; Other players; IMS System Programmer; MVS Systems Programmer; VTAM System

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Programmer; DBAs; Security System Programmers; Security Administrators; Storage Management Administrator; Applications Programmer.

**The Life Cycle of a Message**

Message arrival; Arrival processing - the players; DC communications ITASK; Communications analyzer; Input message queuing; Queue buffers & disk queue datasets; Functional parallelism; DRRN format; Message arrival and queuing summary; Operational datasets; Communications output to queue; Output queuing; Queue mechanism; Intermediate and final message queuing; Message delivery: IMS spool line, JES SPOOL API; Message purge.

**Message Scheduling**

IMS message scheduling & processing; Driving factor for MPR environment; Transaction-related scheduling attributes; Transaction-related advanced scheduling attributes; Transaction-related scheduling attribute limits (continued); Region scheduling attributes; Quick reschedule; Pseudo wait-for-input; Ruling factors; Other MPR scheduling factors; BMP scheduling and processing; Fast path regions; Scheduling & processing summary.

**Control Blocks**

Database macro function; Application definition macro function; PSB handling; Dynamic PSB option; DBD handling; VTAM control blocks.

**JCL ... JCL ... JCL!!!**

JCL ... JCL ... JCL; IMS control region JCL; DL/I separate address space JCL; DBRC JCL; IMS reader JCL; Message processing region JCL; IMS log archiver JCL; Spool print JCL; IRLM JCL; Miscellaneous JCL procs.

**Operational Datasets**

Operational datasets; ACBLIB; FMTLIB; MODBLKS; MODSTAT; DFSMDA.

**PROCLIB Definition**

How IMS uses PROCLIB; DBRC and DLISAS; MSDB specification; Use of Disabled Reference; Page fixing areas of storage; Activating XRF; Pre-initialization routines; Module pre-load list; Control region execution parameters; Buffer definitions; Virtual fetch; OSAM specifications; VSAM specifications; Sequential buffering; Logging datasets; Trace and serviceability options; LU 6.2 device descriptors.

**IMS Setup and Execution**

Control region START command; DLISAS and DBRC startup; True batch; On-call functions; Starting IMS; The workers; Shutting down IMS components; Shutting down IMS.

**Command & Control**

IMS commands entry methods; IMS command format; Altering IMS parameters; TCO overview; Automated Operator Program (Type 1); CICS-DBCTL; Automated Operator Program (Type 2); Multiple IMSs (IMSPLEX); Operations Manager; OM REXX SPOC API; Type 2 commands.

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### IMS Logging

Concepts; Logging entities; OLDS - Online Log Data Set; OLDS recording characteristics; WADS - Write Ahead Data Set; SLDS & RLDS; Restart Data Set; RECON datasets; Record layout; Logical/physical logging; Functions; Reading the log records; FP logging in a single IMS system.

### DBRC Considerations

DBRC overview; RECON initialization and structure; RECON records; Maintaining the RECONs; Migrating RECONs to new release; Skeletal JCL; Log maintenance JCL; Entering commands online; Batch command support; Database registration; RECON maintenance.

### Storage Manager

Storage pools; Fixed storage pools; Storage manager pools; Pool structure; Buffer pool definitions; DFSSPMxx PROCLIB member; Execute parameter changes; Pool allocation; Storage usage; Storage manager trace facility; /DISPLAY POOL command; System checkpoint statistics; Log record contents; Migration consideration - page fixing; Tuning.

### Installation

Planning for IMS; System Modification Program Extended (SMP/E); IMS distribution libraries; IMS target libraries; IVP jobs & tasks; Installation SYSGEN; The system generation process; Implementation steps: installation, customisation; Online change; Online change commands; Modifying Resource Definitions; Major components of DRD; Modifying MODBLKS resources without DRD; Modifying MODBLKS resources with DRD; Environment for DRD.

### z/OS Considerations

System integration; IMS libraries; Updating z/OS for IMS; z/OS modules & tables.

### VTAM Considerations

VTAM considerations; General; Defining VTAM to IMS; Defining IMS to VTAM; Multiple System Coupling (MSC); Intersystem Communication (ISC); ISC supports.

### System Definition

Base system definition; Macro coding requirements; The system definition file; System Configuration; Application and Database; Data Communications; The IMS parameter pyramids; Application parameters; SYSTEM parameters.

### System Definition: Configuration

System configuration macros; The IMSCTRL macro; The BUFPOOLS macro; The COMM macro; The FPCTRL macro; The IMSCTF macro; The MSGQUEUE macro; The security macro; The IMSGEN macro.

