Oracle BBED 工具 说明

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标签：

oracle /

file /

command /

structure /

struct

一.  BBED介绍

       有关BBED 详细使用说明的pdf文档，也是从网上下载的：

              http://download.csdn.net/source/1902555

       Thename bbed is an acronym for Block Browser and EDitor and it is shipped with thedatabase. It is intended for Oracle internal use only and the company neverpublishes any details about it. It is a very powerful tool but also extremelydangerous since it can change and/or corrupt data blocks of any Oracledatabase.

       Ifyou use this tool, you do so at your own risk. Any modifications made with thistool render the database unsupported by Oracle.

       BBED(Oracle Block Browerand EDitor Tool)，用来直接查看和修改数据文件数据的一个工具，是Oracle一款内部工具，可以直接修改Oracle数据文件块的内容，在一些极端恢复场景下比较有用。该工具不受Oracle支持，所以默认是没有生成可执行文件的，在使用前需要重新连接。

二. BBED 的安装和使用

2.1 BBED 安装

       Oracle8i 的BBED在windows 平台下的$ORACLE\_HOME/bin下可以找到，9i中似乎未随软件发布，故在windows没有这个工具，

       在linux上面有，需要编译。

在9i/10g中连接生成bbed:

       cd$ORACLE\_HOME/rdbms/lib

       make-f ins\_rdbms.mk $ORACLE\_HOME/rdbms/lib/bbed

示例：

[oracle@db2 ~]$ cd $ORACLE\_HOME/rdbms/lib

[oracle@db2 lib]$ make -f ins\_rdbms.mk $ORACLE\_HOME/rdbms/lib/bbed

Linking BBED utility (bbed)

rm -f /u01/app/oracle/product/10.2.0/db\_1/rdbms/lib/bbed

gcc -o/u01/app/oracle/product/10.2.0/db\_1/rdbms/lib/bbed-L/u01/app/oracle/product/10.2.0/db\_1/rdbms/lib/-L/u01/app/oracle/product/10.2.0/db\_1/lib/-L/u01/app/oracle/product/10.2.0/db\_1/lib/stubs/ -L/usr/lib -lirc  /u01/app/oracle/product/10.2.0/db\_1/lib/s0main.o/u01/app/oracle/product/10.2.0/db\_1/rdbms/lib/ssbbded.o/u01/app/oracle/product/10.2.0/db\_1/rdbms/lib/sbbdpt.o `cat/u01/app/oracle/product/10.2.0/db\_1/lib/ldflags`    -lnsslb10 -lncrypt10 -lnsgr10 -lnzjs10 -ln10-lnnz10 -lnl10 /u01/app/oracle/product/10.2.0/db\_1/rdbms/lib/defopt.o-ldbtools10 -lclntsh  `cat/u01/app/oracle/product/10.2.0/db\_1/lib/ldflags`    -lnsslb10 -lncrypt10 -lnsgr10 -lnzjs10-ln10 -lnnz10 -lnl10 -lnro10 `cat /u01/app/oracle/product/10.2.0/db\_1/lib/ldflags`    -lnsslb10 -lncrypt10 -lnsgr10 -lnzjs10-ln10 -lnnz10 -lnl10 -lclient10 -lnnetd10 -lvsn10 -lcommon10 -lgeneric10 -lmm -lsnls10 -lnls10  -lcore10 -lsnls10 -lnls10 -lcore10 -lsnls10-lnls10 -lxml10 -lcore10 -lunls10 -lsnls10 -lnls10 -lcore10 -lnls10 `cat/u01/app/oracle/product/10.2.0/db\_1/lib/ldflags`    -lnsslb10 -lncrypt10 -lnsgr10 -lnzjs10-ln10 -lnnz10 -lnl10 -lnro10 `cat/u01/app/oracle/product/10.2.0/db\_1/lib/ldflags`    -lnsslb10 -lncrypt10 -lnsgr10 -lnzjs10-ln10 -lnnz10 -lnl10 -lclient10 -lnnetd10 -lvsn10 -lcommon10 -lgeneric10  -lsnls10 -lnls10  -lcore10-lsnls10 -lnls10 -lcore10 -lsnls10 -lnls10 -lxml10 -lcore10 -lunls10 -lsnls10-lnls10 -lcore10 -lnls10 -lclient10 -lnnetd10 -lvsn10 -lcommon10 -lgeneric10 -lsnls10 -lnls10  -lcore10 -lsnls10 -lnls10 -lcore10 -lsnls10-lnls10 -lxml10 -lcore10 -lunls10 -lsnls10 -lnls10 -lcore10 -lnls10   `cat/u01/app/oracle/product/10.2.0/db\_1/lib/sysliblist`-Wl,-rpath,/u01/app/oracle/product/10.2.0/db\_1/lib -lm    `cat /u01/app/oracle/product/10.2.0/db\_1/lib/sysliblist`-ldl -lm  -L/u01/app/oracle/product/10.2.0/db\_1/lib

[oracle@db2 lib]$

       以上生成的bbed可执行文件在$ORACLE\_HOME/rdbms/lib目录，可以复制到其他位置或者其他同Oracle版本的机器上运行。

也可通过以下命令将bbed生成到$ORACLE\_HOME/bin目录

[oracle@db2 lib]$ make -f ins\_rdbms.mk  BBED=$ORACLE\_HOME/bin/bbed  $ORACLE\_HOME/bin/bbed

Linking BBED utility (bbed)

rm -f /u01/app/oracle/product/10.2.0/db\_1/bin/bbed

gcc -o/u01/app/oracle/product/10.2.0/db\_1/bin/bbed-L/u01/app/oracle/product/10.2.0/db\_1/rdbms/lib/-L/u01/app/oracle/product/10.2.0/db\_1/lib/-L/u01/app/oracle/product/10.2.0/db\_1/lib/stubs/ -L/usr/lib -lirc  /u01/app/oracle/product/10.2.0/db\_1/lib/s0main.o/u01/app/oracle/product/10.2.0/db\_1/rdbms/lib/ssbbded.o/u01/app/oracle/product/10.2.0/db\_1/rdbms/lib/sbbdpt.o `cat/u01/app/oracle/product/10.2.0/db\_1/lib/ldflags`    -lnsslb10 -lncrypt10 -lnsgr10 -lnzjs10-ln10 -lnnz10 -lnl10 /u01/app/oracle/product/10.2.0/db\_1/rdbms/lib/defopt.o-ldbtools10 -lclntsh  `cat/u01/app/oracle/product/10.2.0/db\_1/lib/ldflags`    -lnsslb10 -lncrypt10 -lnsgr10 -lnzjs10-ln10 -lnnz10 -lnl10 -lnro10 `cat/u01/app/oracle/product/10.2.0/db\_1/lib/ldflags`    -lnsslb10 -lncrypt10 -lnsgr10 -lnzjs10-ln10 -lnnz10 -lnl10 -lclient10 -lnnetd10 -lvsn10 -lcommon10 -lgeneric10 -lmm -lsnls10 -lnls10  -lcore10 -lsnls10 -lnls10 -lcore10 -lsnls10 -lnls10-lxml10 -lcore10 -lunls10 -lsnls10 -lnls10 -lcore10 -lnls10 `cat /u01/app/oracle/product/10.2.0/db\_1/lib/ldflags`    -lnsslb10 -lncrypt10 -lnsgr10 -lnzjs10-ln10 -lnnz10 -lnl10 -lnro10 `cat/u01/app/oracle/product/10.2.0/db\_1/lib/ldflags`    -lnsslb10 -lncrypt10 -lnsgr10 -lnzjs10-ln10 -lnnz10 -lnl10 -lclient10 -lnnetd10 -lvsn10 -lcommon10 -lgeneric10  -lsnls10 -lnls10  -lcore10-lsnls10 -lnls10 -lcore10 -lsnls10 -lnls10 -lxml10 -lcore10 -lunls10 -lsnls10-lnls10 -lcore10 -lnls10 -lclient10 -lnnetd10 -lvsn10 -lcommon10 -lgeneric10 -lsnls10 -lnls10  -lcore10 -lsnls10 -lnls10 -lcore10 -lsnls10-lnls10 -lxml10 -lcore10 -lunls10 -lsnls10 -lnls10 -lcore10 -lnls10   `cat/u01/app/oracle/product/10.2.0/db\_1/lib/sysliblist`-Wl,-rpath,/u01/app/oracle/product/10.2.0/db\_1/lib -lm    `cat/u01/app/oracle/product/10.2.0/db\_1/lib/sysliblist` -ldl -lm   -L/u01/app/oracle/product/10.2.0/db\_1/lib

