DBINFO

INTRINSIC NUMBER 402

Provides information about the database being accessed. The information returned is restricted by the user class number established when the database is opened; any data items, data sets, or paths of the database which are inaccessible to that user class are considered to be non-existent.

OPENTURBO vs TurboIMAGE Difference

100%-- Except the dataset spaces allocation related info, which is not applicable in ORACLE.

OPENTURBO Performance Enhancements

N/A.

OPENTURBO Additional Features

406 - Return Buffer's Half-word 16, 17, 18 and 19 are used for OpenTURBO Version, such as 'A.01.04 '
406 - Return Buffer's Half-word 25 and 26 (starts from 1) contains the Number Of Concurrent DBOPEN including the calling process
8001 – OpenTURBO Client Library Version
8002 – OpenTURBO Server Program Version (DBSVR)
8003 – RDBMS and OS Type, 515 for ORACLE on HP-UX
8004 – RDBMS Database Name
8005 – Host Name where RDBMS Database resides
8006 – Service or Port Number that is used by OpenTURBO Listener
8007 – RDBMS Logon
8008 – OpenTURBO Server Program Full Name
8009 – OpenTURBO TI Root-File Name
8010 – OpenTURBO TI Root-File Version
8011 – OpenTURBO CONFIG File Name
8012 – OpenTURBO Reserve Word File Name
8013 – OpenTURBO Error Message File Name
8014 – Unconditional LOCK Pause and Re-try Count
8015 – CIUPDATE Allow Indicator
8016 – DBXBEGIN Allow Indicator
8017 – DUALMODE Indicator
8018 – DUALMODE HP/3000 Host Name
8019 – DUALMODE HP/3000 Listener Service or Port Number
8020 – DUALMODE HP/3000 Server Program Name (DMDRV)
8021 - IMAGEMODE Indicator - Access TurboIMAGE Only
8022 - IGNORE_RETURN_STATUS Indicator (IGNORE_CHAINSTATUS)
Qualifier contains a Dataset Name or Dataset Number
Return Buffer 1st Half-word contains TRUE=1 or FALSE=0
8023 - ONE_DIRECTION_CHAIN_GET Indicator (BULKCHAINGET)
Qualifier contains a Dataset Name or Dataset Number
Return Buffer 1st Half-word contains TRUE=1 or FALSE=0
8081 – Total SQL Calls since DBOPEN

8082 – Total Concurrent DBOPENs in the Client Process
8083 – Total Concurrent Open Cursors for the Database
8084 – Number of Chunks for the OpenTURBO Internal Cursor Pool
Chunk Size is 30000 Bytes

Syntax

DBINFO, base, qualifier, mode, status, buffer

Parameters

`base` is the array name used as the *base* parameter when opening the database; must contain the base ID returned by `DBOPEN`. (Refer to `DBOPEN` for additional base ID information.)

`qualifier` is the name of an array containing a data set/data item name or an integer referencing a data item/data set, depending on the value of the *mode* parameter (refer to "Discussion" for *mode/qualifier* relationship). This parameter form is identical to the *dset* and *item* parameters for `DBFIND`, and the *dset* and *list* parameters for `DBPUT`.

`mode` is an integer indicating the type of information desired. Refer to "Discussion" for `mode` integer information (data item modes 1*nn*; data set modes 2*nn*; path modes 3*nn*; logging, dynamic roll-back recovery, and multiple database transaction modes 4*nn*; subsystem and critical item update modes 5*nn*; third-party indexing modes 8*nn*; and language modes *9nn.)*

`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 5-14. describes the contents of element 1 when the procedure does not succeed.
2	Length of information in buffer array (in halfwords).
3-4	Unchanged from previous procedure call using this array.
5-10	Information about the procedure call and its results. Refer to "Library Procedure Error Messages" in appendix A for a description of this information.

`buffer` is the name of an array in which the requested information is returned. The contents of the *buffer* array vary according to the mode parameter used. They are also described in "Discussion" on the following pages.