### System Definition: Application and Database

Application and database macros; The database macro; The APPLCTN macro; The RTCODE macro; The TRANSACT macro.

### System Definition: Data Communications

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Data communications macros; The NAME macro; MSC definitions; The MSPLINK macro; The MSLINK macro; The MSNAME macro; The NAME macro - remote terminals; MSC coding example; VTAM terminal definitions; The TYPE macro; The terminal macro - VTAM; VTAM LU 6 definitions; VTAM LU 6.1 example.

**Exits**

Why use exits?; Basic coding requirements; How exits are invoked; Commonly used exits.

**External Subsystem**

External Subsystem Attach Facility (ESAF); External Subsystem Attachment Package (ESAP); ESAP resources; External Subsystem Module Table (ESMT); Resource Translation Table (RTT); Basic ESAP processing; Subsystem connections; External subsystem considerations; The IMS attachment; Installing the IMS attachment; Make the DB2 libraries available to IMS; IMS subsystem member; Resource Translation Table (RTT); IMS/DB2 batch; IMS dependent region; associated subsystems & functions: WebSphere MQ, CICS, ODBA, IMS Connect.

**ODBA, DBCTL & CICS**

IMS DBCTL and CICS; CICS database management environments; Why CICS - DBCTL?; CICS interface components; CICS - DL/I requests; Task Control Block structure; Two-phase commit processing; Commit processing completion; Disconnect from DBCTL; Open Data Base Access; DBA security; Examples: DB2 stored procedures and MQ.

**Security**

IMS security; Protected resources; Overview of IMS secured interfaces; System related resources; Terminal related resources; Application related resources; IMS's RACF Resource Classes; Sysgen SECURITY macro; Startup security options; IMS security exit routines; The RACF database; RACF commands; A day in the life...How IMS talks to SAF; When IMS starts; When a user signs on to IMS; When a user accesses a resource; When a user signs off; When IMS terminates.

**Problem Determination**

Overview; DB/DC; ESTAE; Corollary address spaces; MVS failures; Control region failures; System DS failures; Log errors; Dependent region failures; Application program failures; Region controller failure; Data base failures; Write errors; Read errors; IRLM failures; IRLM restart; Database problems; Scheduling failures; Operational dataset problems; DB2; DBCTL/CCTL.

**Establishing a Performance Baseline**

Define service levels; Establish performance objectives; Establish transaction profiles; Develop a monitoring strategy; Establish monitoring techniques; Continuous monitoring; Monitoring for performance tuning; Establish base profiles; Guideline numbers.

**IMS Monitor Reports**

Using the IMS monitor; Starting the IMS monitor; Run profile report; Reports report; Region summary report; Region occupancy report; Region IWAIT report; Program elapsed time; Program I/O report; Program summary report; Message format buffer pool report; Message queue pool report; Data base

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buffer pool report; VSAM buffer pool report.

**IMS General Tuning Considerations**

Address space dispatching priorities; Library and DASD allocations; Fixing buffer pools; MFS general tuning considerations; MPR loading programs; Overview of VLF/LLA; External trace facility; Trace datasets; External trace activation.

**Parallel Sysplex Overview**

Parallel sysplex; Sysplex timer; Coupling Facility; Cross-System Extended Services (XES); Hardware components; Cross-System Coupling Facility (XCF); CF structures; Parallel sysplex services; Comprehensive view of IMS; Strategic IMS architecture; Common Service Layer (CSL); Operations Manager; Resource Manager.

**Shared Databases**

Data sharing: then and now; Block Level Data Sharing (BLDS); Required for data sharing; BLDS setup (IMS); BLDS setup (IRLM); BLDS setup (CFRM policy); Benefits of BLDS.

**Shared Message Queues**

Shared databases; Shared queues; Common Queue Server (CQS); Shared queue setup (IMS); Shared queue setup (CQS); Shared queues setup (sample CQS job); Shared queues setup (CQS CHKPT DS); Shared queues setup (SRDS); Shared queues setup (CFRM policy); Shared queues setup (logger policy).

**Extended Terminal Option**

Overview; Benefits; Static terminal definition; Dynamic (ETO) definition; Implementation; Exits in support of ETO; Dead letter queue; Session establishment; Sign-on processing; Sign-on information sources; AUTOLOGON; AUTOLOGON processing; ETO compatibility options.

**Some Base Enhancements**

IMS and APPC; APPC VTAM definitions; APPC parm member APPCPMxx; LU descriptor definition (DFS62DTx); APPC uses; APPC commands; IMS and OTMA; OTMA definitions; OTMA commands.