[oracle@db2 lib]$ ls -lrt bbed

-rwxr-xr-x 1 oracle oinstall 536161 Aug 1118:30 bbed

[oracle@db2 lib]$ cd $ORACLE\_HOME/bin

[oracle@db2 bin]$ ls -lrt bbed

-rwxr-xr-x 1 oracle oinstall 536161 Aug 11 18:33bbed

 OracleDatabase 11g中缺省的未提供BBED库文件，但是可以用10g的文件编译出来，需要先从10g中复制如下文件到相应目录，然后再执行上述连接命令，参考如下步骤：

（1）复制Oracle 10g文件

Copy $ORA10g\_HOME/rdbms/lib/ssbbded.o to$ORA11g\_HOME/rdbms/lib

Copy $ORA10g\_HOME/rdbms/lib/sbbdpt.o to $ORA11g\_HOME/rdbms/lib

Copy $ORA10g\_HOME/rdbms/mesg/bbedus.msb to $ORA11g\_HOME/rdbms/mesg

Copy $ORA10g\_HOME/rdbms/mesg/bbedus.msg to $ORA11g\_HOME/rdbms/mesg

Copy $ORA10g\_HOME/rdbms/mesg/bbedar.msb to $ORA11g\_HOME/rdbms/mesg

（2）编译

make -f $ORA11g\_HOME/rdbms/lib/ins\_rdbms.mkBBED=$ORACLE\_HOME/bin/bbed $ORACLE\_HOME/bin/bbed

2.2 使用BBED

       BBED是Oracle 内部使用的命令，所以Oracle 不提供技术支持。 为了安全，BBED设置了口令保护，默认密码为blockedit。

[oracle@db2 bin]$ bbed

Password:

BBED-00113: Invalid password. Please rerunutility with the correct password.

[oracle@db2 bin]$ bbed

Password:

BBED: Release 2.0.0.0.0 - LimitedProduction on Thu Aug 11 18:51:47 2011

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BBED>

       一般使用bbed，都是将一些配置信息写入到一个参数文本里，在调用bbed时，指定该参数文件。如：

       $bbedparfile=bbed.par

相关的参数可以通过help 查看：

[oracle@db2 admin]$ bbed help=y

PASSWORD - Required parameter

FILENAME - Database file name

BLOCKSIZE - Database block size

LISTFILE - List file name

MODE - [browse/edit]

SPOOL - Spool to logfile [no/yes]

CMDFILE - BBED command file name

LOGFILE - BBED log file name

PARFILE - Parameter file name

BIFILE - BBED before-image file name

REVERT - Rollback changes from BIFILE[no/yes]

SILENT - Hide banner [no/yes]

HELP - Show all valid parameters [no/yes]

这里我们先演示一个示例。

（1）先获取datafile 的信息

       将datafile 的信息写入一个文件，格式为：文件编号  文件名字 文件大小。可以通过如下SQL   获取：

SYS@dave2(db2)>  select file#||' '||name||' '||bytes from v$datafile ;

FILE#||''||NAME||''||BYTES

--------------------------------------------------------------------------------

1/u01/app/oracle/oradata/dave2/system01.dbf 1761607680

2/u01/app/oracle/oradata/dave2/undotbs01.dbf 927989760

3/u01/app/oracle/oradata/dave2/sysaux01.dbf 398458880

4 /u01/app/oracle/oradata/dave2/users01.dbf5242880

5 /u01/app/oracle/oradata/dave2/example01.dbf104857600

6 /u01/app/oracle/oradata/dave2/dave01.dbf10485760

7/u01/app/oracle/oradata/dave2/undotbs02.dbf 1048576

8/u01/app/oracle/oradata/dave2/huaining01.dbf 52428800

8 rows selected.

       注意，这里的file id。 我们这里的file id 和 oracle 系统内部的file id 相同。 当然这个id 我们也可以自己指定。 当我们在bbed 里设置file id 时，就是根据这个参数文件中的的设置来的。 最好设置为相同，不然以后可能会混淆。

将上面查询出来的datafile信息保存到文本里。

[oracle@db2 ~]$ cat /u01/filelist.txt

1/u01/app/oracle/oradata/dave2/system01.dbf 1761607680

2/u01/app/oracle/oradata/dave2/undotbs01.dbf 927989760

3/u01/app/oracle/oradata/dave2/sysaux01.dbf 398458880

4 /u01/app/oracle/oradata/dave2/users01.dbf5242880

5/u01/app/oracle/oradata/dave2/example01.dbf 104857600

6 /u01/app/oracle/oradata/dave2/dave01.dbf10485760

7/u01/app/oracle/oradata/dave2/undotbs02.dbf 1048576

8/u01/app/oracle/oradata/dave2/huaining01.dbf 52428800

(2) 创建parameter file：

[oracle@db2 ~]$ cat /u01/bbed.par

blocksize=8192

listfile=/u01/filelist.txt

mode=edit

（3）使用parameter file 连接bbed：

[oracle@db2 ~]$ bbed parfile=/u01/bbed.par

Password:

BBED: Release 2.0.0.0.0 - LimitedProduction on Thu Aug 11 20:47:49 2011

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BBED> show

       FILE#           1

       BLOCK#          1

       OFFSET          0

       DBA             0x00400001(4194305 1,1)

       FILENAME       /u01/app/oracle/oradata/dave2/system01.dbf

       BIFILE          bifile.bbd

        LISTFILE        /u01/filelist.txt

       BLOCKSIZE       8192

       MODE            Edit

       EDIT            Unrecoverable

       IBASE           Dec

       OBASE           Dec

       WIDTH           80

       COUNT           512

       LOGFILE         log.bbd

       SPOOL           No

三. BBED命令说明

先看帮助的说明：

BBED> help all

SET DBA [ dba | file#, block# ]

SET FILENAME 'filename'

SET FILE file#

SET BLOCK [+/-]block#

SET OFFSET [ [+/-]byte offset | symbol |\*symbol ]

SET BLOCKSIZE bytes

SET LIST[FILE] 'filename'

SET WIDTH character\_count

SET COUNT bytes\_to\_display

SET IBASE [ HEX | OCT | DEC ]

SET OBASE [ HEX | OCT | DEC ]

SET MODE [ BROWSE | EDIT ]

