

MySQL OCP 8.0 DBA Exam Topic Map

The 7 exam domains of 1Z0-908, key commands and common traps — at a glance

Oracle 1Z0-908 · MySQL 8.0

Updated: October 2026 · Study guide



OCP

EXAM CODE
1Z0-908 · multiple choice

CREDENTIAL
OCP · MySQL 8.0 Database Administrator

SCOPE
7 domains · Architecture → High Availability

DURATION / QUESTIONS / PASSING
Sources differ → verify on education.oracle.com

RETIREMENT DATE
Nov 16, 2026 · last chance to sit

01 Architecture



SUBTOPIC	WHAT YOU MUST KNOW
Client Connections	TCP/IP 3306, X Protocol 33060, Unix socket (Linux), named pipe / shared memory (Windows). On Linux localhost → socket; 127.0.0.1 → TCP. --protocol=TCP to force it.
Data Storage	Transactional Data Dictionary inside InnoDB (mysql.ibd). .frm / .TRG / .par files are gone. Metadata stored as SDI inside .ibd → ibd2sdi.
InnoDB Files	ibdata1 (system TS, change buffer) · file_per_table .ibd (default ON) · general TS · undo_001/002 · ibtmp1 + session temp · doublewrite #ib_*.dblwr (8.0.20+) · redo: ib_logfile* → 8.0.30+ #innodb_redo/
Buffer & Cache	Global: innodb_buffer_pool_size, innodb_log_buffer_size, table_open_cache, key_buffer_size (MyISAM). Per session: sort_buffer_size, join_buffer_size, read_buffer_size, tmp_table_size.
Data Dictionary	INFORMATION_SCHEMA is now a set of views over DD tables. DD tables cannot be accessed directly. Stats cache: information_schema_stats_expiry (86400 s).

QUICK DISCOVERY

```
SELECT SPACE, NAME, ROW_FORMAT, SPACE_TYPE
FROM information_schema.INNODB_TABLESPACES;
SHOW VARIABLES LIKE 'innodb_buffer_pool%';
SELECT @@innodb_redo_log_capacity; -- 8.0.30+
```

Exam Trap: Query Cache was removed entirely in 8.0 — query_cache_* options raise errors. Eliminate any answer that says "speed it up with the query cache".

Memory Formula: Total ≈ global buffers + (max_connections × session buffers). Growing session buffers is multiplied by the connection count.

02 Installation & Configuration



SUBTOPIC	WHAT YOU MUST KNOW
Installation	RPM/DEB repo, generic tar, MSI, Docker. mysqld --initialize → temporary root password written to the error log; --initialize-insecure → root with no password.
Created Files	datadir (/var/lib/mysql), auto.cnf (server_uuid), auto-generated ca.pem / server-cert.pem, mysqld-auto.cnf (SET PERSIST), error log.
Start / Stop	systemctl start mysqld, mysqld_safe, SHUTDOWN / RESTART via SQL, mysqladmin shutdown.
Upgrade	8.0.16+ the server itself performs the upgrade; mysql_upgrade deprecated. --upgrade=AUTO NONE MINIMAL FORCE. Pre-check: Shell util.checkForServerUpgrade(). In-place vs logical.
Option Files	Order: /etc/my.cnf → /etc/mysql/my.cnf → SYSCONFDIR/my.cnf → \$MYSQL_HOME/my.cnf → ~/.my.cnf → ~/.mylogin.cnf. Last one read wins. --defaults-file, --defaults-extra-file, --no-defaults, my_print_defaults.
Variables	SET GLOBAL → lost on restart · SET PERSIST → immediate + persistent · SET PERSIST_ONLY → read-only variable, after restart · RESET PERSIST. Source: performance_schema.variables_info.
Multiple Instances	Separate datadir, port, socket, pid-file, server_id per instance. mysqld_multi + [mysqldN] groups or systemd mysqld@N.