Table 5-14. DBINFO Return Status Values

File System, Memory Management, and Transaction Management Failures:	-1	FOPEN failure.
	-4	FREADLABEL failure.
	-168	Cannot attach *n* to MPE XL XM: file system error *nn*.
	-169	Invalid mode for XM attach options.
	-175	Cannot attach *n* to MPE XL XM: XM error *nn*.
	-176	Cannot detach *n* from MPE XL XM: XM error *nn*.
	-178	Cannot detach *n* from MPE XL XM: file system error *nn*.
	-209	Invalid mode for XM detach options.
Calling Errors:	-11	Bad database reference.
	-21	Bad data set reference.
	-31	Bad mode.
	-222	Only DBXUNDO allowed when a dynamic transaction encounters an error.
	-270	Database with new limits may overrun user's DBINFO buffer
Communications Errors:	-102	DSWRITE failure.
	-106	Remote 3000 data inconsistent.
	-107	NS 3000 or DS 3000 system error.
	-206	Remote TurboIMAGE/XL database exceeds IMAGE/3000 limits.
Exceptional Conditions:	49	Illegal buffer address.
	50	Buffer too small for requested data.
	63	DBG disabled; potential damage; only DBCLOSE allowed.

Consult appendix A for more information about these conditions.

Discussion

This section provides mode integer information for the following modes (note that the *mode/qualifier* relationship is provided):

1*nn* – Data item modes

2*nn* – Data set modes

3*nn* – Path modes

4*nn* – Logging, dynamic roll-back recovery, and multiple database transaction modes

5*nn* – Subsystem and critical item update modes

8*nn* – Third-party indexing modes

9*nn* – Language modes

Mode 101: Item Number

Mode 101 defines the type of access available for a specific item.

Qualifier identifies the data item name or number for which the information is requested.

Buffer returns the following (each element is a halfword or two bytes):

Element	Contents
1	+/– Data item number

If the data item number is positive, the user class has only read access to the data item. If the number is negative, the data item can be updated or the entry containing it can be added or deleted in at least one data set.

Mode 102: Item Name

Mode 102 describes a specific data item.

Qualifier identifies the data item name or number for which the information is requested.

Buffer returns the following (each element is a halfword or two bytes):

Element	Contents
1–8	Data item name
9	One of the following data types followed by a blank: I, J, K, R, U, X, Z, P
10	Sub-item length
11	Sub-item count
12	0
13	0

The data item name is left-justified and will be padded with blanks if the name is shorter than 16 characters.

Mode 103: Items in Database

Mode 103 identifies data items available in the database and displays the type of access allowed. This mode does **not** identify unreferenced data items, that is, those items that are defined in the item section of the schema but are not referenced by at least one data set.

Qualifier is ignored.

Buffer returns the following (each element is a halfword or two bytes):

Element	Contents
1	Item count *x*
2	+/– Data item number 1
. . .	. . .
n + 1	+/– Data item number n

If the data item number is positive, the user class has only read access to the data item. If the number is negative, the user class has both read and write access to the given data set. The data items are listed in data item number order.

Mode 104: Items in Data Set

Mode 104 identifies data items available in a specific data set and the type of access allowed.

Qualifier identifies the data set name or number for which the information is requested.

Buffer returns the following (each element is a halfword or two bytes):

Element	Contents
1	Item count *x*
2	+/– Data item number 1
. . .	. . .
n + 1	+/– Data item number n

If the data item number is positive, the user class has only read access to the data item. If the number is negative, the user class has both read and write access in the given data set. The data items are listed in order of occurrence in data entry.

ELEMENT CONTENTS

Mode 113: BTREEMODE1 and Wildcard Character

Mode 113 gives the settings of `BTREEMODE1` and wildcard character in the root file as well as current `DBOPEN` (DBU).

Qualifier is ignored.

Buffer must be at least 32 bytes and returns the following (each element is a halfword or 2 bytes):

Element	Contents
1	0 if `BTREEMODE1` is off in the root file 1 if `BTREEMODE1` is on in the root file
2	The first byte (8 bits) is always 0. The second byte (8 bits) represents *c*, where *c* is the current wildcard character. For example, if the current wildcard character is @, the element's hex value will be $0040, or decimal 64. This is from the root file.
3	Highest B-Tree argument version supported (0 for the first B-Tree release version).
4	Number of sets with B-Trees indices attached.
5	0 if `BTREEMODE1` is off for current `DBOPEN` 1 if `BTREEMODE1` is on for current `DBOPEN`
6	The first byte (8 bits) is always 0. The second byte (8 bits) represents *c*, where *c* is the current wildcard character. This is for the current `DBOPEN`.
7...16	(reserved)

Mode 201: Set Number

Mode 201 defines the type of access available for a specific data set.