SET SPOOL [ Y | N ]

SHOW [ <SET parameter> | ALL ]

INFO

MAP[/v] [ DBA | FILENAME | FILE | BLOCK ]

DUMP[/v] [ DBA | FILENAME | FILE | BLOCK |OFFSET | COUNT ]

PRINT[/x|d|u|o|c] [ DBA | FILE | FILENAME |BLOCK | OFFSET | symbol | \*symbol ]

EXAMINE[/Nuf] [ DBA | FILE | FILENAME |BLOCK | OFFSET | symbol | \*symbol ]

</Nuf>:

N - a number which specifies a repeatcount.

u - a letter which specifies a unit size:

  b -b1, ub1 (byte)

  h -b2, ub2 (half-word)

  w -b4, ub4(word)

  r -Oracle table/index row

f - a letter which specifies a displayformat:

  x -hexadecimal

  d -decimal

  u -unsigned decimal

  o -octal

  c -character (native)

  n -Oracle number

  t -Oracle date

  i -Oracle rowid

FIND[/x|d|u|o|c] numeric/character string [TOP | CURR ]

COPY [ DBA | FILE | FILENAME | BLOCK ] TO [DBA | FILE | FILENAME | BLOCK ]

MODIFY[/x|d|u|o|c] numeric/character string

     [ DBA | FILE | FILENAME | BLOCK | OFFSET | symbol | \*symbol ]

ASSIGN[/x|d|u|o] <targetspec>=<source spec>

<target spec> : [ DBA | FILE |FILENAME | BLOCK | OFFSET | symbol | \*symbol ]

<source spec> : [ value | <targetspec options> ]

SUM [ DBA | FILE | FILENAME | BLOCK ] [APPLY ]

PUSH [ DBA | FILE | FILENAME | BLOCK |OFFSET ]

POP [ALL]

REVERT [ DBA | FILE | FILENAME | BLOCK ]

UNDO

HELP [ <bbed command> | ALL ]

VERIFY [ DBA | FILE | FILENAME | BLOCK ]

CORRUPT [ DBA | FILE | FILENAME | BLOCK ]

下面是几个常用的：

set 设定当前的环境

show 查看当前的环境参数，跟sqlplus的同名命令类似。

dump 列出指定block的内容

find 在指定的block中查找指定的字符串，结果是显示出字符串，及其偏移量--offset，偏移量就是在block中的字节数

modify 修改指定block的指定偏移量的值，可以在线修改。

copy 把一个block的内容copy到另一个block中

verify 检查当前环境是否有坏块

sum 计算block的checksum，modify之后block就被标识为坏块，current checksum与reqired checksum不一致，sum命令可以计算出新的checksum并应用到当前块。

undo 回滚当前的修改操作，如果手误做错了，undo一下就ok了，回到原来的状态。

revert 回滚所有之前的修改操作，意思就是 undo all

3.1 SET 命令

3.1.1 set dba

       Setsthe current data block using the standard Oracle DBA (Data Block Address)format. This is entered as file\_id, block.

       关于DBA 说明，参考：

       Oracle rdba和 dba 说明

       http://blog.csdn.net/tianlesoftware/article/details/6529346

SQL> select

 2  rowid,

 3  dbms\_rowid.rowid\_relative\_fno(rowid)rel\_fno,

dbms\_rowid.rowid\_block\_number(rowid)blockno,

dbms\_rowid.rowid\_row\_number(rowid) rowno

from t1 where object\_id=100;

ROWID                 REL\_FNO    BLOCKNO     ROWNO

------------------ ---------- --------------------

AAAMxZAABAAAO3SAAA          1     60882          0

AAAMxZAABAAAO3TAAH          1     60883          7

设置file 1，block 60882

BBED> set dba 1,60882

       DBA             0x0040edd2(4255186 1,60882)

       如果设置成功，会返回该block的RDBA (Relative Data Block Address)，rdba就是rowid中的rfile#+block#。括号里面的是DBA值和block 和 file id。 我们验证一下：

SYS@dave2(db2)> variable dbavarchar2(30);

SYS@dave2(db2)> exec :dba :=dbms\_utility.make\_data\_block\_address(1,60882);

PL/SQL procedure successfully completed.

SYS@dave2(db2)> print dba

DBA

----------------------------------------------------------

4255186

3.1.2 set filename

       Setsthe current file to the one specified. It must be a valid Oracle data file andit must be enclosed in single quotes. If the file is not in the current path itmust also be fully qualified. If successful, bbed will respond showing the filenow being accessed.

BBED> set filename '/u01/app/oracle/oradata/dave2/users01.dbf'

       FILENAME       /u01/app/oracle/oradata/dave2/users01.dbf

--必须是一个有效的datafile，并且用单引号括起来

3.1.3 set file

       Setsthe current file to the number specified. The number specified must be one ofthe file ids supplied in the filelist referenced at startup. If successful,bbed will respond showing the file id now being accessed.

BBED> set file 4

       FILE#           4

--注意这里的number，是我们之前配置的filelist里的number。它可以和我们db 里的file id 不一样。 不过最好是配置一样的。

3.1.4 set block

       Setsthe current block. The block is relative to the filename or file already set.The absolute block can be specified, or an offset to the current block can bespecified using the plus (+) or (-) symbols. If successful, bbed will respondshowing the current block.

       --注意这里的block 是一个相对的位置，我们需要先指定一个file，然后在指定block。 即对应file里的block。可以对当前block的位置进行+和-操作。

BBED> set file 4

       FILE#           4

BBED> set block 60882

BBED-00309: out of range block number(60882)

BBED> set file 1

       FILE#           1

BBED> set block 60882

       BLOCK#          60882

BBED> set bock +10

BBED-00202: invalid parameter (bock)

BBED> set block +10

       BLOCK#          60892

BBED> set block -10

       BLOCK#          60882

3.1.5 set offset

       Setsthe current offset. The offset is relative to the block already set. Theabsolute offset can be specified, or an offset to the current offset can bespecified using the plus (+) or minus (-) symbols. If successful, bbed willrespond showing the current offset.

       --偏移量是相对某个block里的偏移量，可以用+和-进行操作

BBED> set offset 20

       OFFSET          20

BBED> set offset +2

       OFFSET          22

BBED> set offset -2

       OFFSET          20

3.1.6 set blocksize

       Setsthe blocksize of the current file. The blocksize must match the file selectedor an error will be reported. If successful, bbed will respond showing thecurrent blocksize.

       设置当前datafile 的blocksize 大小，该大小必须和datafile 的实际block 匹配，否则会报错。

BBED> set blocksize 8192

       BLOCKSIZE       8192

3.1.7 set listfile

      Setsthe listfile to the specified file. This option can be used if the listfile wasnot specified on the command line. The listfile must be enclosed in singlequotes. If successful, bbed will respond showing the current listfile.

       --在前面讲过，可以通过parameter file 来指定bbed的属性，当然也可以通过set 来指定这些信息。对于listfile的文件，必须用单引号括起来。

BBED> set listfile '/u01/filelist.txt'

       LISTFILE        /u01/filelist.txt

3.1.8 set width

       Setsthe current screen width. If not specified bbed will assume an 80-characterdisplay.

       设定当前屏幕的宽度，默认是80.

BBED> set width 200

       WIDTH           200

3.1.9 set count

       Setsthe number of bytes of the data block to display from the dump command. Thedefault is 512.

