Restoring a database

The procedure for restoring the database of an Exponential site - maintenance mode, stopping Velocity, the restore command per engine, SQLite's .restore against replacing the file, the caches to clear afterwards...

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This page is for database administrators who restore an Exponential database, after a failure, a bad upgrade or for a restore test. It answers: in which order to stop, restore and restart, which command restores each engine, what must be cleared afterwards and what to check before the site reopens. Sources: 10.9 Restore and SQLite backup and restore.

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Before you start

- Know which backup you restore and that the files backup (`var/storage`, `settings/override`) is from the same moment.
- Keep a copy of the current, broken database: you may need something from it later.
- Tell the editors: anything published after the backup was taken is lost.

The procedure

1. **Maintenance on**, so nobody writes:

   Shell

   ```
   php bin/php/maintenance.php on --message="Restoring" --allow-root-user
   ```

2. **Under Velocity, stop the server**, so no worker holds the old database:

   Shell

   ```
   php bin/php/console exp:velocity stop --allow-root-user
   ```

3. **Restore the database** (next section) and unpack the files over the installation; fix the owner and mode.
4. **Clear every cache and regenerate the autoloads**:

   Shell

   ```
   php bin/php/ezcache.php --clear-all --allow-root-user
   php bin/php/ezpgenerateautoloads.php -e
   ```

5. **Start Velocity, clear its response cache**, switch maintenance off, open the front page and the administration:

   Shell

   ```
   php bin/php/console exp:velocity start --allow-root-user
   php bin/php/console exp:velocity cache clear --apply --allow-root-user
   php bin/php/maintenance.php off --allow-root-user
   ```

The restore command per engine

Engine	Restore
SQLite 3	`sqlite3 var/storage/sqlite3/exponential.db ".restore '/backup/exponential.db'"`
PostgreSQL	`pg_restore -U exponential -d exponential --clean exponential.dump`
MongoDB	`mongorestore --uri="mongodb://exponential@localhost:27017/exponential" --drop /backup/exponential`
MariaDB	`mariadb -u exponential -p exponential < exponential.sql`
Oracle	`php bin/php/console ext:ezoracle:datapump --import=db.dmp`, or Oracle's `impdp`
MySQL	`mysql -u exponential -p exponential < exponential.sql`

SQLite: .restore or replacing the file

Processes keep the database open: PHP-FPM workers while they run a request, Velocity workers for their whole life. Restore through SQLite's own locking rather than by replacing the file under them. `.restore` copies the backup into the live database page by page under a write lock and prints nothing when it succeeds.

If it reports an error (a writer held the lock, or the backup has another page size, which a database in WAL mode cannot take over), the live database is unchanged. Then replace the file: stop every process that may have it open (Velocity, PHP-FPM, cron), move the old database **and** its `-wal` and `-shm` files aside together, put the backup in place, fix its owner and mode (SQLite files, ownership and permissions), and start the processes again.

After the restore

- **Caches**: they still hold pages rendered from the content before the restore. `ezcache.php --clear-all` clears the kernel's caches, including the SQL query cache; to clear only that one after a write outside Exponential, `php bin/php/ezcache.php --clear-id=querycache --allow-root-user` (The SQL query cache).
- **Sequences**: a full `pg_restore` restores them with the data; after restoring selected tables,

correct them (Operating PostgreSQL). On Oracle, `ext:ezoracle:sequence-sync --dry-run` reports sequences behind their tables.

- **Search index**: if the search index tables were not in the backup, or after restoring into another engine, rebuild it with `php bin/php/updatesearchindex.php --clean --allow-root-user` (The built-in search index tables).
- **MongoDB**: run `bin/mongodb/create_indexes.js` if the indexes were not restored.

Checks before reopening

- The version row matches the code: `SELECT name, value FROM ezsite_data WHERE name LIKE 'ezpublish-%';`
- The row counts of `ezcontentobject`, `ezcontentobject_tree` and `ezcontentobject_attribute` look as expected.
- Sign in to the administration, open a few pages, publish a test object (a publish exercises the writes a page view does not), and delete it.
- `var/log/error.log` shows nothing new.

Testing restores

Test a restore on another machine at least once and after every major upgrade. A practical drill:

1. Take last night's backup to a staging machine.
2. Restore it with this procedure; time each step.
3. Run the checks above.
4. Write down the time it took and what was missing; that is your real recovery time.

Runbooks for hosting staff: Restore and restore tests and Restore from backup.

Checklist

- ☐ Maintenance on; Velocity stopped.
- ☐ Database and files restored from the same moment.
- ☐ All caches cleared, Velocity's response cache too.
- ☐ Sequences, search index and MongoDB indexes checked.
- ☐ Version row, row counts, sign-in and a test publish checked.
- ☐ Maintenance off.

Related pages

- Backups per engine
- Troubleshooting database errors
- When something goes wrong
- Free documentation: this page is free to copy, translate and improve under the GNU FDL

1.3.

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