Qualifier identifies the data set name or number for which the information is requested.

Buffer returns the following (each element is a halfword or two bytes):

Element	Contents
1	+/– Data set number

If the data set number is positive, the user class has only read access. If the number is negative, the user class has both read and write access.

Mode 202: Set Name

Mode 202 describes a specific data set.

Qualifier identifies the data set name or number for which the information is requested.

Buffer returns the following (each element is a halfword or two bytes):

Element	Contents
1–8	Data set name
9	One of the following set types followed by a blank: M, A, D
10	Entry length
11	Blocking factor
12	0
13	0
14–15	Number of entries in set
16–17	Capacity of set. If data set is dynamically expandable, current capacity for detail, and initial capacity (also primary capacity) for master. Note that for master, it is always primary capacity regardless of expansion.

The data set name is left-justified and will be padded with blanks if the name is shorter than 16 characters.

Mode 203: Sets in Database

Mode 203 identifies all data sets available in a database and the type of access allowed. If you are using third-party indexing, this mode does *not* show third-party index files.

Qualifier is ignored.

Buffer returns the following (each element is a halfword or two bytes):

If the data set number is positive, the user class has only read access to the data set and possibly is in the write class list of specific data item(s). If the number is negative, the user class has both read and write access. The data sets are listed in data set number order.

Mode 204: Sets with Item

Mode 204 identifies all data sets available, which contain a specified data item, and indicates the type of access allowed.

Qualifier identifies the data item name or number for which the information is requested.

Buffer returns the following (each element is a halfword or two bytes):

If the data set number is positive, the user class has only read access to the data set and possibly is in the write class list of specific data item(s). If the number is negative, the user class has both read and write access. The data sets are listed in data set number order.

Mode 205: Set Capacity

Mode 205 is an extension of mode 202 with dynamic capacity expansion information.

Qualifier identifies the data set name or number for which the information is requested.

Buffer returns the following (each element is a halfword or two bytes):

Element	Contents
1-8	Data set name
9	One of the following set types followed by a blank: M, A, D
10	Entry length
11	Blocking factor
12	0
13	0
14-15	Number of entries in set
16-17	Current capacity of set, including expansions
18-19	High-water mark
20-21	Maximum capacity
22-23	Initial capacity (primary capacity for master)

The data set name is left-justified and will be padded with blanks if the name is shorter than 16 characters.

Mode 205 can be used for any master or detail data set with or without dynamic capacity expansion capability.

Mode 205 allows users to obtain information on dynamic data set capacity expansion programmatically. It is an extension of mode 202 to include dynamic capacity expansion information such as maximum capacity, initial capacity, incremental number of entries, incremental percent, and the dynamic capacity expansion flag (0 for off and 1 for on) for the data set.

Mode 206: Number of Data Set Chunks

Mode 206 gives the number of chunks in a data set in short format.

Qualifier identifies the data set name or number for which the information is requested.

Buffer returns the following (each element is a halfword or two bytes):

Element	Contents
1	# of chunks in a jumbo data set

If the data set is not a jumbo data set, zero is returned for the number of chunks.

Mode 207: Size of Data Set Chunks

Mode 207 identifies the size of each chunk in terms of IMAGE records in addition to providing the number of chunks.

Qualifier identifies the data set name or number for which the information is requested.

Buffer returns the following (each element is a halfword or two bytes):

Element	Contents
1	# of chunks in a jumbo data set
2	0
3-4	Size of chunk 1 (# entries, not # of blocks!)
5-6	Size of chunk 2 (# entries, not # of blocks!)
7-8	. . .
2n + 3	Size of chunk n (# entries, not # of blocks!)

Total size: (n+1) * 4 bytes.

If the data set is not a jumbo data set, then zero is returned for the number of chunks.

Mode 208: Primary and Actual Capacity

Mode 208 returns the primary and actual capacity.

Qualifier identifies the data set name or number for which the information is requested.

Buffer must be at least a 64-byte record and returns the following (each element is a 32-bit Word):

Element	Contents
1	Primary (hashing) capacity for masters, 0 for details
2	Current capacity, including expansions
3	Maximum capacity
4	Expansion threshold: -1...100 percentage -1 this value means expansion is not triggered by percentage, or it is a non-expandable set
5	Delete chain free head (0 for non-expanded masters)
6	high-water mark (0 for non-expanded masters)
7	Expansion threshold: -1...2 billion blocks -1 this value means expansion not triggered by traversing # blocks without success, or it is a non-expandable set
8...16	Reserved; 0 is returned

`DBINFO` mode 208 does not return an expandable flag, while `DBINFO` 205 returns an

expandable flag. The flag can also be deduced by comparing the current and maximum capacities in `DBINFO` 208. `DBINFO` mode 208 returns information about internals which will be meaningful to only a few customers.