       Tosee an entire 8Kb block therefore you would need to dump the block eight timesat offsets 0, 512, 1024, 1536, 2048, 2560, 3092 and 3604.

       Bysetting the count higher bbed will dump more of the block each time. Byreducing it a smaller dump can be achieved.

       设置dump 命令显示bytes的数量。默认是512 bytes。

BBED> set count 512

       COUNT           512

3.1.10 set ibase

       Setsthe internal number base. The default is decimal. However it can also be set tohexadecimal or octal. This allows the set file, set block and set offsetcommands to use an alternate base to decimal. If successful, bbed will respondshowing the current base:

       --设置内部的数字格式，默认是十进制。 也可以设置为十六进制或者八进制。设置完数字格式之后，可是使用该格式来设置blcok，offset等。

BBED> set ibase hex

       IBASE           Hex

BBED> set block +D

       BLOCK#          14

BBED> set ibase decimal

       IBASE           Dec

3.1.11 set obase

       Thepurpose of this command is unknown.

3.1.12 set mode

       Setsthe bbed mode. The options are browse or edit. In browse mode no changes can bemade. This is the suggested mode for first-time users, or if you are intendingto use the tool only to inspect data blocks.

       --设置bbed 的模式，该默认有2种：browse 和 edit。 browse 模式不允许进行修改。 如果要修改，就选择edit模式。 这个在我们的之前的配置文件里，我们选择了edit。

BBED> set mode browse

       MODE            Browse

BBED> set mode edit

       MODE            Edit

3.1.13 set spool

       Thiscommand appears to not be implemented.

3.2 show 命令

       显示当前的配置选项。

BBED> show

       FILE#           1

       BLOCK#          14

       OFFSET          0

       DBA             0x0040000e(4194318 1,14)

       --注意这里的block 变成了14. 是我们刚才设置的。

       FILENAME       /u01/app/oracle/oradata/dave2/system01.dbf

       BIFILE          bifile.bbd

       LISTFILE        /u01/filelist.txt

       BLOCKSIZE       8192

       MODE            Edit

       EDIT            Unrecoverable

       IBASE           Dec

       OBASE           Dec

       WIDTH           200

       COUNT           512

       LOGFILE         log.bbd

       SPOOL           No

3.3 info

       显示当前可以进行browse 或者edit 的file。即我们filelist 里指定的datafile信息。

BBED> info

 File# Name                                                       Size(blks)

 ----- ----                                                       ----------

    1  /u01/app/oracle/oradata/dave2/system01.dbf                      215040

    2 /u01/app/oracle/oradata/dave2/undotbs01.dbf                     113280

    3 /u01/app/oracle/oradata/dave2/sysaux01.dbf                       48640

    4 /u01/app/oracle/oradata/dave2/users01.dbf                          640

    5 /u01/app/oracle/oradata/dave2/example01.dbf                      12800

    6 /u01/app/oracle/oradata/dave2/dave01.dbf                          1280

    7 /u01/app/oracle/oradata/dave2/undotbs02.dbf                        128

    8 /u01/app/oracle/oradata/dave2/huaining01.dbf                      6400

--一行不能完整显示，设置一下width 参数，就ok了

BBED> set width 65

       WIDTH           65

BBED> info

 File# Name                                        Size(blks)

 ----- ----                                        ----------

    1 /u01/app/oracle/oradata/dave2/system01.dbf       215040

    2 /u01/app/oracle/oradata/dave2/undotbs01.dbf      113280

    3 /u01/app/oracle/oradata/dave2/sysaux01.dbf        48640

    4  /u01/app/oracle/oradata/dave2/users01.dbf           640

    5 /u01/app/oracle/oradata/dave2/example01.dbf       12800

    6 /u01/app/oracle/oradata/dave2/dave01.dbf           1280

    7 /u01/app/oracle/oradata/dave2/undotbs02.dbf         128

    8  /u01/app/oracle/oradata/dave2/huaining01.db        6400

3.4 Map

       Themap command shows a map of the current block. It can be combined with the /voption to produce a more verbose output. The map shows the offsets throughoutthe block where certain information can be found such as the block header, thedata block header or the row directory.

       Ifthe set commands have not been used to set a current block, or it the user simplywishes to examine another block while keeping the current block their focus,the file name, file id, block or DBA can be specified with the command.

       Map会通过偏移量来显示block里的详细信息，如block header，data block header 和row directory。 使用/v 选项，可以查看更详细的信息。

       在不指定block的情况下，会显示当前block的信息，如果想显示其他block的信息，可以使用file name，file id，block 和DBA 来指定要显示的block。

BBED> map

 File:/u01/app/oracle/oradata/dave2/system01.dbf (1)

 Block: 60882                                 Dba:0x0040edd2

------------------------------------------------------------

 KTBData Block (Table/Cluster)

 struct kcbh, 20 bytes                      @0

 struct ktbbh, 72 bytes                     @20

 struct kdbh, 14 bytes                      @92

 struct kdbt[2], 8 bytes                    @106

 sb2kdbr[4]                               @114

 ub1freespace[7974]                       @122

 ub1rowdata[92]                           @8096

 ub4tailchk                               @8188

--这个是默认情况，@后面代表的对应的信息在block里的偏移量，即offset。

--通过dba 来指定某个block

BBED> map /v dba 1,60882

 File:/u01/app/oracle/oradata/dave2/system01.dbf (1)

 Block: 60882                                 Dba:0x0040edd2

------------------------------------------------------------

 KTBData Block (Table/Cluster)

 struct kcbh, 20 bytes                      @0

   ub1 type\_kcbh                          @0

   ub1 frmt\_kcbh                          @1

   ub1 spare1\_kcbh                        @2

   ub1 spare2\_kcbh                        @3

   ub4 rdba\_kcbh                          @4

   ub4 bas\_kcbh                           @8

   ub2 wrp\_kcbh                           @12

   ub1 seq\_kcbh                           @14

   ub1 flg\_kcbh                           @15

   ub2 chkval\_kcbh                        @16

   ub2 spare3\_kcbh                        @18

 struct ktbbh, 72 bytes                     @20

   ub1 ktbbhtyp                            @20

   union ktbbhsid, 4 bytes                @24

   struct ktbbhcsc, 8 bytes               @28

   b2 ktbbhict                            @36

   ub1 ktbbhflg                           @38

   ub1 ktbbhfsl                           @39

   ub4 ktbbhfnx                           @40

   struct ktbbhitl[2], 48 bytes           @44

 struct kdbh, 14 bytes                      @92

   ub1 kdbhflag                           @92

   b1 kdbhntab                            @93

   b2 kdbhnrow                            @94

   sb2 kdbhfrre                           @96

   sb2 kdbhfsbo                           @98

   sb2 kdbhfseo                            @100

   b2 kdbhavsp                            @102

   b2 kdbhtosp                            @104

 struct kdbt[2], 8 bytes                    @106

   b2 kdbtoffs                            @106

   b2 kdbtnrow                             @108

 sb2kdbr[4]                               @114

 ub1freespace[7974]                       @122

 ub1rowdata[92]                           @8096

 ub4tailchk                               @8188

--通过block 来map

BBED> map block 60888

 File:/u01/app/oracle/oradata/dave2/system01.dbf (1)