PERSISTENT SETTINGS & ENCRYPTED LOGIN

```
SET PERSIST max_connections = 500;
SET PERSIST_ONLY innodb_log_file_size = 1073741824;
SELECT VARIABLE_NAME, VARIABLE_SOURCE
FROM performance_schema.variables_info
WHERE VARIABLE_SOURCE = 'PERSISTED';
# ~/.mylogin.cnf (obfuscated)
$ mysql_config_editor set --login-path=dba \
--user=root --host=localhost --password
```

Exam Trap: If an option appears in several files, the last one read wins. mysqld-auto.cnf (SET PERSIST) is processed after all other option files.

03 Security

DENSE



SUBTOPIC	WHAT YOU MUST KNOW
Accounts	'user'@'host' — the most specific host matches first. CREATE USER, ALTER USER, RENAME USER, DROP USER.
Auth Plugin	Default: caching_sha2_password. Legacy: mysql_native_password, auth_socket, sha256_password; Enterprise: LDAP, PAM, Kerberos.
Roles	CREATE ROLE → GRANT role TO user. Roles are inactive by default: SET DEFAULT ROLE or activate_all_roles_on_login=ON. mandatory_roles.
Privileges	Global / DB / table / column / routine level. Dynamic privileges: BACKUP_ADMIN, SYSTEM_VARIABLES_ADMIN, CLONE_ADMIN... partial_revokes, WITH GRANT OPTION.
Password	component_validate_password, PASSWORD EXPIRE, password_history, FAILED_LOGIN_ATTEMPTS + PASSWORD_LOCK_TIME, dual password RETAIN CURRENT PASSWORD.
Connections	require_secure_transport=ON, REQUIRE SSL X509, tls_version. Certificates are auto-generated at install.
Encryption	InnoDB TDE requires a keyring. ENCRYPTION='Y', default_table_encryption, binlog_encryption, redo/undo encryption. ALTER INSTANCE ROTATE INNODB MASTER KEY.
Host & SQLi	Run as OS user mysql, secure_file_priv, local_infile=OFF. SQLi: prepared statement. Enterprise Firewall: RECORDING → PROTECTING / DETECTING.

ROLE-BASED ACCOUNT

```
CREATE ROLE 'app_ro';
GRANT SELECT ON shop.* TO 'app_ro';
CREATE USER 'ali'@'10.0.%' IDENTIFIED BY '$3cr3t!'
PASSWORD EXPIRE INTERVAL 90 DAY
FAILED_LOGIN_ATTEMPTS 5 PASSWORD_LOCK_TIME 1;
GRANT 'app_ro' TO 'ali'@'10.0.%';
SET DEFAULT ROLE ALL TO 'ali'@'10.0.%';
```

Exam Trap: In 8.0 GRANT ... IDENTIFIED BY cannot create users — use CREATE USER first. Old clients without caching_sha2 support fail to connect.

04

Monitoring & Maintenance

Subtopic	What you must know
Error Log	<code>log_error</code> , <code>log_error_verbosity</code> (1-3; default 2), <code>log_error_services</code> (component for JSON sink).
General / Slow Log	<code>general_log</code> · <code>slow_query_log</code> , <code>long_query_time</code> (10 s), <code>log_queries_not_using_indexes</code> , <code>min_examined_row_limit</code> . <code>log_output=FILE TABLE</code> . Analyze: <code>mysqldumpslow</code> .
Binary Log	Enabled by default in 8.0. <code>binlog_format=ROW</code> , <code>binlog_expire_logs_seconds</code> (30 days), <code>PURGE BINARY LOGS</code> , <code>FLUSH BINARY LOGS</code> .
Audit	MySQL Enterprise Audit: <code>audit_log</code> plugin, JSON/XML format, <code>audit_log_filter_set_filter()</code> for rule-based filtering.
Processes & Status	<code>SHOW PROCESSLIST</code> , <code>performance_schema.threads</code> , <code>sys.processlist</code> , <code>KILL [QUERY]</code> . Status: <code>Threads_connected</code> , <code>Threads_running</code> , <code>Aborted_connects</code> , <code>Max_used_connections</code> .
Enterprise Monitor	Service Manager + Agent architecture, Advisors , events, Query Analyzer , dashboards.
Capacity Planning	<code>DATA_LENGTH</code> + <code>INDEX_LENGTH</code> , <code>DATA_FREE</code> (I.S.TABLES), <code>INNODB_TABLESPACES.FILE_SIZE</code> , <code>sys.schema_table_statistics</code> ; track growth trends.
Locks	<code>performance_schema.data_locks</code> / <code>data_lock_waits</code> (new in 8.0), <code>metadata_locks</code> , <code>sys.innodb_lock_waits</code> , <code>innodb_lock_wait_timeout</code> (50 s), <code>innodb_print_all_deadlocks</code> .

