#### Berkeley DB (BDB)

Berkeley DB (BDB) is a software library that provides a high-performance embedded database for key-value data. BDB stores arbitrary key-data pairs as byte arrays, and supports multiple data items for a single key. Berkeley DB is not a relational database.

#### Resources to better understand the system

* Programmer reference guide <https://docs.oracle.com/cd/E17276_01/html/programmer_reference/index.html>
* Berkeley DB Architecture (<http://www.aosabook.org/en/bdb.html>)
* API reference (<https://docs.oracle.com/cd/E17276_01/html/api_reference/C/frame_main.html>)

#### Variation points

PAGESIZE || CACHESIZE || HAVE\_HASH || HAVE\_CRYPTO || || DIAGNOSTIC || HAVE\_STATISTICS || HAVE\_VERIFY || HAVE\_REPLICATION || HAVE\_SEQUENCE

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| No | Variation Point | Range | Description |
| 1 | PAGESIZE | Min: 512 bytes  Max: 64K bytes,  page size must be a power-of-two | Set the size of the pages used to hold items in the database, in bytes.  There are several issues to consider when selecting a pagesize: overflow record sizes, locking, I/O efficiency, and recoverability. For details on trade offs to consider:  <https://docs.oracle.com/cd/E17276_01/html/programmer_reference/general_am_conf.html#am_conf_pagesize> |
| 2 | CACHESIZE | Default: 256KB and not less than 20KB. Max size of a single cache is 4GB | Your cache must be at least large enough for your working set plus some overlap for unexpected situations.  The rule-of-thumb is that cache is good, and more cache is better. That said, it is important not to increase your cache size beyond the capabilities of your system, as that will result in reduced performance.  For more details on tradeoffs to consider:  <https://docs.oracle.com/cd/E17276_01/html/programmer_reference/general_am_conf.html#am_conf_cachesize> |
| 3 | HAVE\_HASH | On|Off  On, if DB is using the Hash Access Method | Berkeley DB provides different access methods to data. One access method may result in dramatically better performance for an application than another one. For large data sets, Locality of reference is a performance criteria when choosing between access methods. For more details:  <https://docs.oracle.com/cd/E17275_01/html/programmer_reference/am_conf_select.html> |
| 4 | HAVE\_CRYPTO | On|Off  On, if the DB release includes strong cryptography | Whether or not encryption for the database is enabled. |
| 5 | DIAGNOSTIC | On|Off  -enable-diagnostic | To build Berkeley DB with run-time debugging checks, enter --enable-diagnostic as an argument to configure. This causes a number of additional checks to be performed when Berkeley DB is running, and also causes some failures to trigger process abort rather than returning errors to the application.  This can be disabled if small memory footprint of library is required (Also see: <https://docs.oracle.com/cd/E17275_01/html/programmer_reference/build_unix_small.html>) |
| 6 | STATISTICS | On|Off  -disable-statistics | Disable statistics support in the Database. If enabled, DB->stat() API can then be used to gather data about a variety of stats (<https://docs.oracle.com/cd/E17276_01/html/api_reference/C/dbstat.html>)  This can be disabled if small memory footprint of library is required (Also see: <https://docs.oracle.com/cd/E17275_01/html/programmer_reference/build_unix_small.html>) |
| 7 | HAVE\_VERIFY | On|Off  --disable-verify | Disable database verification support. If enabled, DB-verify() can be used to verify integrity of all databases in the file (<https://docs.oracle.com/cd/E17276_01/html/api_reference/C/dbverify.html>)  This can be disabled if small memory footprint of library is required (Also see: <https://docs.oracle.com/cd/E17275_01/html/programmer_reference/build_unix_small.html>) |
| 8 | HAVE\_REPLICATION | On|Off  --disable-replication | DIsable database replication support. If enabled, highly available apps can be built using the guide here (<https://docs.oracle.com/cd/E17276_01/html/programmer_reference/rep.html>)  This can be disabled if small memory footprint of library is required (Also see: <https://docs.oracle.com/cd/E17275_01/html/programmer_reference/build_unix_small.html>) |