 Block: 60888                                 Dba:0x0040edd8

------------------------------------------------------------

 KTBData Block (Table/Cluster)

 struct kcbh, 20 bytes                      @0

 struct ktbbh, 72 bytes                     @20

 struct kdbh, 14 bytes                      @92

 struct kdbt[2], 8 bytes                    @106

 sb2kdbr[4]                               @114

 ub1freespace[7936]                       @122

 ub1rowdata[130]                          @8058

 ub4tailchk                               @8188

Map 显示的具体信息解释如下：

struct kcbh, 20 bytes Block Header Structure

  ub1 type\_kcbh Block type (see Header Block Types below)

  ub1 frmt\_kcbh Block format 1=Oracle 7, 2=Oracle 8+

  ub1 spare1\_kcbh Not used

  ub1 spare2\_kcbh Not used

  ub4 rdba\_kcbh RDBA -Relative Data Block Address

  ub4 bas\_kcbh SCN Base

  ub2 wrp\_kcbh SCN Wrap

  ub1 seq\_kcbh Sequence number, incremented for every change made to the block at the same SCN

  ub1 flg\_kcbh Flag:

0x01 New Block

0x02 Delayed Logging Change advanced SCN/seq 0x04 Check value saved - block XOR‘s to zero

0x08 Temporary block

  ub2 chkval\_kcbh Optional block checksum (if DB\_BLOCK\_CHECKSUM=TRUE)

  ub2 spare3\_kcbh Not used

struct ktbbh, 72 bytes Transaction Fixed Header Structure

  ub1 ktbbhtyp Block type (1=DATA, 2=INDEX)

  union ktbbhsid, 4 bytes Segment/Object ID

  struct ktbbhcsc, 8 bytes SCN at last block cleanout

  b2 ktbbhict Number of ITL slots

  ub1 ktbbhflg 0=on the freelist

  ub1 ktbbhfsl ITL TX freelist slot

  ub4 ktbbhfnx DBA of next block on the freelist

  struct ktbbhitl[2], 48 bytes ITL list index

struct kdbh, 14 bytes Data Header Structure

  ub1 kdbhflag N=pctfree hit(clusters); F=do not put on freelist; K=flushable cluster keys

  b1 kdbhntab Number of tables (>1 in clusters)

  b2 kdbhnrow Number of rows

  sb2 kdbhfrre First free row entry index; -1 = you have to add one

  sb2 kdbhfsbo Freespace begin offset

  sb2 kdbhfseo Freespace end offset

  b2 kdbhavsp Available space in the block

  b2 kdbhtosp Total available space when all TXs commit

struct kdbt[1], 4 bytes Table Directory Entry Structure

  b2 kdbtoffs

  b2 kdbtnrow

sb2 kdbr[1] Row Directory

ub1 freespace[8030] Free Space

ub1 rowdata[38] Row Data

ub4 tailchk (See Tailchecks below)

       Differentblock types are designated by the first byte of the block. The following tableshows how to decode the block type:

       不同的block 可以第一个byte的值是不一样的。 具体值对应block 类型如下。

Header Block Types

ID Type

01 Undo segment header

02 Undo data block

03 Save undo header

04 Save undo data block

05 Data segment header (temp, index, data and so on)

06 KTB managed data block (with ITL)

07 Temp table data block (no ITL)

08 Sort Key

09 Sort Run

10 Segment free list block

11 Data file header

可以通过dump block来查看对应的具体的值。 下文讲dump时会有相关的示例。

       oracleblocks 的最后4个bytes 是tail check。 下面看一下oracle 9i block的tail check 组成。

Tailchecks

       Thetail of an Oracle 8+ block is a concatenation of the lower order two bytes ofthe SCN base, the block type and the SCN sequence number.

       Oracleblock tail 由4个bytes组成，但实际上只用了低2个bytes来存放。 2个bytes的tail 由scn base，block type 和 scn sequence 组成。

E.g, if the SCN base number is 0x00029728,the block type is 06 and the SCN sequence number is 0x02, the tail check wouldbe 0x97280602:

SCN base     Type   SCN seq

 9728           06        02

       Althoughthis tail check value is generated from three components, Oracle treats thefinal value as a single unsigned integer stored as a word (4-bytes). Onlittle-endian architecture machines, which include Intel, the value will bestores as low-order byte first.

       虽然tail check 由3个部分组成，但是oracle 把这3部分作为一个整体来存储，并且占用4个bytes。

       对于little-endian（低端）架构的机器，包括Intel, 他们会先存放low-order byte，即低位字节。

       Thereforeif the tail check is examined in the block using a standard block editor, orthe dump command which will be explained in the next section, the byte ordermay look different. A tail check of 0x97280602 stored on an Intel machine wouldbe written to disk as "02062897".

       可以通过标准block editor 或者dump 来查看tail check。 对于不同的机器，他们存储的顺序是不一样的。比如tail check 0x97280602 在Intel Machine 就被存储为02062897，因为它会先保存low-order bytes。

3.5 dump（d）

       Thedump command dumps the content of the block to the screen. It can be combinedwith the /v option to produce a more verbose output. TheDBA, Filename, File, Block and/or Offset to dump can be specified with thecommand. If these are not specified the current file, block and offsetas established with the set command will be dumped. The size of the dump islimited by the set count option and defaults to 512 bytes or alternatively thesize of the dump can be specified with the command.

       dump命令可以讲block 的内从显示到屏幕。 每次显示的bytes由count 控制，默认是512 bytes。 使用 /v 选项，可以显示更多详细信息。

示例：

BBED> dump /vdba 1,60884 offset 0 count 128

 File:/u01/app/oracle/oradata/dave2/system01.dbf (1)

 Block: 60884  Offsets:    0 to  127 Dba:0x0040edd4

-------------------------------------------------------

 06a20000 d4ed4000 e3580900 00000106 l.¢..Ôí@.ãX......

 64610000 01000000 fb000000 de580900 lda......û...ÞX..

 00000000 02000200 00000000 01002900 l..............).

 15010000 a3008000 ce002700 00800000 l....£...Î.'.....

 de580900 01002800 15010000 a4008000 lÞX....(.....¤...

 ce003500 06200000 e3580900 01020700 l Î.5....ãX......

 ffff2400 021fde1e de1e0000 01000100 l..$...Þ.Þ.......

 0600851f 6f1f591f 441f2e1f 181f021f l....o.Y.D.......

 <16 bytes per line>

我们看一下blockheader 中第一行16个bytes 的架构：

Type Format Unused RDBA SCN Base SCN Wrap Seq Flag

06 a2 0000 d4ed4000 e3580900 0000 01 06

在上一节讲到不同的blocktype id 代表不同的类型：

06 KTB managed data block (with ITL)

我们在dump 一个看看：

BBED> dump /v dba 1,6081 offset 0 count128

 File:/u01/app/oracle/oradata/dave2/system01.dbf (1)

 Block: 6081   Offsets:    0 to  127 Dba:0x004017c1

-------------------------------------------------------

 10a20000 c1174000 972a0000 00000104 l.¢..Á.@..\*......

 cbf20000 00000000 00000000 00000000 lËò..............

 00000000 01000000 07000000 20100000 l............ ...

 00000000 01000000 07000000 c3174000 l............Ã.@.

 00000000 00000000 00000000 01000000 l................

 00000000 00000000 00000000 01000000 l ................

 00000000 7e030000 00000040 c2174000 l....~......@Â.@.

 07000000 00000000 00000000 00000000 l................

这个block headertype 就变成了10.