🔒 WHO IS BLOCKING WHOM?

```
SELECT waiting_pid, waiting_query,
       blocking_pid, blocking_query,
       wait_age, sql_kill_blocking_query
FROM sys.innodb_lock_waits;
-- Metadata lock (DDL waiting):
SELECT * FROM sys.schema_table_lock_waits;
-- Latest deadlock:
SHOW ENGINE INNODB STATUS\G
```

⚠️ Exam Trap:

information_schema.INNODB_LOCKS / INNODB_LOCK_WAITS were removed in 8.0 → replaced by performance_schema.data_locks and data_lock_waits.

05

Query Optimization

Subtopic	What you must know
EXPLAIN Variants	<code>EXPLAIN</code> (tabular), <code>FORMAT=JSON</code> (cost), <code>FORMAT=TREE</code> (8.0.16), <code>EXPLAIN ANALYZE</code> (8.0.18 — actually executes the query).
Optimizer	Cost-based; <code>mysql.server_cost</code> / <code>engine_cost</code> . <code>optimizer_switch</code> , <code>optimizer_trace</code> , hint <code>/*+ INDEX(t idx) */</code> , hash join (8.0.18).
8.0 Index Features	Invisible index (test without dropping), descending index, functional index (8.0.13), histogram : <code>ANALYZE TABLE t UPDATE HISTOGRAM ON c</code> .
Index Design	Clustered PK → secondary indexes contain the PK. Leftmost prefix rule, covering index, prefix index, FULLTEXT, SPATIAL.
Index Statistics	<code>innodb_stats_persistent=ON</code> , <code>innodb_stats_persistent_sample_pages</code> (20), <code>ANALYZE TABLE</code> , <code>mysql.innodb_index_stats</code> , <code>SHOW INDEX</code> → Cardinality.
Query Analysis	MEM Query Analyzer, <code>events_statements_summary_by_digest</code> , <code>sys.statements_with_full_table_scans</code> , <code>sys.schema_unused_indexes</code> , <code>sys.schema_redundant_indexes</code> .

🔍 EXPLAIN TYPE — BEST TO WORST

system

const

eq_ref

ref

fulltext

ref_or_null

index_merge

unique_subquery

index_subquery

range

index

ALL

Extra Value	Meaning
Using index	Covering index — table rows not read
Using index condition	ICP — filter pushed down to the storage engine
Using filesort	Extra sort — ORDER BY not served by an index
Using temporary	Temporary table — GROUP BY / DISTINCT / UNION

🔪 TEST AN INDEX WITHOUT DROPPING IT

```
ALTER TABLE orders ALTER INDEX idx_old INVISIBLE;
EXPLAIN ANALYZE SELECT * FROM orders WHERE cust_id = 42;
CREATE INDEX idx_fx ON users ((LOWER(email)));
```

⚠️ Exam Trap:

A primary key **cannot be made invisible**. A histogram is **not** an index — it gives selectivity estimates for non-indexed columns and is not updated automatically.