Mode 209: B-Tree Attachment

Mode 209 informs whether or not a B-Tree exists for a master.

Qualifier is a master data set name or number.

Buffer must be at least a 64-byte record and returns the following (each element is a 16-bit Word):

Element	Contents
1	0 if no B-Tree index exists 1 if B-Tree index exists
2	0 if attached B-Tree not damaged or index does not exist 1 if the attached B-Tree index is damaged
3...32	For internal use

Mode 301: Paths

Mode 301 identifies the paths defined for a specified data set.

Qualifier identifies the data set name or number for which the information is requested.

Buffer returns the following (each element is a halfword or two bytes):

Element	Contents
1	Path count *x*
2	Data set number of path 1
3	Search item number of path 1
4	Sort item number of path 1
. . .	. . .
3*n*–1	Data set number of path *n*
3*n*	Search item number of path *n*
3*n*+1	Sort item number of path *n*

Elements 2 to 4 are repeated for each path.

If *qualifier* specifies a master data set, the set number identifies the detail data set.

If *qualifier* specifies a detail data set, the set number identifies the master data set.

If *qualifier* specifies a master data set, the item numbers identify items in the detail data sets. If you do not have access to a search item, it is not included in the path count and the path information is not returned. If a sort item does not exist or you do not have access to it, the sort item number is zero.

Path designators are presented in the order in which they appear in the schema.

Mode 302: Key or Search Item

Mode 302 identifies the key or search item for a specified data set. For this mode the two qualifiers are shown separately.

Qualifier identifies the master data set name or number for which the information is requested.

Buffer returns the following (each element is a halfword or two bytes):

Element	Contents
1	Key item number
2	0

If *qualifier* specifies a master data set, the key item number is the number in the master set. The number is 0 if you do not have access to the key item.

OR

Qualifier identifies the detail data set name or number for which the information is requested.

Buffer returns the following (each element is a halfword or two bytes):

Element	Contents
1	Search item number
2	Master data set number

If *qualifier* specifies a detail data set, the primary search item and the related master data set number are returned. Both numbers are 0 if you do not have access to the search item.

Mode 401: Logging

Mode 401 obtains information related to logging.

Qualifier is ignored.

Buffer returns the following (each element is a halfword or two bytes):

Element	Contents
1–4	Log identifier name
5	Database log flag
6	User log flag
7	Transaction flag
8–9	User transaction number

The log identifier name is left-justified and padded with blanks if shorter than 8 characters.

If the database is enabled for logging, the database log flag is 1; otherwise it is 0.

If you are logging, the user log flag is 1; otherwise it is 0.

If you have a transaction in progress, the transaction flag is 1; otherwise it is 0.

The user transaction number is one word.

Mode 402: ILR

Mode 402 returns information about Intrinsic Level Recovery (ILR).

Qualifier is ignored.

Buffer returns the following (each element is a halfword or two bytes):

Element	Contents
1	ILR log flag
2	Calendar date (*mmddyy*)
3–4	Clock time (one word in format *hhmmsstt*)
5	0
6–14	
15–16	Reserved

If the database is enabled for ILR, the ILR log flag is 1; otherwise it is 0.

The calendar date is the date ILR was enabled.

The clock time is the time ILR was enabled.

Element 5 is always 0.

ß indicates blank. Elements 6 to 14 are always blank.

Elements 15 and 16 are reserved.

Mode 403: Dynamic Roll-Back

Mode 403 obtains information related to dynamic transaction activity on a given database.

Qualifier is ignored.

Buffer returns the following (each element is a halfword or two bytes):

Element	Contents
1–4	Log identifier name
5	Database log flag
6	User log flag
7	Logical transaction flag
8–9	User transaction number
10–11	XM log set size (in megabytes)
12	XM log set type
13	Database attached flag
14	Dynamic transaction flag
15–26	XM log set name

The log identifier name is left-justified and padded with blanks if shorter than 8 characters.