3.6 print（p）

       Theprint command allows data structures to be printed in raw or formatted output.The DBA, Filename, File, Block and/or Offset to print can be specified with thecommand. If these are not specified the current file, block and offset asestablished with the set command will be printed.

       print命令输出datastructures。 在使用print时，可以指定dba，block 等参数来限定输出特定block。

       Ifthe print command is issued with just the block and offset to print, bbed willdisplay the data structure at that offset.

       在3.4 节map里讲了block的结构，在前面，我们讲过，可以通过dump 来查看block 的type。通过print 也可以查看。现在我们print 一个file 1，block 60811的Data Block Header 的type。

BBED> set dba 1,60811

       DBA             0x0040ed8b(4255115 1,60811)

BBED> set offset 0

       OFFSET          0

BBED> p kcbh.type\_kcbh

ub1 type\_kcbh                               @0        0x06

--type 类型为06.

       Itis also possible to use the print command to print individual data structuresby specifying the name.

       可以通过print 输出指定名称的block structures。

BBED> p kcbh

struct kcbh, 20 bytes                       @0

  ub1 type\_kcbh                           @0        0x06

  ub1 frmt\_kcbh                           @1        0xa2

  ub1 spare1\_kcbh                         @2        0x00

  ub1 spare2\_kcbh                         @3        0x00

  ub4 rdba\_kcbh                           @4        0x0040ed8b

  ub4 bas\_kcbh                             @8        0x00095560

  ub2 wrp\_kcbh                            @12       0x0000

  ub1 seq\_kcbh                            @14       0x01

  ub1 flg\_kcbh                            @15       0x06 (KCBHFDLC,KCBHFCKV)

  ub2 chkval\_kcbh                         @16       0x4667

  ub2 spare3\_kcbh                         @18       0x0000

       Ifwe wanted to determine the number of rows in the block, we could print the dataheader structure or kdbh:

       如果我们想确定block 中row的数量，可以print data header structure 或者kdbh。

       struct kdbh, 14 bytes Data Header Structure

BBED> p kdbh

struct kdbh, 14 bytes                       @92

  ub1 kdbhflag                            @92       0x01 (KDBHFFK)

   b1kdbhntab                              @93       2

   b2kdbhnrow                             @94       10

  sb2 kdbhfrre                            @96      -1

  sb2 kdbhfsbo                            @98       42

  sb2 kdbhfseo                            @100      7917

   b2kdbhavsp                             @102      7875

   b2kdbhtosp                             @104      7875

We can also specifying certain datastructure elements to print such as the row count:

也可以指定某个具体的structure元素进行print。

BBED> p kdbhnrow

b2 kdbhnrow                                 @94       10

该block里保存了10行rows。

注意：

       当print 一个data structure 时，输出的格式如下：

              UnitSize\* | Name | Offset|  Value

       \*Unit size is shown in bytes and indicates if the value is signed (s) orunsigned (u).

       Inaddition to printing information about the specified data structure, the printcommand can also be used to print information about thelocation the data structure points to by using the pointer (\*) prefix.

       --在pointer 加前缀\* 可以print location data structure。

       For example we can display the block row information by printing the kdbr datastructure，kdbr 里保存的是row directory 的信息。

sb2 kdbr[1] Row Directory

BBED> p kdbr

sb2 kdbr[0]                                 @114      8070

sb2 kdbr[1]                                 @116      8053

sb2 kdbr[2]                                 @118      8036

sb2 kdbr[3]                                 @120      8019

sb2 kdbr[4]                                 @122      8002

sb2 kdbr[5]                                 @124      7985

sb2 kdbr[6]                                 @126      7968

sb2 kdbr[7]                                 @128      7951

sb2 kdbr[8]                                 @130      7934

sb2 kdbr[9]                                 @132      7917

格式的对应关系：

Unit Size\*    |  Name    | Offset |  Value

sb2            kdbr[9]    @132    7917

       从上面的结果，可以看出，在这个数据块里有10行记录。 每行的pointer 需要2个bytes来存储。 这10行row的offset 从114 到132.

       我们可以使用kdbr[0] 作为一个指针来print 它对应的内容。这个kdbr[0] 是一个本地的data structure，我们print 需要加\*号前缀。

BBED> p \*kdbr[0]

rowdata[153]

------------

ub1 rowdata[153]                            @8162     0xac

       通过这个信息，我们可以知道该行记录的偏移量是8162. 我们就dump 它的具体信息。

BBED> d /v dba 1,60811 offset 8162 count128

 File:/u01/app/oracle/oradata/dave2/system01.dbf (1)

 Block: 60811  Offsets: 8162 to 8191 Dba:0x0040ed8b

-------------------------------------------------------

 ac000209 00090000 40ed8b00 000040ed l¬.......@í....@í

 8b000003 c2052702 c1020106 6055     l ....Â.'.Á...`U

 <16 bytes per line>

       Theprint command can also print absolute offsets, although it does not offer thecount option like the dump command:

       print命令也可以直接输出一个绝对的offset内容。

BBED> p offset 8162

rowdata[153]

------------

ub1 rowdata[153]                            @8162     0xac

这个输出结果默认是16进制的。我们可以将其修改成其他格式。

Switch Display Format

/x Hex

/d signed decimal

/u unsigned decimal

/o Octal

/c Character

/n Oracle Number

/t Oracle Date

/i Oracle ROWID

BBED> p offset 8162

rowdata[153]

------------

ub1 rowdata[153]                            @8162    0xac

BBED> p /d offset 8162

rowdata[153]

------------

ub1 rowdata[153]                            @8162     172

3.7 examine(x)

       Theexamine command is used to display data from the block in raw or formattedoutput. The DBA, Filename, File, Block and/or Offset to examine can bespecified with the command. If these are not specified the current file, blockand offset as established with the set command will be examined. If the examinecommand is issued with just the block and offset to examine, bbed will displaythe data structure at that offset.

       --examine命令也是用来显示datablock的内容的。

       Unlikethe print command it cannot interpret data structures, but it can be used todisplay row information. Combined with knowledge of the data type of the row,it can be used to retrieve complete rows from the block:

       --print命令不能对datastructures 进行一个解释说明。

       Theexamine command will interpret the data in the block according to the followingswitches:

Switch Display Format

/b b1, ub1 (byte)

/h b2, ub2 (half-word)

/w b4, ub4 (word)

/l b8, ub8 (long) (was b4/ub4 in Oracle7).

/r Oracle table/index row

       Theexamine command allows switches from the print command to be combined withthese specific switches to interpret data.