06

Backup & Recovery

DENSE

Tool	Type	Notes
mysqldump	Logical	<code>--single-transaction</code> (InnoDB consistent, hot), <code>--source-data=2</code> , <code>--routines</code> <code>--events</code> , <code>--set-gtid-purged</code>
mysqlpump	Logical	Parallel (<code>--default-parallelism</code>); in 8.0.34 deprecated
Shell util.*	Logical	<code>dumpInstance()</code> , <code>dumpSchemas()</code> , <code>loadDump()</code> — parallel & compressed
MEB	Physical	<code>mysqlbackup: backup-and-apply-log</code> , <code>--incremental</code> , <code>backup-to-image</code> , <code>validate</code> , <code>copy-back</code> · hot for InnoDB
Raw / Snapshot	Physical	Cold copy (server stopped), LVM/ZFS snapshot, transportable TS: <code>FLUSH TABLES t FOR EXPORT</code>
CLONE plugin	Physical	8.0.17+: <code>CLONE INSTANCE FROM</code> — replica/member provisioning
mysqlbinlog	Binlog	<code>--read-from-remote-server</code> <code>--raw</code> <code>--stop-never</code> for live binlog backup

📖 TERMS

Hot / Warm / Cold

Reads+writes allowed / reads only / server stopped

Full / Incr. / Diff.

Everything / since last backup / since last full

Logical vs Physical

SQL output, portable, slow restore / file copy, fast, same version-platform

🕒 POINT-IN-TIME RECOVERY

```
$ mysqldump --single-transaction --source-data=2 \
  --routines --events --all-databases > full.sql
# 1) restore the full backup
$ mysql < full.sql
# 2) replay binlogs up to just before the bad event
$ mysqlbinlog --start-position=157 \
  --stop-datetime="2026-10-13 09:59:59" \
  binlog.000042 binlog.000043 | mysql
```

⚠️ Exam Trap:

`--single-transaction` does **not** make MyISAM tables consistent. In 8.0.26+ `--master-data` was renamed to `--source-data`.

07

High Availability

Replication · InnoDB Cluster

DENSEST

⚡ REPLICATION

Why?

Read scaling, failover candidate, backups from replicas, geo distribution, analytics isolation.

Types

Async (default), **semi-sync** (`rpl_semi_sync_source` plugin — at least 1 replica ACK), GTID-based or file+position.

Topologies

Source → replica, chain (relay; `log_replica_updates`), **multi-source** (`FOR CHANNEL`), circular.

Threads

Source: **binlog dump** · Replica: **receiver (I/O)** → relay log → **applier (SQL)** → workers (`replica_parallel_workers`, `LOGICAL_CLOCK`).

Requirements

Unique `server_id`, binlog enabled, user with **REPLICATION SLAVE**, for GTID `gtid_mode=ON` + `enforce_gtid_consistency=ON`.

Monitoring

`SHOW REPLICATION STATUS\G`: `Replica_IO_Running`, `Replica_SQL_Running`, `Seconds_Behind_Source`, `Last_SQL_Error`.
`P_S`: `replication_connection_status`, `replication_applier_status_by_worker`.

Troubleshooting

With GTID, skip a failing event by injecting an **empty transaction** with the same GTID. `sql_replica_skip_counter` only when GTID is off. Broken replica → rebuild with **CLONE**.

➤ GTID REPLICATION SETUP (8.0.23+ SYNTAX)

CHANGE REPLICATION SOURCE TO
SOURCE_HOST='db1', SOURCE_USER='repl', SOURCE_PASSWORD='***',
SOURCE_AUTO_POSITION=1, SOURCE_SSL=1;
START REPLICA;
-- Skip the failing GTID:
STOP REPLICA; SET GTID_NEXT='uuid:1234';
BEGIN; COMMIT; SET GTID_NEXT='AUTOMATIC'; START REPLICA;

🔗 GROUP REPLICATION & INNODB CLUSTER

Group Replication

Paxos-based (XCom) group communication; **single-primary** (default) or multi-primary. Conflict detection via certification.

