

DBOPEN

Intrinsic Number 401

Initiates access to the database and establishes the user class number and access mode for all subsequent database access. `DBOPEN` is used in conjunction with `DBCLOSE` to establish and terminate access to a database.

OPENTURBO vs TurboIMAGE Difference

100%

OPENTURBO Performance Enhancements

One `DBSVR` per `DBOPEN`

The password - you must terminate it with a ';' character, when its length is less 8 bytes long.

OPENTURBO Additional Features

OpenTURBO and ORACLE applications co-existence support.

Syntax

`DBOPEN, base,password,mode,status`

Parameters

`base` is the name of an integer array containing a string of ASCII characters. The string must consist of two blanks followed by a left-justified database name (maximum 6 characters) and terminated by a semicolon or blank (), for example, " orders;". If the database is successfully opened, TurboIMAGE/XL replaces the two blanks with a value called the base ID. The base ID uniquely identifies this access path between the database and the process calling `DBOPEN`. In all subsequent accesses to the database, the first halfword of *base* must be this base ID; therefore, the array should not be modified. The base ID contains a number that distinguishes between the 63 access paths allowed for each process for accessing a given database.

NOTE The base ID cannot be passed between processes in an attempt to reduce the number of required `DBOPEN` calls.

To access a database catalogued in a group other than the user's log-on group, the database name must be followed by a period and the group name, for example, `ORDERS.GROUPX`. If the database is in an account other than the user's account, the group name must be followed by a period and the account name, for example, `ORDERS.GROUPX.ACCOUNT1`. You can use an `MPE/iX FILE` command before executing the application program to equate the database name or the database-access file name to another database or database-access file name. You can use only the formal file designator, actual file designator, and the `DEV=parameters`. For additional information on the database-access file, refer to chapter 9.

`password` is the name of an integer array containing a left-justified string of ASCII characters consisting of an optional password followed by an optional user identifier.

The following constructs are valid for the password and user identifier (a represents a blank):

[/USERIDENT] Access class zero (0).

;/[USERIDENT] Creator access.

password[/USERIDENT] Password access.

If either the password or the user identifier string is less than eight characters long, it must be terminated with a semicolon or a blank. The password establishes a user class number as described in chapter 2. A semicolon supplied as the password implies creator class 64. The user identifier is used by the program DBRECOV to distinguish between users logged on under the same name and account.

The following are valid examples:

i

CLERK

CLERK;

CLERK;/JOE;

CLERK /JOE;

/DBA

The password—you must terminate it with a `'i'` character, when its length is less than 8-bytes long.

mode is an integer between 1 and 8, inclusive, corresponding to the valid TurboIMAGE/XL access modes described in chapter 4. Here is a brief summary:

Access Mode	Associated Capabilities	Concurrent Modes Allowed
1	Modify with enforced locking. Allow concurrent modify.	1,5
2	Update, allow concurrent update.	2,6
3	Modify exclusive.	none
4	Modify, allow concurrent read.	6
5	Read, allow concurrent modify.	1,5
6	Read, allow concurrent modify.	6 and either 2, one 4, or 8
7	Read, exclusive.	none
8	Read, allow concurrent read.	6,8

NOTE If the database is open in database access mode 1, a lock must be in effect on either the data set or the whole database when adding to or deleting from master data sets. If a data entry level lock is specified, any subsequent DBPUTs or DBDELETEs will fail with error number -12 and the following message is returned:

intrinsic name CALLED WITHOUT COVERING LOCK IN EFFECT

Lock either the entire database or data set with a data entry lock by using an @ sign to specify all data sets or all data items.

The figure in appendix B summarizes the results of multiple access to the same database. If a database cannot be opened successfully in a particular mode, this information can be used to determine the problem and to select an alternate mode.