       --examine可以根据switch的方式和print 命令进行一个结合来对data 进行解释说明。

       Forexample if we wanted to interpret data as an Oracle table row with the firstcolumn character and the second and third columns numeric, we would execute thecommand as follows:

       BBED>x /rcnn

       Thefollowing example shows the print and examine commands being used to step throughthe first and second rows of a block, with the data interpreted as a row in theformat: character, number, number:

BBED> set dba 1,60811

       DBA             0x0040ed8b(4255115 1,60811)

BBED> p \*kdbr[0]

rowdata[153]

------------

ub1 rowdata[153]                            @8162     0xac

BBED> x /rcnn

rowdata[153]                                @8162

------------

flag@8162: 0xac (KDRHFL, KDRHFF, KDRHFH,KDRHFK)

lock@8163: 0x00

cols@8164:    2

kref@8165:    9

mref@8167:    9

hrid@8169:0x0040ed8b.0

nrid@8175:0x0040ed8b.0

col   0[3] @8181: Â.'

col   1[2] @8185: 1

BBED> p \*kdbr[1]

rowdata[136]

------------

ub1 rowdata[136]                            @8145     0x6c

BBED> x /rcnn

rowdata[136]                                @8145

------------

flag@8145: 0x6c (KDRHFL, KDRHFF, KDRHFH,KDRHFC)

lock@8146: 0x02

cols@8147:    4

col   0[2] @8149: Á.

col   1[1] @8152: 0

col   2[2] @8154: 3

col   3[4] @8157: 42092

       Arepeat count can also be specified to repeat the examine command for subsequentrows. The following shows the print command being used to position the offsetat the last row and then the next three rows are examined.

       examine命令也可以指定多行进行显示。 下面的示例我们通过print命令讲offset 指向到最后一个位置。 然后repeat 3次。

BBED> p kdbhnrow

b2 kdbhnrow                                 @94       10

--这个block上总共有10 个rows。

BBED> p \*kdbr[9]

rowdata[0]

----------

ub1 rowdata[0]                              @8009     0x6c

--用print 将位置指向最后一个row。

BBED> x /3rcnn

rowdata[0]                                  @8009

----------

flag@8009: 0x6c (KDRHFL, KDRHFF, KDRHFH,KDRHFC)

lock@8010: 0x02

cols@8011:    4

col   0[2] @8013: Á.

col   1[1] @8016: 0

col   2[2] @8018: 27

col   3[4] @8021: 52385

rowdata[17]                                 @8026

-----------

flag@8026: 0x6c (KDRHFL, KDRHFF, KDRHFH,KDRHFC)

lock@8027: 0x02

cols@8028:    4

col   0[2] @8030: Á.

col   1[1] @8033: 0

col   2[2] @8035: 24

col   3[4] @8038: 42280

rowdata[34]                                 @8043

-----------

flag@8043: 0x6c (KDRHFL, KDRHFF, KDRHFH,KDRHFC)

lock@8044: 0x02

cols@8045:    4

col   0[2] @8047: Á.

col   1[1] @8050: 0

col   2[2] @8052: 21

col   3[4] @8055: 42224

--examine 显示3次。

注意：

       Notethat Oracle fills data blocks from the bottom-up, so setting the offset to thefirst row will prohibit the use of the repeat option.

       Oracle使用block 是从底向上的。 如果讲offset 设置为0. 那么将会组织repeat 的操作。

       假如当前current row 是3，repeat 2次，那么row 3 和row 2 将被显示。 如果current row 是9， repeat 3次，那么row 9，row 8 和row 7 将被显示。

       如果不能满足repeat，就会返回错误。

3.8 find（f）

       Thefind command is used to locate data within a block. The command allows hex,string or numeric data to be searched for. The pattern can be searched for fromthe top of the block (offset 0) using the TOP directive, or from the currentposition using the CURR directive.

       find命令可以用来搜索关键字。 可以从offset 0 搜索到top 或者从当前的offset 搜索到top。

       Switchesare used to determine the data type of the pattern to search for. These areshown below:

Switch Datatype

/x Hexadecimal

/d Decimal

/u unsigned decimal

/o Octal

/c character (native)

Note: Number and Dates are not supported bythe find command.

       find 命令支持的switch 类型如上表，注意，find 不支持number和Date 。

示例：

--创建表并insert数据

SYS@dave2(db2)> create table dvd(jobvarchar2(100));

Table created.

SYS@dave2(db2)> insert into dvdvalues('Dave is DBA!');

1 row created.

SYS@dave2(db2)> commit;

Commit complete.

SYS@dave2(db2)> insert into dvdvalues('Dave like Oracle!');

1 row created.

SYS@dave2(db2)> commit;

Commit complete.

--查看block 情况：

SYS@dave2(db2)>  select

rowid,

dbms\_rowid.rowid\_relative\_fno(rowid) rel\_fno,

dbms\_rowid.rowid\_block\_number(rowid) blockno,

dbms\_rowid.rowid\_row\_number(rowid) rowno

from dvd;

ROWID                 REL\_FNO    BLOCKNO     ROWNO

------------------ ---------- --------------------

AAAN9VAABAAAcKiAAA          1    115362          0

AAAN9VAABAAAcKiAAB          1    115362          1

--设置block 和 offset

BBED> set file 1

       FILE#           1

BBED> set block 115362

       BLOCK#          115362

BBED> set offset 0

       OFFSET          0

--查找Dave

BBED> find /c Dave top

 File:/u01/app/oracle/oradata/dave2/system01.dbf (1)

 Block: 115362           Offsets: 8155 to 8191           Dba:0x0041c2a2

------------------------------------------------------------------------

 44617665 206c696b 65204f72 61636c65 212c01010c446176 65206973 20444241

 21020616 b3

 <32 bytes per line>

bbed 显示在offset 8155的为位置，我们dump 该offset 看看

BBED> d /v dba1,115362 offset 8155 count 128

 File: /u01/app/oracle/oradata/dave2/system01.dbf(1)

 Block: 115362 Offsets: 8155 to 8191 Dba:0x0041c2a2

-------------------------------------------------------

 44617665 206c696b 65204f72 61636c65 l Dave like Oracle

 212c0101 0c446176 65206973 20444241 l!,...Dave is DBA

 21020616 b3                         l !...³

 <16 bytes per line>

--结果显示的头四个字母就是Dave

如果我们要继续搜索Dave，那么只需要按下f 就可以了，不需要跟参数。

BBED> f

 File:/u01/app/oracle/oradata/dave2/system01.dbf (1)

 Block: 115362           Offsets: 8176 to 8191           Dba:0x0041c2a2

------------------------------------------------------------------------

 44617665 20697320 44424121 020616b3

 <32 bytes per line>

BBED> d /v dba1,115362 offset 8176 count 128

 File:/u01/app/oracle/oradata/dave2/system01.dbf (1)

 Block: 115362 Offsets: 8176 to 8191 Dba:0x0041c2a2

-------------------------------------------------------

 44617665 20697320 44424121 020616b3 l Dave is DBA!...³

 <16 bytes per line>

3.9 Copy

       Thecopy command is used to copy blocks from one location to another. As with othercommands, the file or filename and offset can be specified, or the DBA can bespecified instead.

命令格式如下：

BBED> copy dba 1,115362 to dba 1,115363

copy 是个危险的命令，慎用。

3.10 modify（m）

       Themodify command is used to change data inside a block. The DBA, Filename, File,Block and/or Offset to modify can be specified with the command. If these arenot specified the current file, block and offset as established with the setcommand will be modified. Alternatively a symbol or symbol pointer can bespecified for modification.

       Thepattern of bytes used to overwrite the original can be specified inhexadecimal, decimal, unsigned decimal, octal or character data using the sameswitches as the find command.

       在file 1,block 115362 有我们的Dave，我们这里把Dave 改成dmm。

BBED> modify /c dmm dba 1, 115362 offset 8155

 File:/u01/app/oracle/oradata/dave2/system01.dbf (1)

 Block: 115362           Offsets: 8155 to 8191           Dba:0x0041c2a2

------------------------------------------------------------------------

 646d6d65 206c696b 65204f72 61636c65 212c01010c446176 65206973 20444241

 21020616 b3

 <32 bytes per line>

--dump 验证一下

BBED> d /v dba 1,115362 offset8155 count 128

 File:/u01/app/oracle/oradata/dave2/system01.dbf (1)

 Block: 115362 Offsets: 8155 to 8191 Dba:0x0041c2a2

-------------------------------------------------------

 646d6d65 206c696b 65204f72 61636c65 l dmme like Oracle

 212c0101 0c446176 65206973 20444241 l!,...Dave is DBA

 21020616 b3                         l !...³

 <16 bytes per line>

--注意，这里只修改了Dave的前三个字母，即把Dave变成了dmme。

注意一点，这里仅仅是修改，还没有进行update，即sum apply， select 才会改变。

SYS@dave2(db2)> select \* from dvd;

JOB

--------------------------------------------------------------------------------

Dave is DBA!