GR Requirements

InnoDB only, **PK on every table**, GTID on, `binlog_format=ROW`, communication port `33061`.

Quorum

$n = 2f + 1 \rightarrow 3$ members tolerate 1 failure, 5 tolerate 2. Max 9 members.

InnoDB Cluster

GR + MySQL Shell (AdminAPI) + MySQL Router. Router ports: `6446` RW / `6447` RO (classic), `6448/6449` (X).

Recovery

Distributed recovery: incremental via binlog or **CLONE**. Complete outage: `dba.rebootClusterFromCompleteOutage()`. Quorum loss: `forceQuorumUsingPartitionOf()`.

Related Solutions

InnoDB ReplicaSet (8.0.19, async, manual failover), **ClusterSet** (8.0.27, cross-cluster DR).

➤ MYSQL SHELL — ADMINAPI (JS MODE)

```
dba.checkInstanceConfiguration('admin@db1:3306')
dba.configureInstance('admin@db1:3306')
var c = dba.createCluster('prodCluster')
c.addInstance('admin@db2:3306', {recoveryMethod: 'clone'})
c.status() // ONLINE / RECOVERING / UNREACHABLE
c.setPrimaryInstance('db2:3306')
c.rejoinInstance('db3:3306')
$ mysqlrouter --bootstrap admin@db1:3306 --user=mysqlrouter
```

⚠ Exam Trap:

Terminology changed in 8.0.22–8.0.26: **MASTER→SOURCE**, **SLAVE→REPLICA**. Questions may use either syntax — know both.

08

Exam Prep Checklist

☑ Build a lab: 3-node InnoDB Cluster on VMs/Docker

dba.createCluster → addInstance → Router

CRITICAL

☑ PITR drill: roll back with dump + binlog

mysqldump → mysqlbinlog --stop-datetime

CRITICAL

☑ Break & fix replication

duplicate key → GTID empty tx → START REPLICA

CRITICAL

☑ User/role scenarios

roles inactive → SET DEFAULT ROLE

CRITICAL

☑ Option file order & SET PERSIST

my_print_defaults mysqld

IMPORTANT

☑ Reading EXPLAIN: type + Extra

EXPLAIN FORMAT=TREE / ANALYZE

IMPORTANT

☑ Lock diagnosis (row + metadata)

sys.innodb_lock_waits

IMPORTANT

☑ TDE + keyring setup

ALTER TABLE t ENCRYPTION='Y'

IMPORTANT

☑ Enterprise tools conceptually

NEB · MEM · Audit · Firewall

RECOMMENDED

☑ Memorize default values

port 3306/33060/33061 · 6446/6447

RECOMMENDED

CRITICAL

do it hands-on

IMPORTANT

try at least once

RECOMMENDED

know conceptually

✔ Strategy:

Watch for "Choose two/three" in multi-answer questions. Eliminate clearly wrong options first; focus on version-specific (8.0.x) features and **default** values.

⌚ Time Constraint:

120-908 retires on **Nov 16, 2026**. After that, follow Oracle's new MySQL DBA learning path.

09 Default Values to Memorize MySQL 8.0 defaults					
NETWORK & CONNECTIONS		DEFAULT	INNODB	DEFAULT	LOG, BINLOG & CHARACTER SET
port		3306	innodb_buffer_pool_size	128M	log_bin
mysqlx_port		33060	innodb_page_size	16K	binlog_format
group_replication (XCom)		33061	innodb_file_per_table	ON	binlog_expire_logs_seconds
Router RW / RO (classic)		6446 / 6447	innodb_flush_log_at_trx_commit	1	sync_binlog
max_connections		151	innodb_lock_wait_timeout	50 s	long_query_time
wait_timeout		28800 s	innodb_autoinc_lock_mode	2 (interleaved)	gtid_mode
default_authentication_plugin		caching_sha2_password	transaction_isolation	REPEATABLE-READ	character_set_server
					utf8mb4 · utf8mb4_0900_ai_ci

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