If your database is enabled for third-party indexing (TPI), refer to your vendor documentation for additional DBOPEN mode information. The section on DBUTIL in chapter 8 of this book has a brief description of the TPI option.

status is the name of an array of 10 halfwords in which TurboIMAGE/XL returns status information about the procedure. If the procedure executes successfully, the status array contents are:

Element	Contents
1	If the procedure succeeds, the return status is 0. Table 5-19. describes the contents of element 1 when the procedure does not succeed.
2	User class number, 0 to 63 (or a 64 if the database creator enters a semicolon “;” in place of a password).
3	Current size of the DBG (in halfwords) or 32767, whichever is smaller. If it is 32767, the DBG size exceeds the maximum halfword value limit.
4	Size of the DBU (in halfwords) or 32767, whichever is smaller. If it is 32767, the DBU size exceeds the maximum half-word value limit.
5-10	Information about the current procedure call and its results. This same information is returned for all TurboIMAGE/XL procedures if an error occurs. It is described in “Library Procedure Error Messages” in appendix A.

Discussion

A process can concurrently use the database through independent, unique access paths by issuing as many as 127 calls to DBOPEN (63 calls per database) and specifying a different base array in each call. Subsequent calls to other TurboIMAGE/XL procedures must use the appropriate base array so that the correct base ID is used.

CAUTION

One DBSVR per DBOPEN.

Although a single process can call DBOPEN a maximum of 127 times (63 per database), DBOPEN can encounter an MPE/iX system limit and fail. For example, DBOPEN would fail if the limit was exceeded for mapped file space or if the process attempted to open more than the allowable number of files.

The database activity controlled on one access path relates to that controlled on other access paths in the same way the database activity of one process relates to that of another. The access modes established by each DBOPEN call must be compatible, but otherwise the activity controlled by each access path and the pointers maintained by it are completely independent. The only exception to this access path independence relates to locking. If a process makes a lock request on one access path, it cannot issue a lock on another access path unless the program has multiple RIN capability (CAP=MR) or first calls DBUNLOCK to release the locks on the first access path.

DBOPEN performs expansion recovery if necessary. During the *first open* of the database using any open mode, DBOPEN automatically performs expansion recovery for any detail data set with the “expansion in progress” flag turned on and a previous DBPUT capacity expansion had not completed. Recovery correctly adjusts the data set free count and the root file data set capacity fields using the actual data set file size. Use the SHOW CAPACITY command in DBUTIL to detect if recovery is required for the data set. If the message, “dynamic capacity expansion in progress flag is on,” is displayed for the data set, and asterisks are in the “no. of entries” and “%max cap” fields, then recovery is required for the data set(s). QUERY or any application performing the first DBOPEN of the database can be used to recover the detail data set capacity. Use DBChange Plus or a third-party application to change an existing detail data set to have parameters for dynamic expansion.

If the database is enabled for logging, and the program calls DBOPEN in one of modes 1-4, then TurboIMAGE/XL attempts to access a log file using the MPE/iX OPENLOG intrinsic. OPENLOG succeeds only if the following have been completed:

1. A valid log identifier and log password have been set into the database root file using the DBUTIL >>SET command, and
2. A corresponding system log process has been initiated by the console operator to handle any calls to the logging system.

If OPENLOG fails, DBOPEN also fails and returns an appropriate error condition. If OPENLOG succeeds, DBOPEN causes a log record to be written which includes such information as time, date, user name, user program, mode, and security class. (Refer to appendix E for a full description of log record contents and formats.)

A process is logging if it successfully opens a database in one of modes 1-4, and the database is enabled for logging. A program does not log if it opens in one of modes 5-8, or if the database is not enabled for logging.

If DBRECOV roll-back recovery is enabled, the first DBOPEN checks if the user logging file and the database are attached to the same Transaction Management (XM) user log set. The database and the user

logging file must be kept synchronized at the XM level in order for DBRECOV roll-back recovery to work.

DBOPEN initiates recovery of the incomplete dynamic transactions, if necessary; then DBRECOV rolls back the incomplete static transactions.

Dynamic transactions are not allowed with DBOPEN mode 2.