If the database is enabled for logging, the database log flag is 1; otherwise it is 0.

If you are logging, the user log flag is 1; otherwise it is 0.

If no logical transaction is in progress, the transaction flag is 0. If a static transaction is in progress, the flag is set to 1; if a multiple database transaction is in progress, the flag is set to 2.

The user transaction number is one word.

The Transaction Management (XM) log set is measured in megabytes. If the XM log set is circular, the log set type is CR; otherwise it is LN indicating a linear log.

If the database is attached to XM, the database attached flag is 1; otherwise it is 0.

If the user is processing a dynamic transaction, the dynamic transaction flag is 1; otherwise it is 0.

If the database is associated with the default XM user log set, the XM log set name element contains blanks; otherwise it contains the name of the XM log set.

Mode 404: Logging Subsystem Information

Mode 404 returns information about multiple database transactions.

Qualifier is ignored.

Buffer returns the following (each element is a halfword or two bytes):

Element	Contents
1	Database log flag
2	User log flag
3	Roll-back log flag
4	ILR log flag
5	MUSTRECOVER flag
6	Database remote flag
7	Logical transaction flag
8–11	Log identifier name
12–13	Log index
14–15	Multiple database transaction ID
16	Number of databases involved in the multiple database transaction
17–31	Base IDs of the databases involved in the multiple database transaction

If the database is enabled for logging, the database log flag is 1; otherwise it is 0.

If you are logging, the user log flag is set to 1; otherwise it is 0. If a user accesses the database with a `DBOPEN` mode 5, this flag is set to 0. If the database is enabled for roll-back logging, the roll-back log flag is set to 1; otherwise it is 0.

If the database is enabled for ILR, the ILR log flag is set to 1; otherwise it is 0.

If the database is enabled for `MUSTRECOVER`, the `MUSTRECOVER` flag is set to 1; otherwise it is 0.

If the database resides on a remote system, the database remote flag is set to 1. If the database resides on the local system, the flag is set to 0. If no logical transaction is in progress, the transaction flag is set to 0. If a static transaction is in progress, the flag is set to 1. If a multiple database transaction is in progress, the flag is set to 2.

The log index is used to call the `WRITELOG` intrinsic. It is set to 0 if logging is not used.

The transaction ID represents a multiple or single database transaction. Elements 16-31 are set when a multiple database transaction is in progress.

Mode 406: Database Information

Mode 406 returns information about fully qualified database name and open mode.

Qualifier is ignored.

Buffer returns the following (each element is a halfword or two bytes):

Element	Contents
1-14	Fully qualified database name, left justified, blank trailing.
15	Open mode for current DBOPEN.
16	Root file version of the database. In the form C*n* where C is uppercase ASCII and *n* is a number. For example, C2 or C3.
17-24	For internal use.
25-32	Reserved.

Mode 501: Subsystem Access

Mode 501 checks subsystem access to the database. Refer to the DBUTIL >>SHOW and >>SET commands described in chapter 8 for more information.

Qualifier is ignored.

Buffer returns the following (each element is a halfword or two bytes):

The following values are used for subsystem access:

0 No access

1 Read access

3 Read/write access

Mode 502: Critical Item Update

Mode 502 checks the critical item update (CIUPDATE) option settings for the database and the current DBOPEN. The CIUPDATE option is set for the database with the DBUTIL >>SET command and then, depending on the setting, can be enabled or disabled with DBCONTROL for the current DBOPEN. Refer to the discussion of DBCONTROL in this chapter and the descriptions of the DBUTIL >>SHOW and >>SET commands in chapter 8 for more information.

Qualifier is ignored.

Buffer returns the following (each element is a halfword or two bytes):

Element	Contents
1	Critical item update flag
2	Current setting for accessor

For element 1, the following values are used for the CIUPDATE option setting specified with DBUTIL for the database:

0 Critical item update is disallowed.

1 Critical item update is allowed (default).

2 Critical item update is on.

For element 2, the following values are used for the current DBOPEN setting specified with DBCONTROL:

0 Critical item update is disabled for this accessor.

1 Critical item update is enabled for this accessor.

Modes 8nn: Third-Party Indexing

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

Mode 901: Language

Mode 901 obtains the Native Language attribute of the database. It returns the MPE/iX code for the language attribute.

Qualifier is ignored.

Buffer returns the following (each element is a halfword or two bytes):

Element	Contents
1	Language ID