Dave like Oracle!

3.11 assign

       Theassign command does symbolic assignment, with type and range checking. Eithertarget or source can be omitted for the current offset.

       Forexample, the following command assigns structure at current offset to file 4,block 2 ”s first ITL entry

BBED> assign dba 4, 2 ktbbhitl[0]

3.12 sum

       Thesum command is used to check and set the block checksum. The DBA, Filename,File, Block and/or Offset to check can be specified with the command. If theseare not specified the current file, block and offset as established with theset command will be checked.

       Theapply directive can be used to update the checksum.

       我们可以使用bbed 对block 进行修改。 要使这些修改生效，就要使用sum命令。

BBED> sum dba 1,115362

Check value for File 1, Block 115362:

current = 0xe5fb, required = 0xe5fb

BBED> sum dba 1,115362 apply

Check value for File 1, Block 115362:

current = 0xe5fb, required = 0xe5fb

正常情况下，apply 以后，就已改生效了，但是我测试的时候apply 并没有生效，而是把db 重启之后，modify 才生效。

SYS@dave2(db2)> select \* from dvd;

JOB

--------------------------------------------------------------------------------

Dave is DBA!

Dave like Oracle!

SYS@dave2(db2)> startup force

ORACLE instance started.

Total System Global Area  239075328 bytes

Fixed Size                  1218724 bytes

Variable Size              83887964 bytes

Database Buffers          150994944 bytes

Redo Buffers                2973696 bytes

Database mounted.

Database opened.

SYS@dave2(db2)> select \* from dvd;

JOB

--------------------------------------------------------------------------------

Dave is DBA!

dmme like Oracle!

3.13 push / pop

       Thepush and pop commands are used to push a file, block and offset location onto amemory backed stack and then pop them back. This allows a current locationbeing edited to be temporarily saved while another location is examined ormodified.

Note that the stack only stores the locationœ it does notsave the contents.

       --push命令将对象放到内存的stack，pop 将对象从内存写回磁盘。

       Thefollowing example shows file 7, block 16, offset 8163 being examined. Thelocation is saved with the push command. We then move to file 6, block 1 beforereturning to DBA 7,16 with the pop command.

BBED> push dba 7,16

DBA 0x01c00010 (29360144 7,16)

OFFSET 8163

BBED> set dba 6,1

DBA 0x01800001 (25165825 6,1)

BBED> pop

DBA 0x01c00010 (29360144 7,16)

OFFSET 8163

       Thecommand pop all can be used to remove all push‘d entries from the stack. Thecommand show all can be used to show all saved locations.

3.14 revert

       Therevert command is used to restore a file, filename, block or DBA to it‘soriginal state when bbed was started.

       revert是恢复自bbed 启动以来的所有修改。

BBED> revert dba 1,115362

All changes made to this block will berolled back. Proceed? (Y/N) y

Reverted file'/u01/app/oracle/oradata/dave2/system01.dbf', block 115362

BBED> sum dba 1,115362 apply

Check value for File 1, Block 115362:

current = 0xdef7, required = 0xdef7

这个block是我们之前修改成dmme 的。 我们应用之后，再次select：

SYS@dave2(db2)> select \* from dvd;

JOB

--------------------------------------------------------------------------------

Dave is DBA!

dmme like Oracle!

还是没有改变，flush 一下buffer cache之后就更改回来了。我们刚才在之前的测试时，是重启了DB。 看来也是启了flush buffer cache的作用。

SYS@dave2(db2)> alter system flushbuffer\_cache;

System altered.

SYS@dave2(db2)> select \* from dvd;

JOB

--------------------------------------------------------------------------------

Dave is DBA!

Dave like Oracle!

3.15 undo

       Theundo command rolls back the last modify or assign command. If the undo commandis issued again the modification is re-done.

       undo命令是回滚最后一次的操作。

BBED> modify /cdmm dba 1, 115362 offset 8155

 File:/u01/app/oracle/oradata/dave2/system01.dbf (1)

 Block: 115362           Offsets: 8155 to 8191           Dba:0x0041c2a2

------------------------------------------------------------------------

 646d6d65 206c696b 65204f72 61636c65 212c01010c446176 65206973 20444241

 21020616 b3

 <32 bytes per line>

BBED> d /v dba1,115362 offset 8155 count 128

 File:/u01/app/oracle/oradata/dave2/system01.dbf (1)

 Block: 115362 Offsets: 8155 to 8191 Dba:0x0041c2a2

-------------------------------------------------------

 646d6d65 206c696b 65204f72 61636c65 l dmmelike Oracle

 212c0101 0c446176 65206973 20444241 l!,...Dave is DBA

 21020616 b3                         l !...³

 <16 bytes per line>

BBED> undo

BBED>modify /x446176 filename '/u01/app/oracle/oradata/dave2/system01.dbf' block115362. offset 8155.

 File:/u01/app/oracle/oradata/dave2/system01.dbf (1)

 Block: 115362           Offsets: 8155 to 8191           Dba:0x0041c2a2

------------------------------------------------------------------------

 44617665 206c696b 65204f72 61636c65 212c01010c446176 65206973 20444241

 21020616 b3

 <32 bytes per line>

--undo 下面的modify是oracle 自己执行的。

BBED> d /v dba 1,115362 offset 8155count 128

 File:/u01/app/oracle/oradata/dave2/system01.dbf (1)

 Block: 115362 Offsets: 8155 to 8191 Dba:0x0041c2a2

-------------------------------------------------------

 44617665 206c696b 65204f72 61636c65 l Davelike Oracle

 212c0101 0c446176 65206973 20444241 l!,...Dave is DBA

 21020616 b3                         l !...³

 <16 bytes per line>

3.16 verify

       Theverify command is used to verify the integrity of the block. It performs asimilar function to the dbverify utility.

       verify命令用来验证block的完整性。

BBED> verify dba 6,15

DBVERIFY - Verification starting

FILE = /u01/app/oracle/oradata/dave2/dave01.dbf

BLOCK = 15

DBVERIFY - Verification complete

Total Blocks Examined         : 1

Total Blocks Processed (Data) : 1

Total Blocks Failing   (Data) : 0

Total Blocks Processed (Index): 0

Total Blocks Failing   (Index): 0

Total Blocks Empty            : 0

Total Blocks Marked Corrupt   : 0

Total Blocks Influx           : 0

3.17 corrupt

       Thecorrupt command is used to mark blocks as media corrupt.

       corrupt命令将一个block 标记为corrupt，这样db 在操作时就会跳过该block，从而避免错误。

BBED> corrupt dba 6,15

Block marked media corrupt

Note: The undo command does not undo acorruption. The revert command however does.

注意： undo 命令不能undo 一个corruption，但是revert 命令却可以。

小结：

       关于bbed 命令的语法部分就这么多。 下篇将重点看一下BBED 命令的使用。