If the database is enabled for logging and user wants to record session name or job name instead of user identifier in the password parameter part into DBOPEN log record, then the user should use DBUTIL to enable the database for 'FORCE SESSION' (see DBUTIL in Chapter 8) and leave the user identifier in the password parameter blank.

Table 5-19. DBOPEN Return Status Values

File System, Memory Management, and Transaction Management Failures:	-1	HPFOPEN or FOPEN failure.
	-2	FCLOSE failure.
	-3	FREADDIR failure.
	-4	FREADLABEL failure.
	-5	FWRITEDIR error.
	-6	FWRITELABEL error.
	-8	FUNLOCK failure.
	-9	Cannot create a control block.
	-10	FFILEINFO failure.
	-168	Cannot attach <i>n</i> to MPE XL XM: file system error <i>nn</i> .
	-169	Invalid mode for XM attach options.
	-175	Cannot attach <i>n</i> to MPE XL XM: XM error <i>nn</i> .
	-176	Cannot detach <i>n</i> from MPE XL XM: XM error <i>nn</i> .
	-177	User log file is not in the same volume set as database.
	-178	Cannot detach <i>n</i> from MPE XL XM: file system error <i>nn</i> .
	-179	Cannot begin MPE XL XM transaction for attach.
	-198	Total DBOPEN count/user exceeds limit.
	-208	FLABELINFO failure.
	-209	Invalid mode for XM detach.
	-210	MPE error <i>decimal integer</i> while getting log file name.
-211	Invalid or no userlabel.	

Calling Errors:	-11	Bad database reference.
	-13	Must be creator of root file or database.
	-21	Bad password.
	-22	Maintenance word required.
	-31	Bad mode.
	-32	Unobtainable mode.
	-34	Database must be recovered before access is allowed.
	-90	Root file bad: unrecognized state: <i>% octal integer</i> .
	-91	Bad root modification level.
	-92	Database not created.
	-94	Database bad: Was being modified with output deferred, may not be accessed in mode <i>decimal integer</i> .
	-95	Database bad: Creation was in process (create again).
	-96	Database bad: Erase was in process (erase again).
	-220	Database and user log not attached to the same XM log set.
Communications Errors:	-15	DSLINE or remote HELLO failure; setup for RDBA failed.
	-60	Illegal file equation on root file.
	-61	Error while obtaining information about file equation.
	-100	DSOPEN failure.
	-101	DSCLOSE failure.
	-102	DSWRITE failure.
	-103	Remote 3000 space insufficient.
	-104	Remote system does not support TurboIMAGE/XL.
	-105	Remote 3000 cannot create control block.
	-106	Remote 3000 data inconsistent.
	-107	NS 3000 or DS 3000 system error.
Logging System Failures:	-110	OPENLOG failure.
	-111	WRITELOG failure.
	-114	Roll-back enabled without logging.

Native Language Support Errors:	-200	Database language not system supported.
	-201	Native Language Support not installed.
	-202	MPE Native Language Support error <i>decimal integer</i> returned by NLINFO.
Exceptional Conditions:	-167	Cannot begin MPE XL XM transaction: XM error <i>nn</i> .
	-191	DBS control block is full.
	-199	Cannot end MPE XL XM transaction: XM error <i>nn</i> .
	-220	User log and database not attached to same XM log.
	-226	Error occurred when the 00 file was created.
	-227	Error occurred in 00 file recovery.
	-234	Cannot purge the 00 file.
	-236	Internal error occurred when opening the AUX file: error <i>nn</i> .
	-250	Failure in semaphore initialization.
	-253	Database enabled for indexing, but third-party indexing is not configured.
	-331	Invalid DSET Capacity.
	-332	Error in QLOCK table operation.
	-333	Error in QOPEN table operation.
	60	Database access disabled.
	61	This database opened more than 63 times by the same process.
	62	DBG full.
	63	DBG disabled; potential damage; only DBCLOSE allowed.
	64	PCBX full.
	66	The current DBG for the database does not appear correct (TurboIMAGE internal error).
	68	DBB disabled by an abort.

Consult appendix A for more information about these conditions and appendix B for results of multiple access.

