IMS DATABASE ADMINISTRATION

A Practical Mainframe Operations and Troubleshooting Workbook

IMS DB architecture • Database resources • Recovery readiness • Operational diagnosis

Estimated time: 45–60 minutes | Audience: IMS DBAs, mainframe system programmers and production support teams

What you will learn

Identify core IMS DB concepts, understand database and control resources, investigate common availability and performance symptoms, and plan controlled recovery and maintenance activities. Use this workbook with the exact IMS release documentation and site-approved procedures.

1. IMS DB: the administrator's view

IBM Information Management System (IMS) provides hierarchical database and transaction processing capabilities. IMS DB administration focuses on database definitions, access paths, data integrity, availability, recovery, reorganisation, logging and coordination with dependent IMS and z/OS services.

Area / resource	Purpose and DBA focus
IMS databases	Hierarchical data structures and segments; understand database organisation, access patterns and application dependencies.
Database data sets	Physical data components that hold database records; monitor allocation, availability and integrity.
DBD and PSB definitions	Describe database structure and application access requirements; manage changes through controlled definition and deployment processes.
ACB / runtime definitions	Provide runtime control information as applicable to the IMS release and configuration.
RECON data sets	Record recovery and database recovery-related information; protect availability and consistency.
IMS logs	Capture activity needed for restart, recovery and operational diagnosis.
Image copies and recovery assets	Support restoration and recovery objectives; verify currency, availability and retention.

Administrator's principle

Treat database definition, physical data sets, logging and recovery assets as a connected control environment. A database open or access failure may involve definitions, allocation, authorisation, locks, logs, recovery state or an underlying z/OS dependency.

2. Routine IMS DBA health checks

Check	Questions and evidence
Database status	Are required databases available and in the expected state? Are there unexpected stops or restricted conditions?
Data set health	Are database data sets allocated, accessible and free from relevant system or I/O errors?
Logging and RECON	Are logs and RECON resources available and consistent with site procedures?
Recovery readiness	Are image copies and recovery resources current, catalogued and retained as required?
Application access	Are affected programs and transactions able to access required databases?
Performance	Are response time, I/O activity, buffer usage and contention trends within established thresholds?

Use local monitoring baselines and approved IMS commands. Confirm command syntax and expected status values for the installed IMS release before acting.

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3. Troubleshooting playbook

Symptom	Investigation path	Avoid
Database unavailable	Capture database name and status; inspect IMS messages, recent changes, data set allocation, authorisation and dependencies.	Repeated open/start attempts without diagnosing the condition.
Application cannot access database	Confirm scope and application; review PSB/DBD/runtime definition alignment, database status and security.	Changing definitions without impact analysis.
Recovery required	Establish failure point, available logs, image copies, RECON status and recovery objective; follow approved recovery plan.	Ad hoc restore or recovery actions.
Slow database access	Compare workload and I/O trends; review access path, database organisation, contention and recent application changes.	Reorganising or tuning from a single metric.
Unexpected database changes	Review change history, utilities, jobs, authorisations and application activity; preserve evidence.	Making corrective updates before data integrity is assessed.

4. Scenario: database unavailable after maintenance

Situation: After a scheduled maintenance window, an application reports that an IMS database cannot be accessed. The database was available before the window. The operations team confirms that maintenance jobs ran, but the application owner has not yet identified a code change.

Investigation sequence

Step	Action and evidence
1. Define scope	Capture database name, affected applications, start time, region and exact error messages.
2. Confirm status	Check database status using approved site procedures; identify whether the issue affects one or multiple applications.
3. Review maintenance	Inspect job output, utility results, change records and any definition deployment during the window.
4. Validate dependencies	Check database data sets, authorisation, logs, RECON and required runtime definitions.
5. Assess integrity	Determine whether any utility or interruption left the database in a restricted or recovery-required state.
6. Plan remediation	Engage IMS DBA, system programmer and application owner; use approved recovery or rollback procedure.
7. Validate	Confirm database availability, application access and data integrity with agreed checks.

Decision prompts

- Did the maintenance include a database utility, definition deployment or data set change?
- Do messages indicate an availability issue, definition mismatch or recovery condition?
- Are logs, RECON and image-copy resources usable for the required recovery path?
- What validation confirms application access and data integrity?

5. Controlled change and recovery checklist

Control	Evidence required
Scope	Database, data sets, applications, regions and business impact identified.
Baseline	Current definitions, status, logs and recovery assets recorded.
Technical review	Release-specific IMS documentation, dependencies and utility implications reviewed.
Testing	Definition or maintenance change validated in a representative test environment.
Recovery	Recovery point, image-copy/log availability, rollback options and owners confirmed.
Approval	IMS DBA, application, operations and relevant platform owners approve.
Post-change	Database status, application access, integrity and monitoring verified.

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6. IMS DBA incident worksheet

Field	Record
IMS subsystem / environment	_____
Database / data set	_____
Application / PSB involved	_____
Incident start and scope	_____
Messages and job / utility evidence	_____
RECON / log / image-copy status	_____
Likely cause and alternatives	_____
Recovery or corrective action approval	_____
Validation and integrity evidence	_____

7. Knowledge check

1. What is the primary purpose of IMS database definitions such as DBDs? **A.** Describe database structure **B.** Route IP traffic **C.** Compile JCL **D.** Manage printer queues

2. Which resource is central to IMS database recovery information? **A.** RECON data sets **B.** JES spool **C.** SYSOUT class **D.** Terminal map

3. An application cannot access a database after maintenance. What is the best initial approach? **A.** Restart everything **B.** Capture messages and check database status, maintenance output and dependencies **C.** Delete the database data set **D.** Recompile unrelated programs

4. Why verify image copies and logs before recovery? **A.** To confirm recovery resources and recovery point are usable **B.** To reduce documentation **C.** To bypass approval **D.** To avoid validation

5. What should be confirmed after corrective action? **A.** Only that the job ended **B.** Database availability, application access and data integrity **C.** Only CPU usage **D.** No further checks

Answer key: 1-A, 2-A, 3-B, 4-A, 5-B

Key takeaway

IMS DBA operations require disciplined control of database definitions, data sets, logs and recovery assets. Preserve evidence, establish the database state, choose a release-appropriate recovery path and validate both service availability and data integrity.

Further learning: Consult IBM Documentation for the installed IMS release. Review IMS database administration, DBD/PSB and runtime definitions, database data sets, RECON, logging, image copies, recovery, reorganisation and utilities. Follow local standards for commands, backups and production change control.

Ez-Learn course resource: IMS Database Administration | Use alongside the official curriculum, instructor guidance and approved lab environment.

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